NATIONAL NUTRITION PROGRAMME

BASELINE SURVEY 2004

REPORT

CONTRIBUTORS

Tahmeed Ahmed
S.K. Roy
Nurul Alam
A.M. Shamsir Ahmed
Gulshan Ara
Abbas Uddin Bhuiya
Shams El Arifeen
Barkat-e-Khuda
U.H. Farida Khatun
Harun-ur-Rashid
Ahmed Al-Sabir
Subrata K. Bhadra
Shahin Sultana

ICDDR,B: Centre for Health and Population Research

Institute of Public Health Nutrition

National Institute of Population Research and Training

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Editors
M. Shamsul Islam Khan
Tahmeed Ahmed
S.K. Roy

Managing Editor
M. Shamsul Islam Khan

Coordinator
A.M. Shamsir Ahmed

Printing and Publication
M. Shamsul Islam Khan

Cover Design
Tahmeed Ahmed

Page Lay-out and Desktop
Mahbubul Hoque
Biplob Banerjee

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ICDDR,B: Centre for Health and Population Research
Mohakhali, Dhaka 1212 (GPO Box 128, Dhaka 1000), Bangladesh
Telephone: +(880-2) 8811751-60 [10 lines], 8812353-7 [5 lines], and (880-2) 8822467
Fax: +(880-2) 9885657, 8823116
Email: msik@icddrb.org
URL: http://www.icddrb.org

PREFACE

The Ministry of Health and Family Welfare of the People's Republic of Bangladesh initiated the National Nutrition Programme (NNP), the largest nutrition initiative, to reduce malnutrition in children, adolescent girls, and women. The National Nutrition Programme Baseline Survey carried out in 2004 was implemented through a collaborative effort of ICDDR,B: Centre for Health and Population Research, Institute of Public Health Nutrition (IPHN), and the National Institute of Population Research and Training (NIPORT). The objectives of the survey were to provide detailed information about nutritional status of children aged less than 5 years, adolescent girls and pregnant women, pregnancy weight gain, weight of the newborn, anaemia and iodine status of pregnant women and adolescent along with socioeconomic data, feeding practices, access to and use of child health and nutrition services, and mothers' nutrition knowledge and practices. Information about involvement in home gardening, poultry, household food security, participation in growth monitoring and promotion sessions, and adolescent girls' forum were also obtained.

The survey results will serve as baseline information as well as be instrumental in monitoring and evaluating activities of the National Nutrition Programme. The results will also help in identifying new directions in the health and nutrition sector of Bangladesh and in formulation policies and programmes.

The Technical Committee of the project and the Report Review Committee comprised experts from the NNP, ICDDR,B, IPHN, NIPORT, Department of Statistics, University of Dhaka, Institute of Nutrition and Food Science, and Mitra and Associates. I would like to extend my gratitude and appreciation to all the members of the Technical Committee, Report Review Committee, and Independent Quality Control Team for their important contributions.

I express my sincere thanks to the team of the NNP Baseline Survey of ICDDR,B, IPHN, NIPORT, and Mitra and Associates for their sincere efforts in completing the survey. Finally, the Ministry of Health and Family Welfare of the Government of the People's Republic of Bangladesh, National Nutrition Programme, World Bank, and Canadian International Development Agency (CIDA) deserve special thanks for providing guidance and financial support for the survey.

FOREWORD

The Baseline Survey of National Nutrition Programme was conducted by ICDDR,B: Centre for Health and Population Research in collaboration with National Institute of Population Research and Training (NIPORT) and Institute of Public Health Nutrition (IPHN). The survey provides information on childhood malnutrition (under-2 and 3-5 years old children), nutritional status of adolescent girls, lactating and pregnant women, pregnancy weight gain, birth-weight, and micronutrient status (anaemia, iodine status). The survey also collected data on socioeconomic status, infant feeding, health and nutritional practice of children, adolescent girls, and lactating and pregnant women.

The findings of this report together with other national surveys will enhance the understanding of important issues relating to the HNPSP in Bangladesh. Information from the Baseline Survey can be used for reviewing the progress of programmes and for improving future policies and strategies for the country.

Further analysis of data of the Baseline Survey would be useful. It is hoped that academicians, researchers, and programme personnel will carry out such analysis to provide in-depth information that will guide the future direction and effective implementation of the HNPSP.

I express my sincere thanks to IPHN, NIPORT, and ICDDR,B for their sincere efforts in conducting the survey. National Nutrition Programme, World Bank, and Canadian International Development Agency (CIDA) deserve special thanks for providing guidance and financial support for the survey.

ACKNOWLEDGMENTS

The National Nutrition Programme (NNP) is the largest nutrition initiative to reduce malnutrition in children adolescent girls, and women. The NNP Baseline Survey was carried out in 2004-2005 through a collaborative effort of ICDDR,B: Centre for Health and Population Research, with Institute of Public Health Nutrition (IPHN) and National Institute of Population Research and Training (NIPORT). The survey collected detailed information on nutritional status of children aged less than 5 years, adolescent girls and pregnant women, pregnancy weight gain, birth-weight of the newborn, anaemia and iodine status of pregnant women and adolescents, access to and use of child health and nutrition services, and mothers' nutrition knowledge and practices. Information on home gardening, poultry, food security, and growth monitoring and promotion was also collected.

The report will help in understanding and formulating the important issues relating to the HNPSP in Bangladesh. Information obtained from the Baseline Survey can be used for reviewing the progress of programmes and also help improve future policies and strategies.

For the future directions of the NNP in Bangladesh, further analysis could be undertaken by the researchers, academicians, and programme personnel. Such analysis will also be helpful for the country's nutrition policies and implementation of programmes.

The successful completion of the Baseline Survey of National Nutrition Programme 2004 was possible by the contributions of a number of organizations and individuals. The contributors of this report deserve special thanks. I express my thanks to the ICDDR,B, IPHN, and NIPORT for their efforts in conducting the survey. Special thanks also go to Mitra and Associates and Family Welfare Visitors for their sincere efforts in conducting the field survey. The survey field staff, quality control field staff, and Independent Quality Control team members also deserve special thanks. Thanks are due to the Ministry of Health and Family Welfare of the Government of the People's Republic of Bangladesh, World Bank, and Canadian International Development Agency (CIDA) for providing guidance and financial support for the survey.

This report summarizes the findings of the Baseline Survey of the National Nutrition Programme (NNP) 2004, conducted by ICDDR,B: Centre for Health and Population Research, in collaboration with Institute of Public Health Nutrition and National Institute of Population Research and Training. The financial aid for the survey was provided by World Bank, Canadian International Development Agency (CIDA), and Government of the People's Republic of Bangladesh. The baseline survey of NNP is a part of National Nutrition Programme, which is designed to collect data on anthropometric indices of under-2 children, 3-5 years old children, adolescent girls, lactating and pregnant women, pregnancy weight gain, birth-weight and micronutrient status (anaemia, iodine status). The survey also collected data on socioeconomic status, infant feeding, health and nutritional practice of adolescent girls, lactating and pregnant women.

Mr. Biplob Banerjee deserves thanks for providing help in cleaning and analyzing data. Special thanks are due to Prof. Nitai Chakraborti of University of Dhaka for his contribution to the survey. The contribution of Mr. M. Shamsul Islam Khan, Head, Publications Unit of ICDDR,B, to the report is sincerely acknowledged. Mr. Mahbubul Hoque, Office Manager, Nutrition Programme, ICDDR,B, also deserves thanks for his input to the survey and compilation of the report.

Thanks are also due to: Mothers, pregnant women, adolescent girls, children, and household heads interviewed in the survey; Field staff, Mitra and Associates; BRAC; and officials of upazilas.

Additional information about the Baseline Survey of NNP may be obtained from:

ICDDR,B: Centre for Health and Population Research
GPO Box 128, Dhaka 1000, Bangladesh
Phone: 880-2-8811751-60
Fax: 880-2-8823116, 8812530, 8811568, 8826050, 9885657, 8811686, and 8812529

National Nutrition Programme
Ministry of Health & Family Welfare
Government of the People's Republic of Bangladesh
House 46, Raod 5, Dhanmondi R/A

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ACRONYMS

ANC	Antenatal care
BCC	Behavioural change communication
BDHS	Bangladesh Demographic and Health Survey
BINP	Bangladesh Integrated Nutrition Project
BMI	Body mass index
BRAC	Bangladesh Rural Advancement Committee
CDC	Centers for Disease Control and Prevention
CED	Chronic energy deficiency
CNBC	Community-based nutrition component
CNC	Community Nutrition Centre
CNO	Community Nutrition Organizer
CNP	Community Nutrition Promoter
CNS	Child Nutrition Survey
EBFD	Exclusive breastfeeding
GMP	Growth monitoring and promotion
HAM	Height-for-age median
HAZ	Height-for-age z-score
HKI	Helen Keller International
Ht	Height
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
IEC	Information, education, and communication
IPHN	Institute of Public Health Nutrition
LBW	Low birth-weight
LW	Lactating women
MCH	Maternal and child health
MoHFW	Ministry of Health and Family Welfare
MUAC	Mid-upper arm circumference
NCHS	National Center for Health Statistics
NIPORT	National Institute of Population Research and Training
NNP	National Nutrition Programme
NS	Not significant
PSU	Primary Sampling Unit
PW	Pregnant women
SES	Socioeconomic status
SF	Supplementary feeding
U2	Under-2 children (children aged less than two years)
U5	Under-5 children (children aged less than five years)
VAC	Vitamin A capsule
VAD	Vitamin A deficiency
VNMC	Village Nutrition Management Committee
WAM	Weight-for-age median
WAZ	Weight-for-age z-score
WHM	Weight-for-height median
WHZ	Weight-for-height z-score
WHO	World Health Organization
NSS	Nutritional Surveillance Survey (HKI)
Wt	Weight

DIFINITIONS

Z-score classification

Underweight	Weight-for-age z-score (WAZ) <-2.00
Moderate	WAZ -3.00 to -2.01
Severe	WAZ <-3.00
Stunting	Height-for-age z-score (HAZ) <-2.00
Moderate	HAZ -3.00 to -2.01
Severe	HAZ <-3.00
Wasting	Weight-for-height z-score (WHZ) <-2.00
Moderate	WHZ -3.00 to -2.01
Severe	WHZ <-3.00

MUAC (Mid-upper arm circumference)

In children aged 12-59 months

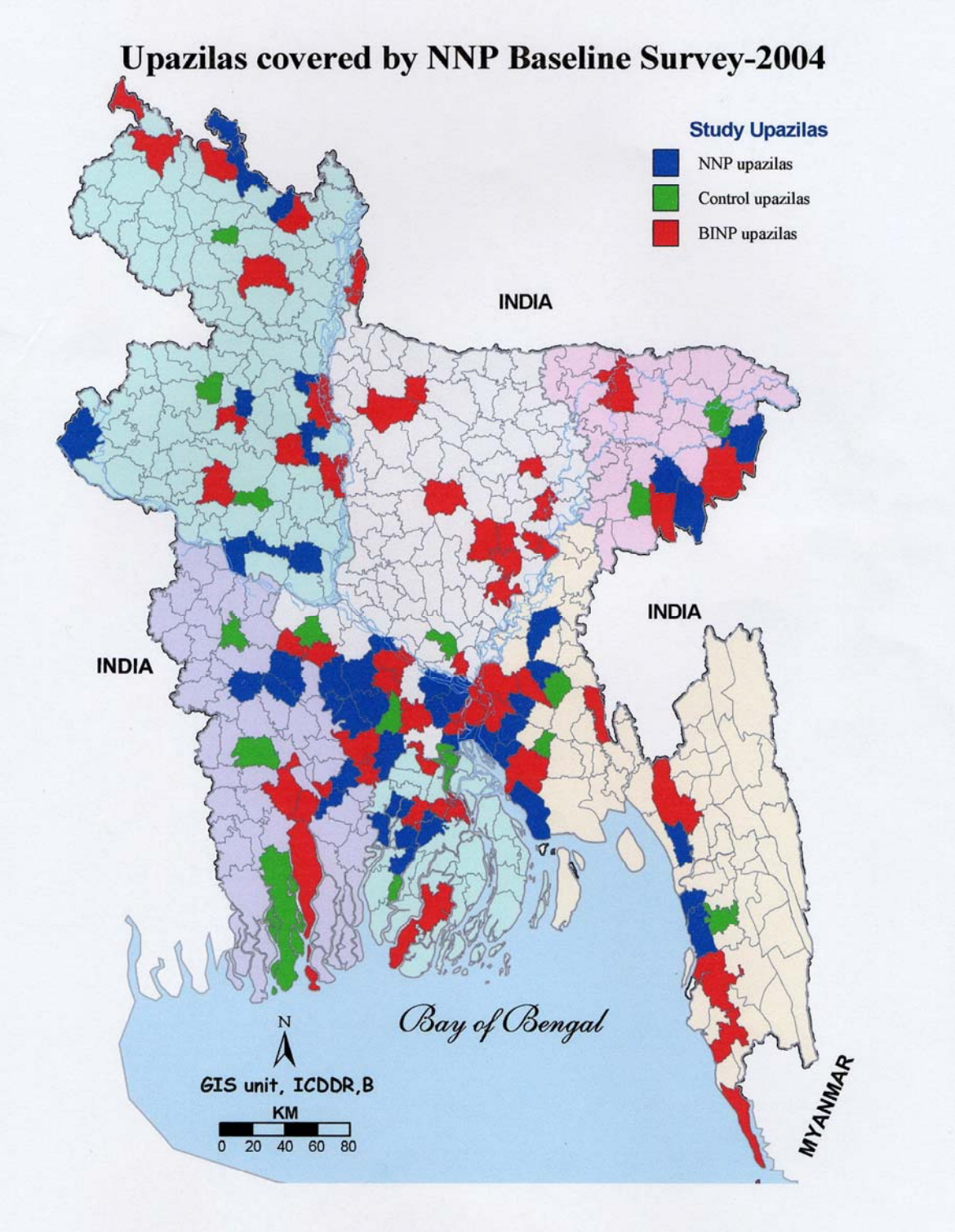
Fixed MUAC cut-off for malnutrition	12.5 cm

BMI (Body mass index)

Calculated as weight in kilograms divided by the squire of the height in metres

Interpretation	
BMI <16.0	Indicates severe thinness
BMI 16.0-16.99	Indicates moderate thinness
BMI 17.00-18.49	Indicates marginal thinness
BMI 18.5-24.99	Is the normal range for an individual

MAP OF BANGLADESH



BASELINE SURVEY 2004

EXECUTIVE SUMMARY

The Baseline Survey 2004 of the National Nutrition Programme (NNP) was conducted by ICDDR,B: Centre for Health and Population Research in collaboration with Institute of Public Health Nutrition and National Institute of Population Research and Training. Collection of data was started in March 2004 and was completed in March 2005. A total of 113 upazilas were selected for the survey.

Survey population and general characteristics of households

The required sample size of 26,424 subjects was taken from a total of 151,372 household members living in selected upazilas of the NNP, BINP, and comparison areas; females accounted for 52.8% of the subjects. More than 96% of target households under the survey were selected, while more than 98% of interviews was successfully conducted in the household part of the survey.

The proportions of female-headed households were lower in the NNP and BINP areas than in the comparison areas. Two-thirds of the households were composed each of 5 or more persons; the average household size was 6.1, which is higher than the national average of 5 persons. Less than 5% of household heads were not currently married. Level of education of household heads was comparable in 3 areas of the survey (NNP, BINP, and comparison); more than 42% of household heads had no formal education. 28% of households in the NNP areas, 38% in the BINP areas, and 42% in the comparison area had access to electricity. One in 10 households had no latrine facility. Tin was the most common roofing material accounting for 89% of the sampled households, while mud was used as material for floor in 95% of the households. One in 5 households did not possess any land, while 2 in 5 households owned land of less than 50 decimals. Three in 10 households experienced food crises (defined as inability of a household to produce or access at all times the minimum food needed for 3 meals) in the last 12 months. Based on the principal components analysis for calculation of wealth index, there were fewer households in the lowest and the second quintiles of wealth index in the comparison area than in the NNP and BINP areas. Household characteristics varied significantly between administrative divisions of Bangladesh. For example, the number of household heads with no education was lowest in Barisal division (26.9%) and highest in Dhaka division (48%). Access to electricity was lowest in Rajshahi division (22.4%) and highest in Sylhet division (39.2%).

Characteristics of under-2 children

About 14% of tubewells used by households of under-2 children were contaminated with arsenic, the problem being less in the BINP areas. About 30% of households of under-2 children suffered from food deficit at any time last year, which was significantly less in the BINP areas. This difference is perhaps due to an increased involvement of the households in local cooperatives in the BINP areas. The households in the BINP areas were also more frequently involved in homestead gardening.

The BINP had ceased its activities in 2002, while the NNP commenced its field activities in September 2004. Most respondents, who mentioned that community nutrition centres (CNCs) were available in their localities, were from Dhaka and Sylhet divisions where the NNP had

just started its field activities when the survey was done in those areas. About 28% of children in the BINP areas actually received growth monitoring and promotion (GMP) cards from the CNCs, and a similar proportion of children was weighed 3 times over the last 3 months. One-third of mothers interviewed did not feel that their children should ever be weighed. This calls for beha-viour change communication (BCC) measures to remove the complacency regarding GMP.

Illnesses were quite common among children. 83% of under-2 children in the BINP areas suffered from any illness in the past 2 weeks compared to 85% in the comparison areas. Treat-ment was sought in three-fourths of episodes of illnesses; however, in only 8% of episodes were the children taken to a public healthcare provider. Village quacks and local pharmacies catered to more than 50% of episodes of illnesses for which treatment was sought. Coverage under the Expanded Programme on Immunization was high, which has reflected in the coverage figures of about 85% for OPV-3 (3 doses of oral polio vaccine) and DPT-3 (3 doses of diphtheria, pertussis, tetanus vaccine), about 75% for measles vaccine, and more than 95% for BCG vaccine.

Healthcare of mothers of under-2 children

Overall, half of the mothers of under-2 children never received antenatal care (ANC) during the last pregnancy. In the BINP areas, however, there was a significant 10 percentage-point decrease in mothers who did not receive ANC. A significantly greater proportion (32%) of mothers in the BINP areas received iron tablets during the last pregnancy compared to 23% and 24% in the NNP and comparison areas respectively. Nightblindness due to deficiency of vitamin A is a major problem in Nepal, and its prevalence in Bangladesh is estimated to be about 5%. Administering an oral dose of 200,000 IU of vitamin A within 6 weeks of delivery is an effective method of combating vitamin A deficiency disorders in lactating mothers and newborns. Only about 8% of mothers in the BINP and NNP areas received vitamin A within 6 weeks of delivery, which was significantly greater than that in the comparison areas (5%).

Morbidity during pregnancy is common in Bangladesh. The most common conditions suffered by the mothers of under-two children during their last pregnancy included severe headache and blurred vision, pedal oedema, anaemia, fever, labour pain persisting for more than 12 hours, excessive bleeding during and after childbirth, and foul-smelling vaginal discharge.

Health and nutrition-related knowledge and practice of mothers of under-2 children

Compared to the NNP areas, a significantly greater proportion of mothers of under-2 children in the BINP and comparison areas gave a history of increased food intake while they were pregnant. Similar was the case of taking more rest than usual during pregnancy. More mothers in the BINP areas had the correct notion that increased food intake and taking more rest during pregnancy benefit both mother and foetus. Significantly more mothers in the BINP areas consumed iodized salt than in the other 2 areas under the survey, and they were more aware of iodine deficiency disorders.

More than 95% of mothers breastfed their under-2 children. However, the overall rate of exclusive breastfeeding for 6 months was low (11.2%). Even more disturbing was the fact that the rate of exclusive breastfeeding was significantly lower in the BINP areas (8.1%) compared to 11.7% in the NNP areas and 13.3% in the comparison areas. Improper complementary feeding practices were common. Of 7,326 children, semi-solid foods were introduced to 3% of infants at as early as 1 month, to 5% at 2 months and 12% at 3 months.

This is in contrast to the fact that 95% of mothers of under-2 children in the BINP areas knew that starting supplementary feeding before 6 months of age was bad for the child. This clearly demonstrates discordance between knowledge and practice regarding infant feeding.

Mothers of under-2 children living in the BINP areas had a significantly better knowledge about causes and prevention of diarrhoea in children. They were also more aware of signs and symptoms of pneumonia in children, the major cause of childhood deaths.

Nutritional status of under-2 children

Anthropometry was performed on 8,819 under-2 children having a median age of 11 months and an interquartile range of 6-17 months. The mean length-for-age z-score (LAZ) was -1.5, corresponding to 94% of the National Center for Health Statistics (NCHS) median. The mean weight-for-age z-score (WAZ) of under-2 children was -1.6 (82% of median), while the mean weight-for-length z-score (WLZ) was -0.8 (93% of median). Group-wise, the under-2 children surveyed had mild stunting and mild under-weight but were not wasted. The mean anthropometric values did not differ among the BINP, NNP and comparison areas. The difference between means was also not observed when the data were disaggregated by sex.

Significantly more (34%) under-2 children in the BINP and comparison areas were free of stunting (LAZ -1 and above) compared to 31% in the NNP areas. Similarly, 31% of children in the BINP and comparison areas were not under-weight (WAZ -1 and above) compared to 27% in the NNP areas. In total, 53% of children were not wasted (WLZ -1 and above), and there was no difference among the 3 areas with regard to the proportion of children without wasting.

Micronutrient status of under-2 children

The mean haemoglobin level of under-2 children was 10.9 g/dL, and there was no difference in the mean haemoglobin levels among the 3 areas under the survey. Based on the anaemia cut-off of 11 g/dL, 50% of the children were anaemic. This indicates that the public-health significance of anaemia among under-2 children is high, which is defined as a prevalence of 40% or more.

The median iodine content of table salt consumed in the households of under-2 children was 19.7 parts per million (ppm) with an interquartile range of 9.6-34-5 ppm. In total, 39.5% of households were consuming table salt containing an inadequate concentration of iodine (<15 ppm). This is a proxy indicator of poor iodine nutriture among children covered by the survey. These results also call for more efforts in making table salt iodization and consumption of iodized salt routine in the country.

Nutritional status of mothers of under-2 children

A body mass index (BMI) of <18.5 in adults indicates chronic energy deficit (CED). CED in mothers is not only directly linked to susceptibility to infections and reduced productivity, it is also associated with decreased potentials for childcare. Of 8,795 mothers of under-2 children interviewed, more than one-third of mothers suffered from CED. The prevalence was highest in the NNP areas (39%) compared to 38% in the BINP and 35% in the comparison areas (NNP vs comparison areas, $p<0.05$).

Overall, 4.3% of mothers suffered from severe malnutrition, defined as a BMI of <16. These mothers actually fulfill the criteria for admission to a therapeutic feeding centre for treatment of acute malnutrition. Malnutrition secondary to underlying diseases, e.g. tuberculosis, is a

major cause of severe malnutrition in adults in a non-famine situation. The proportions of mothers with severe malnutrition were, however, comparable among the BINP, NNP and comparison areas.

Characteristics of under-5 (24-59 months old) children

Tubewells of households of under-5 children in the BINP areas were significantly less (8%) contaminated with arsenic than in other areas. The number of households not owning any agricultural land was significantly less (50%) in the comparison areas. A larger proportion of households of under-5 children in the BINP areas, however, did not have food deficit last year. The households in the BINP areas were more involved with local cooperatives and NGOs and in homestead growing of vegetables.

More than 80% of mothers of under-5 children in the BINP areas reported availability of services provided by the CNCs in their localities. This implies that under-5 children were born at a time when the programme was actually in operation in the BINP areas. Coverage of vitamin A supplementation (200,000 units) during the last 6 months was more than 80%, the rate being highest in the BINP areas. Morbidity among under-5 children was also lowest in the BINP areas.

Healthcare of mothers of under-5 children

ANC during the last pregnancy was more common among mothers of under-5 children living in the BINP areas. Intake of iron-folic acid tablets during the last pregnancy was also significantly greater among mothers in the BINP areas. Public healthcare providers and pharmacies were the major source of iron-folic acid tablets in the NNP and comparison areas, while the CNCs provided bulk of the tablets in the BINP areas. Postpartum vitamin A supplementation was almost negligible (2.8%) in the comparison areas compared to 7.2% in the BINP areas.

Health and nutrition-related knowledge and practice of mothers of under-5 children

The mothers in the BINP areas had increased awareness of good-health practices during pregnancy. A significantly greater proportion (18%) of mothers in the BINP areas took more food during the last pregnancy, and about half of mothers correctly believed that increased food intake was beneficial for both mother and foetus. Consumption of non-iodized table salt was widespread in all the areas. However, intake of iodized salt was significantly more common (64%) among mothers in the BINP areas. The mothers in the BINP areas also had better knowledge about causes and prevention of childhood diarrhoea and also of goitre.

Nutritional status of under-5 children

The median age and body weight of under-5 children (n=4,826) were 41 months and 11.7 kg respectively. The mean HAZ of children in the BINP areas was significantly less compared to the NNP areas (-1.9 vs -2.1). However, the reverse was true for the mean WHZ (-1.2 vs -1.1). Severe stunting, defined as HAZ <-3, was present in 22% of children in the NNP areas, 19% in the comparison areas, and 17% in the BINP areas (NNP vs BINP, $p<0.001$). Overall, only 19% of children were not stunted. The prevalence of severe under-weight (WAZ <-3) did not differ by area and was 14% in the NNP, 13% in the BINP, and 15% in the comparison areas.

In total, 42% of under-5 children were moderately under-weight (WAZ -3 to <-2), while 11% were not under-weight; these children were distributed in the 3 areas. Less than 1% of children had severe wasting, while 41% had no wasting at all.

Nutritional status of mothers of under-5 children

The median age, height, and weight of mothers of under-5 children were 25 years, 150 cm, and 43.8 kg respectively. The mean BMI of mothers in the BINP areas was 20.1 which is significantly greater than that of mothers in the NNP areas (19.8). One-third of mothers had CED (BMI <18.5).

Characteristics of adolescent girls

Girls aged 13-14 years accounted for 43% and those aged 18-19 years accounted for 10% of adolescent girls interviewed. Two-thirds of adolescent girls were students, 4% were earning members, and the remaining 30% were involved in housework. Only 4% had no education, the majority (69%) had secondary education, and 6% had education of 10th class or more. About 42% of adolescents in the BINP areas and 6% in the NNP areas reported availability of adolescent forums in their locality. In total, 38% of adolescent forum members in the BINP areas and 19% in the NNP areas received counselling. The topics of counselling in order of priority were general health, followed by food and nutrition, hygiene and sickness care, and sexually transmitted diseases. HIV/AIDS was sparingly discussed. Surprising to note was the absence of any counselling relating to preparations for motherhood, i.e. breastfeeding. Only half of the girls actually listened to discussion on nutrition in radio or television. The survey results showed that the girls in the BINP areas had a better knowledge regarding goitre and prevention of diarrhoea.

Healthcare of adolescent girls

The great majority (ranging from 79% in the BINP areas to 93% in the comparison areas) of adolescent girls did not take iron-folic acid supplements. Ever intake and intake in the last 6 months of iron tablets and anti-helminthics were higher in the BINP areas than in the NNP and comparison areas. The two-weekly prevalence of morbidity was 42% in the comparison areas, 34% in the NNP areas, and 33% in the BINP areas. The symptoms in order of prevalence were fever (17%), followed by cough and/or cold (9%), stomach ache (4%), diarrhoeal diseases (3%), and skin infections (1%). The adolescent girls went mostly to untrained village quacks (50%) for treatment, followed by local pharmacies (15%) and private fee-for-service doctors (17.3%). A very few (7%) mentioned about going to public sources for seeking treatment.

One in 3 adolescent girls had intestinal parasitosis. The most common parasite detected was *Ascaris lumbricoides* (11%). Although the National Vitamin A Plus Campaign has provisions for giving anti-helminthic drugs to 24-59 months old children, there is no such provision for adolescents and adults. Helminthiasis being a common problem in the country and given its effects on nutrition and general well-being, routine anti-helminthic treatment should be considered for these population groups.

Nutritional status of adolescent girls

The median age, height, weight, and BMI of adolescent girls interviewed were 15 years, 149.2 cm, 41.5 kg, and 18.6 respectively. The girls in the BINP and comparison areas were heavier than those in the NNP areas. In total, 54% of adolescent girls in the NNP areas had CED compared to 50% in the BINP and comparison areas. Surprisingly enough, almost 11% of girls were severely malnourished with a BMI of <16, and the rates were comparable among the 3 areas.

The mean haemoglobin level of adolescent girls interviewed was 12.64 g/dL. The prevalence of anaemia among them, defined as a haemoglobin level of less than 12 g/dL, was 24.8%.

Based on the cut-off of 15 ppm, 42% of households of adolescent girls were consuming table salt that contained inadequate iodine. The proportion of households consuming table salt with inadequate concentration of iodine was lowest in the NNP areas. The prevalence of iodine deficiency, defined as a urinary iodine concentration of less than 100 mg/L, was 37% overall. It was lowest among adolescent girls in the NNP areas (29%), followed by 40% in the BINP areas and 42% in the comparison areas. These data suggest the enormity of the problem of sub-clinical iodine deficiency in the country and its consequent implications on growth and intellectual performances of the population. The data also single out the need for making salt iodization universal in the country and for rendering properly iodized table salt readily available in households.

Household and background characteristics of pregnant women

Tubewell is the major source of drinking-water for pregnant women interviewed. Around 12% of tubewells were contaminated with arsenic. However, arsenic contamination of tubewell water was significantly higher in the NNP and comparison areas than in the BINP areas. Only 18% of latrines used by pregnant women were hygienic (septic tank/modern and slab). About 88% of households of pregnant women did possess any type of land. Possession of any type of land was significantly less among households in the NNP areas. More than two-thirds of households of pregnant women did not have any food deficit last year; the situation in the BINP areas was also better. Despite awareness of the adverse effects of iodine deficiency, one-third of households consumed non-iodized table salt. As in the case of households of child respondents, households of pregnant women in the BINP areas were more involved in cooperatives and NGO activities. More households in the BINP areas took assistance in the form of technical knowledge and seeds, from the government agencies or NGOs in growing vegetables in their homesteads.

About half of the pregnant women were aged 18-24 years. About 85% of women got married before 18 years of age, the mean age at marriage being 15 years. Almost two-thirds of women became pregnant before 18 years of age, implying that conception quickly followed marriage. One-third of pregnant women had no education, and the proportion of pregnant women without any formal education was significantly less in the comparison areas.

Access of pregnant women to health and nutritional services

Twenty-one percent of pregnant women in the BINP areas and 3% in the NNP areas received supplementary feeding from the CNCs. However, 78% and 13% of women in the BINP and NNP areas respectively reported availability of health/nutrition-education programmes in their locality. They were from areas where the NNP had just started its activities. Compared to other administrative divisions, an increased number (24%) of pregnant women in the NNP areas of Sylhet division received supplementary feeding.

More than half of the pregnant women did not receive ANC, while only around one-fourth received ANC before 4 months of pregnancy. Use of ANC was significantly higher in pregnant women in the BINP areas where the CNCs contributed substantially to provision of ANC. Awareness of ANC and its importance were still not optimal; of those women who did not receive ANC, more than 40% did not consider ANC as necessary.

Despite the widespread prevalence of anaemia and the increased need for iron and folic acid during pregnancy, only 25% of women in the BINP areas regularly took iron supplements, which is significantly high compared to the other areas. Again in the BINP areas, the CNCs

played a major role in providing iron-folic acid tablets. In general, the main reasons for not taking iron supplements regularly were that (a) the tablets were not considered necessary, (b) adverse effects of the medication, and (c) forgetfulness in taking the tablets. More than one-third of the respondents suffered from any illness in the last 2 weeks, the proportion being significantly less in the BINP areas.

Nutritional knowledge and practice of pregnant women

Pregnant women in the BINP areas significantly took more food and rest compared to their peers in the NNP and comparison areas. Despite the difference between the areas, only 25% and 55% of women in the BINP areas took more food and rest respectively. This indicates that, although the CNCs provide counselling, practice is not optimal which implies the role of other factors, for example, decision-making of pregnant women in their families.

Significantly more women in the BINP areas gave an affirmative response regarding breastfeeding soon after birth of child. Additionally, more women in the BINP areas planned to feed colostrum to the newborn. They also more commonly had correct knowledge relating to complementary feeding. Women of these areas also had increased knowledge about manifestations and prevention of childhood pneumonia. Use of iodized salt was significantly more common among pregnant women in the BINP areas than in the NNP or comparison areas. Only 50% of pregnant women were aware that iodized salt benefits both mother and foetus.

Nutritional status of pregnant women

Of 5,978 pregnant women interviewed, more than 50% were in 4-6 months of pregnancy. Their mean age was 22.5 years; women in the comparison areas were significantly younger than women in the NNP and BINP areas. Their mean height was 150.1 cm. The respondents of the comparison areas were significantly taller than those in the BINP areas. The mean weight was 48.7 kg with a standard deviation of 6.7 kg and interquartile range of 44.1-52.3 kg. The mean BMI of pregnant women was 21.6 kg/m^2, with a standard deviation of 2.6 and interquartile range of 19.8-23.0 kg/m^2.

A cross-sectional study was done to investigate weight gain during pregnancy. Overall monthly weight increments for all women were 1.1 kg between 5th and 4th month, 1.2 kg between 6th and 5th month, 0.8 kg between 7th and 6th month, 1.3 kg between 8th and 7th month, and 0.1 kg between 9th and 8th month. The mean weight increment per month between 4th and 9th month of gestation was 0.9 kg. The only significant difference in body weight between the groups was noted at 6 months between the comparison women (mean 49.4 kg, n=237) and the BINP women (mean 48.0 kg, n=471).

Micronutrient status of pregnant women

The mean haemoglobin level of pregnant women was 11 g/dL. Forty-five percent of pregnant women had anaemia, defined as a haemoglobin level of less than 11 g/dL. A significantly lower proportion (36%) of pregnant women in the BINP areas had anaemia (51% in the NNP and 60% in the comparison areas).

Based on a urinary iodine excretion level cut-off of <100 mg/L, 40% of pregnant women had iodine deficiency, with the highest proportion (45%) among women in the BINP areas. This is reflected in the fact that 42% of households of women in the BINP areas consumed table salt having inadequate iodine (<15 ppm). The magnitude of both anaemia and sub-clinical iodine deficiency, therefore, is substantial during pregnancy.

Pregnancy weight gain and birth-weight of newborns

Of 455 pregnant women followed longitudinally, only one-third had standard weight gain of more than 4 kg in the third trimester. The mean weight gain in the third trimester was 3.44 kg, which was comparable among the areas under the survey. Maternal education of secondary level or higher and 2 or 3 parity were associated with a weight gain of more than 4 kg during the third trimester. There was a trend in achieving standard weight gain during the third trimester by women with low BMI (<18.5), which may be due to food supplementation. The data also showed a trend in achieving standard weight gain with an increased intake of food during pregnancy.

Of 692 child births, the incidence of low birth-weight (LBW) in rural Bangladesh was 20.7% with a mean birth-weight of 2.78 kg. The incidence of LBW was lowest in the BINP areas (17.3%) and highest in the NNP areas (26%). Factors associated with a lower incidence of LBW included: maternal education of secondary level or higher, 2 or 3 parity, maternal height of 145 cm or more, BMI of 18.5 or more, and duration of pregnancy of 40 weeks or more.

Inference from multivariate analyses

Among under-2 children, area of residence (NNP, BINP, or comparison) did not show any relationship with nutritional status. The prevalence of good practices during the last pregnancy of mothers of under-2 children showed a monotonic increase with increase in maternal education. Household food insecurity inhibited mothers' taking more food during pregnancy, but not taking more rest or receiving ANC. Pregnancy care was better in the BINP areas than in the NNP project areas. More women in the BINP areas received iron supplements than those living in the NNP areas. The prevalence of food insecurity was lower in the BINP areas than in the NNP areas.

Among under-5 children, stunting was less prevalent in the BINP areas compared to the NNP areas. The girls were more likely to be under-weight than boys. Both maternal level of education and household asset index were negatively related to children's under-weight and stunting.

The prevalence of lower BMI (<18.5) showed a gradual decline with an increase in age of adolescent girls. Education, household asset index, and food insecurity were not associated with the prevalence of low BMI. The prevalence of lower BMI was less in the BINP areas than in the NNP areas. Both knowledge and practice relating to good health and nutrition, i.e. need for extra food, iron supplementation, and taking anti-helminthic tablets were more common among adolescents living in the BINP areas than in the NNP areas. The prevalence of reproductive tract illnesses, e.g. offensive smelling vaginal discharge, and the taboo of food avoidance during menstruation were lower in the BINP areas than in the NNP areas.

The likelihood of pregnant women seeking antenatal care and receiving iron-folic acid supplement was higher in the BINP areas than in the NNP areas. Taking more rest during pregnancy and consumption of iodized salt were higher in the BINP areas compared to the NNP areas, controlling for all other variables. Household food deficit showed a strong negative correlation with women's level of education and asset index. Food deficit was less frequent in the BINP areas than in the NNP areas.

Logistic regression analysis revealed a lower risk of LBW with the following conditions: residence of mother in the BINP areas, 2 or 3 parity, maternal height of 145 cm or more, BMI of 18.5 or more, and duration of pregnancy 40 weeks or more.

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Despite some recent positive changes, levels of malnutrition in Bangladesh still remain as one of the highest in the world. Approximately, 58% of under-5 children are underweight, and 51% are stunted. Nearly 50% of women suffer from chronic energy deficit, while the incidence of low birth-weight is perhaps the highest in the world. Micronutrient deficiencies are rampant and, to cite as an example, over 70% of pregnant women suffer from anaemia. The economic consequences of the problem of malnutrition in Bangladesh are profound, resulting in lost productivity and reduced intellectual and learning capacity, in addition to causing excess maternal and child mortality. Malnutrition also imposes heavy burden on the healthcare system of the country through excess morbidity, intrauterine growth retardation, and elevated risks of cardiovascular diseases and diabetes mellitus in adulthood.

In this scenario, the Ministry of Health and Family Welfare has initiated the National Nutrition Programme (NNP), the largest nutrition initiative, to reduce malnutrition in children, adolescent girls, and women. This is being achieved through community-based nutrition interventions and comprehensive inter-sectoral efforts to improve nutrition of vulnerable segments of the population, i.e. children, adolescent girls, and women. The earlier nutrition intervention of the Bangladesh Integrated Nutrition Project (BINP) was completed during 1995-2002, and the experiences gained are now being used for the NNP. The specific objectives of the NNP are to:

1. Reduce severe protein-energy malnutrition (weight-for-age z-score <-3) in under-2 children to 5%
2. Reduce moderate protein-energy malnutrition (PEM) (≥-3 WAZ <-2) in under-2 children to 30%
3. Increase weight gain during pregnancy to ≥9 kg in 50% of pregnant women
4. Reduce the incidence of low birth-weight (<2,500 g) to <30%
5. Reduce the prevalence of anaemia among adolescent girls and pregnant women by 1/3
6. Reduce the prevalence of iodine deficiency to 50%
7. Sustain the prevalence of nightblindness among under-5 children at 0.5%.

1.2 OBJECTIVES OF THE NNP BASELINE SURVEY

A baseline survey for the NNP was commissioned to ICDDR,B for estimating various nutritional and socioeconomic indicators in the intervention and comparison *upazilas* (sub-districts). ICDDR,B conducted the survey in association with Institute of Public Health Nutrition (micronutrient part of the survey) and National Institute of Population Research and Training (pregnancy weight gain and birth-weight of newborns). ICDDR,B performed the household and the anthropometric surveys in collaboration with the data-collection agency, Mitra and Associates. Quality assurance of data collection was also done by ICDDR,B.

The following were the objectives of the baseline survey of NNP:

1. To obtain statistically valid samples from 44 'new' NNP upazilas
2. To obtain valid data from appropriate samples from 53 'old' BINP upazilas
3. To obtain valid data from 16 comparison upazilas.

CHAPTER 2

METHODOLOGY

2.1 SURVEY DESIGN

Administratively, Bangladesh is divided into 6 divisions, and each division is divided into districts and then into upazilas. The rural area in an upazila is divided into unions, and each union is divided into *mouzas*; the urban area (called *pourashoba*) in an upazila is divided into wards, and each ward is divided into *mohallas*. The 1991 census provided a list of mouzas and mohallas with the number of households in 113 upazilas (44 NNP intervention upazilas, 16 NNP comparison upazilas, and 53 BINP upazilas from phase II, III, and IV). The number of households in a mouza varied widely. Two mouzas were merged to adjacent mouzas and then divided into segments of about 310 households in the NNP intervention and comparison upazilas and into segments of about 360 households in the BINP upazilas. The segments of about 310 households in the NNP upazilas and about 360 households in the BINP upazilas constituted the primary sampling units (PSUs) of the survey. The NNP Baseline Survey covered 708 PSUs (360 belong to 44 NNP upazilas, 120 to 16 NNP comparison upazilas, and 228 to 53 BINP upazilas) in 113 upazilas in 6 divisions.

In each division, 60 PSUs from the NNP upazilas and 20 PSUs from the NNP comparison upazilas were selected with proportional allocation to the size (number of households) of the division. The NNP sample is, therefore, self-weighted within a division. Since one objective of the NNP Baseline Survey was to provide survey estimate at the division level, an equal number of PSUs and respondents was, thus, selected from each division, the 6 division's total NNP sample were not self-weighted, and the weighting factors were applied to the aggregate estimate in this report. In the BINP upazilas, 228 PSUs were selected randomly with proportional allocation to the size of the 3 phases.

2.2 ESTIMATION OF SAMPLE SIZE

Estimation of sample size was based on level of reliability in the estimates of measurable indicators and on expected changes (reduction or improvement) in the measurable indicators in the NNP upazilas compared with the comparison upazilas. Another consideration in estimating the sample size was to make the sample estimates in the project and comparison upazilas self-weighted within divisions. This is particularly important because the ratio of the project and the comparison upazilas is roughly 3:1 (in other words, the same sampling fractions).

The formula for determining unequal sample sizes in a division is as follows:

$$n = \frac{\left[Z_{\alpha}\sqrt{(r+1)PQ} - Z_{1-\beta}\sqrt{rP_1Q_1 + P_2Q_2}\right]^2}{r(P_2 - P_1)^2} * \text{design effect}$$

where $(P_1\text{-}P_2)$= change in the indicator, $P=(P_1+rP_2)/(1+r)$ and $Q=(1-P)$, r= the ratio of programme and comparison populations (in this case r=0.33), Z_{α} = 1.96 at α=0.0, $Z_{1-\beta}$ = -0.842 for power of the test set at 0.80 and the design effect= 1.2. Sample sizes in the baseline survey for key measurable indicators and expected prevalence rates for each indicator at each time point are shown in the following table:

Estimates of sample size for 44 NNP upazilas, 16 comparison upazilas, and 53 old BINP upazilas			
Sample size for 44 NNP and 16 comparison upazilas (number of PSUs=480, each PSU=310 households)			
Indicator	Target population	Sample sSize at the national level	Sample size per PSU
Severe and moderate PEM	Under-2 children	8,160	17
Severe stunting	Children aged 24-59 months	2,880*	6
Low BMI among adolescent girls	Adolescent girls	2,880	6
Pregnancy weight gain >4 kg	Women in 3rd trimester	3,840	8
	Sub-total	**17,760**	**37**
Sample size for 53 old BINP upazilas* (number of PSUs=228, each PSU=350 households)			
Indicator	Target population	Sample size at the national level	Sample size per PSU
Severe and moderate PEM	Under-2 children	2,280	10
Severe stunting	Children aged 24-59 months	2,280	10
Low BMI among adolescent girls	Adolescent girls	2,052	9
Pregnancy weight gain >4 kg	Women in 3rd trimester	2,052	9
	Sub-total	**8,664**	**38**
	Grand total	**26,424**	
* Will be estimated at the national level			

Sampling design for micronutrient survey

A common sampling design was prepared for collection of blood, urine, stool and table-salt samples. All the biological specimens (blood, urine, and stool) will be collected from each sampled respondent and table-salt from each sampled household. The common sample design will minimize field travel and facilitate better field supervision, and collection of biological specimens from the same individual will allow to examine the correlation between biological markers/indicators.

Respondents would be selected randomly from the list of respondents successfully interviewed by the Household Survey Team in PSUs selected for IPHN. A list of' respondents for each selected PSU had already been prepared by Mitra &. Associates.

Number of blood, urine and stool specimens to be collected from target populations

	Target respondents				
Project	Children aged 6-23 months	Adolescent girls	Pregnant women[b]	Sum	Number of PSUs
NNP project	135 (3 per PSU)	135 (3 per PSU)	135 (3 per PSU)	405 (9 per PSU)	45
Comparison	45 (3 per PSU)	45 (3 per PSU)	45 (3 per PSU)	135 (9 per PSU)	15
BINP	180 (4 per PSU)	180 (4 per PSU)	180 (4 per I'SU)	540(12 per PSU)	45
Total	360	360	360	1080	105

Urine specimens will be collected only from adolescent and pregnant women; therefore, the number of urine specimens will be 720, and the number of all other specimens and table-salt sample will be 1,080

Women in 2 or 3 trimester of pregnancy will be eligible for sampling

Increase in sample size

The sample sizes for the NNP project and comparison areas were determined to detect the difference between two proportions, not to estimate the proportions precisely. Now the increase in sample size for the NNP and comparison areas together and for BINP (n=180) will enable to estimate the prevalence of 50% within 8 percentage-points variation. Merging of age groups, for example, adolescent and pregnant women together will enable to estimate the prevalence within 5 percentage-points variation.

Sampling design for pregnancy weight gain and birth-weight survey

Sample size: Subjects of pregnancy weight gain and birth-weight survey were women in their third trimester. The required sampled size was 393 pregnant women from the NNP project upazilas, 130 from the comparison upazilas, and 264 from the BINP upazilas.

Selection of PSUs: Allocation of PSUs in the BINP upazilas was proportional to number of upazilas in BINP Phase II, III, and IV. The sample of 132 PSUs from the list of 228 PSUs in the

BINP upazilas was selected randomly. So were the samples of 198 PSUs from the list of 360 PSUs in the NNP upazilas and 66 PSUs from the list of 120 PSUs in the comparison upazilas. The number of selected PSUs was roughly same for each division.

Selection of pregnant women: In selected PSUs, pregnant women were selected randomly from the list of pregnant women, interviewed successfully by the Household Survey Teams, which had prepared the list of pregnant women for each selected PSU. Selection of pregnant women in a PSU was random where the number of pregnant women in a PSU was larger than what was required.

2.3 SAMPLING WEIGHTS

The sampling units, particularly the PSUs, were sampled with different selection probabilities across the 6 administrative divisions. The division-level differential selection probabilities were applied to the individuals to compensate for the differential representation in the overall NNP sample. The NNP sample was weighted by the inverse of the differential probabilities at PSU and individual child levels. The procedure used for calculating the sampling weights for under-two children is given below.

Selection probability of under-2 children in a PSU within a division was obtained from:

$$\frac{Number\ of\ households\ in\ a\ PSU}{Number\ of\ households\ in\ a\ division} \times \frac{Successful\ \ \text{int}erviews\ of\ <2\ children\ in\ a\ PSU}{Number\ of\ households\ with <2\ children\ in\ a\ PSU}$$ The

weight factor, being the inverse of the selection probability, of under-two children within the division is

$$\frac{Number\ of\ households\ in\ a\ division}{Number\ of\ households\ in\ a\ PSU} \times \frac{Number\ of\ households\ with <2\ children\ in\ a\ PSU}{Successful\ \ \text{int}erviews\ of\ <2\ children\ in\ a\ PSU}$$

The division-level average weight factor of the NNP sample is used as the weight factor of the NNP comparison sample of the respective division. The above procedure is followed for calculating weight factor of the NNP sample of under-2 children of all other divisions and for the entire samples of children aged 2-4 years and adolescent girls, but not for sample of pregnant women in the 3rd trimester.

Calculation of sampling weights for pregnant women

Since the number of successful interviews of pregnant women varied considerably among PSUs from the expected (average) number of interviews per PSU, the weight factor was calculated at the division level to obtain NNP sample estimates at the aggregate level. The formula used for calculating weight factor for pregnant women is given by

$$\frac{Number\ of\ households\ in\ a\ division}{Total\ successful\ \text{int}erviews\ of\ pregnant\ women\ in\ that\ division}$$

2.4 QUESTIONNAIRE DEVELOPMENT

Four questionnaires were used for the Baseline Survey: a household questionnaire, a questionnaire for under-5 children, one for adolescent girls, and another for pregnant women. Nutrition researchers from ICDDR,B drafted these questionnaires, which were pre-tested in the field and circulated to relevant professionals for feedback. The draft questionnaires were finalized in a series of meetings of the questionnaire finalization sub-committee (chaired by the Joint Secretary, WHO and Public Health, MOHFW) consisting of representatives of NNP, NIPORT, Mitra & Associates, IPHN, ICDDR,B, and University of Dhaka. The questionnaires were developed, translated, and printed in Bangla. The entire process of questionnaire development and finalization took about three months (January-March 2004). Recruitment of staff was also completed during this period.

The household questionnaire consisted of a schedule for listing all household members. For each listed person, the survey collected basic information, such as age, sex, marital status, and education. Information was also collected on type of housing, source of water, sanitation, availability of electricity, ownership of household assets, food security, and involvement in nutrition gardening.

The under-5 questionnaire included questions on access to and use of child health and nutrition services; pregnancy history and use of maternal health services by their mothers; mothers' nutrition knowledge and practices; and anthropometry (weight, height, and MUAC) of under-5 children and their mothers.

The adolescent girls questionnaire included access of adolescent girls to health and social services, food security, nutrition and health-related knowledge, entertainment, social security, and anthropometric measurements.

The questionnaire for pregnant women included pregnancy history and care-seeking during pregnancy, health and nutrition knowledge and practices, and anthropometric measurements.

2.5 SURVEY METHODOLOGY

The variables used for the survey are as follows:

Primary variables

1. Weight, height, and MUAC of children aged <5 years
2. Weight, height, and MUAC of pregnant women
3. Pregnancy weight gain
4. Birth-weight
5. Anaemia among adolescent girls and pregnant women
6. Iodine status of adolescent girls and pregnant women.

Secondary variables

1. Socioeconomic data of households
2. Infants and children: feeding (exclusive breastfeeding, complementary feeding), growth monitoring and promotion
3. Adolescent girls: age, weight, height, MUAC, and diet
4. Pregnant women: age, gravida, pregnancy-related complications, duration of pregnancy, antenatal check-up, rest during pregnancy, dietary practice, and plans for breastfeeding
5. Micronutrients: use of iodized salt, iodine content of table salt, micronutrient intake in food, iron tablet intake by pregnant women, and vitamin A capsule intake at delivery
6. Stool for ova of helminthes.

Process variables

1. Involvement in home gardening, poultry, pisciculture, dairy farm, nursery, and income-generating activities
2. Food security, and intake of protein-rich food and micronutrients
3. Participation in adolescent girls' forum, women's group, non-formal education, and training on skill development
4. Nutrition knowledge, childcare, dietary practices of adolescents and pregnant women, domestic hygiene, and healthcare practices.

Selection of households with target populations

The data-collection agency, Mitra and Associates, conducted a household listing operation in all the PSUs from April to August 2004. Listing was done to identify households with target populations: under-2 children, children aged 2-4 years, never-married adolescent girls (aged 13-19 years), and pregnant women in third trimester in the PSUs. From the listed households, the required numbers of households with under-2 children, with children aged 2-4 years, with adolescent girls, and with pregnant women were selected randomly and independently. The field interviewers were provided with the lists of selected households in each PSU to conduct the survey.

2.6 PROCEDURE OF DATA COLLECTION

- Household socioeconomic survey: A pre-tested questionnaire was served by the survey teams of data-collection agency. Demographic and socioeconomic variables and variables on caring practices, nutrition gardening, poultry, and livestock were included in the questionnaire. Respondents included household heads, guardians of under-5 children, adolescent girls, and pregnant women. Body weight, height, and MUAC were measured and recorded.

- Survey on micronutrient status: The Institute of Public Health Nutrition (IPHN) conducted this part of the survey which included the following:
  a) Haemoglobin estimation from finger prick blood samples of children, adolescent girls, and pregnant women (by the HemoCue method in the field)

b) Iodine status of adolescent girls and pregnant women by measuring iodine excretion in urine samples (by the microplate method of Ohashi *et al*. in the International Council for Comparison of Iodine Deficiency Disorders (ICCIDD) laboratory of Institute of Nutrition and Food Science, University of Dhaka)

c) Iodine content of table-salt samples (by iodometric titration method in the IPHN laboratory)

d) Stool samples for ova of helminths (ICDDR,B collected the stool samples; the samples were tested at the Parasitology Laboratory of ICDDR,B).

- Survey on pregnancy weight gain and birth-weight of infants: The National Institute of Population Research and Training (NIPORT) was responsible for this part of the survey. It included measuring body weight of women during the third trimester of pregnancy and weight of newborns. NIPORT used the services of Family Welfare Visitors at the union level to measure weights of pregnant women and newborns.

2.7 COORDINATION AND TRAINING

The survey covered about 27,000 respondents in 113 upazilas and involved different government organizations and agencies. Coordination of such a complex survey was done by the Project Director and Deputy Project Director assisted by the Coordination Manager and two Research Officers. This was done in regular consultation with the Executive Director and other senior members of ICDDR,B. The field staff of the data-collection agency and members of the QC teams were given extensive hands-on training on the use of locally-made length boards, height boards, Uniscale and on proper measurement and recording of weight, height, MUAC, etc. They were also trained on the use of the questionnaires. The importance of maintaining etiquette with respondents was emphasized regularly. Refresher training of the field staff was also undertaken at regular intervals. The ICDDR,B QC team members also trained FWVs engaged by NIPORT on the proper use of Uniscale and measurement of weight of pregnant women and newborns. Senior staff from ICDDR,B helped IPHN in developing the methodology for collecting data and samples for the micronutrient part of the survey.

2.8 DATA MANAGEMENT AND ANALYSIS

All data of the household survey and anthropometry of children, adolescent girls, and pregnant and lactating women were entered into a personal computer, cleaned, and edited. Data were first entered using the FoxPro programme and then converted into SPSS/PC (version 10). Anthropometric indices were calculated using the ANTHROPAC package and EpiInfo 2000. Malnutrition was classified using the standard cut-off values for different anthropometric indices. Cleaned data were used for generating tables of relevant variables from various age-groups and by area, i.e. NNP, BINP, and comparison area. Crude weight was applied to anthropometric variables of children and adolescent girls to adjust for the size of division and the number of successful interviews. Continuous variables having a normal distribution were compared among the 3 areas using one-way analysis of variance. Post hoc comparison between 2 areas was done

using the Bonferroni procedure. The Kruskall-Wallis test was used for comparing continuous variables having a skewed distribution. Pearson's chi-square test was used for comparing categorical variables. The association between variables was examined by Pearson's correlation test. Logistic/multiple regression was used as and when necessary. A p value of <0.05 was considered significant.

2.9 RESPONSE RATE

Coverage of the sample

Tables 2.9.1 presents response rates for samples of under-2 children, children aged 24-59 months, never-married adolescent girls (aged 13-19 years), and women in the third trimester of pregnancy, and reasons for non-response, according to programme area. The main reasons for non-response were absence of inhabitants for an extended period at the time the interview teams visited them, vacant dwellings, and destroyed dwellings. More than 96% of target households were selected for the survey, and more than 98% of selected households were successfully interviewed.

Table 2.9.1 Results of households and individual interviews in different programme areas

Result	NNP area		BINP area		Comparison area		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	Under-2 children							
Households selected								
Household occupied	6133	95.4	2545	97.2	2084	97.5	10762	96.2
Absent from household for extended period	164	2.6	31	1.2	32	1.5	227	2.0
Household vacant or address not a dwelling place	64	1.0	25	1.0	19	0.9	108	1.0
Dwelling destroyed	67	1.0	18	0.7	2	0.1	87	0.8
Total	6428	100.0	2619	100.0	2137	100.0	11184	100.0
Households interviewed								
Household interviewed	5438	88.7	2167	85.1	1764	84.6	9369	87.1
Household not interviewed	695	11.3	378	14.9	320	15.4	1393	12.9
Total households occupied	6133	100.0	2545	100.0	2084	100.0	10762	100.0
Household response rate		88.7		85.1		84.6		87.1
Individual interviews								
Eligible mothers interviewed	5300	97.5	2162	99.8	1759	99.7	9221	98.4
Eligible mothers not interviewed	138	2.5	5	0.2	5	0.3	148	1.6
Total eligible mothers	5438	100.0	2167	100.0	1764	100.0	9369	100.0
Eligible mothers' response rate		97.5		99.8		99.7		98.4
	Children aged 24-59 months							
Households selected								
Household occupied	2632	95.4	2448	96.8	921	96.8	6001	96.2
Absent from household for extended period	61	2.2	38	1.5	19	2.0	118	1.9
Household vacant or address not a dwelling place	46	1.7	26	1.0	9	0.9	81	1.3
Dwelling destroyed	19	0.7	17	0.7	2	0.2	38	0.6
Total	2758	100.0	2529	100.0	951	100.0	6238	100.0
Households interviewed								
Households interviewed	2356	89.5	2130	87.0	800	86.9	5286	88.1
Households not interviewed	276	10.5	318	13.0	121	13.1	715	11.9
Total households occupied	2632	100.0	2448	100.0	921	100.0	6001	100.0
Household response rate		89.5		87.0		86.9		88.1
Individual interviews								
Eligible mothers interviewed	2298	97.5	2123	99.7	795	99.4	5216	98.7
Eligible mothers not interviewed	58	2.5	7	0.3	5	0.6	70	1.3
Total eligible mothers	2356	100.0	2130	100.0	800	100.0	5286	100.0
Eligible mothers' response rate		97.5		99.7		99.4		98.7

Contd…

Table 2.9.1–contd. Results of households and individual interviews in different programme areas

Result	NNP area		BINP area		Comparison area		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
	Never married adolescent girls							
Households selected								
Household occupied	2718	97.9	2276	98.7	912	97.7	5906	98.2
Absent from household for extended period	29	1.0	12	0.5	5	0.5	46	0.8
Household vacant or address not a dwelling place	15	0.5	13	0.6	10	1.1	38	0.6
Dwelling destroyed	14	0.5	6	0.3	6	0.6	26	0.4
Total	2776	100.0	2307	100.0	933	100.0	6016	100.0
Households interviewed								
Household interviewed	2416	88.9	1953	85.8	794	87.1	5163	87.4
Household not interviewed	302	11.1	323	14.2	118	12.9	743	12.6
Total households occupied	2718	100.0	2276	100.0	912	100.0	5906	100.0
Household response rate		88.9		85.8		87.1		87.4
Individual interviews								
Eligible girls interviewed	2355	97.5	1951	99.9	790	99.5	5096	98.7
Eligible girls not interviewed	61	2.5	2	0.1	4	0.5	67	1.3
Total eligible girls	2416	100.0	1953	100.0	794	100.0	5163	100.0
Eligible women response rate		97.5		99.9		99.5		98.7
Pregnant women in third trimester								
Households selected								
Household occupied	3183	95.7	2585	97.5	1240	97.4	7008	96.7
Absent from household for extended period	78	2.3	24	0.9	10	0.8	112	1.5
Household vacant or address not a dwelling place	25	0.8	12	0.5	7	0.5	44	0.6
Dwelling destroyed	41	1.2	29	1.1	16	1.3	86	1.2
Total	3327	100.0	2650	100.0	1273	100.0	7250	100.0
Households interviewed								
Household interviewed	2836	89.1	2195	84.9	1067	86.0	6098	87.0
Household not interviewed	347	10.9	390	15.1	173	14.0	910	13.0
Total households occupied	3183	100.0	2585	100.0	1240	100.0	7008	100.0
Household response rate		89.0		84.9		86.0		87.0
Individual interviews								
Eligible women interviewed	2722	95.9	2192	99.9	1065	99.8	5979	98.0
Eligible women not interviewed	114	4.1	3	0.1	2	0.2	119	2.0
Total eligible women	2836	100.0	2195	100.0	1067	100.0	6098	100.0
Eligible women response rate		95.9		99.9		99.8		98.0

CHAPTER 3

HOUSEHOLD CHARACTERISTICS

BACKGROUND

This chapter provides information on demographic, social and economic characteristics of the households included in the NNP Baseline Survey 2004. It presents characteristics of household population, such as age, sex, marital status, and educational attainment. It also provides information on household characteristics, such as source of drinking-water, sanitation facilities, electricity, house construction materials, possession of durable goods, and ownership of homestead and agriculture land. This information may help assess representativeness of the survey households.

The Baseline Survey 2004 defines a household as a person or a group of related and/or unrelated persons, who usually live(s) in the same dwelling unit(s) and has/have common cooking and eating arrangements, and one person is acknowledged as head of the household. A member of the household is any person who usually lives in the household; and a visitor is someone who is not a member of the household, but stayed in the household before the interview.

The survey collected information for all usual residents of the selected households (*de jure* population) and persons who stayed the night before the survey (*de facto* population).

3.1 HOUSEHOLD POPULATION BY AGE, SEX, AND PROGRAMME AREA

Age and sex distribution of the *de facto* household population by programme area in the NNP Baseline Survey 2004 is shown in Table 3.1.1. The household population includes 151,372 persons, yielding an average household size of 6.1 persons. Females constituted 52.8% of the household population. Overall, the proportions of persons in younger age-groups were quite larger than proportions in the 2001 population census for each sex and programme area.

Table 3.1.1. Percent distribution of household population by age, sex, and programme area, NNP Baseline Survey 2004

Age (years)	Survey area							
	NNP		BINP		Comparison		All	
	Male	Female	Male	Female	Male	Female	Male	Female
0-4	19.8	18.6	18.4	17.0	20.3	18.2	19.4	18.0
5-9	12.3	11.8	11.7	11.7	11.9	11.5	12.1	11.7
10-14	10.5	12.5	10.7	13.0	10.7	12.1	10.6	12.6
15-19	7.0	14.7	7.0	15.7	7.0	15.6	7.0	15.2
20-24	5.9	10.9	6.3	10.9	6.2	11.1	6.0	10.9
25-29	8.4	7.9	8.7	7.5	8.0	7.7	8.5	7.8
30-34	8.2	5.3	8.6	5.1	8.7	5.1	8.4	5.2
35-39	7.3	3.4	7.3	3.6	6.8	3.4	7.2	3.5
40-44	5.2	2.6	5.2	2.7	5.3	2.5	5.2	2.6
45-49	4.1	2.6	4.4	3.1	3.7	2.6	4.1	2.7
50-54	2.5	2.5	2.9	2.4	2.5	2.5	2.7	2.5
55-59	1.8	1.6	1.9	1.7	1.7	1.7	1.8	1.6
60-64	2.2	2.0	2.1	2.1	2.3	2.1	2.2	2.0
65-69	1.4	1.1	1.5	1.1	1.4	1.2	1.4	1.1
70-74	1.6	1.1	1.6	1.0	1.5	1.2	1.6	1.1
75-79	0.6	0.4	0.7	0.5	0.6	0.5	0.6	0.5
80+	1.2	1.0	1.1	1.0	1.2	1.0	1.2	1.0
Total (n)	36,517	40,752	22,657	25,371	12,259	13,816	71,433	79,939

3.2 CHARACTERISTICS OF HOUSEHOLD HEADS

Table 3.2.1 shows the distribution of households by sex of head of household, by number of household members, by marital status, and by education, according to programme area. The percentage of female-headed households was lower in the NNP and BINP areas than in the comparison areas. Two-thirds of the households were composed of 5 or more persons, and the average household size was 6.1, which is higher than the national average of 5.0 persons. Less than 5% of household heads were not currently married. More than 42% of household heads had no education, and another 11% had secondary education and above.

Table 3.2.1. Percent distribution of households by sex, marital status, education of head of household, and household size, according to programme area, NNP Baseline Survey 2004			
Characteristics of household head and household	Survey area		
	NNP	BINP	Comparison
Sex of household head			
Male	94.4	95.0	92.7
Female	5.6	5.0	7.3
Total	100.0	100.0	100.0
Number of usual members			
<5	31.3	34.2	32.2
5-6	36.2	36.6	36.2
7+	32.5	29.2	31.6
Average household size	6.2	5.9	6.2
Marital status of household head			
Never married	1.5	1.4	1.3
Married	95.5	96.0	95.7
Divorced/deserted	0.2	0.2	0.1
Widow/widower	2.7	2.5	3.0
Total	100.0	100.0	100.0
Education of household head			
None	42.9	43.7	43.4
Primary incomplete	16.9	15.6	15.3
Primary complete	11.8	11.5	14.2
Secondary incomplete	17.4	17.3	16.1
Secondary +	11.0	11.9	11.1
Total	100.0	100.0	100.0
Number of households	12,212	8,221	4,296

3.3 EDUCATION AND MARITAL STATUS OF HOUSEHOLD MEMBERS

The percentages of never-married and currently-married household members were higher for males than for females (Table 3.3.1). Divorce and widowhood were more common among females than among males.

Table 3.3.1. Percent distribution of household population (aged 10 years and above) by marital status and programme area, NNP Baseline Survey 2004

Marital status	Survey area							
	NNP		BINP		Comparison		All	
	Male	Female	Male	Female	Male	Female	Male	Female
Never married	34.6	29.4	34.0	30.3	35.2	29.4	34.5	29.7
Married	63.9	61.2	64.7	60.8	63.5	61.1	64.1	61.0
Divorced	0.1	0.3	0	0.3	0	0.4	0.1	0.3
Separated	0.1	0.5	0.1	0.5	0	0.4	0.1	0.5
Widow/widower	1.3	8.6	1.2	8.2	1.3	8.7	1.3	8.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total (n)	24,799	28,382	15,841	18,104	8,317	9,721	48,957	56,207

In the NNP Baseline Survey 2004, information on educational attainment was collected for each household member aged 6 years and above. Table 3.3.2 presents the distribution of the *de facto* household population by sex and programme area. As expected, educational attainment was little higher among males than among females in all programme areas.

Table 3.3.2. Level of education of household members (aged 6 years and above) by sex and programme area, NNP Baseline Survey 2004

Highest grade passed	Survey area							
	NNP (%)		BINP (%)		Comparison (%)		All (%)	
	Male	Female	Male	Female	Male	Female	Male	Female
No education	36.6	37.9	36.7	38.6	35.8	37.2	36.5	38.0
Primary incomplete	24.0	23.3	22.7	21.8	22.9	20.9	23.4	22.4
Primary complete	10.8	11.4	11.3	11.0	13.4	12.0	11.4	11.4
Secondary incomplete	18.0	22.3	18.4	23.3	17.9	24.7	18.1	23.1
Secondary complete +	10.5	5.1	11.0	5.3	10.1	5.1	10.6	5.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of persons aged 6+	29,295	33,172	18,490	21,056	9,770	11,308	57,555	65,536

Table 3.3.3 shows that the school attendance rate has increased for boys and girls in younger age-group (6-14 years), but the rate of increase has been higher for girls than for boys. Data also revealed that, for those aged 6-14 years, the rate has fallen for boys than for girls. Table 3.3.4 shows that no-education rate has decreased for boys and girls in younger age-groups (6-14 years and 15-24 years), but the rate of decrease has been higher for girls than for boys. Data also revealed that, for those aged 15-24 years, the difference in no-education rate between males and females has almost disappeared.

Table 3.3.3. School attendance (in %) of household members (aged 6 years and above) by age and sex, NNP Baseline Survey 2004

Ever attend school	Male				Female			
	6-14 yr	15-24 yr	25-49 yr	50 + yr	6-14 yr	15-24 yr	25-49 yr	50 + yr
No	11.7	14.5	34.0	44.6	8.5	15.8	45.4	77.8
Yes	88.3	85.5	66.0	55.4	91.5	84.2	54.6	22.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of persons	14,209	9,307	23,875	8,203	17,248	20,868	17,397	7,873

Table 3.3.4. Percent distribution of level of education of household members (aged 6 years and above) by age and sex, NNP Baseline Survey 2004

Highest grade passed	Male				Female			
	6-14 yr	15-24 yr	25-49 yr	50 + yr	6-14 yr	15-24 yr	25-49 yr	50 + yr
No education	34.8	16.4	37.2	48.4	27.2	17.0	48.2	79.4
Primary incomplete	48.4	17.3	15.8	13.9	44.7	15.0	17.3	9.6
Primary complete	7.7	17.0	12.2	11.8	9.2	14.7	12.7	7.5
Secondary incomplete	8.3	35.8	19.6	15.2	18.1	43.4	15.4	3.0
Secondary complete +	0.8	13.5	15.1	10.8	0.7	9.9	6.3	0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of persons	14,209	9,307	23,875	8,203	17,248	20,868	17,397	7,873

3.4 BACKGROUND CHARACTERISTICS OF HOUSEHOLDS

In the household questionnaire, respondents were asked about characteristics of their households, including access to electricity, source of drinking-water, sanitation facilities, materials used in house building, and land ownership. 28% of households had access to electricity in the NNP area, 38% in the BINP area, and 42% in the comparison area (Table 3.4.1). While tubewell is the predominant source of water in all areas, 69% of households had some kind of hygienic toilets (septic tank/modern toilets, slab latrines, and pit latrines). One in 10 households had no latrine facility.

Tin was the most common roofing material, accounting for 89% of sampled households. Only 3% of household roofs were made of cement and concrete. Half of the households lived in structures with walls made of natural materials, jute straw, bamboo, and mud. Another half lived in household structures with walls made of durable materials, tin accounting for 42%, and brick and cement accounting for 8%. The most commonly-used material for flooring was mud accounting for 95%, followed by cement accounting for 3.5%.

One in 5 households was landless, and 2 in 5 households owned land less than 50 decimals. Only 5% of households owned land of 750 decimals and above.

Table 3.4.1. Percent distribution of households by household characteristics, according to programme area, NNP Baseline Survey 2004

Household characteristics	Survey area		
	NNP	BINP	Comparison
Electricity			
Yes	28.0	38.1	42.0
No	72.0	61.9	58.0
Source of drinking-water			
Tap (pipe)	1.0	1.4	0.1
Tubewell	95.7	95.5	98.2
Ring well	1.0	0.9	0.2
Pond	1.3	0.9	0.9
Ditch/cannel/lake/river	0.7	0.7	
Others	0.3	0.6	0.5
Sanitation facility			
Septic tank/modern latrine	4.4	5.4	6.9
Slab latrine	12.6	11.6	10.8
Pit latrine	52.0	51.3	54.0
Hanging latrine	3.0	3.7	2.6
Open latrine	19.2	16.8	14.2
Bush/field/yard	8.4	10.6	10.8
Others	0.4	0.6	0.7
Main roof material			
Katcha (bamboo/thatch)	8.7	8.9	3.3
Tin	89.1	87.9	91.1
Cement, concrete, or tile	2.2	3.2	5.6
Main wall material			
Jute/bamboo/mud	47.1	48.1	47.7
Tin	43.5	41.5	38.9
Brick, cement	9.4	10.4	13.4
Floor material			
Earth/bamboo (*katcha*)	93.4	91.9	92.3
Cement/concrete	6.3	8.1	7.7
Land ownership (in decimals)			
Landless	22.8	18.7	19.6
1-49	38.6	42.2	41.5
50-99	11.1	11.8	11.2
100-249	13.4	14.4	15.9
250-750	8.4	7.8	7.4
750+	5.7	5.1	4.3
Number of households	12,212	8,221	4,296

Table 3.4.2 shows the household food security and vulnerability. Three in 10 households had experienced food crises (defined as inability of a household to produce or access at all times the minimum food needed for 3 meals) in the last 12 months. One in 20 households had food crises for more than half of the time. VGD card, old-age allowance, and destitute allowance covered 4% of households. About two-thirds (65.5%) of households had some members who had membership of NGO or government-managed welfare forum. Six in 10 households had home gardens, and 8 in 10 households had raised poultry birds.

Table 3.4.2. Percent distribution of households by food security, according to programme area, NNP Baseline Survey 2004

Household characteristics	Survey area		
	NNP	BINP	Comparison
Food security status in last 12 months			
Secured for 12 months	71.7	76.9	74.2
Insecured for 1-3 month(s)	11.3	8.3	8.8
Insecured for 4-6 months	11.4	10.4	12.1
Insecured for 7-12 months	5.5	4.4	4.9
Use of iodized salt for cooking			
Yes	65.7	67.6	61.2
No	34.3	32.4	38.8
Any member holds VGD card			
Yes	2.9	2.5	2.0
No	97.1	97.5	98.0
Any member gets old-age allowance			
Yes	1.5	1.1	1.3
No	98.5	98.9	98.7
Anyone gets destitute allowance			
Yes	0.9	0.6	0.5
No	99.1	99.4	99.5
Membership with any GO/NGO			
Yes	62.6	58.0	65.5
No	37.4	42.0	34.5
Home gardening			
Yes	55.5	61.0	58.3
No	44.5	39.0	41.7
Raise poultry			
Yes	76.8	77.3	77.9
No	23.2	22.7	22.1
Number of households	12,212	8,221	4,296

Information on household possession of durable goods is presented in Table 3.4.3. Possession of durables has bearing on quality of life. Four in 10 households had an almirah or a wardrobe, and 6 in 10 households had a table, or a chair, or a bench. About 90% of households had a cot or bed. More than 30% had radio, 20% had television, 20% had bicycle, and 24% had electric fan. Possession of motor bike (accounted for 1.5%), sewing machine (4%), and mobile phone (4.5%) was less common.

Table 3.4.3. Percent distribution of households by durable goods and wealth index, according to programme area, NNP Baseline Survey 2004

Household durables goods	Survey area		
	NNP	BINP	Comparison
Household durables			
Almirah/wardrobe	36.5	38.9	46.3
Table	60.0	60.0	63.8
Chair/bench	62.0	59.6	63.8
Dining table	14.1	10.9	12.8
Khat/chowki	88.1	89.5	89.8
Radio/two-in-one	29.4	30.9	36.7
Television	14.9	20.7	20.5
Bicycle	20.1	22.0	23.4
Motor bike	1.3	1.6	1.9
Sewing machine	3.7	5.0	3.7
Fan	18.0	26.9	32.9
Telephone/mobile	3.3	4.8	5.1
Wealth index			
Lowest	21.7	20.4	17.1
Second	20.0	20.6	18.8
Middle	20.2	19.8	20.2
Fourth	20.6	19.0	22.1
Highest	17.5	20.2	21.7
Number of households	12,212	8,221	4,296

Wealth index

The long-term economic status of a household is indicated by wealth index. Wealth included in the index ranged from the possession of items, such as *khat*, table, chair, almirah, radio, television, bike (including motor bike), land owned, wall material of the main dwelling unit (mud floor accounted for 96% and tin roof accounted for 94%, and these were, therefore, excluded from analysis), and type of toilet used.

The principle components analysis of household wealth retained one factor and assigned factor score (weight) to each household. The higher the score the more are household assets. The households were divided into quintiles — 5 categories from the lowest 20% to the highest 20%– on the basis of the factor score. There were fewer households in the lowest and the second quintile in the comparison area than in the NNP and BINP areas.

Inter-division variations

Household characteristics varied significantly between divisions (Table 3.4.4). For example, household heads with no education were lowest in Barisal division (26.9%) and highest in Dhaka division (48%), followed by Rajshahi division (47.3%) and Sylhet division (47.2%). Access to electricity was lowest in Rajshahi division (22.4%) and highest in Sylhet division (39.2%). A large difference in sanitation practices between divisions exists. While 81.4% of households had some type of toilet facilities (including septic tank/modern toilet, slab latrine, and pit latrine) in Barisal and Khulna divisions, it was lowest (61.2%) in Rajshahi division. One in 4 households had no toilet facility in Rajshahi division followed by one in 10 in Sylhet division. The number of household members with NGO membership was highest (49.2%) in Khuna division and lowest (30.3% and 31.0% respectively) in Sylhet and Chittagong divisions. More than 70% of households could procure food for all members for all time in the last 12 months to eat 3 meals a day. 4-7% failed to do so for more than 6 months. Sampled households divided by a single asset index exhibited quite a large variation across divisions; the highest quintile accounted for 23% of households in Sylhet and Chittagong divisions and 15.4% in Rajshahi division. More than half of households were either landless or owned land less than 50 decimals in each division.

Table 3.4.4. Percent distribution of households by background characteristics and division, NNP Baseline Survey 2004

Background characteristics	Division					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
Education of household head						
None	26.9	44.0	48.0	40.2	47.3	47.2
Primary incomplete	22.2	15.0	15.4	17.5	15.5	13.6
Primary complete	14.2	12.3	11.0	10.6	9.9	16.4
Secondary incomplete	20.6	16.2	16.3	19.2	16.1	15.4
Secondary +	16.1	12.5	9.3	12.5	11.3	7.5
Electricity in household						
Yes	34.7	38.0	35.4	38.7	22.4	39.2
No	65.3	62.0	64.6	61.3	77.6	60.8
Latrine facilities						
Septic tank/modern latrine	4.7	4.8	4.2	5.8	5.4	9.8
Slab latrine	9.6	11.4	11.3	14.4	13.3	12.3
Pit latrine	67.0	55.8	50.7	61.1	42.5	44.7
Hanging latrine	1.0	2.2	5.4	3.7	1.8	4.0
Open latrine	16.2	20.8	20.9	9.9	12.1	19.1
Bush/field/yard	1.4	5.0	7.6	5.0	24.8	10.2
Home gardening						
Yes	63.3	49.4	66.5	49.1	57.0	62.9
No	36.7	50.6	33.5	50.9	43.0	37.1
Poultry raising						
Yes	82.6	77.2	76.3	79.3	78.2	67.9
No	17.4	22.8	23.7	20.7	21.8	32.1
Membership with NGO/samity						
Yes	41.8	31.0	42.0	49.2	40.6	30.3
No	58.2	69.0	58.0	50.8	59.4	69.7
Food insecurity in last 12 months						
No insecurity	78.80	71.60	78.40	75.80	69.50	70.00
<4 months	7.10	9.70	8.20	10.70	13.20	8.90
4-6 months	10.50	12.70	9.80	9.40	11.20	13.90
7-12 months	3.70	5.90	3.60	4.00	6.10	7.20
Wealth index						
Lowest	19.9	21.5	22.9	21.2	15.8	21.0
Second	19.0	16.7	21.6	22.1	22.3	18.1
Middle	19.7	16.7	19.5	18.5	25.8	20.1
Fourth	21.7	22.4	18.6	19.0	20.7	17.6
Highest	19.8	22.7	17.4	19.2	15.4	23.2
Land ownership (in decimals)						
Landless	15.1	28.3	8.0	28.6	26.7	21.8
1-49	38.6	40.5	47.0	28.4	36.2	42.9
50-99	11.7	10.8	12.5	11.1	10.9	10.2
100-249	14.2	11.4	16.1	15.6	14.8	13.7
250-750	8.4	4.5	9.7	12.0	9.0	7.5
750 +	12.1	4.5	6.8	4.3	2.4	4.0
Total (n)	2,055	6,803	6,785	2,056	5,371	1,661

CHAPTER 4

HEALTH AND NUTRITIONAL STATUS OF UNDER-2 CHILDREN

SECTION 4.1 HOUSEHOLD CHARACTERISTICS OF UNDER-2 CHILDREN

Approximately, 14% of tubewells used by households of under-2 children were contaminated by arsenic (Table 4.1.1). This is of concern because available data suggest that malnutrition and deficiency of specific dietary elements play a role in susceptibility to deranged arsenic metabolism or arsenic-associated disease (Engel RR, Receveur O. Arsenic ingestion and internal cancers: a review. Am J Epidemiol 1993;138:896-7). Only 5% of households used modern latrines, while defecating in the open space was a widespread practice (Table 4.1.2). This perhaps explains the high prevalence (~25%) of intestinal parasites. A little more than half of all households did not own any cultivable land. About 30% of households of children suffered from food deficit at any time last year, which was significantly less than that in the BINP areas (Table 4.1.4). This difference is perhaps due to an increased involvement in local cooperatives in the BINP areas. Households in the BINP areas were also more frequently involved in homestead gardening and poultry rearing. Less than half of households had access to listening to radio broadcasts, while about 30-45% watched television programmes.

One-third of mothers could not read or write; formal education was minimal (Table 4.1.8). The mean age at marriage of girls was 15 years, and one-third of them had three or more children alive.

Table 4.1.1. Percentage distribution of households with under-2 children by source of water and arsenic contamination, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Source of drinking-water				
Tap water	1.0	1.1	0.1	0.8
Tubewell	95.8	95.3	98.5	96.2
Ring well	1.1	1.2	0.2	0.9
Pond	1.1	0.7	0.7	0.9
Ditch/canal/lake	0.3	0.1	-	0.2
River/fountain	0.5	0.7	-	0.4
Rain water	-	-	0.2	0.1
Others	0.3	1.0	0.3	0.5
Total	100.0	100.0	100.0	100.0
Total (n)	5,026	2,086	1,707	8,819
Marking on tubewell				
Red (arsenic-contaminated)	16.3	9.1	15.2	14.4
Green (not contaminated)	39.4	37.7	26.4	36.4
Not colored	44.3	53.2	58.4	49.2
Total	100.0	100.0	100.0	100.0
Total (n)	4,813	1,988	1,681	8,482
Source of water for cleaning household utensils				
Tap water	1.0	1.7	0.8	1.1
Tubewell	55.9	64.1	54.9	57.7
Ring well	2.1	3.3	0.4	2.0
Pond	36.5	27.1	38.7	34.7
Ditch/canal/lake	3.2	1.7	3.3	2.9
River/fountain	1.1	1.8	1.9	1.4
Others	0.1	0.2	0.1	0.1
Total	100.0	100.0	100.0	100.0
Total (n)	5,026	2,086	1,707	8,819

BINP vs NNP and comparison, $p<0.001$, for arsenic contamination of tubewell water

Table 4.1.2. Type of latrine (in %) used by households with under-2 children, NNP Baseline Survey 2004

Idicator	Survey area			
	NNP	BINP	Comparison	All
Type of latrine				
Septic tank/ modern latrine	3.8	5.6	6.3	4.7
Slab latrine	12.2	10.6	11.4	11.7
Pit latrine	52.3	51.6	55.6	52.8
Hanging latrine	3.1	3.5	2.6	3.1
Open latrine	19.1	16.5	14.5	17.6
Bush/field/yard	9.1	11.2	9.0	9.6
Others	0.4	1.0	0.6	0.6
Total	100.0	100.0	100.0	100.0
Total (n)	5,026	2,086	1,707	8,819
Latrine shared with other households				
Yes	44.1	46.4	46.4	45.1
No	55.9	53.6	53.6	54.9
Total	100.0	100.0	100.0	100.0
Total (n)	4,550	1,831	1,543	7,924

Table 4.1.3. Percentage distribution of land ownership of households of under-2 children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Ownership of any land	86.0	87.2	89.9	87.1
Amount of homestead land (acres)				
Landless	16.8	15.0	13.2	15.6
0.01- 0.49	70.1	73.3	75.5	71.9
0.50-0.99	4.4	4.8	4.5	4.5
1.00- 2.49	2.5	1.6	1.8	2.2
2.50- 7.49	0.3	0.4	0.3	0.4
7.50+	5.9	4.9	4.6	5.4
Total	100.0	100.0	100.0	100.0
Amount of agricultural land (acres)				
Landless	51.8	54.7	49.3	52.0
0.01-0.49	18.2	16.9	19.0	18.0
0.50-0.99	9.4	9.9	10.5	9.7
1.00-2.49	10.1	10.9	11.5	10.6
2.50-7.49	6.8	5.7	5.7	6.3
7.50 +	3.7	2.0	4.0	3.3
Total	100.0	100.0	100.0	100.0
Total (n)	5,026	2,086	1,707	8,819

Comparison vs NNP, p<0.001; BINP vs comparison, p= 0.012 for ownership of any land

Table 4.1.4. Percentage distribution of households with under-2 children by food-deficit status during last year and salt used in cooking, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Food deficit (months)				
No food deficit	69.6	74.6	74.3	71.7
<4	12.6	9.5	8.7	11.1
4-6	11.4	11.7	12.6	11.7
7-12	6.5	4.2	4.4	5.5
Total	100.0	100.0	100.0	100.0
Total (n)	1,530	529	439	2,498
Type of salt used in cooking				
Packet salt (iodized)	65.6	66.8	62.5	65.3
Open salt	34.4	33.2	37.5	34.7
Total	100.0	100.0	100.0	100.0
Total (n)	5,026	2,086	1,707	8,819

Food deficit is inability to manage 3 meals daily for all household members last year
NNP vs BINP, p<0.001; NNP vs comparison, p<0.001, for no food deficit

Table 4.1.5. Percentage distribution of households of under-2 children having VGF cards, old-age or destitute allowance, membership of cooperatives and NGOs, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
VGF card holder	2.7	2.1	1.5	2.3
Old age allowance	1.5	0.9	0.8	1.2
Destitute allowance	1.0	0.9	0.6	0.9
Membership of cooperatives	38.5	42.1	33.9	38.5
NGO membership	61.5	57.9	66.1	61.5
Name of organization				
GO				
BRDB	1.2	1.7	1.2	1.3
Others	11.1	10.5	8.3	10.4
NGO				
BRAC	1.5	2.0	.9	1.5
Proshika	19.2	20.9	16.2	19.0
ASA	7.3	9.6	8.4	8.1
Grameen Bank	2.2	2.9	2.3	2.4
Taken loan from cooperative	41.7	47.0	34.5	41.6
Total (n)	5,026	2,086	1,707	8,819

VGF= Vulnerable group feeding, BRDB= Bangladesh Rural Development Board; GO=Government
NNP vs comparison, p<0.001, for VGF card holding; NNP vs comparison, p= 0.04 for old-age allowance
BINP vs NNP, p<0.001; Comparison vs NNP, p<0.001; BINP vs comparison, p<0.001, for membership of cooperatives
BINP vs NNP, p<0.001; Comparison vs NNP, p<0.001; BINP vs comparison, p<0.001, for NGO membership

Table 4.1.6. Involvement of households of under-2 children in homestead gardening, poultry rearing, and fish farming by survey area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Grew vegetables at home last year	53.4	58.6	54.4	54.8
Total (n)	5,026	2,086	1,707	8,819
Sold vegetables grown at home last year	17.6	15.4	14.0	16.3
Received assistance from GO/NGO programmes in home gardening	11.4	17.6	10.3	12.8
Total (n)	2,684	1,222	929	4,835
Reared poultry	74.1	75.3	75.7	74.7
Total (n)	5,026	2,086	1,707	8,819
Sold eggs through poultry rearing	30.91	30.8	27.1	30.2
Received assistance from GO/NGO programmes in poultry	7.4	9.7	5.2	7.5
Total (n)	3,725	1,571	2,193	6,589
Fish farming	19.8	20.6	25.6	21.1
Total (n)	5,026	2,086	1,707	8,819
Received assistance from GO/NGO programmes in fish farming	9.3	11.7	7.9	9.5
Total (n)	993	429	438	1,860

BINP vs NNP, p<0.001; BINP vs comparison, p=0.01, for growing vegetables in homestead
BINP vs NNP, p<0.001; BINP vs comparison, p<0.001, for GO/NGO assistance in homestead gardening
BINP vs NNP, p<0.001; BINP vs comparison, p<0.001; NNP vs comparison, p<0.001, for GO/NGO assistance in poultry rearing
Comparison vs NNP, p<0.001; BINP vs comparison, p<0.001, for fish farming
GO=Government

Table 4.1.7. Media access of mothers of under-2 children by survey area, NNP Baseline Survey 2004				
Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Frequency of listening to radio/two-in-one				
No	57.9	54.2	53.1	56.1
Everyday	18.7	18.8	16.9	18.4
At least once a week	16.2	20.0	22.2	18.2
Less than once a week	7.2	7.0	7.8	7.2
Total	100.0	100.0	100.0	100.0
Listen to nutrition programme/discussion on radio	28.5	32.3	33.5	30.4
Frequency of watching television				
No	68.0	53.9	55.9	62.3
Everyday	11.9	18.8	16.9	14.5
At least once a week	15.6	20.9	21.7	18.1
Less than once a week	4.5	6.3	5.5	5.1
Total	100.0	100.0	100.0	100.0
Watch nutrition programme/discussion on television	17.6	25.6	26.8	21.3
Total (n)	5,026	2,086	1,707	8,818

Table 4.1.8. Distribution (in %) of under-2 children by age and background characteristics of mothers of under-2 children, NNP Baseline Survey 2004				
Indicator	Survey area			
	NNP	BINP	Comparison	All
Age range of children (months)				
0-5	21.7	19.7	20.3	21.0
6-11	29.0	31.3	28.2	29.4
12-23	49.3	49.0	51.5	49.6
Age range of mothers (years)				
<=19	26.5	28.1	28.5	27.3
20-29	54.8	55.2	53.4	54.6
30 and above	18.7	16.7	18.0	18.1
Mean (SD) age of mothers (years)	24.0 (6.1)	23.7 (5.9)	23.8 (6.0)	23.9 (6.0)
Mean (SD) age at marriage (years)	15.0 (2.4)	14.9 (2.2)	15.1 (2.2)	15.0 (2.3)
Educational level				
No education	36.2	34.0	28.9	34.2
Primary incomplete	19.4	18.1	16.6	18.5
Primary complete	13.7	14.4	15.6	14.2
Secondary incomplete	23.8	26.7	31.4	26.0
Secondary and above	7.0	6.8	7.4	7.0
Type of institution attended				
School/college	95.9	96.0	93.6	95.5
Madrasah	2.6	2.7	4.6	3.1
Non-formal education	1.4	1.3	1.8	1.5
Number of pregnancies				
Only once	23.5	24.8	24.3	24.0
Twice	24.3	25.6	25.3	24.8
More than twice	52.2	49.6	50.4	51.2
Number of live children				
1	29.7	31.5	30.2	30.2
2	26.7	28.2	28.0	27.3
3-4	31.2	31.1	29.6	30.9
5 and more	12.4	9.3	12.2	11.6
Total (n)	5,027	2,086	1,707	8,820

No education: Never attended school; Primary incomplete: I-IV class passed; Primary complete: V class passed; Secondary incomplete: VI-IX class passed; Secondary complete: Secondary school certified and above
NNP and BINP vs comparison, $p<0.001$, for no education

4.2 ACCESS TO HEALTH AND NUTRITION SERVICES

The BINP had ceased its activities in 2002, while the NNP officially commenced its field activities in September 2004. Most respondents who mentioned that community nutrition centres (CNCs) were available in their localities were from Dhaka and Sylhet divisions where the NNP had just started its activities when the survey was done in those areas (Table 4.2.1). About 28% of children in the BINP areas actually received GMP cards from the CNCs, and a similar proportion of children was weighed 3 times over the last 3 months (Table 4.2.3). This is suggestive of a good compliance with GMP at least in the areas where the survey was done. One-third of mothers interviewed did not feel that their children should ever be weighed (Table 4.2.4). This calls for BCC measures to remove the complacency regarding GMP.

Illnesses were quite common among children. 83% of under-2 children in the BINP areas suffered from any illness in the past two weeks compared to 85% in the comparison areas (Table 4.2.5). The increased frequency of morbid conditions, notably infections, including fever, diarrhoea, and pneumonia, were responsible for the deterioration of nutritional status of children. When this happens, a vicious cycle of infection-malnutrition goes on and on until the chain is broken at some point (Scrimshaw NS, Taylor CE, Gordon JE. Interaction of nutrition and infection. Geneva: WHO, 1968). Treatment was provided in three-fourths of episodes of illnesses; however, in only 8% of episodes were the children taken to a public healthcare provider. Village quacks and local pharmacies catered to more than 50% of episodes of illnesses for which treatment was sought (Table 4.2.6). Oral rehydration salt solution (ORS), the cornerstone of treatment of diarrhoeal diseases, was provided in 75% cases of diarrhoea in children. The country has made tremendous strides in child immunization against the 6 vaccine-preventable diseases under the Expanded Programme on Immunization. This is reflected in the coverage figures of about 80% for OPV-3, DPT-3, and measles vaccine and more than 95% for BCG vaccine (Table 4.2.7).

Table 4.2.1. Use of services provided by Community Nutrition Centres by mothers of under-2 children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
CNC available	13.8	87.4	1.7	28.8
Mothers having knowledge of services provided by CNC	14.5	78.5	6.5	28.1
Knowledge of mothers regarding services provided by CNC				
Measurement of weight of children	5.6	52.0	1.7	15.8
Measurement of height of children	0.8	7.2	0.1	2.2
Supply nutritious food to children	12.8	72.3	5.2	25.4
Supply nutritious food to pregnant women	7.1	59.3	3.4	18.7
Measurement of weight of pregnant women	3.3	42.7	1.5	12.3
Measurement of weight of newborn babies	0.5	6.9	0.1	1.9
Organize meetings with adolescent girls and others on health education	0.3	1.2	0.2	0.5
Organize meetings with mothers	1.3	6.7	0.6	2.4
Total (n)	5,026	2,086	1,707	8,819

Data in comparison areas reflect diffusion of knowledge; CNC = Community Nutrition Centre

Table 4.2.2. Division-wise percentage distribution of under-2 children by availability of CNC in locality, NNP Baseline Survey 2004

Division	Survey area						Total (n)
	NNP		BINP		Comparison		
	CNC availability	Knowledge about CNC service	CNC availability	Knowledge about CNC service	CNC availability	Knowledge about CNC service	
Barisal	12.8	14.2	78.9	74.7	0.6	3.0	699
Chittagong	3.8	6.7	78.1	68.1	0.7	3.4	2578
Dhaka	22.2	22.5	91.4	82.4	5.4	18.8	2256
Khulna	3.2	12.5	95.3	92.1	-	6.9	730
Rajshahi	6.1	8.5	86.9	74.9	0.3	2.7	1979
Sylhet	79.1	52.3	87.6	76.0	1.4	1.4	577
All	13.8	14.5	87.4	78.5	1.7	6.5	
Total (n)	5,026		2,086		1,707		8,819

When the survey was carried out in Sylhet and Dhaka divisions, programme activities in the NNP areas had started
Data of the comparison areas reflect diffusion of knowledge
CNC= Community Nutrition Centre

Table 4.2.3. Services received by under-2 children from CNCs by survey area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Participated in CNC activities	3.9	40.7	0.7	12.0
Supplementary feeding	1.5	10.9	-	3.4
CNC visits per week				
No visit	98.5	89.1	100.0	96.6
1-2	0.4	2.9	-	0.9
3-4	0.3	0.8	-	0.3
5 and more	0.8	7.2	-	2.2
Total	100.0	100.0	100.0	100.0
GMP card received from CNC	3.8	28.2	0.6	8.9
Checking presence of GMP cards				
No card	96.2	71.8	99.5	91.1
Card seen	1.8	15.5	0.3	4.8
Card not seen	1.2	4.8	0.2	1.9
Card with CNC	0.8	8.0	-	2.3
Total	100.0	100.0	100.0	100.0
Had at least 3 weight measurements in last 3 months	2.1	28.0	0.9	8.0
Total (n)	5,025	2,086	1,706	8,819
Received vitamin A within last 6 months (age 6 months +)	64.1	65.2	72.8	66.1
Total (n)	3,935	1,675	3,960	6,970

Table 4.2.4. Reasons for not participating in weight-measurement sessions for last 3 months by under-2 children, NNP Baseline Survey 2004

Reason	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Did not feel necessary	31.4	31.7	39.0	33.0
Objection of household members	1.0	1.2	1.2	1.1
Lack of money	3.8	.4	3.4	2.9
Lack of time	2.5	3.5	1.0	2.5
Poor quality of services	3.6	9.0	2.5	4.7
Forgot to attend	0.4	0.7	0. 3	0.5
Illness in households	0.1	0.3	0.2	0.2
Did not know	55.3	27.7	51.3	48.0
Did not want to mention	8.8	1.6	5.6	6.5
Others	0.1	0	0	0
Total (n)	4,919	1,501	1,692	8,112

Table 4.2.5. Percentage distribution of morbidity in last 2 weeks among under-2 children, NNP Baseline Survey 2004

Illness	Survey area			
	NNP	BINP	Comparison	All
Any illness	83.3	82.6	85.4	83.6
Fever/cough/common cold	74.9	72.0	74.7	74.2
Diarrhoea	18.0	15.7	17.0	17.3
Dysentery	17.1	14.1	12.0	15.4
Pneumonia	6.5	5.1	6.0	6.1
Ear infection	5.3	4.8	5.0	5.1
Conjunctivitis	5.6	5.0	4.8	5.3
Skin disease	14.1	13.1	15.5	14.1
Others	0.7	2.3	1.6	1.2
Total (n)	5,026	2,086	1,707	8,819

Comparison vs NNP, p=0.04; BINP vs comparison, p= 0.01, for any illness in last 2 weeks
NNP vs BINP, p=0.01; BINP vs comparison; p= 0.055, for fever/cough/common cold
NNP vs BINP, p=0.023, for diarrhoea
NNP vs BINP, p=0.002; NNP vs comparison; p<0.001; BINP vs comparison, p=0.054, for dysentery
NNP vs BINP, p=0.029, for pneumonia
Comparison vs BINP, p=0.040, for skin diseases

Table 4.2.6. Healthcare-seeking pattern for sick under-2 children by survey area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Treatment sought for recent illness	77.0	78.2	77.4	77.4
Total (n)	4,189	1,722	1,458	7,369
Last treatment received				
Qualified doctor (Government)	5.3	5.9	5.9	5.5
Trained paramedics (Government)	2.5	1.6	1.3	2.1
All NGO service providers	0.5	0.7	0.5	0.6
Private qualified doctors	16.2	16.6	18.7	16.8
Trained private paramedics	0.7	0.4	0.4	0.5
Village quacks/pharmacies	53.2	52.8	56.7	53.8
Homeopaths	18.0	19.5	14.0	17.6
Kabiraj	2.5	1.7	1.4	2.1
Community Nutrition Centre	0.1	-	-	0.1
Others	1.1	0.7	1.1	1.0
Total	100.0	100.0	100.0	100.0
Total (n)	3,225	1,347	1,126	5,698
ORS given during diarrhoea	72.2	78.9	79.2	75.0
Total (n)	892	322	284	1,498

CNC=Community Nutrition Centre

Table 4.2.7. Crude immunization coverage of under-2 children (aged 12-23 months), NNP Baseline Survey 2004

Name of vaccine	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
BCG	95.8	96.7	96.7	96.2
OPV-3	85.6	88.4	84.9	86.1
DPT-3	83.6	87.5	83.6	84.5
Measles	76.8	79.4	75.4	77.1
Total (n)	2,476	1,022	880	4,376

Table 4.2.8. Division-wise percentage distribution of routine immunization converge of under-2 children (aged 12-23 months) by area, NNP baseline survey 2004

Division	NNP			BINP			Comparison			Total (n)
	BCG	DPT-3	Measles	BCG	DPT-3	Measles	BCG	DPT-3	Measles	
Barisal	98.9	91.2	84.5	96.7	93.3	77.8	97.0	79.0	74.0	371
Chittagong	94.8	82.6	77.6	95.6	84.8	80.4	96.6	81.7	74.6	1202
Dhaka	95.8	84.0	74.3	96.7	87.8	77.6	97.6	86.3	70.6	1180
Khulna	95.9	86.1	77.8	100.0	99.1	79.3	98.0	91.8	85.7	355
Rajshahi	98.2	83.4	78.8	97.2	84.0	75.6	98.7	87.9	85.2	966
Sylhet	89.0	77.9	65.1	91.1	73.2	69.6	90.7	75.0	67.1	305

4.3 HEALTHCARE-SEEKING OF MOTHERS OF UNDER-2 CHILDREN

Antenatal check-up is pivotal for good health of a pregnant woman and a newborn. Overall, half of mothers of under-2 children had never received ANC during their pregnancy (Table 4.3.2). In the BINP areas, however, there was a significant 10 percentage-point decrease in women not receiving ANC. Of those who received ANC, provision of ANC was equally shared between public and private healthcare providers. This was in contrast to care-seeking in the case of any illness in under-2 children. Complacency was the major reason for not seeking ANC. A significantly greater proportion (32%) of mothers in the BINP areas received iron tablets during pregnancy compared to 23% and 24% in the NNP and comparison areas respectively (Table 4.3.4). Nightblindness due to deficiency of vitamin A is a major problem in Nepal, and its prevalence in Bangladesh is estimated to be about 5%. Administering an oral dose of 200,000 IU of vitamin within 6 weeks of delivery is an effective method of combating vitamin A deficiency disorders in lactating mothers and newborns and has been incorporated as a national strategy (Institute of Public Health Nutrition. Field guide for National Vitamin A Plus Campaign. Dhaka: IPHN, 2005). Yet only about 8% of women in the BINP and NNP areas received vitamin A within 6 weeks of delivery, which was greater than that (5%) of the comparison areas (Table 4.3.4).

Morbidity during pregnancy is common in Bangladesh. The most common conditions suffered by mothers of under-2 children during their last pregnancy included severe headache and blurred vision (54%), oedema of feet (32%), anaemia (29%), fever (25%), labour pain persisting for more than 12 hours (25%), excessive bleeding during and after childbirth (24%), and foul-smelling vaginal discharge (20%) (Table 4.3.6).

Table 4.3.1. Tetanus toxoid vaccination-coverage rate of mothers of under-2 children during last pregnancy, NNP Baseline Survey 2004

TT dose	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Nil	18.2	13.7	11.7	15.9
TT-1	25.2	25.4	25.4	25.3
TT-2	39.3	42.1	45.5	41.2
TT-3	16.7	17.8	16.2	16.9
TT-4	0.4	0.9	1.1	0.6
TT-5	0.2	0	0.2	0.1
Total (n)	5,026	2,086	1,707	8,819

NNP vs BINP and comparison, $p<0.001$, for no TT immunization

TT=Tetanus toxoid

Table 4.3.2. Percentage distribution of antenatal check-up, source of ANC, services received, and reasons for not receiving ANC of mothers of under-2 children during last pregnancy, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
No. of ANC visits				
No visit	54.4	40.0	51.7	50.5
1	15.1	16.2	16.5	15.6
2	11.6	14.7	13.2	12.7
3 or more	18.9	29.1	18.5	21.2
Total	100.0	100.0	100.0	100.0
Mean (SD) months of pregnancy at first ANC	5.3 (2.0)	5.0 (1.9)	5.3 (2.1)	5.2 (2.0)
Total (n)	5,026	2,086	1,707	8,819
Source of ANC				
Qualified doctors (Government)	22.4	17.0	23.5	21.1
Trained paramedics (Government)	28.6	24.1	19.9	25.7
All NGO service providers	22.1	22.1	21.9	22.0
Private qualified doctors	23.2	20.4	31.8	24.0
Trained private paramedics	0.1	02	0.2	0.1
Village quacks/local pharmacies	1.3	0.6	1.5	1.1
Homeopath	01	0.2	0.2	0.2
Community Nutrition Centres	02	13.3	0.1	3.9
Others	2.0	2.2	0.8	1.8
Total	100.0	100.0	100.0	100.0
Service received during ANC				
Weight measurement	73.5	84.2	68.7	75.7
Measurement of blood pressure	85.5	79.5	86.8	84.0
Urine test	52.3	45.5	49.7	49.8
Blood test	26.8	26.5	34.9	28.2
Received iron tablet	68.5	68.8	69.1	68.7
Others	32.1	47.0	50.4	39.8
Total (n)	2,290	1,251	824	4,365
Reasons for not receiving none or only one ANC				
Did not consider necessary	37.1	36.0	37.2	36.9
Objection of family members	6.1	4.3	6.3	5.7
None to accompany	2.6	1.2	2.0	2.2
Economic constraint	22.0	12.2	19.9	19.2
Poor quality of ANC	1.4	1.3	1.6	1.4
Living at a distance from ANC providers	6.7	3.4	4.9	5.6
Others	5.8	3.0	3.6	4.7
Total	100.0	100.0	100.0	100.0
Total (n)	3,494	1,173	1,164	5,831

BINP vs NNP and comparison, p<0.001, for no ANC visit; ANC=Antenatal care

Table 4.3.3. Division-wise percentage distribution of antenatal check-ups of mothers of under-2 children during last pregnancy, NNP Baseline Survey 2004

Division	NNP			BINP			Comparison			Total (n)
	0	1-2	3 and+	0	1-2	3 and+	0	1-2	3 and+	
Barisal	55.3	27.5	17.2	43.4	26.5	30.1	71.1	18.1	10.8	699
Chittagong	56.9	26.3	16.8	38.0	29.6	32.4	57.6	28.6	13.7	2,578
Dhaka	65.8	24.6	9.6	47.4	30.9	21.7	43.3	33.2	23.5	2,256
Khulna	54.8	27.4	17.8	33.6	30.8	35.6	61.4	22.8	15.8	730
Rajshahi	40.8	28.8	30.5	31.5	32.6	35.9	36.1	38.4	25.5	1,979
Sylhet	53.4	26.0	20.6	42.1	34.7	23.1	52.1	26.0	21.9	578

Table 4.3.4. Iron and postpartum vitamin A supplementation of mothers of under-2 children during last pregnancy, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Iron supplementation				
Regular	22.6	31.8	23.7	25.0
Irregular	12.9	17.6	13.8	14.2
None	64.5	50.5	62.6	60.8
Total (n)	5,025	2,086	1,707	8,818
Mean (SD) months of gestation of start of iron supplementation	5.3 (2.9)	5.0 (1.6)	5.3 (1.9)	5.2 (2.4)
Source of iron tablets				
Qualified doctors (Government)	14.5	10.1	14.7	13.2
Trained paramedics (Government)	29.3	19.5	20.3	24.7
NGO service providers	20.1	17.2	23.1	19.8
Private qualified doctors	5.6	4.4	8.8	5.8
Trained private paramedics	0.1	0.1	0.3	0.1
Village quacks/pharmacies	27.6	16.9	32.3	25.3
Community Nutrition Centres	1.6	29.0	0.2	9.5
Others	1.3	2.9	0.3	1.6
Total (n)	1,784	1,032	640	3,456
Reasons for not taking iron tablets regularly				
Did not consider necessary	18.4	15.8	18.7	17.7
Objection of family members	4.2	1.1	4.7	3.4
Side-effect of tablets/syrup	29.2	38.3	27.2	31.5
Lack of supply	10.0	8.4	5.8	8.7
Forgot to take	16.4	22.6	19.6	18.8
Did not receive enough tablets	4.6	7.1	10.0	6.3
Lost tablets	0.4	.0	.0	0.2
Economic constraint	5.2	.8	3.8	3.7
Others	11.5	6.0	10.1	9.6
Total (n)	647	368	236	1251
Vitamin A capsule received within 6 weeks of delivery	8.3	7.9	5.2	7.6
Total (n)	5,026	2,086	1,707	8,819

BINP vs NNP and comparison, $p<0.001$, for receiving iron supplementation during last pregnancy
NNP and BINP vs comparison, $p<0.001$, for receiving vitamin A capsule within 6 weeks of delivery

Table 4.3.5. Division-wise percentage distribution of iron supplementation of mothers of under-2 children during last pregnancy, NNP baseline survey 2004

Division	NNP		BINP		Comparison		Total (n)
	Received supple-mentation	No supple-mentation	Received supple-mentation	No supple-mentation	Received supple-mentation	No supple-mentation	
Barisal	17.2	82.8	25.9	74.1	12.6	87.4	699
Chittagong	19.9	80.1	34.3	65.7	23.7	76.3	2,578
Dhaka	12.6	87.4	29.6	70.4	22.9	77.1	2,256
Khulna	19.9	80.1	24.9	75.1	17.0	83.0	730
Rajshahi	37.4	62.6	39.7	60.3	34.0	66.0	1,980
Sylhet	23.5	76.5	31.4	68.6	21.9	78.1	577

Table 4.3.6. Pregnancy-related health complications of mothers of under-2 children during last pregnancy, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Severe headache/blurred vision	53.5	52.9	58.4	54.3
Oedema	32.6	32.0	31.5	32.3
High blood pressure	5.9	5.0	5.6	5.6
Protein in urine	2.2	2.3	2.4	2.2
Bleeding per vagina	5.3	4.5	5.0	5.1
Labour pain more than 12 hours	26.1	24.4	23.9	25.3
Excessive bleeding during/after delivery	23.6	23.3	26.6	24.1
Convulsions	7.5	5.8	3.2	6.8
Anaemia	28.7	30.9	30.1	29.5
Fever more than 3 days during last pregnancy	26.5	24.4	23.3	25.4
Fever more than 3 days after delivery	17.8	18.4	19.2	18.2
Foul-smelling vaginal discharge	18.7	20.5	21.3	19.6
Others	12.3	12.8	15.1	13.0
Total (n)	5,026	2,086	1,707	8,818

4.4 MATERNAL KNOWLEDGE AND PRACTICE OF NUTRITION

Compared to the NNP areas, a significantly greater proportion of mothers of under-2 children in the BINP and comparison areas gave a history of increased food intake during their pregnancy (Table 4.4.1). Similar was the case of taking more rest than usual during pregnancy. More mothers in the BINP areas had the correct notion that increased food intake and taking more rest during pregnancy benefit both mother and foetus. Use of iodized salt was more common in the BINP areas. Significantly more mothers in the BINP areas consumed iodized salt than in other two areas of the survey (Table 4.4.6). Respondents in the BINP areas were more aware of iodine deficiency disorders. More than 50% of mothers believed that taking iodized salt during pregnancy were beneficial both for them and foetuses.

Exclusive breastfeeding up to 6 months has been identified as one of the most cost-effective strategies for improving child health globally. It has also been estimated to prevent more than 10% of child deaths (Jones G, Steketee RW, Black RE *et al*. How many child deaths can we prevent this year? Lancet 2003;362:65-71). The survey found that more than 95% of under-2 children were breastfed (Table 4.4.8). It also found that the overall rate of exclusive breastfeeding was as low as 11.2%. Even more disturbing was the fact that the rate of exclusive breastfeeding was significantly lower in the BINP areas (8.1%) compared to 11.7% in the NNP and 13.3% in the comparison areas. The rates varied between the divisions, being as low as 2% in Barisal division and as high as 18% in Rajshahi division (Table 4.4.9). Improper weaning practices were rampant. Among 7,326 children, semi-solid foods were introduced to 3% of infants at as early as 1 month, to 5% at 2 months, and 12% at 3 months (Table 4.4.10). This is in contrast to the fact that 95% of mothers of under-2 children in the BINP areas knew that starting supplementary feeding before 6 months of age was bad for the child (Table 4.4.12). This clearly demonstrates discordance between knowledge and practice regarding infant feeding.

Mothers in the BINP areas had a significantly better knowledge about causes and prevention of diarrhoea in children (Tables 4.4.13-14). They were also more aware of the signs and symptoms of pneumonia in children, the major cause of childhood deaths (Table 4.4.16). We are, however, concerned to note that rapid breathing, chest indrawing, and inability to suck breastmilk were considered manifestations of pneumonia by only 56%, 28%, and 10% of mothers. The latter two signs are, in fact, danger signs for pneumonia in children (World Health Organization. Acute respiratory infections in children: case management in small hospitals in developing countries; a manual for doctors and other senior health workers. Geneva: World Health Organization, 1990).

Table 4.4.1. Health and nutrition-related knowledge and practice of mothers of under-2 children during last pregnancy, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Food intake during last pregnancy				
More than before	15.0	19.8	20.0	17.1
Same as before	34.6	38.1	35.4	35.6
Less than before	50.4	42.1	44.6	47.3
Total	100.0	100.0	100.0	100.0
Perception about intake of more food during pregnancy				
Complicates delivery	4.2	2.3	3.5	3.6
Benefits mother	12.5	14.2	17.5	13.9
Benefits foetus	18.8	19.8	19.1	19.1
Benefits both mother and foetus	38.2	45.8	35.1	39.4
Makes no difference	1.7	.7	.4	1.2
Others	15.9	13.4	16.7	15.5
Do not know	8.6	3.9	7.8	7.3
Total	100.0	100.0	100.0	100.0
Rest taken during last pregnancy				
More than before	40.4	45.4	45.3	42.5
Same as before	34.7	36.8	31.7	34.6
Less than before	24.9	17.8	23.0	22.8
Total	100.0	100.0	100.0	100.0
Perception about more rest during pregnancy				
Causes weight gain of mother	6.5	3.9	3.7	5.3
Benefits mother	19.2	24.7	25.2	21.7
Benefits foetus	5.7	7.0	7.7	6.4
Benefits both mother and foetus	28.5	36.9	25.6	29.9
Makes no difference	1.4	.3	1.3	1.1
Others	30.1	22.4	26.3	27.5
Do not know	8.6	4.8	10.2	8.0
Total	100.0	100.0	100.0	100.0
Total (n)	5,026	2,086	1,707	8,819

BINP and comparison vs NNP vs BINP, $p<0.001$, for increased food intake during pregnancy
NNP vs BINP, $p<0.001$; BINP vs comparison, $p=0.02$, for the belief of increased food intake complicating delivery
BINP vs NNP and comparison, $p<0.001$, for the belief of increased food benefiting both mother and foetus
BINP and comparison vs NNP, $p<0.001$, for taking more rest than before
BINP vs NNP and comparison, $p<0.001$, for the belief of increased rest benefiting both mother and foetus

Table 4.4.2. Division-wise percentage distribution of food-intake practice during last pregnancy of mothers of under-2 children, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	More than before	Less than /same as before	More than before	Less than /same as before	More than before	Less than /same as before	
Barisal	19.9	80.1	17.5	82.5	19.2	80.8	700
Chittagong	12.3	87.7	16.1	83.9	16.4	83.6	2,578
Dhaka	11.8	88.2	21.5	78.5	22.4	77.6	2,255
Khulna	17.0	83.0	21.7	78.3	23.0	77.0	729
Rajshahi	18.7	81.3	22.6	77.4	27.2	72.8	1,997
Sylhet	16.5	83.5	9.9	90.1	13.7	86.3	578

Table 4.4.3. Division-wise percentage distribution of knowledge about food-intake during last pregnancy of mothers of under-2 children, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	Correct knowledge	Incorrect knowledge	Correct knowledge	Incorrect knowledge	Correct knowledge	Incorrect knowledge	
Barisal	82.2	17.8	90.4	9.6	85.5	14.5	700
Chittagong	62.3	37.7	70.1	29.9	57.1	42.9	2,578
Dhaka	71.7	28.3	83.7	16.3	82.0	18.0	2,255
Khulna	74.8	25.2	87.0	13.0	71.0	29.0	729
Rajshahi	71.7	28.3	76.3	23.7	82.0	18.0	1,997
Sylhet	68.8	31.2	68.6	31.4	69.9	30.1	578

Correct knowledge is: increased intake of food during pregnancy benefits both mother and foetus

Table 4.4.4. Division-wise percentage distribution of taking rest during last pregnancy of mothers of under-2 children, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	More than before	Less than /same as before	More than before	Less than /same as before	More than before	Less than /same as before	
Barisal	48.0	52.0	49.4	50.6	50.3	49.7	700
Chittagong	39.3	60.7	44.0	56.0	42.1	57.9	2,578
Dhaka	38.2	61.8	45.2	54.8	45.2	54.8	2,255
Khulna	44.9	55.1	49.0	51.0	49.5	50.5	729
Rajshahi	41.1	58.9	46.3	53.7	48.3	51.7	1,997
Sylhet	36.3	63.7	33.9	66.1	44.5	55.5	578

Table 4.4.5. Division-wise percentage distribution of knowledge about rest during last pregnancy of mothers of under-2 children, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	Correct knowledge	Incorrect knowledge	Correct knowledge	Incorrect knowledge	Correct knowledge	Incorrect knowledge	
Barisal	66.7	33.3	77.7	22.3	76.0	24.0	700
Chittagong	47.9	52.1	55.7	44.3	47.6	52.4	2,578
Dhaka	61.5	38.5	73.8	26.2	68.6	31.4	2,255
Khulna	70.5	29.5	80.6	19.4	72.3	27.7	729
Rajshahi	45.4	54.6	62.5	37.5	58.3	41.7	1,997
Sylhet	47.6	52.4	60.3	39.7	47.9	52.1	578

Correct knowledge is: increased rest during pregnancy benefits both mother and foetus

Table 4.4.6. Percentage distribution of use and knowledge about iodized salt during last pregnancy of mothers of under-2 children, NNP Baseline Survey 2004

Indicator	NNP	BINP	Comparison	All
Type of salt taken during last pregnancy				
Iodized salt	65.3	72.6	64.4	66.8
Open salt	34.7	27.4	35.6	33.2
Total	100.0	100.0	100.0	100.0
Knowledge about use of iodized salt during pregnancy				
Harms foetus	0.8	0.5	0.7	0.7
Benefits mother	13.2	12.1	16.6	13.6
Benefits foetus	16.0	21.3	14.7	17.0
Benefits both mother and foetus	45.9	52.7	45.8	47.5
Make no difference	0.7	0.2	0.6	0.6
Others	1.3	0.6	0.7	1.0
Do not know	22.1	12.5	20.7	19.6
Total	100.0	100.0	100.0	100.0
Total (n)	5,026	2,086	1,707	8,819

BINP vs NNP and comparison, p<0.001, for intake of iodized salt
BINP vs NNP and comparison, p<0.001, for knowledge of iodized salt intake benefiting both mother and foetus

Table 4.4.7. Percentage distribution of knowledge and practice of colostrum feeding and initiation of breastfeeding by mothers of under-2 children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Breastfeeding initiation				
After birth	27.7	34.1	32.6	30.2
Within 24 hours of birth	50.9	49.9	46.9	49.9
After 24 hours of birth	21.4	16.0	20.4	19.9
Total	100.0	100.0	100.0	100.0
Fed colostrum	91.0	95.5	94.6	92.8
Time of colostrum feeding				
After birth	27.7	34.1	32.6	30.2
Within 24 hours of birth	50.9	49.9	46.9	49.9
After 24 hours of birth	21.4	16.0	20.4	19.9
Total	100.0	100.0	100.0	100.0
Perception about colostrum feeding				
Upsets baby's stomach	3.7	1.1	2.0	2.8
Benefits mother	1.3	.8	1.0	1.1
Benefits baby	87.0	93.5	91.1	89.3
Benefits both mother and foetus	0.6	0.6	0.1	0.5
Makes no difference	0.5	0.3	0.3	0.4
Others	1.0	0.6	.6	0.8
Not known	5.8	3.1	4.8	5.0
Total	100.0	100.0	100.0	100.0
Total (n)	5,026	2,086	1,707	8,819

BINP and comparison vs NNP, p<0.001, for breastfeeding initiation after birth
BINP and comparison vs NNP, p<0.001, for colostrum feeding after birth
BINP and comparison vs NNP, p<0.001, for the belief that colostrum feeding benefits child

Table 4.4.8. Percentage distribution of current breastfeeding status, exclusive breastfeeding, and knowledge about increasing breastmilk of mothers of under-2 children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Currently breastfed	96.4	96.1	95.3	96.1
Exclusively breastfed (0-6 month(s) old infants)	11.7	8.1	13.3	11.2
Total (n)	1,369	521	435	2,325
Knowledge of mothers about ways to increase breastmilk				
Did nothing to increase breastmilk	69.8	71.9	70.2	70.4
Increased intake of foods	27.0	25.5	26.5	26.5
Increased intake of fluids	0.2	0.1	0.1	0.1
Others	3.1	2.4	3.3	3.0
Total	100.0	100.0	100.0	100.0
Total (n)	5,026	2,086	1,707	8,819
Type of food intake increased to produce more breastmilk				
Rice	38.8	24.1	32.2	34.2
Dal	11.1	9.2	6.7	9.8
Fish	61.9	57.8	51.8	59.0
Meat	22.9	22.9	19.6	22.3
Eggs	23.9	25.1	25.0	24.4
Vegetables	65.2	70.8	62.1	65.8
Milk	33.6	34.8	38.0	34.7
Fruits	16.1	23.9	16.7	18.0
Others	31.8	34.5	36.7	33.4
Total (n)	1,518	586	509	2,613

NNP vs BINP, p=0.02; BINP vs comparison, p=0.01, for exclusive breastfeeding status in 0-6 month(s) old infants

Table 4.4.9. Division-wise knowledge and practice of breastfeeding of mothers of under-2 children, NNP Baseline Survey 2004

Indicator	Survey area						
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet	All
Currently breastfed	96.0	96.0	96.1	97.0	96.8	93.8	96.1
Total (n)	699	2,578	2,256	730	1,979	577	8,819
Exclusively breastfed (0-6 month(s) old infants)	1.8	15.3	2.2	7.0	18.2	3.2	11.2
Total (n)	167	751	464	215	632	95	2,324
Knowledge of mothers about ways to increase breastmilk							
Did not nothing to increase breastmilk	71.9	64.2	73.8	75.0	71.7	72.3	70.4
Increased intake of foods	26.6	32.9	23.5	18.9	25.2	24.0	26.5
Increased intake of fluids	-	0.2	0.2	0.1	0.2	-	0.1
Others	1.6	2.8	2.5	5.9	3.0	3.6	3.0
Total (n)	700	2,578	2,256	729	1,979	578	8,820
Type of food intake increased to produce more breastmilk							
Rice	9.6	15.5	7.8	5.9	9.8	2.6	10.1
Dal	1.9	2.8	1.8	0.7	6.1	0.9	2.9
Fish	14.9	24.2	13.0	12.3	16.3	18.7	17.5
Meat	7.7	9.3	3.9	4.7	7.2	4.3	6.6
Eggs	7.7	9.4	5.9	8.1	6.7	2.4	7.2
Vegetables	23.2	21.1	18.2	16.0	19.7	17.1	19.5
Milk	7.9	14.2	8.9	8.4	10.6	2.6	10.3
Fruits	7.7	6.4	4.3	4.1	5.7	2.2	5.3
Others	5.6	10.6	10.6	10.0	9.7	9.4	9.9
Total (n)	699	2,578	2,256	730	1,979	577	8,819

Table 4.4.10. Age of starting supplementary feeding in under-2 children, NNP Baseline Survey 2004

Introduction of semi-solid food (months)	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
1	2.8	2.5	2.1	2.6
2	5.5	4.4	6.2	5.4
3	10.9	12.1	13.7	11.8
4	9.3	12.6	11.6	10.6
5	26.9	29.6	28.4	27.8
6	28.6	28.6	25.8	28.1
7 or more	16.0	10.2	12.3	13.9
Total	100.0	100.0	100.0	100.0
Total (n)	4,071	1,792	1,463	7,326

Table 4.4.11. Age of introduction of any food in addition to breastmilk in under-2 children, NNP Baseline Survey 2004

Introduction of any food with breastmilk (months)	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
From day of birth	9.7	7.9	7.6	8.9
1	10.8	9.0	7.5	9.7
2	9.1	7.0	9.6	8.7
3	13.7	15.5	15.9	14.6
4	8.6	10.5	10.0	9.3
5	18.8	21.1	23.0	20.2
6	19.6	22.1	19.0	20.1
7	5.5	5.0	5.1	5.3
8	2.0	0.9	1.5	1.7
9	0.5	0.3	0.3	0.4
10	0.4	0.1	-	0.2
11	0.1	0.1	-	0.1
12	1.3	0.4	0.5	1.0
Total	100.0	100.0	100.0	100.0
Total (n)	4,437	1,896	1,556	7,889

Any food includes water, honey, crystal sugar, cow's milk, semi-solid or family food

Table 4.4.12. Percentage distribution of knowledge of mothers of under-2 children about supplementary feeding before and after 6 months of age of children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
If started before 6 months of age				
Bad for child	86.9	94.6	93.6	90.0
Makes no difference	1.4	0.4	0.7	1.0
Others	6.0	2.7	2.5	4.6
Not known	5.7	2.3	3.2	4.4
Total	100.0	100.0	100.0	100.0
If started after 6 months of age				
Bad for child	93.1	97.6	97.2	94.9
Makes no difference	1.1	0.1	0.4	0.7
Others	1.0	0.2	0.2	0.6
Not known	4.9	2.1	2.2	3.7
Total	100.0	100.0	100.0	100.0
Total (n)	4,823	2,041	1,645	8,509

BINP and comparison vs NNP, p<0.001, bad for child if supplementary feeding is started before 6 months of age
BINP and comparison vs NNP, p<0.001, bad for child if supplementary feeding is started after 6 months of age

Table 4.4.13 Knowledge of mothers about causes of diarrhoea in under-2 children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Knowledge about causes of diarrhoea				
Dirty or contaminated water	20.6	19.0	14.7	19.1
Dirty or contaminated food	85.2	90.9	87.4	87.0
Not washing hands before taking meals	23.1	29.9	24.2	24.9
Not washing hands with soap after defecation	10.0	11.7	8.9	10.2
Not washing hands with ash/mud after defecation	5.7	6.2	4.5	5.6
Not using sanitary latrine	8.2	9.5	10.1	8.8
Not continuing breastfeeding up to 2 years of age	0.1	-	-	0.1
Not giving vaccines	0.1	0.1	-	0.1
Others	34.5	38.0	33.1	35.0
Do not know	7.0	4.2	6.5	6.3
Total (n)	5,026	2,086	1,707	8,818

NNP and BINP vs comparison, p<0.001, for dirty or contaminated water
NNP vs BINP, p<0.001; NNP vs comparison, p=0.03; BINP vs comparison, p<0.001, for dirty or contaminated food
BINP vs NNP and comparison, p<0.001, for not washing hands before taking meal
NNP vs BINP, p=0.03; BINP vs comparison, p<0.0015, for not washing hand with soap after defecation
BINP vs comparison, p= 0.02, for not washing hand with ash/mud after defecation

Table 4.4.14. Knowledge of mothers about prevention of diarrhoea in under-2 children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Knowledge about prevention of diarrhoea				
Intake of safe food	70.8	84.5	81.4	76.1
Drinking safe water	32.0	21.9	19.2	27.1
Washing hands before taking meal	22.8	29.5	23.9	24.6
Washing hands with soap after defecation	10.3	11.5	8.9	10.3
Washing hands with ash/mud after defecation	4.7	5.8	5.2	5.1
Using sanitary latrine	7.5	9.3	8.7	8.1
Continuing breastfeeding up to 2 years of age	0.1	.0	0.1	0.1
Proper immunization	0.1	.0	.0	0.1
Others	32.1	35.7	29.6	32.4
Do not know	9.5	5.2	7.8	8.1
Total (n)	5,026	2,086	1,707	8,818

NNP vs BINP, p<0.001; NNP vs comparison, p<0.001; BINP vs comparison, p=0.01, for intake of safe food
NNP vs BINP, p<0.001; NNP vs comparison, p<0.001; BINP vs comparison, p=0.04, for drinking safe water
BINP vs NNP and comparison, p<0.001, for washing hands before taking meal
BINP vs comparison, p=0.01, for washing hands with soap after defecation

Table 4.4.15. Knowledge of mothers about home care of under-2 children with diarrhoea, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Care during diarrhoea				
Feed ORS	99.8	99.8	99.6	99.7
Feed home-made fluid	91.0	96.4	95.1	93.1
Continue normal diet	70.0	77.9	81.6	74.1
Continue breastmilk	89.8	94.5	94.7	91.9
Others	36.1	55.6	50.3	43.5
Total (n)	5,026	2,086	1,707	8,818

Table 4.4.16. Knowledge of mothers about signs, symptoms, and prevention of pneumonia in under-2 children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Know about pneumonia	91.7	95.5	95.9	93.4
Total (n)	5,026	2,086	1,707	8,818
Knowledge about signs and symptoms of pneumonia				
Cough and cold	86.3	88.5	88.5	87.3
Fever	46.5	47.5	42.6	46.0
Rapid breathing	54.7	61.4	53.1	56.0
Chest indrawing	27.3	30.2	25.8	27.7
Inability to suck breastmilk	10.1	9.6	9.9	10.0
Others	11.8	10.8	15.0	12.2
Not known	6.1	5.8	4.5	5.7
Knowledge about prevention of pneumonia				
Keeping baby warm	89.8	93.1	93.4	91.3
Exclusive breastfeeding	0.4	0.2	0.2	0.3
Continue breastfeeding up to 2 years	0.2	0.1	0.1	0.1
Proper immunization	1.0	0.6	1.4	1.0
Others	8.5	5.8	6.8	7.5
Do not Know	9.5	6.4	5.7	8.0
Total (n)	4,609	1,992	1,638	8,239

BINP and comparison vs NNP, p<0.001; know about pneumonia
BINP vs NNP and comparison, p<0.001, for rapid breathing
BINP vs NNP and comparison, p<0.001, for chest in-drawing

Table 4.4.17. Knowledge of mothers of under-2 children about cause and prevention of goitre, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Knowledge about goitre	69.2	79.2	73.3	72.4
Total (n)	5,026	2,086	1,707	8,818
Knowledge about cause of goitre				
Not eating enough food	0.7	0.7	0.6	0.7
Not eating enough fruits	2.3	2.3	2.7	2.4
Not eating enough vegetables	4.6	6.5	4.6	5.0
Not taking iodized salt	21.8	33.8	23.8	25.0
Not eating iodine-rich foods	2.7	3.4	2.3	2.8
Others	6.6	5.0	3.5	5.6
Total (n)	3,479	1,653	1,252	6,384
Knowledge about prevention of goitre				
Eating enough rice	0.5	0.7	0.2	0.5
Eating enough fruits	3.7	4.1	4.2	3.9
Eating enough vegetables	8.0	9.6	7.2	8.8
Taking iodized salt	32.1	42.8	32.3	34.9
Eating iodine-rich foods	3.6	4.6	3.4	3.8
Others	5.9	4.1	4.0	5.1
Do not know	60.1	50.7	61.7	58.0
Total (n)	3,479	1,653	1,252	6,384

BINP vs NNP and comparison, p<0.001, for knowledge about goitre
BINP vs NNP and comparison, p<0.001, for not eating iodized salt as a cause of goitre
BINP vs NNP and comparison, p<0.001, for taking iodized salt for prevention of goitre
BINP vs NNP and comparison, p<0.001, for no knowledge about prevention of goitre

4.5 NUTRITIONAL STATUS OF UNDER-2 CHILDREN AND THEIR MOTHERS

Anthropometry was performed on 8,819 children having a median age of 11 months (interquartile range 6-17 months) (Table 4.5.1). The mean length-for-age z-score was -1.5, corresponding to 94% of the National Center for Health Statistics (NCHS) median. The mean weight-for-age z-score of the under-2 children was -1.6 (82% of median), while the mean weight-for-length z-score was -0.8 (93% of median). Group-wise, the under-2 children surveyed had mild stunting, and mild underweight but were not wasted. The mean anthropometric values did not differ among the BINP, NNP and comparison areas. The difference between means was also not observed when the children were disaggregated by sex (Tables 4.5.2-3).

Significantly more (34%) under-2 children in the BINP and comparison areas were free of stunting (LAZ -1 and above) compared to 31% in the NNP areas (Table 4.5.4). Similarly, 31% of children in the BINP and comparison areas were not underweight (WAZ -1 and above) compared to 27% in the NNP areas. In total, 53% of children were not wasted (WLZ -1 and above), and there was no difference among the three groups with regard to the proportion of children without wasting.

A BMI of <18.5 in adults indicates chronic energy deficit (CED). CED in mothers is not only directly linked to susceptibility to infections and reduced productivity, it is also associated with decreased potentials for childcare. Of 8,795 mothers of under-2 children interviewed, more than one-third had CED (Table 4.5.8). The prevalence of CED was highest in the NNP areas (39%) compared to 38% in the BINP and 35% in the comparison areas (NNP vs comparison areas, $p<0.05$). Overall, 4.3% of mothers suffered from severe malnutrition, defined as a BMI of <16. These mothers actually fulfilled the criteria for admission to a therapeutic feeding centre for treatment of acute malnutrition (World Health Organization. The management of nutrition in major emergencies. Geneva: World Health Organization, 2000). Secondary malnutrition is a major cause of severe malnutrition in adults in a non-famine situation. The proportions of mothers with severe malnutrition were, however, comparable among the BINP, NNP and comparison areas.

Table 4.5.1. Distribution of age, height, weight, and anthropometric indices of under-2 children, NNP Baseline Survey 2004

Indicator	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile
Age (months)	11.6	6.3	11.0	6.0	17.0	11.7	6.2	11.0	6.8	17.0	11.9	6.2	12.0	6.0	17.0	11.7	6.3	11.0	6.0	17.0
Height (cm)	68.9	7.4	69.5	63.5	74.5	69.2	7.1	69.5	64.1	74.5	69.4	7.1	70.0	64.3	74.7	69.1	7.2	69.6	63.9	74.6
Weight (kg)	7.4	1.7	7.5	6.3	8.5	7.5	1.6	7.5	6.5	8.5	7.5	1.6	7.5	6.5	8.5	7.4	1.6	7.5	6.4	8.5
MUAC (mm)	135.9	11.4	136.0	130.0	142.0	135.8	11.7	136.0	130.0	142.0	135.6	12.1	136.0	128.0	142.0	135.8	11.6	136.0	130.0	142.0
LAZ- score	-1.6	1.2	-1.6	-2.4	-0.8	-1.5	1.2	-1.5	-2.3	-0.7	-1.5	1.2	-1.5	-2.3	-0.7	-1.5	1.2	-1.5	-2.4	-0.7
WAZ-score	-1.7	1.2	-1.7	-2.5	-0.9	-1.6	1.2	-1.7	-2.4	-0.8	-1.6	1.2	-1.7	-2.5	-0.8	-1.6	1.2	-1.7	-2.5	-0.8
WLZ-score	-0.8	1.1	-0.9	-1.6	-0.1	-0.8	1.1	-0.9	-1.6	-0.1	-0.8	1.1	-0.9	-1.6	-0.1	-0.8	1.1	-0.9	-1.6	-0.1
LA% of median	94.0	4.6	93.9	91.0	97.0	94.2	4.6	94.2	91.3	97.2	94.3	4.6	94.4	91.3	97.3	94.1	4.6	94.1	91.1	97.1
WA% of median	81.9	12.9	80.6	72.8	89.3	82.7	13.4	81.0	73.9	90.9	82.7	13.1	81.1	73.4	90.8	82.2	13.1	80.8	73.2	90.2
WL% of median	92.8	10.7	91.5	85.8	98.8	93.1	10.4	92.1	85.8	98.8	92.8	10.1	91.4	86.0	99.1	92.8	10.5	91.6	85.8	98.8
Total (n)	5,026					2,086					1,707					8,819				

p=NS for each anthropometric index by area; LAZ=Length-for-age z-score; WAZ=Weight-for-age z-score; WLZ=Weight-for-length z-score; LA=Length-for-age; WA=Weight-for-age; WL=Weight-for-length
MUAC=Mid-upper arm circumference; NS=Not significant

Table 4.5.2. Distribution of age, height, weight, and anthropometric indices of under-2 boys, NNP Baseline Survey 2004

Indicator	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile
Age (months)	11.5	6.4	11.0	6.0	17.0	11.7	6.2	11.0	6.0	17.0	11.8	6.2	11.0	6.0	17.0	11.6	6.3	11.0	6.0	17.0
Height (cm)	69.5	7.5	70.3	64.1	75.3	70.0	7.3	70.3	65.2	75.5	70.2	7.0	70.6	65.5	75.6	69.7	7.4	70.4	64.5	75.4
Weight (kg)	7.6	1.7	7.7	6.6	8.8	7.8	1.6	7.8	6.7	8.9	7.8	1.6	7.9	6.7	8.9	7.7	1.7	7.8	6.6	8.8
MUAC (mm)	137.9	11.4	138.0	130.0	144.0	137.5	11.8	138.0	130.0	144.0	138.1	13.2	138.0	130.0	144.0	137.8	11.8	138.0	130.0	144.0
LAZ-score	-1.6	1.2	-1.6	-2.4	-0.8	-1.5	1.2	-1.5	-2.3	-0.7	-1.5	1.2	-1.5	-2.3	-0.7	-1.6	1.2	-1.6	-2.4	-0.8
WAZ-score	-1.6	1.2	-1.7	-2.5	-0.9	-1.6	1.2	-1.7	-2.4	-0.8	-1.6	1.2	-1.7	-2.5	-0.8	-1.6	1.2	-1.7	-2.5	-0.8
WLZ-score	-0.8	1.1	-0.9	-1.5	-0.1	-0.8	1.1	-0.9	-1.6	-0.2	-0.9	1.0	-1.0	-1.6	-0.2	-0.8	1.1	-0.9	-1.6	-0.1
LA% of median	94.0	4.5	93.9	91.0	96.8	94.3	4.6	94.4	91.4	97.2	94.3	4.4	94.4	91.3	97.4	94.1	4.5	94.1	91.2	97.0
WA% of median	82.1	12.4	80.9	73.2	89.9	83.0	13.1	81.1	74.2	91.1	82.9	12.5	81.9	73.9	90.8	82.5	12.6	81.1	73.6	90.3
WL% of median	93.2	10.6	92.0	86.5	99.1	93.3	10.4	92.3	86.1	98.6	93.0	9.6	91.5	86.2	98.5	93.2	10.4	92.0	86.4	98.7
Total	2,542					1,049					838					4,429				

p=NS for each of the anthropometric indices by area; NS=Not significant; LAZ= Length-for-age z-score; WAZ= Weight-for-age z-score;
WLZ= Weight-for-length z-score; LA=length-for-age; WA=weight-for-age; WL=weight-for-length

Table 4.5.3. Distribution of age, height, weight, and anthropometric indices of under-two girls, NNP Baseline Survey 2004

Indicator	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile
Age (months)	11.7	6.2	11.0	6.0	17.0	11.7	6.1	11.0	7.0	17.0	11.9	6.2	12.0	6.0	17.0	11.8	6.2	12.0	6.0	17.0
Height (cm)	68.3	7.2	69.0	63.0	73.7	68.5	6.8	68.7	63.5	73.5	68.7	7.1	69.4	63.4	73.8	68.4	7.1	69.1	63.2	73.7
Weight (kg)	7.1	1.6	7.2	6.1	8.2	7.2	1.5	7.2	6.3	8.2	7.2	1.5	7.2	6.3	8.2	7.2	1.5	7.2	6.2	8.2
MUAC (mm)	133.9	11.0	134.0	126.0	141.3	134.0	11.3	134.0	128.0	140.0	133.4	10.7	134.0	128.0	140.0	133.8	11.0	134.0	126.0	140.0
LAZ-score	-1.5	1.2	-1.5	-2.4	-0.7	-1.5	1.2	-1.5	-2.3	-0.7	-1.5	1.3	-1.5	-2.3	-0.7	-1.5	1.2	-1.5	-2.3	-0.7
WAZ-score	-1.7	1.2	-1.8	-2.5	-0.9	-1.6	1.2	-1.7	-2.4	-0.8	-1.6	1.2	-1.7	-2.5	-0.8	-1.6	1.2	-1.7	-2.5	-0.8
WLZ-score	-0.8	1.1	-1.0	-1.6	-0.1	-0.8	1.1	-0.9	-1.6	-0.1	-0.8	1.1	-0.9	-1.5	-0.1	-0.8	1.1	-0.9	-1.6	-0.1
LA% of median	94.0	4.7	94.0	90.9	97.1	94.2	4.7	94.1	91.2	97.2	94.3	4.8	94.3	91.3	97.1	94.1	4.7	94.1	91.0	97.1
WA% of median	81.6	13.5	80.0	72.5	89.0	82.4	13.7	80.9	73.3	90.8	82.5	13.7	80.7	72.8	90.8	82.0	13.6	80.4	72.7	89.9
WL% of median	92.3	10.7	90.8	85.1	98.6	92.8	10.5	91.9	85.5	99.3	92.6	10.6	91.2	85.7	99.4	92.5	10.6	91.0	85.4	99.0
Total	2,484					1,037					869					4,390				

p=NS for each of the anthropometric indices by area; LAZ= Length-for-age z-score; WAZ= Weight-for-age z-score;
WLZ= Weight-for-length z-score; LA=length-for-age; WA=weight-for-age; WL=weight-for-length

Table 4.5.4. Frequency distribution of malnutrition based on z-score among under-2 children, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	No.	%	No.	%	No.	%	No.	%
LAZ								
<-3.00 SD	579	11.5	216	10.4	193	11.3	988	11.2
-3.000 SD to -2.01 SD	1,237	24.6	490	23.5	396	23.2	2,124	24.1
-2.00 SD to -1.01 SD	1,627	32.4	665	31.9	529	31	2,821	32
-1.00 SD and above	1,583	31.5	715	34.3	589	34.5	2,886	32.7
WAZ								
<-3.00 SD	589	11.7	220	10.5	194	11.4	1,003	11.4
-3.000 SD to -2.01 SD	1,454	28.9	631	30.2	499	29.3	2,584	29.3
-2.00 SD to -1.01 SD	1,602	31.9	597	28.6	487	28.5	2,687	30.5
-1.00 SD and above	1,381	27.5	638	30.6	526	30.8	2,545	28.9
WLZ								
<-3.00 SD	86	1.7	34	1.6	19	1.1	140	1.6
-3.000 SD to -2.01 SD	595	11.8	241	11.6	207	12.2	1,044	11.8
-2.00 SD to -1.01 SD	1,678	33.4	666	31.9	576	33.7	2,920	33.1
-1.00 SD and above	2,666	53	1145	54.9	905	53	4,716	53.5
Total	5,026		2,086		1,707		8,819	

NNP vs BINP, p=0.02; NNP vs comparison, p= 0.02, for LAZ -1.00 SD and above
NNP vs BINP and comparison, p<0.001, for WAZ -1.00 SD and above

Table 4.5.5. Frequency distribution of malnutrition based on z-score among under-2 boys, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	No.	%	No.	%	No.	%	No.	%
LAZ								
<-3.00 SD	285	11.2	114	10.9	93	11.1	492	11.1
-3.000 SD to -2.01 SD	639	25.1	251	23.9	197	23.5	1,087	24.5
-2.00 SD to -1.01 SD	862	33.9	334	31.8	256	30.5	1,452	32.8
-1.00 SD and above	756	29.7	350	33.4	292	34.9	1,398	31.6
WAZ								
<-3.00 SD	298	11.7	114	10.9	91	10.8	503	11.4
-3.000 SD to -2.01 SD	705	27.8	306	29.2	253	30.2	1,265	28.6
-2.00 SD to -1.01 SD	812	32	304	29	234	27.9	1,350	30.5
-1.00 SD and above	726	28.5	325	31	260	31	1,311	29.6
WLZ								
<-3.00 SD	54	2.1	22	2.1	8	1	84	1.9
-3.000 SD to -2.01 SD	326	12.8	124	11.8	110	13.1	560	12.7
-2.00 SD to -1.01 SD	779	30.6	326	31.1	281	33.5	1,386	31.3
-1.00 SD and above	1,382	54.4	577	55	440	52.4	2,399	54.2
Total	2,542		1,049		838		4,429	

NNP vs comparison, p= 0.02, for WHZ < -3.00 SD
NNP vs BINP, p=0.03; NNP vs comparison, p<0.001, for HAZ -1.00 SD and above

Table 4.5.6. Frequency distribution of malnutrition based on z-score among under-2 girls, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	No.	%	No.	%	No.	%	No.	%
LAZ								
<-3.00 SD	294	11.9	102	9.8	100	11.5	496	11.3
-3.000 SD to -2.01 SD	598	24.1	239	23	200	23	1,037	23.6
-2.00 SD to -1.01 SD	765	30.8	331	31.9	273	31.4	1,369	31.2
-1.00 SD and above	827	33.3	365	35.2	297	34.1	1,488	33.9
WAZ								
<-3.00 SD	291	11.7	106	10.2	103	11.9	500	11.4
-3.000 SD to -2.01 SD	748	30.1	325	31.3	246	28.3	1,319	30
-2.00 SD to -1.01 SD	790	31.8	293	28.3	253	29.2	1,336	30.4
-1.00 SD and above	655	26.4	313	30.2	266	30.7	1,235	28.1
WLZ								
<-3.00 SD	32	1.3	12	1.2	11	1.3	55	1.3
-3.000 SD to -2.01 SD	269	10.8	117	11.3	98	11.2	483	11
-2.00 SD to -1.01 SD	899	36.2	340	32.8	295	34	1,534	34.9
-1.00 SD and above	1,284	51.7	568	54.8	465	53.6	2,317	52.8
Total	2,484		1,037		869		4,390	

NNP vs BINP, p=0.02; NNP vs comparison, p=0.01, for WAZ -1.00 SD and above

Fig 4.5.1: Percent distribution of stunting, underweight and wasting of 0-23 months old children by division, NNP Baseline survey 2004

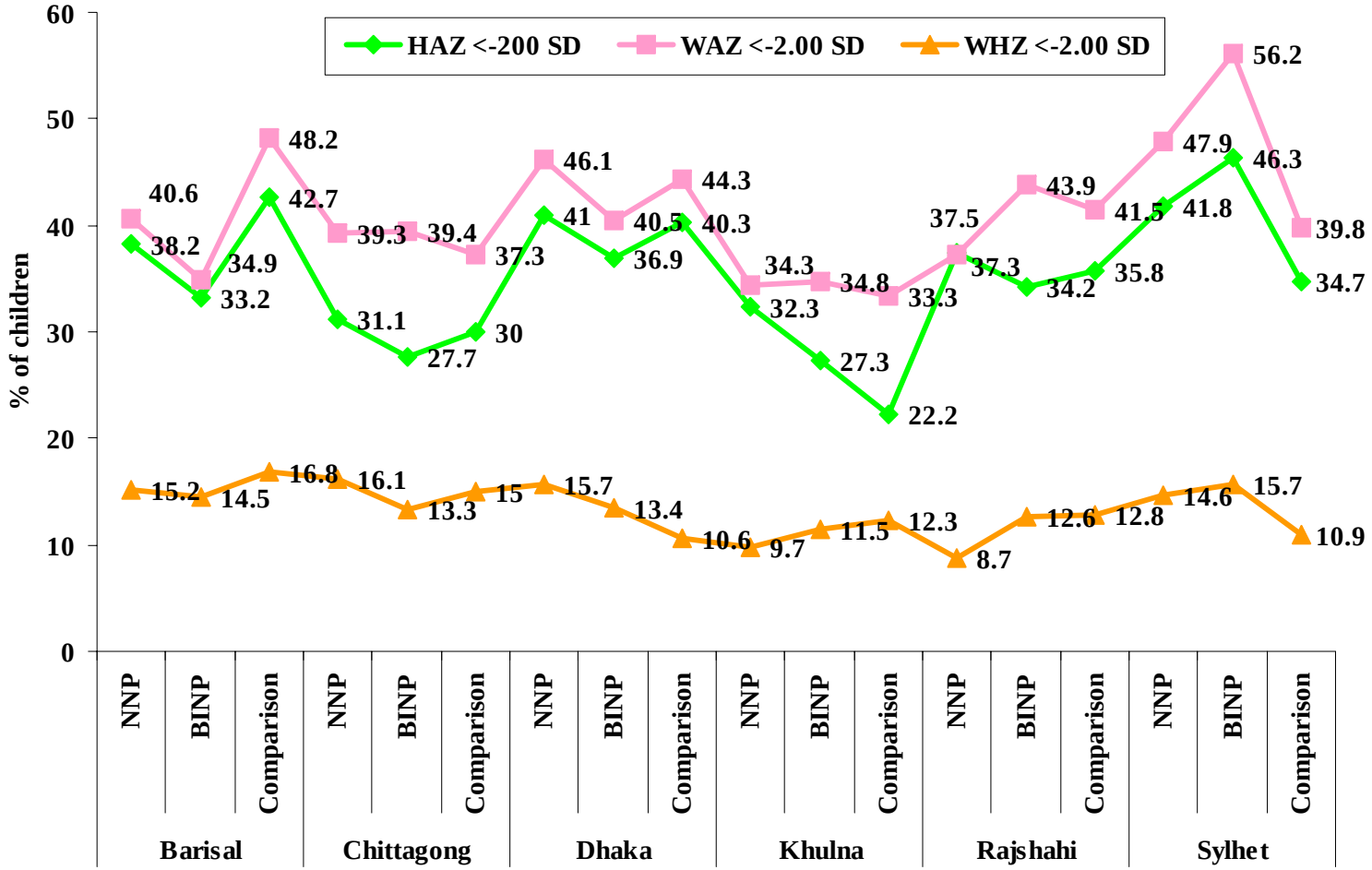


Fig 4.5.2: Comparison of median body weight of under two boys with NCHS median

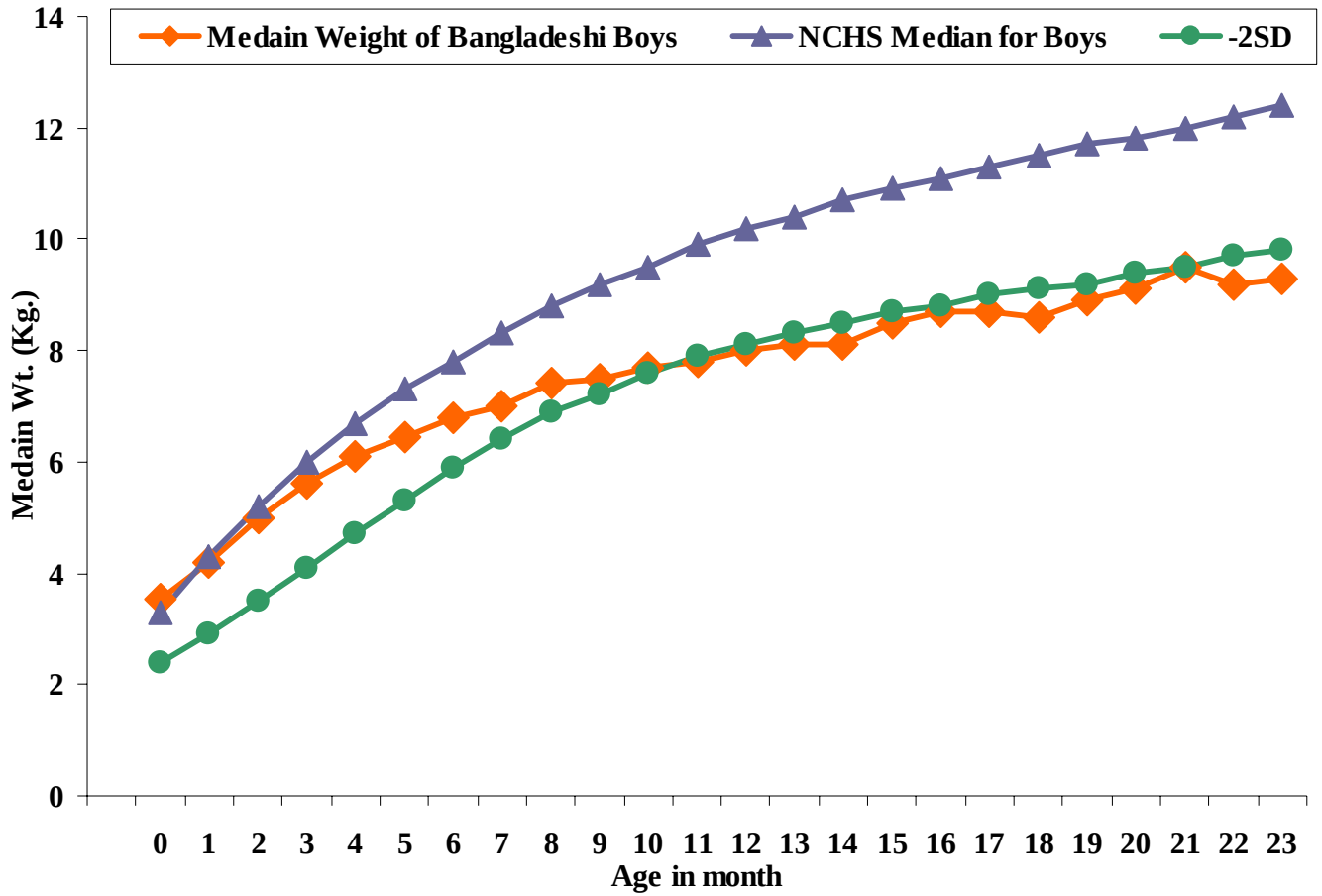


Fig 4.5.3: Comparison of median height of under two boys with NCHS median

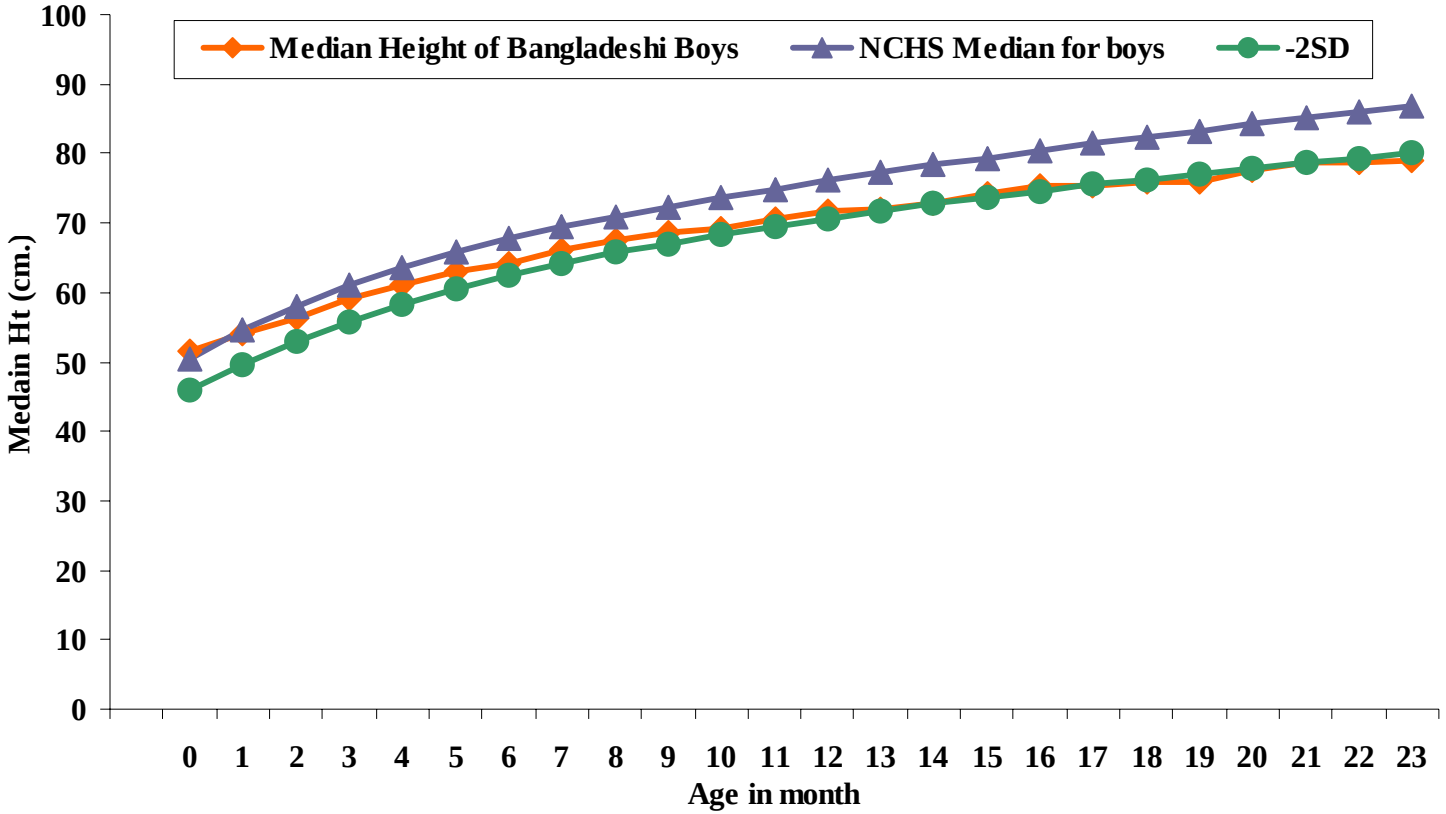


Fig 4.5.4: Comparison of median body weight of under two girls with NCHS median

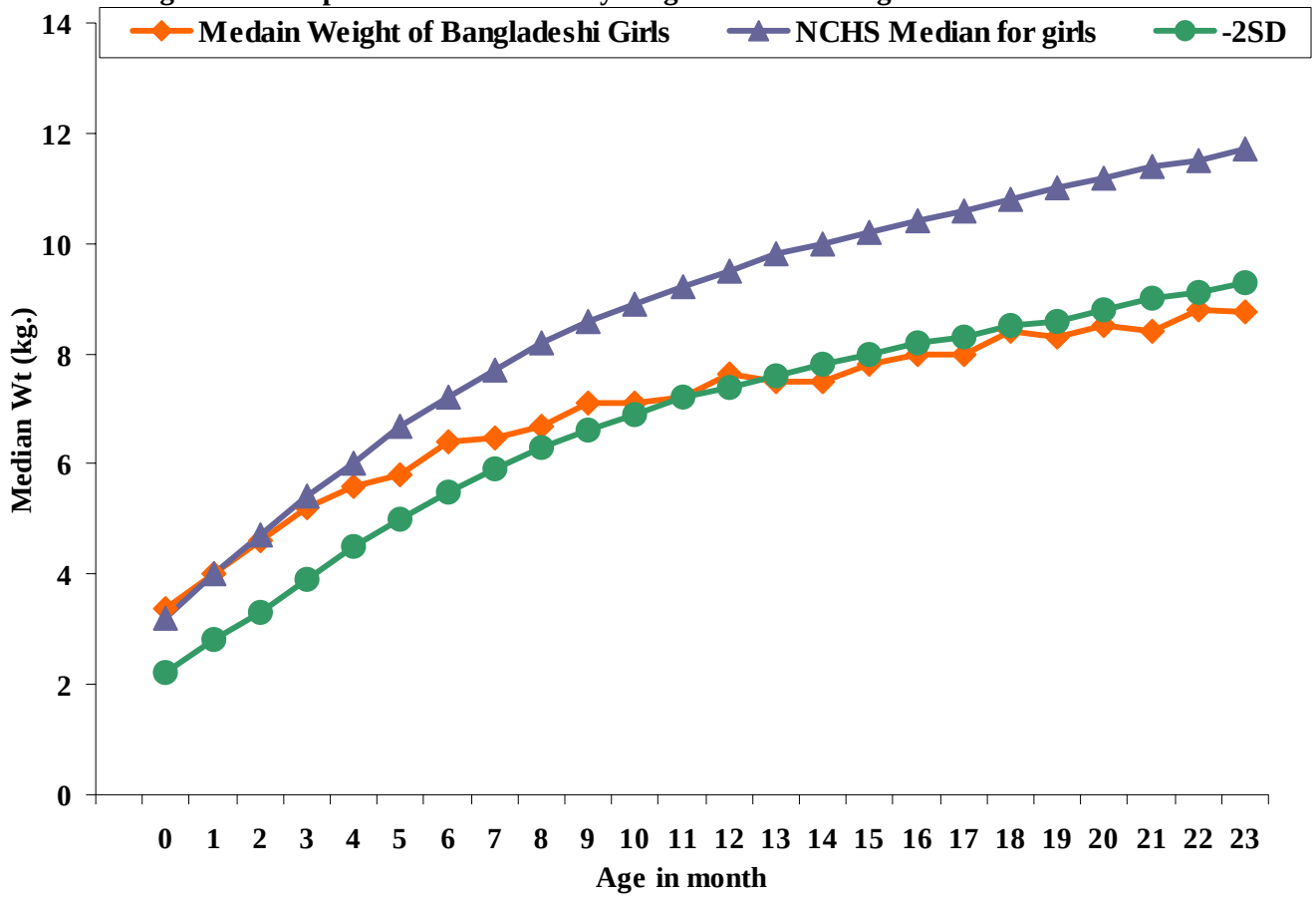


Fig 4.5.5: Comparison of median height of under two girls with NCHS median

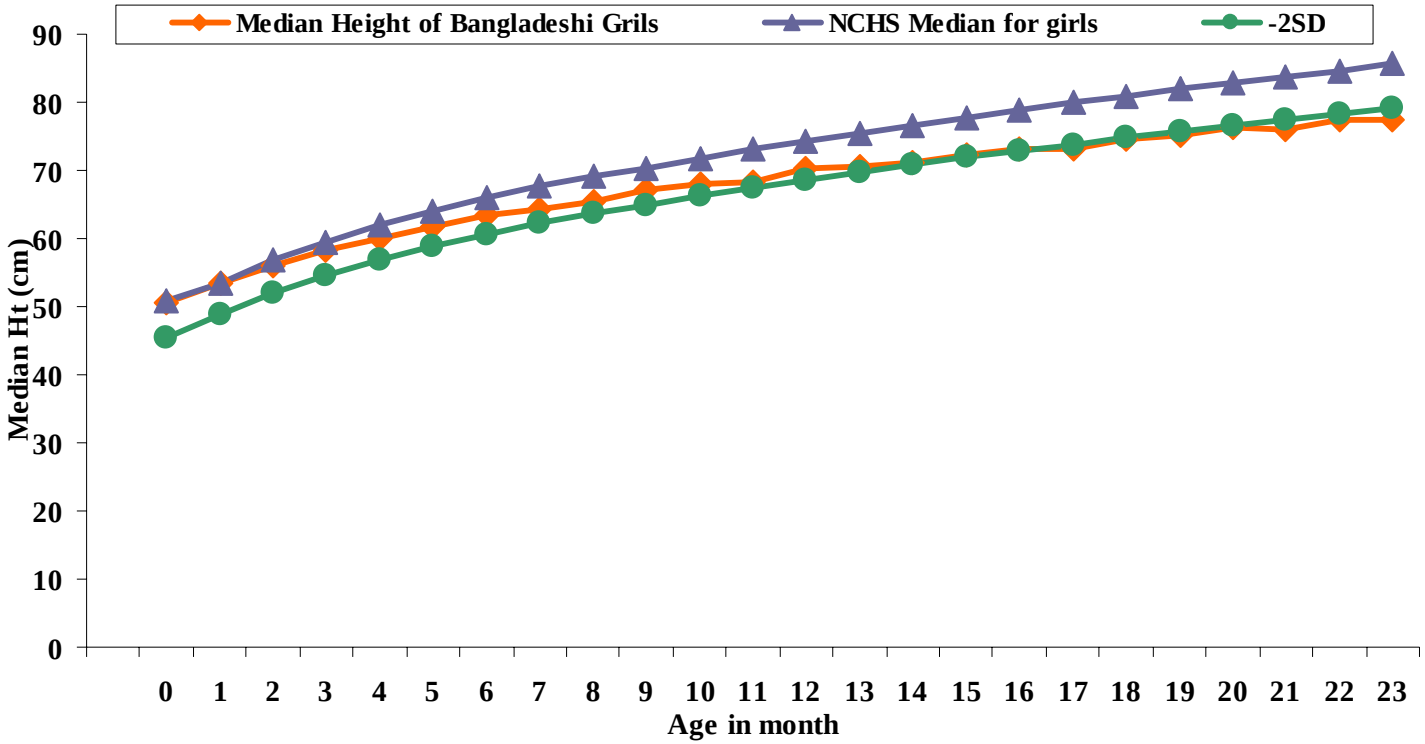


Table 4.5.7. Distribution of age, height, weight, MUAC, and BMI of mothers of under-2 children, NNP Baseline Survey 2004

Indicator	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile
Age (years)	24.0	6.1	23.0	19.0	28.0	23.7	5.9	23.0	19.0	27.0	23.8	6.0	23.0	19.0	28.0	23.9	6.0	23.0	19.0	27.0
Height (cm)	151.0	33.2	150.0	146.4	153.3	149.6	5.7	149.7	145.9	153.3	151.5	34.3	150.4	146.7	153.7	150.8	29.4	150.0	146.4	153.4
Weight (kg)	43.6	6.4	42.7	39.3	46.7	43.8	6.8	42.8	39.2	47.1	44.6	7.1	43.5	39.9	48.3	43.8	6.7	42.9	39.4	47.1
MUAC (mm)	233.7	22.6	232.0	219.7	246.0	233.7	25.4	230.0	218.0	246.0	235.4	23.2	232.0	220.0	250.0	234.0	23.4	232.0	218.0	246.0
BMI	19.4	2.7	19.0	17.8	20.5	19.6	3.0	19.1	17.7	20.8	19.7	3.0	19.3	17.9	21.1	19.5	2.8	19.1	17.8	20.7
Total	5,026					2,086					1,707					8,819				

One-way analysis of variance, $p<0.05$
Weight: Comparison vs NNP,and BINP
Height: Comparison vs BINP
BMI: Comparison vs NNP

Table 4.5.8. Percentage distribution of BMI classification of mothers of under-2 old children, NNP Baseline Survey 2004

BMI clasification-1	Survey area							
	NNP		BINP		Comparison		All	
	No.	%	No.	%	No.	%	No.	%
≤15.99	210	4.2	95	4.6	75	4.4	380	4.3
16.00-16.99	444	8.9	177	8.5	150	8.8	771	8.8
17.00-18.49	1279	25.6	515	24.8	374	22.1	2168	24.7
18.50-19.99	1421	28.4	549	26.5	453	26.7	2423	27.6
20.00 +	1648	32.9	738	35.6	642	37.9	3028	34.5
BMI clasification-2								
≤18.49	1940	38.7	792	38.1	602	35.4	3335	37.9
18.50 +	3073	61.3	1289	61.9	1099	64.6	5460	62.1
Total	5,013		2,081		1,701		8,795	

NNP vs comparison, p<0.05, for mothers with BMI <18.50

4.6 MICRONUTRIENT STATUS OF UNDER-2 CHILDREN

The mean haemoglobin level among 394 under-2 children was 10.9 g/dL (SD 1.2) (Table 4.6.1), the cut-off level indicative of anaemia being 11 g/dL (World Health Organization. The management of nutrition in major emergencies. Geneva: World Health Organization, 2000). The mean haemoglobin levels of under-2 children in the three areas—BINP, NNP, and comparison—were comparable. Based on the anaemia cut-off of 11 g/dL, 50% of children were anaemic (Table 4.6.2). 58% of children in the comparison area had anaemia. These data indicate that the public-health significance of anaemia among under-2 children is high (defined as a prevalence of 40% or more).

The median iodine content of table salt consumed in the households of under-2 children was 19.7 ppm with an interquartile range of 9.6-34-5 (Table 4.6.3). In total, 39.5% of households were consuming table salt containing an inadequate concentration of iodine (<15 ppm) (Table 4.6.4). This is a proxy indicator of poor iodine nutriture among children covered by the survey. These results also call for more efforts in making iodization of table salt and consuming iodized salt routinely available in the country.

Table 4.6.1 Haemoglobin level of under-2 children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Mean (g/dL)	11.06	10.96	10.57	10.95
Standard deviation	1.21	1.29	1.32	1.26
Median	11.1	10.9	10.75	11.00
25^{th}, 75^{th} percentiles	10.2/11.9	10.2/11.7	9.52/11.37	10.20/11.72
Total (n)	167	179	48	394

Table 4.6.2 Anaemia among under-2 children, NNP Baseline Survey 2004

Status of anaemia	Survey area							
	NNP (%)		BINP (%)		Comparison (%)		All (%)	
Anaemia (Hb <11 g/dL)	43.1		52.5		58.3		49.2	
No anemia (Hb ≥11 g/dL)	56.9		47.5		41.7		55.8	
Total (n)	167		179		48		394	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
Anaemia (Hb <11 g/dL)	46.2	41.5	52.2	53.0	64.3	47.4	51.5	47.3
No anaemia (Hb ≥11 g/dL)	53.8	58.5	47.8	47.0	35.7	52.6	48.5	52.7
Total (n)	78	82	90	83	28	19	196	184

Table 4.6.3. Table salt iodine levels in households of under-2 children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Mean (ppm)	25.07	27.02	25.70	26.10
Standard deviation	23.46	32.48	21.92	27.88
Median	20.30	18.20	24.60	19.75
25,75th percentiles	9.60/31.75	9.60/35.20	6.40/39.50	9.60/34.45
Total (n)	104	137	45	286

ppm=parts per million

Table 4.6.4. Percentage distribution of households of under-2 children consuming table salt containing adequate iodine (15 ppm or more), NNP Baseline Survey 2004

Household salt iodine level	Survey area			
	NNP	BINP	Comparison	All
<15 ppm	39.4	38.0	44.4	39.5
≥15 ppm	60.6	62.0	55.6	60.5
Total (n)	104	137	45	286

Table 4.6.5. Prevalence of stool parasites in under-5 children by survey area, NNP Baseline Survey 2004

Parasite	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Nil	75.8	75.5	81.6	76.6
Ascaris lumbricoides	10.1	8.8	6.1	9.1
Trichuris trichiura	1.0	0.7	-	0.7
Hookworm	-	-	-	-
Strongyloides stercoralis	-	0.7	-	0.3
Entamoeba histolytica	2.0	5.4	2.0	3.7
Giardia lamblia	7.1	5.4	2.0	5.4
Blastocystis hominis	3.0	0.7	4.1	2.0
Lodamoeba butschlii	-	0.7	-	0.3
Entamoeba coli	-	1.4	2.0	1.0
Endolimax nana	1.0	0.7	2.0	1.0
Total (n)	99	147	49	295

4.7 ASSOCIATION OF NUTRITIONAL STATUS OF UNDER-2 CHILDREN WITH DIFFERENT VARIABLES

Results of univariate analyses of the association of nutritional status of under-2 children with different variables, including residence (administrative division), age, sex, maternal education, food insecurity, and household wealth index are shown in Tables 4.7.1-3. The anthropometric cut-offs used in the analyses were <-3 SD, <-2 SD (which also includes children <-3 SD) and >=-2 SD for LA, WA, and WL. Proportions of children falling in each anthropometric category were comparable among the three areas of the survey and among the divisions. The majority of children who were severely malnourished by LA, WA, or WL were in the post-weaning age-group of 12-23 months. Stunting and underweight showed a linear trend with increasing age, while wasting was more common after 12 months of age. The proportions of boys and girls falling in each anthropometric category were also comparable among the areas of the survey and among the divisions. Gender bias was not observed for any of the anthropometric categories. The prevalence of severe malnutrition was associated with decreasing maternal education. The association of maternal education and children in the best anthropometric category (≥-2 SD), although present, was less prominent. It can be speculated that mothers with no education and having children in the best anthropometric category were positively deviant in childcare and feeding practices. Similar speculations can be made for food-insecured and poor households with nutritionally better-off children. The prevalence of severe stunting and severe underweight was linearly related with decreasing household index.

Tables 4.7.4-6 summarize the association of nutritional status of under-2 children with selected healthcare practices. Three or more visits of mothers for ANC were associated with severe stunting or underweight of children. Taking more rest, food, and regular iron supplementation during pregnancy and mothers receiving high-dose vitamin A capsule within 6 weeks of delivery were associated with less prevalence of severe stunting. Severe underweight was less prevalent among children of mothers who regularly took iron tablets during the last pregnancy.

Table 4.7.1. Association of stunting of under-2 children with socioeconomic characteristics, NNP Baseline Survey 2004

Background variable	Percentage distribution of under-2 children by z-score									Total (n)
	LAZ <-3 SD			LAZ <-2 SD			LAZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	
Residence										
Barisal	14.5	11.4	18.6	38.3	33.7	42.5	61.7	66.3	57.5	700
Chittagong	11.1	8.3	10.0	31.1	27.7	30.0	68.9	72.3	70.0	2,577
Dhaka	12.1	9.8	10.5	41.0	36.9	40.4	59.0	63.1	59.6	2,257
Khulna	8.8	7.5	5.9	32.4	27.3	22.0	67.6	72.7	78.0	729
Rajshahi	10.5	12.0	11.9	37.4	34.1	35.7	62.6	65.9	64.3	1,980
Sylhet	16.1	18.2	13.7	41.8	46.3	21.5	58.2	53.7	65.1	578
Age of child (months)										
<6	3.4	0.7	2.3	13.4	8.0	8.1	86.6	92.0	91.9	1,850
6-11	6.9	6.3	5.4	28.4	25.1	23.7	71.6	74.9	76.3	2,592
12-23	17.9	16.8	18.1	50.7	49.8	50.9	49.3	50.2	49.1	4,377
Sex of child										
Male	11.2	10.9	11.1	36.3	34.8	34.6	63.7	65.2	65.4	4,429
Female	11.8	9.8	11.5	35.9	32.9	34.4	64.1	67.1	65.6	4,390
Maternal education										
None	10.6	10.3	14.4	38	33.9	39.4	62.0	66.1	60.6	3,019
Primary incomplete	9.6	9.0	10.2	35.4	32.0	36.3	64.6	68	63.7	1,636
Primary complete	8.1	6.3	9.7	28.9	26.0	29.1	71.1	74.0	70.9	1,254
Secondary +	4.0	6.4	6.3	14.2	20.6	16.5	85.8	79.4	83.5	2,310
Food insecurity at household										
None	13.9	12.6	14.0	41.7	42.9	43.3	58.3	57.1	56.7	6,318
<4 months	12.9	17.1	15.8	42.1	44.5	44.4	57.9	55.5	55.6	978
4-12 months	18.8	16.1	17.1	55.1	41.4	53.3	44.9	58.6	46.7	1,523
Household wealth index										
1	16.7	17.4	14.0	46.7	46.6	45.2	53.3	53.4	54..8	1,833
2	14.0	12.3	13.6	39.8	39.1	43.4	60.2	60.9	56.6	1,752
3	11.3	9.4	16.1	38.4	32.9	39.8	61.6	67.1	60.2	1,740
4	8.9	7.9	10.2	31.3	29.3	31.0	68.7	70.7	69.0	1,780
5	5.7	4.4	4.7	21.8	20.4	19.3	78.2	79.6	80.7	1,713
Total	11.5	10.4	11.3	36.1	33.8	34.5	63.9	66.2	65.5	**8,819**

Table 4.7.2. Association of underweight of under-2 children with socioeconomic characteristics, NNP Baseline Survey 2004

Background variable	Percentage distribution of under-2 children by z-score									Total (n)
	WAZ <-3 SD			WAZ <-2 SD			WAZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	
Residence										
Barisal	15.0	10.2	15.7	40.7	34.9	48.2	59.3	65.1	51.8	700
Chittagong	12.7	8.9	11.5	39.4	39.3	37.3	60.6	60.7	62.7	2,577
Dhaka	13.6	10.4	11.3	46.1	40.5	44.2	53.9	59.5	55.8	2,257
Khulna	9.5	7.1	6.9	34.3	34.8	33.0	65.7	65.2	67.0	729
Rajshahi	7.7	12.0	11.6	37.4	43.9	41.5	62.6	56.1	58.5	1,980
Sylhet	14.5	19.0	8.9	48.2	56.2	39.7	51.8	43.8	60.3	578
Age of child (months)										
<6	1.6	0.7	0.6	8.9	6.1	3.5	91.1	93.9	96.5	1,850
6-11	7.5	5.2	5.2	30.8	30.9	29.3	69.2	69.1	70.7	2,592
12-23	18.7	17.9	19.0	60.4	61.1	61.4	39.6	38.9	38.6	4,377
Sex of child										
Male	11.7	10.9	10.9	39.5	40.0	41.1	60.5	60.0	58.9	4,429
Female	11.7	10.2	11.9	41.8	41.6	40.2	58.2	58.4	59.8	4,390
Maternal education										
None	10.1	10.8	14.0	43.6	41.3	44.4	56.4	58.7	55.6	3,019
Primary incomplete	10.8	8.7	10.5	40.8	36.7	39.8	59.2	63.3	60.2	1,636
Primary complete	8.0	5.9	8.6	31.4	30.5	35.4	68.6	69.5	64.6	1,254
Secondary+	3.1	2.8	3.2	16.0	24.8	23.8	84.0	75.2	76.2	2,310
Food insecurity at household										
None	12.4	12.1	17.3	46.8	50.5	52.7	53.2	49.5	47.3	6,318
<4 months	15.9	18.8	17.7	50.6	51.0	51.2	49.4	49.0	48.8	978
4-12 months	19.1	20.7	17.3	54.9	58.6	61.8	45.1	41.4	38.2	1,523
Household wealth index										
1	18.2	17.8	14.0	52.1	55.0	52.0	47.9	45.0	48.0	1,833
2	14.6	13.0	14.6	46.2	45.2	51.4	53.8	54.8	48.6	1,752
3	10.6	9.7	17.8	42.1	41.3	42.7	57.9	58.7	57.3	1,740
4	8.3	7.3	8.7	34.6	36.4	38.5	65.4	63.6	61.5	1,780
5	5.6	4.4	4.0	25.2	25.2	24.4	74.8	74.8	75.6	1,713
Total	11.7	10.5	11.4	40.6	40.8	40.6	59.4	59.2	59.4	**8,819**

Table 4.7.3. Association of wasting of under-2 children with socioeconomic characteristics, NNP Baseline Survey 2004

Background variable	Percentage distribution of under-2 children by z-score									Total (n)
	Z- scores									
	WLZ <-3 SD			WLZ <-2 SD			WLZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	
Residence										
Barisal	2.2	1.2	0.6	15.3	14.5	16.8	84.7	85.5	83.2	700
Chittagong	2.6	2.5	1.5	16.1	13.3	14.9	83.9	86.7	85.1	2,577
Dhaka	1.9	1.1	1.0	15.7	13.4	10.5	84.3	86.6	89.5	2,257
Khulna	0.8	0.8	2.0	9.8	11.5	12.0	90.2	88.5	88.0	729
Rajshahi	0.6	2.2	1.0	8.7	12.6	12.9	91.3	87.4	87.1	1,980
Sylhet	1.3	2.5	-	14.5	15.7	11.0	85.5	84.3	89.0	578
Age of child (months)										
<6	1.4	0.7	0.3	2.7	1.2	0.6	97.3	98.8	99.4	1,850
6-11	0.8	0.6	0.6	5.8	3.7	5.6	94.2	96.3	94.4	2,592
12-23	2.4	2.6	1.7	22.9	24.1	22.5	77.1	75.9	77.5	4,377
Sex of child										
Male	2.1	2.1	1.0	15.0	13.9	14.1	85.0	86.1	85.9	4,429
Female	1.3	1.2	1.3	12.1	12.4	12.5	87.9	87.6	87.5	4,390
Maternal education										
None	1.5	1.1	1.1	13.3	13.0	14.0	86.7	87.0	86.0	3,019
Primary incomplete	2.6	0.3	1.5	15.7	12.0	11.7	84.3	88.0	88.3	1,636
Primary complete	1.3	1.6	0.9	10.0	9.7	10.1	90.0	90.3	89.9	1,254
Secondary+	0.6	0.7	-	7.1	9.2	5.6	92.9	90.8	94.4	2,310
Food insecurity at household										
None	2.1	1.5	1.3	16.8	13.6	14.1	83.2	86.4	85.9	6,318
<4 months	1.7	3.3	0.5	17.1	20.8	22.3	82.9	79.2	77.7	978
4-12 months	1.5	2.3	3.9	13.8	21.8	14.7	86.2	78.2	85.3	1,523
Household wealth index										
1	2.3	3.2	0.7	17.8	19.4	16.1	82.2	80.6	83.9	1,833
2	2.4	1.1	3.2	14.5	13.0	19.6	85.5	87.0	80.4	1,752
3	0.8	1.2	1.2	14.2	13.4	14.3	85.8	86.6	85.7	1,740
4	1.1	1.6	0.3	11.1	12.5	11.2	88.9	87.5	88.8	1,780
5	1.8	0.9	0.5	9.4	7.6	7.4	90.6	92.4	92.6	1,713
Total	1.7	1.6	1.1	13.6	13.2	13.3	86.4	86.8	86.7	**8,819**

Table 4.7.4. Association of stunting of under-2 children with selected household healthcare practices, NNP Baseline Survey 2004

Background variable	Percent distribution of under-2 children by z-score									Total (n)
	Z- scores									
	LAZ <-3 SD			LAZ <-2 SD			LAZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	
ANC received by mother										
<3 visits	6.4	8.9	5.1	27.0	28.1	24.1	73.0	71.9	75.9	938
≥3 visits	12.7	10.9	12.7	38.3	36.2	36.9	61.7	63.8	63.1	4,089
Maternal rest during pregnancy										
More than before	11.0	8.8	9.8	33.4	30.4	32.1	66.6	69.1	67.9	2,029
Less or same as before	11.9	11.7	12.5	38.0	36.7	36.5	62.0	65.4	63.5	2,997
Maternal food intake during pregnancy										
More than before	9.8	7.0	8.8	31.3	30.9	34.5	68.7	68.7	64.0	753
Less or same as before	11.8	11.2	11.9	37.0	34.6	34.6	63.0	63.0	65.4	4,273
Iron supplementation during pregnancy										
Regular	7.7	10.2	7.9	29.3	32.4	30.0	70.7	67.6	70.0	1,136
Irregular/none	12.6	10.4	12.4	38.1	34.5	36.0	61.9	65.5	64.0	3,890
Vitamin A capsule within 6 weeks of delivary										
Received	10.5	6.7	7.9	30.4	23.0	27.0	69.6	77.0	73.0	418
Not received	11.6	10.7	11.5	36.7	34.8	34.9	63.3	65.2	65.1	4,608
Vitamin A capsule taken by child in last 6 months										
Received	14.2	13.6	14.4	43.6	43.9	1.6	56.4	56.1	98.4	2,523
Not received	13.0	11.1	11.4	40.5	33.3	0.5	59.5	66.7	99.5	1,411
Total	11.5	10.4	11.3	36.1	33.8	34.5	63.9	66.2	65.5	8,819

Table 4.7.5. Association of underweight of under-2 children with selected household healthcare practices, NNP Baseline Survey 2004

Background variable	Percent distribution of under-2 children by z-score									Total (n)
	Z- scores									
	WAZ <-3 SD			WAZ <-2 SD			WAZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	
ANC received										
<3 visits	5.7	7.1	4.8	30.2	35.1	27.3	69.8	64.9	72.7	937
≥3 visits	13.1	11.9	12.9	43.0	43.1	43.7	57.0	56.9	56.3	4,089
Rest during pregnancy										
More than before	10.0	8.2	10.7	38.5	36.4	38.0	61.5	63.6	62.0	2,029
Less or same as before	12.9	12.5	11.9	42.0	44.4	42.8	58.0	55.6	63.5	2,997
Food intake										
More than before	11.0	7.7	12.9	33.7	36.0	36.0	66.3	63.0	64.0	753
Less or same as before	11.8	11.2	11.0	41.8	41.7	14.8	58.2	58.3	58.2	4,273
Iron supplementation										
Regular	7.8	9.9	6.2	33.3	39.3	35.1	66.7	60.7	64.9	1,136
Irregular/none	12.9	10.8	13.0	42.8	41.5	42.3	57.2	58.5	57.7	3,890
Vitamin A capsule within 6 weeks of delivary										
Received	9.1	9.1	6.7	33.7	32.1	36.0	66.3	67.9	64.0	418
Not received	11.9	10.7	11.6	41.3	41.5	40.9	58.7	58.5	59.1	4,608
Vitamin A capsule in last 6 months										
Received	15.0	14.7	15.6	52.1	53.6	52.9	47.9	46.4	47.1	2,523
Not received	13.7	9.6	10.3	44.8	41.3	42.7	55.2	58.7	57.3	1,411
Total	11.7	10.5	11.4	40.6	40.8	40.6	59.4	59.2	59.4	**8,819**

Table 4.7.6. Association of wasting of under-2 children with selected household healthcare practices, NNP Baseline Survey 2004

Background variable	Percent distribution of under-2 children by z-score									Total (n)
	Z- scores									
	WLZ <-3 SD			WLZ <-2 SD			WLZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	
ANC received										
<3 visits	1.4	1.0	0.3	9.6	11.8	7.6	90.4	88.2	92.4	938
≥ 3 visits	1.8	1.9	1.3	14.5	13.8	14.5	85.5	86.2	85.5	4,089
Rest during pregnancy										
More than before	1.1	1.0	0.4	11.9	10.8	13.7	88.1	89.1	86.3	2,029
Less or same as before	2.1	2.2	1.7	14.6	15.2	13.0	85.4	84.8	87.0	2,997
Food intake										
More than before	1.7	1.9	1.8	12.4	10.4	11.1	87.6	89.6	88.9	753
Less or same as before	1.7	1.6	1.0	86.4	13.9	13.8	86.2	86.1	86.2	4,273
Iron supplementation										
Regular	1.5	1.4	-	12.4	12.8	11.1	88.1	87.2	88.9	1,136
Irregular/none	1.8	1.8	1.5	14.1	13.4	13.9	85.9	86.6	86.1	3,890
Vitamin A capsule within 6 weeks of delivary										
Received	1.7	1.8	-	13.6	13.3	12.4	86.4	86.7	87.6	418
Not received	1.7	1.6	1.2	13.6	13.2	13.3	86.4	86.8	86.7	4,608
Vitamin A capsule in last 6 months										
Received	1.7	2.1	1.6	18.4	19.8	18.5	81.6	80.2	81.5	2,523
Not received	2.0	1.4	0.5	13.4	9.3	11.1	86.6	90.2	88.9	1,411
Total	1.7	1.6	1.1	13.6	13.2	13.3	86.4	86.8	86.7	**8,819**

4.8 RESULTS OF MULTIVARIATE ANALYSES

The prevalence of underweight, stunting, and wasting among under-2 children showed a monotonic increase with increase in the child's age (Table 4.8.1). Female children were less wasted than male children. The higher the maternal education the lower was the prevalence of underweight, stunting, and wasting. Household food security and asset index showed inverse relationships with the prevalence of underweight, stunting, and wasting. Neither maternal membership in NGO *samity*, nor taking more rest during pregnancy nor the area (NNP project, NNP comparison, or BINP) showed any relationship with children's nutritional status.

The prevalence of good practices during pregnancy showed a monotonic increase with increase in maternal education (Table 4.8.2). Household food insecurity inhibited mothers' taking more food during pregnancy, but not taking more rest or receiving ANC. Household asset index was positively related to receiving ANC by women. Their membership in NGO *samity* was also positively related to taking more food during pregnancy and receiving ANC, but not taking more rest. In the BINP area, overall, pregnancy care was better than in the NNP areas.

The higher the maternal education and household asset index, the greater was the odds ratio of receiving iron supplements during pregnancy, but not receiving vitamin A capsule after delivery (Table 4.8.3). Only women who had secondary school education had a 3 times higher probability of taking high potency vitamin A capsule (200,000 units) after delivery. Women in the BINP areas received iron supplements at a higher rate than women in the NNP areas. The prevalence of food insecurity was much higher among illiterate and poor (indicated by asset index) women. Surprisingly, the prevalence of food insecurity was lower in the BINP areas than in the NNP areas.

Table 4.8.1. Adjusted odds ratios (95% confidence interval) of children's malnutrition indices for different background characteristics (children aged 6-23 months, n=7,076)

Background characteristics	WAZ <-2 SD	HAZ <-2 SD	WHZ <-2 SD
Age of child (months)	1.13** (1.12-1.14)	1.12** (1.11-1.13)	1.14** (1.13-1.16)
Sex of child			
Male	1	1	1
Female	1.05 (0.94-1.17)	0.96 (0.86-1.08)	0.76** (0.65-0.89)
Maternal education			
None	1	1	1
Primary incomplete	0.82* (0.70-.97)	0.88 (0.74-1.04)	0.81 (0.65-1.01)
Primary complete	0.76* (0.64-.91)	0.85 (0.71-1.03)	0.97 (0.76-1.25)
Secondary incomplete	0.67** (0.57-.79)	0.73** (0.62-.87)	0.72** (0.56-.92)
Secondary+	0.37** (0.27-.51)	0.40** (0.29-.56)	0.60* (0.39-.92)
Food deficit in last 12 months			
No deficit	1	1	1
Deficit <4 months	1.25* (1.02-1.53)	1.19 (.97-1.45)	1.17 (.88-1.54)
Deficit 4 months +	1.37** (1.16-1.62)	1.29** (1.08-1.55)	1.26* (1.02-1.54)
Asset index			
Lowest	1	1	1
Second	0.86 (0.71-1.04)	0.80* (0.68-.95)	0.86 (0.68-1.09)
Middle	0.71** (0.59-.87)	0.75** (0.62-.91)	0.79 (0.62-1.00)
Fourth	0.62** (0.50-.76)	0.59** (0.49-.72)	0.73* (0.56-0.95)
Highest	0.40** (0.31-.51)	0.38** (0.30-.48)	0.56* (0.40-.078)
Member of any *samity* (NGO)			
No	1	1	1
Yes	1.04 (0.92-1.18)	0.86* (0.76-.98)	1.10 (0.94-1.29)
Had more rest when pregnant			
No	1	1	1
Yes	0.89 (0.79-1.01)	0.90 (0.79-1.02)	0.84* (0.71-0.99)
Survey area			
NNP project	1	1	1
NNP comparison	1.13 (0.96-1.33)	1.02 (0.86-1.20)	1.07 (0.86-1.33)
BINP project	1.04 (0.91-1.20)	0.94 (0.81-1.09)	1.00 (0.84-1.19)
Wald chi-square (14 DF)	682.6 , p<0.001	561.5, p<0.001	399.9, p<0.001

The dependent variable equals to 1 if WAZ <-2 SD, HAZ <-2 SD or WAZ <-2 SD, 0 otherwise
*p<0.05, **p<0.01

Table 4.8.2. Adjusted odds ratios (95% confidence interval) of good practices during pregnancy of mothers of children aged 0-23 month(s) for different background characteristics (n=8,858)

Background characteristics	More food intake during pregnancy	More rest during pregnancy	Receive antenatal care
Age of mother (year)	0.96** (0.95-0.97)	0.99 (0.98-1.00)	0.97** (0.96-0.98)
Maternal education			
None	1	1	1
Primary incomplete	1.00 (0.87-1.15)	1.31** (1.14-1.52)	1.19* (1.02-1.38)
Primary complete	1.11 (0.94-1.30)	1.21* (1.02-1.43)	1.25** (1.05-1.49)
Secondary incomplete	1.20* (1.04-1.39)	1.54** (1.32-1.81)	1.77** (1.51-2.08)
Secondary+	1.29* (1.03-1.61)	1.98** (1.58-2.48)	5.21** (3.89-6.97)
Food deficit in last 12 months			
No deficit	1	1	
Deficit <4 months	0.72** (0.61-0.85)	1.18* (1.00-1.39)	1.11 (0.91-1.35)
Deficit 4 months+	0.77** (0.66-0.90)	1.03 (0.87-1.20)	0.88 (0.74-1.04)
Asset index			
Lowest	1	1	1
Second	0.93 (0.80-1.09)	0.97 (0.82-1.13)	1.33** (1.11-1.59)
Middle	0.92 (0.79-1.09)	0.97 (0.82-1.16)	1.46** (1.23-1.74)
Fourth	0.89 (0.76-1.05)	1.09 (0.91-1.31)	1.74** (1.44-2.11)
Highest	1.05 (0.88-1.24)	0.99 (0.90-1.10)	2.65** (2.14-3.29)
Member of any *samity* (NGO)			
No	1	1	1
Yes	1.14** (1.03-1.26)	0.99 (0.90-1.10)	1.32** (1.17-1.49)
Survey area			
NNP project	1	1	1
NNP comparison	1.22** (1.06-1.41)	1.18* (1.03-1.36)	1.01 (0.79-1.31)
BINP project	1.35** (1.20-1.52)	1.22** (1.08-1.37)	1.80** (1.52-2.15)
Wald chi-square (14 df)	682.6 , p<0.001	561.5, p<0.001	399.9, p<0.001

The dependent variable equals to 1 if a mother had more food intake or more rest during pregnancy than before or received ANC, 0 otherwise

*p<0.05, **p<0.01

Table 4.8.3. Adjusted odds ratios (95% confidence interval) of taking iron supplements during last pregnancy and vitamin A capsule after delivery by mothers of children aged 0-23 month(s) for different background characteristics (n=8,858)

Background characteristics	Intake of iron supplement	Intake of vitamin A capsule	Food insecurity in last year
Age of mother (years)	0.97** (0.96-.98)	0.99 (0.97-1.01)	1.02** (1.01-1.03)
Maternal education			
None	1	1	1
Primary incomplete	1.17* (1.00-1.37)	1.00 (.71-1.39)	0.83* (0.71-0.98)
Primary complete	1.07 (.911-1.26)	1.19 (0.86-1.64)	0.73* (0.60-0.89)
Secondary incomplete	1.74** (1.49-2.03)	1.30 (0.96-1.76)	0.48** (0.39-0.58)
Secondary+	4.64** (3.59-6.00)	2.93** (2.05-4.18)	0.20** (0.12-0.36)
Food deficit in last 12 months			
No deficit	1	1	N/A
Deficit <4 months	1.08 (0.89-1.32)	0.84 (0.58-1.20)	N/A
Deficit 4 months+	0.92 (0.76-1.10)	0.46** (0.31-.66)	N/A
Asset index			
Lowest	1	1	1
Second	1.34** (1.13-1.58)	1.06 (0.75-1.50)	0.64** (0.55-.75)
Middle	1.39** (1.16-1.66)	0.92 (0.63-1.35)	0.38** (0.32-.45)
Fourth	1.56** (1.29-1.89)	1.17 (0.82-1.67)	0.17** (0.14-.21)
Highest	2.13** (1.76-2.58)	1.20(0.84-1.71)	0.04** (0.03-.06)
Member of any samity (NGO)			
No	1	1	
Yes	1.38** (1.22-1.55)	1.19 (0.84-1.70)	0.95 (0.84-1.08)
Survey area			
NNP project	1	1	1
NNP comparison	1.00 (0.80-1.24)	1.10 (0.92-1.33)	0.96 (0.75-1.21)
BINP project	1.77** (1.49-2.11)	0.91 (0.72-1.16)	0.78** (0.65-0.93)
Wald chi-square (14 df)	682.6 , p<0.001	561.5, p<0.001	399.9, p<0.001

The dependent variable equals to 1 if a mother received iron supplement or vitamin A capsule when pregnant with the current child age 0-23 month(s) or household had food insecurity, 0 otherwise
*p<0.05, **p<0.01

CHAPTER 5

HEALTH AND NUTRITIONAL STATUS OF 24-59 MONTHS OLD CHILDREN

Section 5.1 HOUSEHOLD CHARACTERISTICS OF 24-59 MONTHS OLD CHILDREN

More than 95% of households of under-5 (24-59 months old) children were drinking tubewell water. An alarming feature was arsenic contamination of 13% of tubewells, which is significantly higher in the NNP and comparison areas. The use of hygienic latrines was minimal; only 5% of households were using use septic tank or modern latrine, while almost half of the households were sharing latrines. About 14% of households did not own any homestead, and more than 50% did not possess any cultivable land; landlessness was significantly higher among households in the NNP areas. A significantly greater proportion of households in the BINP areas did not suffer from food deficit last year. Membership of local cooperatives and NGOs was common among the households; a greater proportion of households in the BINP areas was associated with local cooperatives but not with NGOs compared to the NNP and comparison areas. The BINP households took more assistance in home gardening from the government and NGO sources and were, therefore, more involved in growing vegetables. The illiteracy rate was lowest among mothers in the comparison areas. Having 5 or more children was not uncommon (15% of mothers).

Table 5.1.1. Percentage distribution of arsenic contamination and source of water of households of 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Source of drinking-water				
Tap water	0.8	1.3	-	0.9
Tubewell	95.9	95.5	98.1	96.1
Ring well	0.9	1.0	0.3	0.8
Pond	1.2	0.9	0.7	1.0
Ditch/canal/lake	0.2	0.1	0.1	0.1
River/fountain	0.6	0.6	0.1	0.5
Rain water	-	0.2	0.5	0.1
Others	0.3	0.6	0.1	0.4
Total	100.0	100.0	100.0	100.0
Total (n)	2,108	1,990	728	4,826
Marking on tubewell				
Red (arsenic contaminated)	16.4	8.0	13.6	12.6
Green (not contaminated)	38.9	39.8	29.1	37.8
Not colored	44.7	52.2	57.3	49.7
Total	100.0	100.0	100.0	100.0
Total (n)	2,022	1,901	714	4,637
Source of water for cleaning households utensils				
Tap water	0.7	1.8	0.4	1.1
Tubewell	55.4	64.1	53.2	58.7
Ring well	1.7	2.9	0.7	2.0
Pond	37.6	27.4	39.8	33.7
Ditch/canal/lake	3.6	1.5	3.3	2.7
River/fountain	0.9	2.0	2.6	1.6
Others	0.1	0.3	-	0.2
Total	100.0	100.0	100.0	100.0
Total (n)	2,109	1,990	727	4,826

BINP vs NNP and comparison, $p<0.001$, for arsenic contamination of tubewell water

Table 5.1.2. Percentage distribution of type of latrine of households of 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Latrine type				
Septic tank/modern latrine	3.9	4.8	5.6	4.6
Slab latrine	10.6	11.0	8.5	10.4
Pit latrine	50.9	49.9	51.7	50.6
Hanging latrine	2.5	3.8	2.8	3.1
Open latrine	21.8	18.0	18.7	19.8
Bush/field/yard	9.9	11.9	12.1	11.1
Others	0.5	0.6	0.6	0.5
Total	100.0	100.0	100.0	100.0
Total (n)	2,108	1,990	727	4,825
Latrine shared with other households				
Yes	43.3	44.2	44.7	43.9
No	56.7	55.8	55.3	56.1
Total	100.0	100.0	100.0	100.0
Total (n)	1,888	1,741	636	4,265

Table 5.1.3. Percentage distribution of land ownership of households of 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Ownership of any land	87.0	88.7	88.9	88.0
Amount of homestead land (acres)				
Landless	16.4	12.5	14.1	14.4
0.01-0.49	71.9	76.4	74.5	74.1
0.50-0.99	3.9	4.9	5.6	4.6
1.00-2.49	2.5	1.7	1.6	2.0
2.50-7.49	0.7	0.6	0.3	0.6
7.50 +	4.7	3.9	3.8	4.3
Total	100.0	100.0	100.0	100.0
Amount of agricultural land (acres)				
Landless	54.7	53.3	49.6	53.4
0.01-0.49	16.3	17.3	20.5	17.3
0.50-0.99	9.3	9.9	9.6	9.6
1.00-2.49	11.0	11.3	11.0	11.1
2.50-7.49	5.6	6.1	6.7	6.0
7.50 +	3.2	2.1	2.6	2.6
Total	100.0	100.0	100.0	100.0
Total (n)	2,108	1,990	728	4,826

NNP vs BINP, $p<0.001$, for homestead landlessness
NNP vs comparison, $p=0.02$, for agricultural landlessness

Table 5.1.4. Percentage distribution of food deficit and type of table salt used by members of households of 24-59 months old children during last year, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Food deficit (months)				
No deficit	68.2	74.4	69.5	70.9
<4	12.3	9.4	9.6	10.7
4-6	13.3	10.8	13.8	12.3
7-12	6.2	5.4	7.2	6.0
Total	100.0	100.0	100.0	100.0
Type of salt used in cooking				
Packet salt (iodized)	64.0	65.5	60.9	64.2
Open salt	36.0	34.5	39.1	35.8
Total	100.0	100.0	100.0	100.0
Total (n)	2,108	1,990	728	4,826

Food deficit is inability to manage three meals daily for all household members last year
BINP vs NNP, p<0.001; BINP vs comparison, p=0.01 for no food deficit

Table 5.1.5. Percentage distribution of households of 24-59 months old children having VGF cards, old-age or destitute allowance, membership of cooperatives and NGOs, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
VGF card holder	3.2	2.2	2.2	2.7
Old-age allowance	1.6	0.9	0.7	1.2
Destitute allowance	1.2	0.4	0.5	0.7
Membership of cooperatives	38.3	43.9	37.4	40.5
NGO membership	61.7	56.1	62.6	59.5
Name of organization				
Government				
BRDB	1.6	1.1	1.0	1.3
Others	11.5	11.3	8.9	11.0
NGO				
BRAC	1.0	1.0	0.8	1.0
Proshika	18.9	23.2	19.5	20.8
ASA	7.6	9.5	9.5	8.7
Grameen Bank	1.9	3.1	2.0	2.4
Taken loan from cooperative	41.0	50.0	40.0	44.6
Total (n)	2,108	1,990	728	4,826

VGF= Vulnerable group feeding, BRDB= Bangladesh Rural Development Board
NNP vs BINP, p=0.03, for old-age allowance
BINP vs NNP, p<0.001; BINP vs comparison, p <0.002, for membership of cooperatives
NNP vs BINP, p<0.001; comparison vs BINP, p<0.002, for NGO membership

Table 5.1.6. Involvement of households of 24-59 months old children in homestead gardening, poultry rearing, and fish farming by survey area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Grew vegetables at home last year	55.3	60.2	57.0	57.5
Total (n)	2,108	1,990	728	4,826
Sold vegetables grown at home last year	18.1	16.6	15.8	17.1
Received assistance from GO/NGO programmes in home gardening	13.8	16.8	10.0	14.5
Total (n)	1,165	1,179	414	2,776
Poultry rearing	78.1	76.6	78.3	77.5
Total (n)	2,108	1990	728	4,826
Sold eggs through poultry rearing	32.3	34.4	32.6	33.2
Received assistance from GO/NGO programmes in poultry	10.6	10.0	6.6	9.8
Total (n)	1,646	1,524	570	3,740
Fish farming	20.3	21.0	23.6	21.1
Total (n)	2,108	1990	728	4,826
Received assistance from GO/NGO programmes in fish farming	10.3	9.6	7.2	9.5
Total (n)	429	418	172	1,019

BINP vs NNP, $p<0.002$, for growing vegetables in homestead
BINP vs NNP and comparison, $p<0.05$; NNP vs comparison, $p<0.05$, for GO/NGO assistance in homestead gardening
GO=Government; NGO=Non-government

Table 5.1.7. Media access of mothers of 24-59 months old children by survey area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Frequency of listening radio/two-in-one				
No	59.4	56.5	55.2	57.5
Everyday	17.3	17.7	14.2	17.0
At least once a week	16.9	18.6	20.2	18.1
Less than once a week	6.5	7.2	10.5	7.4
Total	100.0	100.0	100.0	100.0
Listen to nutrition programme/discussion on radio	64.3	70.0	68.0	67.3
Total (n)	857	866	326	2,049
Frequency of TV watching				
No	68.0	54.3	57.6	60.8
Everyday	12.3	19.1	15.8	15.6
At least once a week	14.8	21.8	19.9	18.4
Less than once a week	4.9	4.9	6.7	5.2
Total	100.0	100.0	100.0	100.0
Watch nutrition programme/discussion on TV	58.0	58.5	56.4	58.0
Total (n)	675	910	309	1,894

Table 5.1.8. Background characteristics of mothers of 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Age range of children (months)				
24-35	31.1	33.5	39.0	31.8
36-47	39.9	38.1	40.4	39.2
48-59	29.0	28.4	30.6	29.0
Total	100.0	100.0	100.0	100.0
Mean (SD) age of mother (years)	26.4 (6.0)	26.3 (6.0)	26.5 (5.8)	26.9 (6.0)
Age-group of mother (years)				
≤19	11.0	11.5	9.6	11.0
20-29	60.3	61.5	61.0	60.9
30 and above	28.7	27.1	29.4	28.1
Mean (SD) age of marriage (years)	14.8 (2.3)	14.8 (2.2)	14.9 (2.2)	14.8 (2.3)
Highest education level				
No education	43.0	40.5	38.2	41.3
Primary incomplete	20.5	19.7	18.6	19.9
Primary complete	12.8	13.5	13.6	13.2
Secondary incomplete	18.4	20.5	23.4	20.0
Secondary and above	5.4	5.8	6.2	5.7
Types of institution				
School/college	96.2	96.6	95.9	96.3
Madrasa	1.3	1.7	2.7	1.7
Non-formal education	2.5	1.7	1.5	2.0
Number of pregnancies				
Only once	11.0	12.8	10.2	11.6
Twice	25.5	26.0	23.9	25.5
More than twice	63.5	61.2	65.9	62.9
Number of live children				
1	17.4	18.2	14.6	17.3
2	30.6	33.5	32.7	32.1
3-4	36.0	36.2	35.2	36.0
5 and more	16.0	12.1	17.6	14.6
Total (n)	2,107	1,990	728	4,825

No education: Never attended school; Primary incomplete: I-IV class passed; Primary complete: V class passed; Secondary incomplete: VI-IX class passed; Secondary complete: Secondary school certified and above; Comparison vs NNP, $p<0.05$, for no education

5.2 ACCESS TO HEALTH AND NUTRITION SERVICES

As expected, the vast majority of mothers of under-5 children in the BINP areas reported availability of CNCs and were aware of services provided by the CNCs. However, less than 50% of mothers reported measurement of weight of children and newborns by the CNCs. A large proportion of children did not visit a CNC, and almost half of mothers of such children did not feel necessary to take their children to the CNCs. Only 11% of mothers in the BINP areas cited poor quality of services rendered by the CNCs as a reason for not visiting CNCs. Although there was awareness of the services provided by the CNCs, the mothers had inertia in actually seeking services from the CNCs. One-third of under-5 children in the BINP areas actually received GMP cards and 4% supplementary feeding. This group of children (24-59 months old) also included children who were older than the age limit for being enrolled in the NNP. Vitamin A (200,000) supplementation coverage was universally high in all the areas at more than 85%. Children in the BINP areas had a lesser number of episodes of illnesses, including diarrhoea, cough/fever/common cold, in the two weeks prior to interview. Treatment of children was sought for 70% of episodes of illnesses, and village quacks and local pharmacies treated 64% of episodes.

ANC was far from being optimal. More than 50% of mothers of under-5 children made no visits for ANC. This proportion, however, was significantly less in the case of BINP mothers. But unlike the situation in the case of children where private healthcare providers treat most of illnesses, more than 50% of mothers went to government doctors and paramedics for seeking ANC. What was disappointing was that only one-fourth of 4,826 mothers of under-5 children took iron-folic acid tablets regularly, with significantly more mothers in the BINP areas taking the tablets. Only 6% of mothers did not receive the adequate number of tablets, while the three major reasons for not taking the tablets were adverse effects, not considering the tablets to be necessary, and forgetting to take them. This indicates that availability of tablets was not a major issue; counselling perhaps was not adequate for improving compliance. Postpartum vitamin A supplementation was very poor – only 6% of mothers reported taking a vitamin A capsule within 6 weeks of last childbirth.

Table 5.2.1. Use of services provided by Community Nutrition Centres by mothers of 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
CNC available	13.1	87.6	1.6	42.1
Mother's having knowledge of service provided by CNC	13.5	80.9	7.9	40.4
Services provided by CNC				
Measurement of weight of children	4.9	49.4	3.1	23.0
Measurement of height of children	1.2	6.6	0.2	3.3
Supply of nutritious food to pregnant women	7.8	62.8	4.9	30.0
Measurement of weight of pregnant women	3.2	43.5	3.1	19.8
Measurement of weight of new born babies	0.5	5.8	.0	2.6
Arrange meetings with adolescent girls and others on health education	0.5	1.3	-	0.7
Arrangement of meetings with mothers	1.0	6.1	0.5	3.0
Total (n)	2,108	1,990	728	4,826

Table 5.2.2. Division-wise percentage distribution of 24-59 months old children by availability of CNC in locality, NNP Baseline Survey 2004

Division	Survey area						Total (n)
	NNP		BINP		Comparison		
	CNC availability	Knowledge about CNC service	CNC availability	Knowledge about CNC service	CNC availability	Knowledge about CNC service	
Barisal	11.0	13.2	80.5	87.1	1.4	4.2	413
Chittagong	1.6	5.1	77.4	71.1	0.4	3.7	1267
Dhaka	22.2	23.0	92.0	83.4	5.0	25.2	1349
Khulna	5.7	10.2	96.7	94.6	-	6.5	442
Rajshahi	6.4	8.0	85.7	77.7	0.7	0.7	1058
Sylhet	81.0	50.8	88.1	80.7	-	3.2	297
All	13.1	13.5	87.6	80.9	1.5	8.0	
Total (n)	2,108		1,990		728		4,826

When the survey was carried out in Sylhet and Dhaka divisions, programme activities in the NNP areas had started. Data of the comparison areas probably reflect diffusion of knowledge

Table 5.2.3. Services received by 24-59 months old children from CNCs by survey area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Participated in CNC activities	1.4	16.5	0.8	7.5
CNC visits per week				
No visit	99.8	95.9	99.9	98.2
1-2	0.2	1.4	-	0.6
3-4	-	0.3	0.1	0.2
5 or more	-	2.4	-	1.0
Total	100.0	100.0	-	100.0
Supplementary feeding	0.2	4.1	-	1.4
Possessing GMP card from CNC	2.9	32.4	1.0	14.7
Total (n)	2,108	1,990	728	4,826
Checking GMP cards of those who possess				
No card	97.1	67.6	99.0	85.2
Card seen	1.3	10.8	0.4	5.1
Card not seen	1.3	14.0	0.5	6.4
Card with CNC	0.2	7.6	-	3.2
Total	100.0	100.0	-	100.0
Total (n)	61	644	7	712
Had at least 3 weight measurements in last 3 months	1.1	6.0	1.1	3.1
Received vitamin A within last 6 months	84.1	89.0	87.4	86.6
Total (n)	2,108	1990	728	4,826

Table 5.2.4. Reasons for not participating in weight-measurement sessions for last 3 months by 24-59 months old children, NNP Baseline Survey 2004

Reason	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Did not feel necessary	33.5	45.0	35.5	38.5
Objection of household members	0.8	0.7	1.1	0.8
Lack of money	3.1	.5	3.4	2.1
Lack of time	1.1	3.3	1.1	2.0
Poor quality of services	2.6	11.3	1.7	6.1
Forgot to attend	0.1	0.7	0.1	0.3
Illness in household	0.1	0.3	0.4	0.2
Do not know	57.2	36.1	55.6	48.2
Did not want to mention	8.6	1.6	5.4	5.2
Others	-	0.1	-	-
Total (n)	2,108	1,990	728	4,826

Table 5.2.5. Percentage distribution of morbidity in last two weeks among 24-59 months old children, NNP Baseline Survey 2004

Illness	Survey area			
	NNP	BINP	Comparison	All
Any illness	75.2	71.4	75.7	73.7
Fever/cough/common cold	64.5	58.5	63.7	61.9
Diarrhoea	14.1	12.0	11.2	12.8
Dysentery	13.2	11.2	13.2	12.3
Pneumonia	2.6	2.4	2.0	2.4
Ear infection	4.0	3.9	5.0	4.1
Conjunctivitis	4.2	4.4	4.8	4.4
Skin disease	11.7	11.8	13.0	12.0
Others	1.1	1.5	.6	1.1
Total (n)	2,108	1,990	728	4,826

BINP vs NNP and comparison, $p<0.05$, for any illness in last two weeks
BINP vs NNP and comparison, $p<0.05$, for fever/cough/common cold
BINP vs NNP, $p=0.04$, for diarrhoea

Table 5.2.6. Healthcare-seeking pattern of 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Treatment sought for illness	68.2	69.5	72.9	69.4
Total (n)	1,586	1,420	550	3,556
Last treatment received				
Qualified doctors (Government)	4.4	4.0	3.5	4.1
Trained paramedics (Government)	1.8	1.7	1.7	1.7
NGO service providers	1.1	0.6	1.0	0.9
Private qualified doctors	15.1	13.8	19.2	15.2
Private trained paramedics	-	0.2	-	0.1
Village quacks/pharmacies	63.2	66.0	62.4	64.2
Homeopaths	11.8	11.2	9.5	11.2
Kabiraj	1.4	1.9	2.2	1.7
CNCs	0.1	0.1	-	0.1
Others	1.2	0.5	0.5	0.8
Total	100.0	100.0	100.0	100.0
Total (n)	1,080	987	402	2,469
ORS given during diarrhoea	71.3	78.3	75.3	74.5
Total (n)	303	235	81	619

Table 5.2.7. Tetanus toxoid vaccination-coverage rate of mothers of 24-59 months old children during the last pregnancy, NNP Baseline Survey 2004

TT dose	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Nil	16.0	12.3	10.7	13.7
TT-1	174	15.1	15.7	16.2
TT-2	40.8	43.6	45.7	42.7
TT-3	25.0	28.1	27.3	26.6
TT-4	0.6	0.8	0.5	0.7
TT-5	0.2	0.2	-	0.2
Total (n)	2,108	1,990	728	4,826

NNP vs BINP and comparison, p<0.001, for no TT immunization
NNP vs BINP and comparison, p<0.001, for at least TT-2 immunization

Table 5.2.8. Percentage distribution of antenatal check-ups, source of ANC services received, and reasons for not receiving ANC of mothers of 24-59 months old children during last pregnancy, NNP Baseline Survey 2004

Indicators	Survey areas			
	NNP	BINP	Comparison	All
No. of ANC visits				
No visit	66.9	47.8	61.5	58.2
1	10.1	13.7	9.9	11.6
2	7.6	13.2	12.0	10.6
3 or more	15.3	25.4	16.6	19.7
Total	100.0	100.0	100.0	100.0
Mean (SD) months of pregnancy at first ANC	5.1 (3.3)	5.0 (1.8)	5.3 (1.9)	5.1 (2.4)
Total (n)	2109	1,990	728	4,827
Sources of ANC				
Qualified doctors (Government)	25.6	21.3	22.1	22.9
Trained Paramedics (Government)	29.7	27.5	23.6	27.7
NGO service providers	13.2	17.8	20.0	16.5
Private qualified doctors	26.4	16.0	31.4	21.7
Private trained paramedics	-	-	0.4	-
Village quack/pharmacies	2.6	0.8	-	1.3
Homeopaths	0.3	0.2	0.7	0.3
CNCs	0.3	14.7	-	7.7
Others	2.0	1.7	1.8	1.8
Total	100.0	100.0	100.0	100.
Service received during ANC				
Weight measurement	71.3	86.1	68.4	78.5
Measurement of blood pressure	84.6	78.8	84.5	81.6
Urine test	49.8	42.8	42.7	45.2
Blood test	28.8	23.1	26.4	25.5
Received iron tablet	71.7	78.0	68.6	74.5
Others	31.3	41.2	51.5	39.2
Total (n)	698	1,039	280	2,017
Reasons for not receiving none or one ANC				
Did not consider necessary	43.7	43.8	40.5	43.3
Objection of family members	7.0	4.7	7.4	6.1
None to accompany	2.5	.7	1.6	1.6
Economic constraint	23.6	11.6	18.3	17.8
Poor quality of ANC	1.0	1.3	.8	1.0
Living at a distance from ANC providers	6.3	2.4	5.5	4.6
Others	7.6	3.8	5.2	5.7
Total (n)	2,108	1,990	728	4,826

BINP vs NNP and comparison, p<0.001; NNP vs comparison, p=0.01, for no ANC visit

Table 5.2.9. Division-wise percentage distribution of antenatal check-ups of mothers of 24-59 months old children during last pregnancy, NNP Baseline Survey 2004

Division	NNP			BINP			Comparison			Total (n)
	0	1-2	3 and+	0	1-2	3 and+	0	1-2	3 and+	
Barisal	70.7	17.2	12.1	58.6	21.9	19.5	75.7	18.6	5.7	413
Chittagong	69.3	17.9	12.8	53.6	28.0	18.4	61.8	22.0	16.2	1267
Dhaka	75.9	14.1	10.0	53.5	27.7	18.8	58.9	21.5	19.6	1348
Khulna	62.7	19.0	18.4	41.0	25.9	33.1	69.6	23.9	6.5	442
Rajshahi	58.8	19.5	21.7	32.0	27.4	40.5	56.7	24.7	18.7	1058
Sylhet	53.5	22.8	23.6	49.5	24.8	25.7	57.4	16.4	26.2	297

Table 5.2.10. Iron and postpartum vitamin A supplementation of mothers of 24-59 months old children during last pregnancy, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Iron supplementation intake				
Regular	19.2	33.2	22.5	25.4
Irregular	11.9	21.3	11.8	15.8
None	68.9	45.5	65.7	58.8
Total	100.0	100.0	100.0	100.0
Total (n)	2,108	1,990	728	4,826
Mean (SD) months of gestation at start of iron supplementation	5.4 (6.3)	5.4 (5.8)	5.0 (1.8)	5.4 (5.7)
Source of iron supplementation				
Qualified doctors (Government)	18.8	11.0	18.0	14.5
Trained paramedics (Government)	27.5	12.8	41.9	17.9
Trained field worker	9.3	7.8	10.2	8.6
NGO service providers	11.3	14.5	18.3	14.0
Private qualified doctors	6.1	2.9	6.2	4.4
Trained private paramedics	1.9	1.0	2.2	1.5
Pharmacies/homeopaths	22.3	11.3	28.6	171
CNCs	1.4	36.1	-	20.1
Traditional healers/others	1.4	2.7	1.6	2.1
Total (n)	655	1,084	250	1,989
Reasons for not taking iron supplementation regularly				
Did not consider necessary	21.1	12.3	20.0	16.1
Objection of family members	2.3	1.4	.8	1.7
Side-effect of tablet/syrup	29.8	45.0	17.9	36.9
Lack of supply	14.2	7.5	7.8	9.8
Forget to take	20.6	21.2	33.2	22.4
Did not receive enough tablets	5.8	4.0	14.8	5.8
Lost tablets	.0	0.2	0.4	0.2
Economic constraint	2.8	1.7	1.2	2.0
Others	3.5	6.6	3.8	5.2
Total (n)	252	424	85	761
Vitamin A capsule received within 6 weeks of delivery	6.7	7.2	2.8	6.3
Total (n)	2,108	1,990	728	4,826

BINP vs NNP and comparison, $p<0.001$, for receiving iron supplementation during pregnancy
NNP and BINP vs comparison, $p<0.001$, for receiving vitamin A capsule within 6 weeks of delivery

Table 5.2.11. Division-wise percentage distribution of iron supplementation of mothers of 24-59 months old children during last pregnancy, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	Received supplementation	No supplementation	Received supplementation	No supplementation	Received supplementation	No supplementation	
Barisal	15.0	85.0	24.3	75.7	14.1	85.9	413
Chittagong	18.3	81.7	33.7	66.3	24.5	75.5	1267
Dhaka	13.5	86.5	32.2	67.8	171	82.9	1348
Khulna	22.9	77.1	22.6	77.4	13.0	87.0	442
Rajshahi	24.3	5.7	42.5	57.5	32.2	67.8	1058
Sylhet	24.4	75.6	39.4	60.6	24.2	75.8	297

Table 5.2.12. Pregnancy-related health complications of mothers of 24-59 months old children during last pregnancy, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Severe headache/blurred vision	49.1	50.7	58.2	51.1
Oedema	28.8	29.9	31.9	29.7
High blood pressure	4.7	5.0	5.8	5.0
Protein in urine	1.7	1.3	2.6	1.6
Bleeding per vagina	5.4	3.8	4.3	4.6
Labour pain more than 12 hours	22.7	23.4	24.5	23.2
Excessive bleeding during/after delivery	23.1	20.0	26.8	22.4
Convulsions	7.3	5.7	8.8	6.9
Anaemia	26.2	29.3	32.0	28.4
Fever more than 3 days during last pregnancy	24.3	24.4	22.0	24.0
Fever more than 3 days after delivery	18.7	18.8	19.2	18.8
Foul-smelling vaginal discharge	16.8	18.0	21.5	18.0
Others	12.3	12.1	14.0	12.5
Total (n)	**2,108**	**1,990**	**728**	**4,826**

5.3 MATERNAL KNOWLEDGE AND PRACTICE OF NUTRITION

The practice of taking extra food by mothers of under-5 children during last pregnancy was not common. Only 16% of mothers took more food during pregnancy, with significantly more mothers in the BINP areas (18%) practising the correct advice. But perception about intake of more food during pregnancy was also not optimal – less than 50% of BINP mothers knew that taking extra food would benefit both mother and foetus. This implies that counselling in the BINP areas resulted in a slightly better difference in the correct practice of increased food intake during pregnancy, but it was far from being optimal. Similarly, 64% of BINP mothers used iodized salt in their household cooking, and 55% believed that intake of iodized salt benefited both mother and foetus. These figures are much lower in the other two areas. More mothers in the BINP areas correctly believed that contaminated food is a cause of diarrhoea in children. Fast breathing was perceived as a sign of pneumonia in children by less than 50% of BINP mothers. Surprisingly, chest indrawing, which is considered difficult to identify, was perceived as a sign of pneumonia by more than 50% of mothers. More mothers in the BINP areas were aware of the causes and prevention of goitre.

Table 5.3.1. Health and nutrition-related knowledge and practice of mothers of 24-59 months old children during last pregnancy, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Food intake during last pregnancy				
More than before	14.1	18.0	17.9	16.3
Same as before	34.3	39.2	37.6	36.8
Less than before	51.6	42.8	44.5	46.9
Perception about intake of more food during pregnancy				
Complicates delivery	6.2	2.9	3.1	4.4
Benefits mother	14.4	14.5	15.2	14.6
Benefits foetus	16.5	17.4	19.5	17.3
Benefits both mother and foetus	39.4	47.0	33.1	41.6
Make no difference	.7	.4	1.4	.7
Others	14.9	13.3	19.3	14.9
Do not know	7.8	4.6	8.4	6.6
Rest taken during last pregnancy				
More than before	37.6	39.3	42.8	39.1
Same as before	36.7	40.1	32.8	37.5
Less than before	25.7	20.6	24.4	23.4
Perception about more rest during pregnancy				
Causes weight gain of mother				
Benefits mother	7.9	4.6	5.6	6.2
Benefits foetus	20.2	24.5	26.7	22.9
Benefits both mother and foetus	5.9	6.1	6.7	6.1
Makes no difference	28.8	36.6	24.5	31.4
Others	1.1	.4	2.3	1.0
Do not know	26.6	22.5	25.2	24.7
	9.4	5.3	8.8	7.6
Total (n)	2,108	1,990	728	4,826

BINP and comparison vs NNP, $p<0.05$, for increased food intake during last pregnancy
BINP vs NNP and comparison, $p<0.001$, for the belief in increased food benefiting both mother and foetus
NNP vs comparison, $p=0.01$, for taking more rest during last pregnancy
BINP vs NNP and comparison, $p<0.001$, for the belief in increased rest benefiting both mother and foetus

Table 5.3.2. Division-wise percentage distribution of food intake practice during last pregnancy of mothers of 24-59 months old children, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	More than before	Less/same as before	More than before	Less/same as before	More than before	Less/same as before	
Barisal	15.0	85.0	12.9	87.1	20.7	79.3	431
Chittagong	9.7	90.3	13.2	86.8	15.4	84.6	1,267
Dhaka	12.6	87.4	24.5	75.5	16.5	83.5	1,349
Khulna	15.3	84.7	15.2	84.8	20.5	79.5	442
Rajshahi	19.9	80.1	23.5	76.5	21.1	78.9	1,058
Sylhet	17.5	85.5	13.1	86.9	15.6	84.4	297

Table 5.3.3. Division-wise percentage distribution of knowledge about food intake during last pregnancy of mothers of 24-59 months old children, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	Correct knowledge	Wrong knowledge	Correct knowledge	Wrong knowledge	Correct knowledge	Wrong knowledge	
Barisal	79.9	20.1	89.9	10.1	81.7	18.3	431
Chittagong	66.0	34.0	67.8	32.2	52.7	47.3	1,267
Dhaka	72.2	27.8	82.0	18.0	76.7	23.3	1,349
Khulna	70.1	29.9	86.6	13.4	67.4	32.6	442
Rajshahi	72.0	28.0	75.5	24.5	78.7	21.3	1,058
Sylhet	67.5	32.5	69.7	30.3	60.7	39.3	297

Table 5.3.4. Division-wise percentage distribution of taking rest during last pregnancy of mothers of 24-59 months old children, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	More than before	Less/same as before	More than before	Less/same as before	More than before	Less/same as before	
Barisal	44.5	55.5	38.5	61.5	53.5	46.5	431
Chittagong	34.9	65.1	41.0	59.0	44.2	55.8	1,267
Dhaka	34.7	65.3	38.1	61.9	43.0	57.0	1,349
Khulna	43.3	56.7	40.6	59.4	39.1	60.9	442
Rajshahi	41.6	58.4	39.8	60.2	35.6	64.4	1,058
Sylhet	30.7	69.3	39.4	60.6	43.5	56.5	297

Table 5.3.5. Division-wise percentage distribution of knowledge about rest during last pregnancy of mothers of 24-59 months old children, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	Correct knowledge	Wrong knowledge	Correct knowledge	Wrong knowledge	Correct knowledge	Wrong knowledge	
Barisal	69.5	30.5	82.2	17.8	67.6	32.4	431
Chittagong	51.7	48.3	52.7	47.3	45.9	54.1	1,267
Dhaka	62.5	37.5	71.7	28.3	69.2	30.8	1,349
Khulna	68.8	31.2	77.8	22.2	69.6	30.4	442
Rajshahi	45.7	54.3	61.9	38.1	61.3	38.7	1,058
Sylhet	45.2	54.8	54.1	45.9	46.8	53.2	297

Table 5.3.6. Percentage distribution of use and knowledge about iodized salt during last pregnancy of mothers of 24-59 months old children, NNP Baseline Survey 2004

Indicator	NNP	BINP	Comparison	All (%)
Type of salt taken during last pregnancy				
Iodized salt	56.7	63.6	54.6	59.2
Open salt	43.3	36.4	45.4	40.8
Total	100.0	100.0	100.0	100.0
Knowledge about use of iodized salt during pregnancy				
Harms foetus	1.5	0.9	0.4	1.1
Benefits mother	12.6	12.5	17.8	13.3
Benefits foetus	15.4	19.0	16.8	17.1
Benefits both mother and foetus	47.7	54.7	39.9	49.4
Make no difference	1.1	0.4	0.9	0.8
Others	1.1	0.4	0.2	0.7
Do not know	20.6	12.1	24.0	17.6
Total	100.0	100.0	100.0	100.0
Total (n)	2,108	1,990	730	4,828

BINP vs NNP and comparison, $p<0.001$, for intake of iodized salt

BINP vs NNP and comparison, $p<0.001$; NNP vs comparison, $p<0.001$, for iodized salt intake benefiting both mother and foetus

Table 5.3.7. Knowledge of mothers about causes of diarrhoea in 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Knowledge about cause of diarrhoea				
Dirty or contaminated water	19.6	18.3	16.0	18.5
Dirty or contaminated food	85.7	90.6	87.9	88.1
Not washing hands before taking meals	25.5	31.0	28.7	28.3
Not washing hands with soap after defecation	11.4	11.2	8.9	11.0
Not washing hands with ash/mud after defecation	6.0	6.9	5.4	6.3
Not using sanitary latrine	9.8	9.1	8.5	9.3
Not breastfeeding up to 2 years of age	0.2	.0	.0	0.1
Not giving vaccines	.0	.0	.0	.0
Others	35.1	35.8	33.4	35.1
Not known	6.5	4.6	5.2	5.5
Total (n)	2,108	1,990	728	4,826

NNP vs comparison, p=0.03, for dirty or contaminated water
BINP vs NNP, p<0.001; BINP vs comparison, p=0.04, for dirty or contaminated food
NNP vs BINP, p<0.001, for not washing hands before taking meal

Table 5.3.8. Knowledge of mothers about prevention of diarrhea in 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Knowledge about preventing diarrhoea				
Intake of safe food	71.6	84.7	82.6	78.7
Drinking safe water	32.0	21.9	17.6	25.6
Washing hands before taking meals	24.5	30.9	28.4	27.7
Washing hands with soap after defecation	11.2	11.3	9.2	10.9
Washing hands with ash/mud after defecation	5.3	5.5	5.7	5.4
Using sanitary latrine	-	-	-	-
Continuing breastfeeding up to 2 years of age	-	-	-	-
Proper immunization	32.0	33.1	28.3	31.9
Others	8.6	5.5	7.1	7.1
Care during diarrhoea				
Feeding ORS and home-made fluid	100.0	99.8	100.0	99.9
Keep child warm	94.7	96.5	95.7	95.6
Advice from *kabiraz*	68.6	77.9	83.5	74.7
Feed normal diet	84.2	91.6	91.8	88.4
Advice from doctor	39.3	53.5	48.5	46.5
Total (n)	2,108	1,990	728	4,826

BINP and comparison vs NNP, p<0.001, for intake of safe food
NNP vs BINP and comparison, p<0.001; BINP vs comparison, p=0.01, for drinking safe water
BINP vs NNP, p<0.001, for washing hands before taking meal

Table 5.3.9. Knowledge of mothers about signs, symptoms, and prevention of pneumonia in 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Know about pneumonia	90.8	95.9	93.0	93.2
Total (n)	2,108	1,990	728	4,820
Knowledge about signs and symptoms of pneumonia				
Cough and cold				
Fever	84.9	87.6	88.9	86.6
Rapid breathing	48.2	48.6	44.9	47.9
Chest indrawing	58.4	65.1	52.1	60.3
Inability to suck breastmilk	29.5	31.4	27.3	30.0
Others	8.5	9.0	7.1	8.5
Not known	11.1	11.0	13.3	11.4
	4.9	4.6	3.1	4.5
Knowledge about prevention of pneumonia				
Keep baby warm	82.2	89.3	89.0	86.2
Exclusive breastfeeding	0.1	0.3	.0	0.1
Continue breastfeeding up to 2 years	.0	.0	.0	.0
Proper immunization	0.8	0.6	0.5	0.7
Others	8.0	5.7	8.7	7.1
Do not know	7.4	5.9	3.2	6.2
Total (n)	1,914	1,908	677	4,499

BINP vs NNP, p<0.001; Comparison vs NNP, p=0.003, for knowledge about pneumonia
BINP vs comparison, p<0.001, for rapid breathing
BINP vs comparison, p=0.04, for chest indrawing

Table 5.3.10. Knowledge of mothers of 24-59 months old children about causes and prevention of goitre, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Know or heard about goitre	70.0	79.5	72.4	74.3
Knowledge about cause of goitre				
Not eating enough food	1.0	1.0	0.8	0.8
Not eating enough fruits	2.4	1.7	2.4	2.1
Not eating enough vegetables	5.1	5.0	3.6	4.9
Not taking iodized salt	20.9	31.7	21.7	25.5
Not eating iodine-rich foods	2.2	3.0	2.5	2.6
Others	6.2	4.6	2.9	5.0
Do not know or not sure	41.2	42.9	45.6	42.5
Knowledge about prevention of goitre				
Eating enough rice	0.4	0.2	0.5	0.4
Eating enough fruits	2.8	2.9	2.6	2.8
Eating enough vegetables	5.8	6.5	4.1	5.8
Taking iodized salt	21.0	31.6	22.0	25.5
Eating iodine-rich foods	2.8	3.5	2.6	3.0
Others	3.5	2.8	2.3	3.0
Do not know	43.7	43.3	45.3	43.8
Total (n)	2,108	1,990	728	4,826

BINP vs NNP and comparison, p<0.001, for knowledge about goitre
BINP vs NNP and comparison, p<0.001, for not taking iodized salt as a cause of goitre
BINP vs NNP and comparison, p<0.001, for taking iodized salt for prevention of goitre

5.4 NUTRITIONAL STATUS OF UNDER-5 CHILDREN

The mean age, height, and weight of 4,826 children aged 24-59 months were 41.1 months, 89.7 cm, and 11.8 kg respectively. The mean HAZ of under-5 children was -2.0, WAZ -2.1, and WHZ -1.1. Children in the BINP areas had significantly better HAZ compared to those in the NNP areas. The mean WHZ of under-5 children, however, was better in the NNP areas.

There was no difference between the areas regarding the proportion of children with stunting, defined as HAZ <-2. The overall prevalence of stunting was 50%. Severe stunting (HAZ <-3) was significantly more prevalent among children in the NNP areas compared to those in the BINP areas (22% vs 17%). On the contrary, 53% of children in the BINP areas had mild or no stunting as opposed to 47% in the NNP areas.

Under-weight, defined as WAZ <-2, was observed in 56% of under-5 children. The prevalence of severe under-weight was 13.8%, without any difference between the areas. About 56% of children were moderately under-weight (-3.0 SD to -2.01 SD).

The prevalence of wasting (WHZ <-2) was 12%, while severe wasting (WHZ <-3) was observed in only 0.7% of children. Eleven percent of children had moderate wasting, and 47% were suffering from mild wasting.

Table 5.4.1. Distribution of age, height, weight, and anthropometric indices of 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile
Age (months)	41.2	9.8	41.0	33.0	49.0	40.9	9.7	41.0	32.0	49.0	41.8	9.7	42.0	33.0	50.0	41.1	9.7	41.0	33.0	49.0
Height (cm)	89.4	7.3	89.2	84.2	94.7	89.8	7.2	89.7	84.6	95.0	90.0	7.0	90.2	85.5	95.0	89.7	7.2	89.6	84.4	94.8
Weight (kg)	11.8	1.9	11.6	10.4	13.0	11.8	1.9	11.7	10.4	13.0	11.8	1.8	11.8	10.6	13.0	11.8	1.9	11.7	10.4	13.0
MUAC (mm)	145.1	11.7	144.0	138.0	152.0	144.7	11.6	144.0	138.0	152.0	144.6	10.4	144.0	138.0	152.0	144.8	11.5	144.0	138.0	152.0
HAZ- score	-2.1	1.3	-2.1	-2.9	-1.3	-1.9	1.2	-1.9	-2.7	-1.2	-2.0	1.3	-2.0	-2.8	-1.3	-2.0	1.3	-2.0	-2.8	-1.2
WAZ-score	-2.1	0.9	-2.1	-2.7	-1.5	-2.1	0.9	-2.1	-2.7	-1.5	-2.1	0.9	-2.2	-2.7	-1.5	-2.1	0.9	-2.1	-2.7	-1.5
WHZ-score	-1.1	0.8	-1.1	-1.6	-0.6	-1.2	0.8	-1.2	-1.7	-0.7	-1.2	0.7	-1.2	-1.6	-0.8	-1.1	0.8	-1.2	-1.7	-0.7
HA% of median	91.8	5.1	91.7	88.6	95.0	92.3	4.9	92.3	89.2	95.3	92.0	5.2	92.0	88.8	94.9	92.0	5.0	91.9	88.9	95.1
WA% of median	77.8	9.7	77.4	71.4	84.1	77.8	9.5	77.1	71.2	83.5	77.6	9.7	77.0	71.1	83.5	77.8	9.6	77.2	71.3	83.8
WH% of median	90.2	7.2	89.9	85.7	94.6	89.5	7.4	89.1	84.5	93.8	89.7	6.9	89.5	85.0	93.0	89.8	7.3	89.4	85.1	94.1
Total	2,108					1,990					728					4,826				

One way analysis of variance, $p<0.05$
HAZ: BINP vs NNP
WHZ: NNP vs BINP
HA% of median: BINP vs NNP
WH% of median: NNP vs BINP

Table 5.4.2. Distribution of age, height, weight, and anthropometric indices of 24-59 months old boys, NNP Baseline Survey 2004

Indicator	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile
Age (months)	41.0	9.7	41.0	32.0	48.1	41.3	9.6	41.0	33.0	49.0	42.3	9.7	43.0	34.0	51.0	41.3	9.7	41.0	33.0	49.0
Height (cm)	90.2	7.2	89.6	84.8	95.4	90.8	7.1	90.8	85.7	95.6	90.8	6.7	91.0	86.8	95.7	90.6	7.1	90.5	85.5	95.5
Weight (kg)	12.1	1.9	12.0	10.6	13.4	12.2	1.9	12.1	10.8	13.4	12.2	1.8	12.2	11.0	13.4	12.1	1.9	12.0	10.7	13.4
MUAC (mm)	145.8	11.7	146.0	138.0	152.0	145.8	11.0	146.0	138.0	152.0	145.7	9.8	144.0	140.0	152.0	145.8	11.1	146.0	138.0	152.0
HAZ-score	-2.0	1.2	-2.0	-2.8	-1.1	-1.8	1.2	-1.8	-2.6	-1.1	-2.0	1.2	-2.0	-2.6	-1.2	-1.9	1.2	-1.9	-2.7	-1.1
WAZ-score	-2.0	0.9	-2.0	-2.6	-1.4	-2.0	0.9	-2.0	-2.6	-1.4	-2.0	0.8	-2.0	-2.6	-1.5	-2.0	0.9	-2.0	-2.6	-1.4
WHZ-score	-1.1	0.8	-1.2	-1.6	-0.6	-1.2	0.8	-1.2	-1.7	-0.7	-1.1	0.7	-1.2	-1.6	-0.8	-1.1	0.8	-1.2	-1.7	-0.7
HA% of median	92.1	5.0	92.0	88.8	95.5	92.6	5.0	92.5	89.5	95.6	91.9	4.7	92.0	89.3	95.1	92.3	5.0	92.3	89.2	95.5
WA% of median	78.2	9.7	78.0	72.0	84.3	78.5	9.6	77.9	71.7	84.3	77.8	9.3	77.6	71.9	83.5	78.3	9.6	77.8	71.9	84.2
WH% of median	90.2	7.2	89.8	85.2	94.6	89.8	7.4	89.2	84.8	93.8	89.9	6.7	89.5	85.0	93.0	90.0	7.2	89.4	85.0	94.2
Total	1,026					1,011					384					2,421				

One way analysis of variance, $p<0.05$
Height-for-age z-score: BINP vs comparison
Height-for-age % of median: BINP vs comparison

Table 5.4.3. Distribution of age, height, weight, and anthropometric indices of 24-59 months old girls, NNP Baseline Survey 2004

Indicator	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile
Age (months)	41.4	9.8	41.0	33.0	50.0	40.5	9.8	40.0	32.0	49.0	41.2	9.7	41.7	33.0	49.0	41.0	9.8	40.0	33.0	49.0
Height (cm)	88.7	7.3	88.4	83.3	93.7	88.7	7.1	88.6	83.6	93.7	89.1	7.3	88.7	83.5	94.2	88.8	7.2	88.5	83.5	93.8
Weight (kg)	11.5	1.9	11.4	10.2	12.7	11.3	1.8	11.3	10.0	12.5	11.5	1.8	11.4	10.2	12.5	11.4	1.8	11.3	10.1	12.6
MUAC (mm)	144.4	11.6	144.0	136.0	152.0	143.5	12.2	142.0	136.0	150.0	143.4	10.9	142.0	136.0	150.0	143.9	11.8	144.0	136.0	152.0
HAZ-score	-2.2	1.3	-2.2	-3.0	-1.4	-2.0	1.2	-2.0	-2.8	-1.3	-2.0	1.4	-2.0	-2.9	-1.3	-2.1	1.3	-2.1	-2.9	-1.3
WAZ-score	-2.1	0.9	-2.2	-2.8	-1.5	-2.2	0.9	-2.3	-2.8	-1.7	-2.2	1.0	-2.2	-2.8	-1.6	-2.2	0.9	-2.2	-2.8	-1.6
WHZ-score	-1.1	0.8	-1.1	-1.6	-0.6	-1.2	0.8	-1.2	-1.7	-0.7	-1.2	0.8	-1.2	-1.6	-0.8	-1.1	0.8	-1.2	-1.6	-0.7
HA% of median	91.5	5.2	91.3	88.3	94.5	92.0	4.8	92.0	89.0	94.9	92.0	5.6	91.9	88.7	94.8	91.8	5.1	91.7	88.6	94.7
WA% of median	77.5	9.7	76.9	70.9	84.0	77.1	9.4	76.4	70.9	82.8	77.4	10.3	76.5	70.8	83.3	77.3	9.7	76.7	70.9	83.3
WH% of median	90.3	7.2	90.0	86.0	94.4	89.1	7.4	88.9	84.3	93.8	89.4	7.1	89.5	85.1	92.9	89.7	7.3	89.5	85.1	94.0
Total	1,082					979					344					2,373				

One way analysis of variance, $p<0.05$
Weight-for-height z-score: NNP vs BINP
Weight-for-height % of median: NNP vs BINP

Table 5.4.4. Frequency distribution of malnutrition based on z-score among 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	No.	%	No.	%	No.	%	No.	%
HAZ								
<-3.00 SD	465	22.1	344	17.3	137	18.9	947	19.6
-3.000 SD to -2.01 SD	646	30.6	590	29.6	234	32.2	1470	30.5
-2.00 SD to -1.01 SD	590	28	656	33	224	30.8	1470	30.5
-1.00 SD and above	407	19.3	400	20.1	132	18.2	939	19.5
WAZ								
<-3.00 SD	299	14.2	257	12.9	109	14.9	664	13.8
-3.000 SD to -2.01 SD	862	40.9	862	43.3	302	41.5	2026	42
-2.00 SD to -1.01 SD	708	33.6	645	32.4	239	32.9	1593	33
-1.00 SD and above	239	11.3	226	11.4	77	10.6	543	11.2
WHZ								
<-3.00 SD	15	0.7	16	0.8	3	0.5	35	0.7
-3.000 SD to -2.01 SD	203	9.6	247	12.4	89	12.3	539	11.2
-2.00 SD to -1.01 SD	967	45.9	958	48.1	366	50.2	2291	47.5
-1.00 SD and above	923	43.8	769	38.6	270	37.1	1962	40.7
Total	2,108		1,990		728		4,826	

HAZ <-3.00: NNP vs BINP, p<0.001
HAZ -2.00 SD and above: BINP vs NNP, p<0.001
WHZ -3.00 to -2.01: NNP vs BINP, p <0.004; NNP vs comparison, p<0.05
WHZ -2.00 SD and above: NNP vs BINP, p<0.004
WHZ -1.00 SD and above: NNP vs BINP and comparison, p<0.05

Table 5.4.5. Frequency distribution of malnutrition based on z-score among 24-59 months old boys, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	No.	%	No.	%	No.	%	No.	%
HAZ								
<-3.00 SD	203	19.8	153	15.1	67	17.5	423	17.5
-3.000 SD to -2.01 SD	305	29.8	286	28.3	122	31.9	714	29.5
-2.00 SD to -1.01 SD	296	28.9	342	33.8	125	32.7	763	31.5
-1.00 SD and above	222	21.6	230	22.7	69	17.9	521	21.5
WAZ								
<-3.00 SD	118	11.5	105	10.4	46	12.1	270	11.1
-3.000 SD to -2.01 SD	400	39	410	40.6	151	39.4	961	39.7
-2.00 SD to -1.01 SD	381	37.1	359	35.5	145	37.8	885	36.6
-1.00 SD and above	126	12.3	137	13.6	41	10.7	304	12.6
WHZ								
<-3.00 SD	6	0.6	5	0.5	2	0.6	13	0.6
-3.000 SD to -2.01 SD	101	9.9	119	11.8	40	10.5	261	10.8
-2.00 SD to -1.01 SD	488	47.6	494	48.9	197	51.3	1179	48.7
-1.00 SD and above	431	42	393	38.9	144	37.6	968	40
Total	1,026		1,011		384		2,421	

HAZ <-3.00: NNP vs BINP, p=0.006

Table 5.4.6. Frequency distribution of malnutrition based on z-score among 24-59 months old girls, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
HAZ								
<-3.00 SD	262	24.2	191	19.5	70	20.4	524	21.8
-3.000 SD to -2.01 SD	340	31.5	304	31.1	112	32.5	756	31.4
-2.00 SD to -1.01 SD	294	27.2	314	32.1	99	28.7	707	29.4
-1.00 SD and above	185	17.1	170	17.4	63	18.4	419	17.4
WAZ								
<-3.00 SD	180	16.7	152	15.5	62	18.1	395	16.4
-3.000 SD to -2.01 SD	462	42.7	452	46.2	151	44	1065	44.3
-2.00 SD to -1.01 SD	327	30.2	286	29.2	94	27.4	707	29.4
-1.00 SD and above	113	10.5	89	9.1	36	10.5	238	9.9
WHZ								
<-3.00 SD	9	0.8	11	1.1	1	0.3	21	0.9
-3.000 SD to -2.01 SD	101	9.4	128	13.1	49	14.2	278	11.6
-2.00 SD to -1.01 SD	479	44.3	464	47.4	169	49.1	1112	46.2
-1.00 SD and above	492	45.5	376	38.4	125	36.4	994	41.3
Total	1,082		979		344		2,405	

HAZ <-3.00 SD: BINP vs NNP, p=0.01
HAZ -2.00 SD and above: BINP vs NNP, p<0.01
WHZ -1.00 SD and above NNP vs BINP and comparison, p<0.01
WHZ -3.00 to -2.01 NNP vs BINP, p= 0.008, NNP vs comparison, p=0.012
WHZ -2.00 SD and above NNP vs BINP and comparison

Fig 5.4.1: Percent distribution of stunting, underweight and wasting of 24-59 months old children by division, NNP Baseline survey 2004

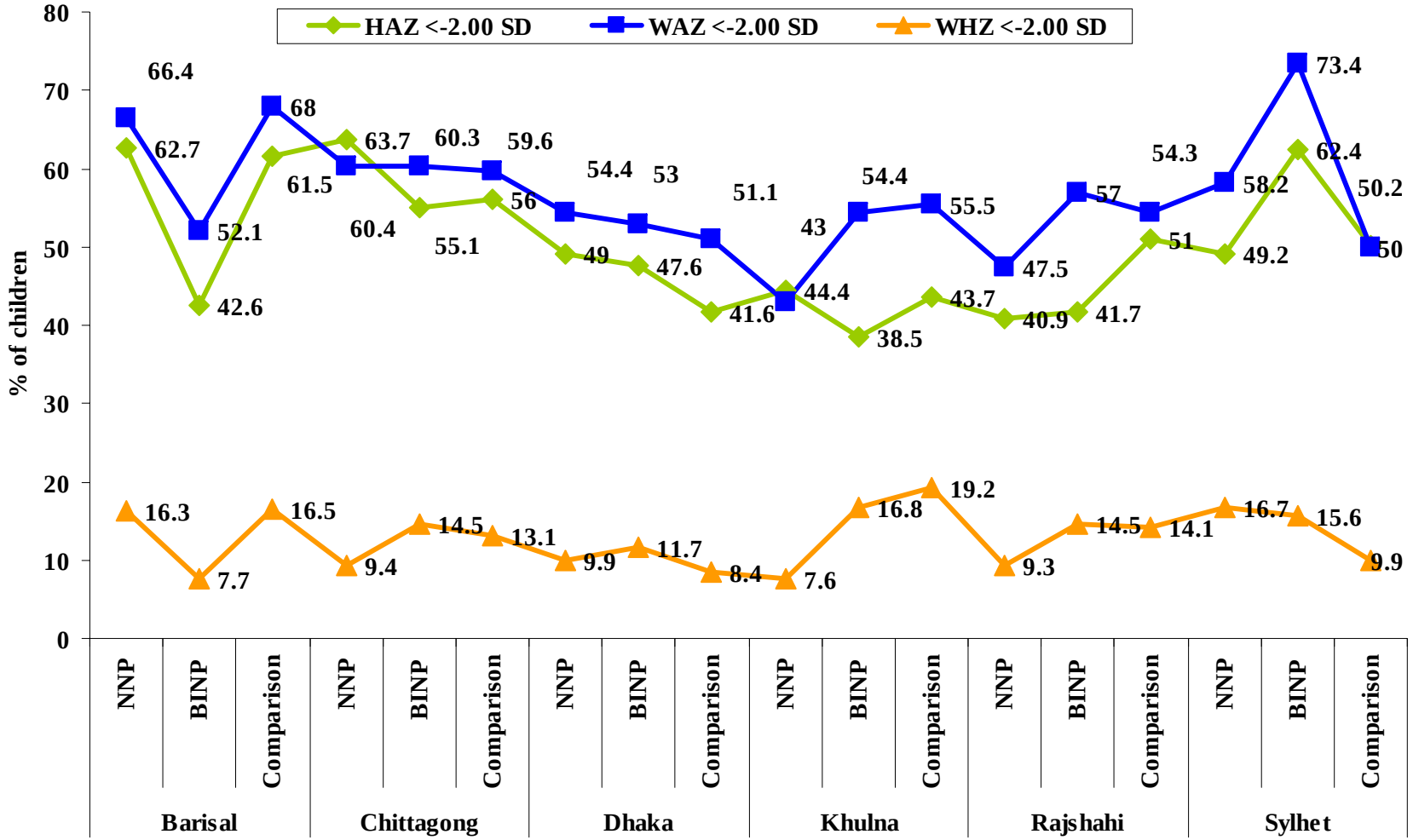


Fig 5.4.2: Comparison of median body weight of 24-59 months old boys with NCHS median

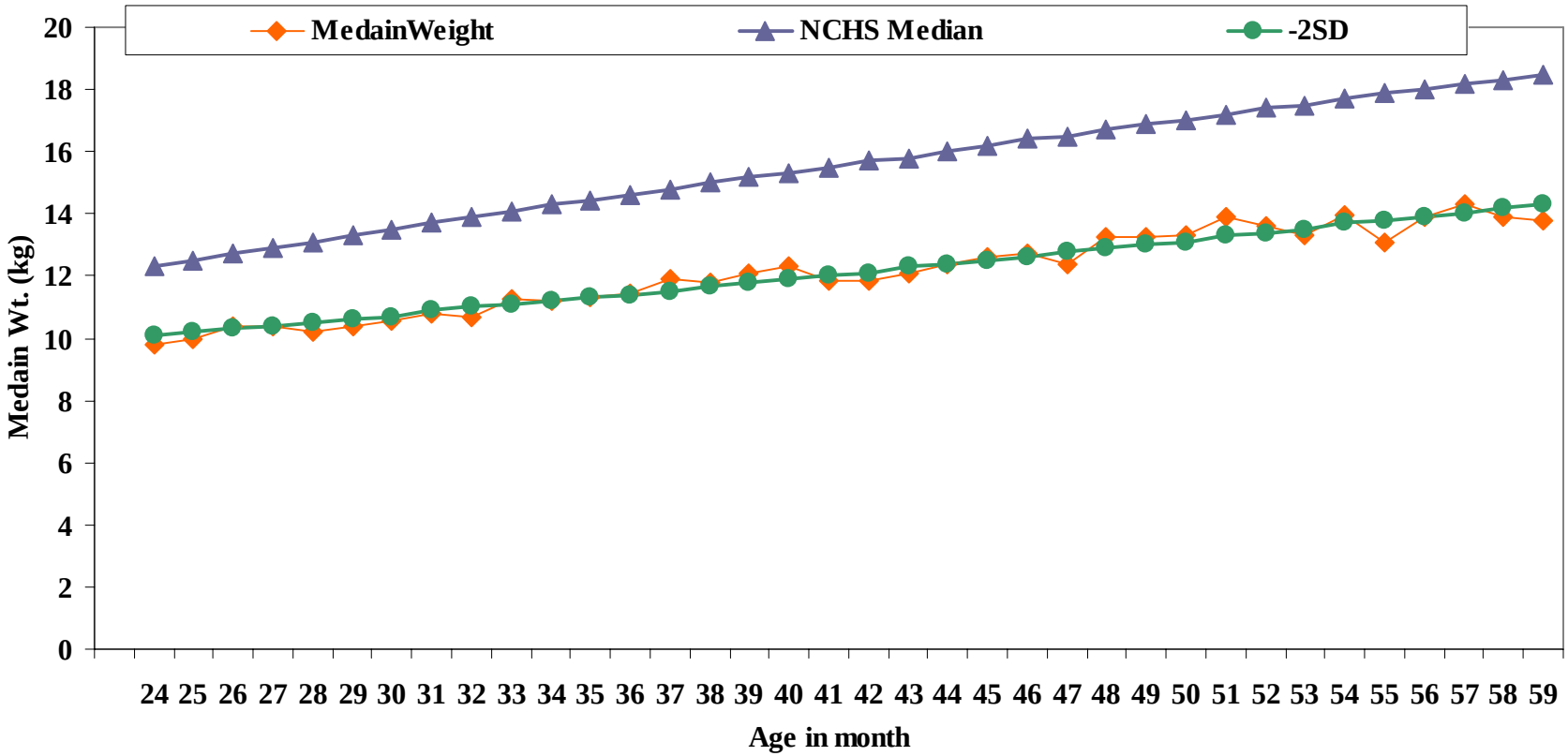


Fig 5.4.3: Comparison of median body weight of 24-59 months old girls with NCHS median

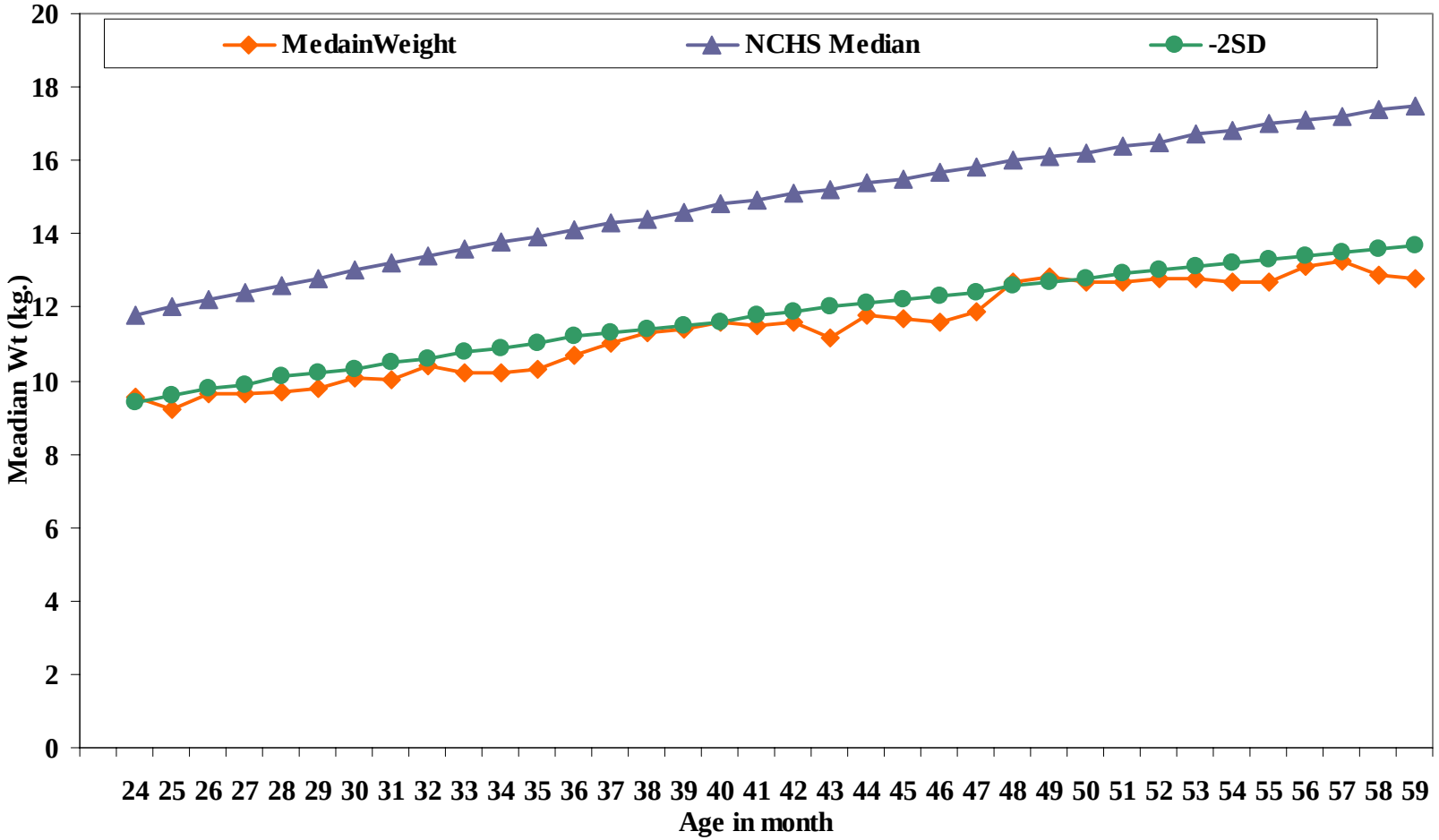


Fig 5.4.4: Comparison of median height of 24-59 months old boys with NCHS median

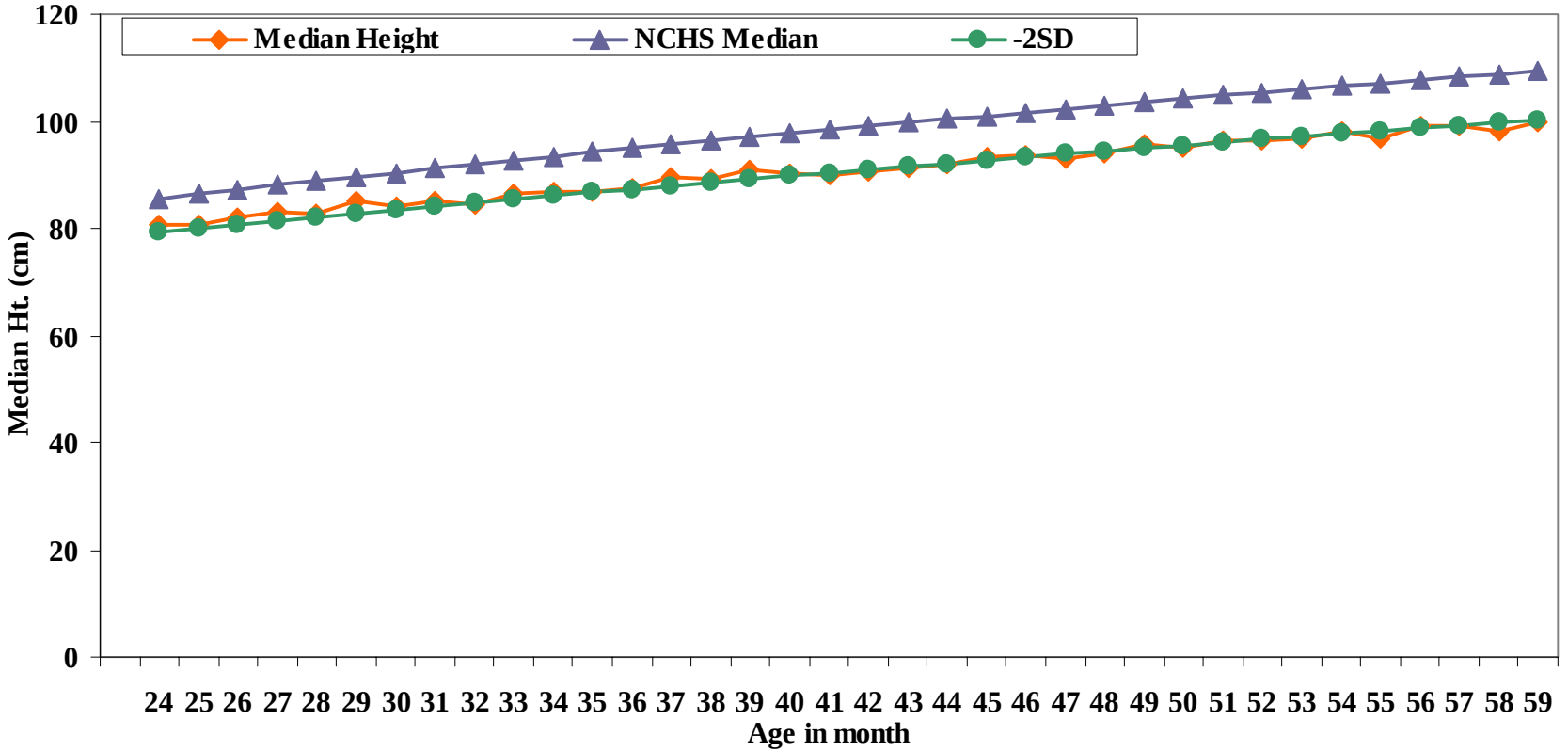


Fig 5.4.5: Comparison of median height of 24-59 months old girls with NCHS median

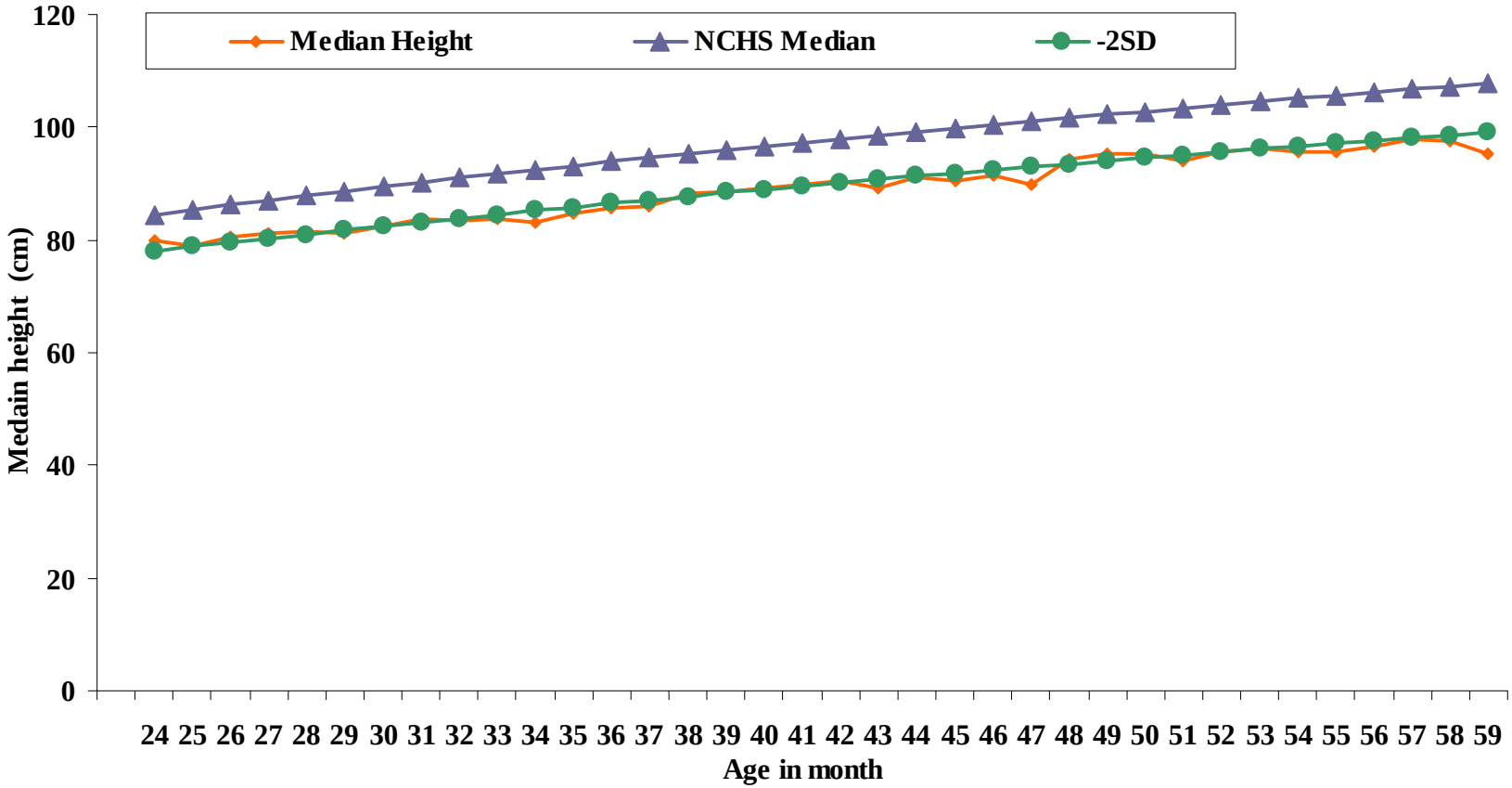


Table 5.4.7. Distribution of age, height, weight, MUAC, and BMI of mothers of 24-59 months old children, NNP Baseline Survey 2004

Indicator	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile
Age (years)	26.4	6.1	25.0	22.0	30.0	26.3	6.0	25.0	22.0	30.0	26.5	5.8	26.0	22.0	30.0	26.4	6.0	25.0	22.0	30.0
Height (cm)	150.4	18.8	150.2	146.6	153.6	150.2	19.8	149.8	146.4	153.3	150.9	29.1	149.9	146.8	153.8	150.4	21.1	150.0	146.6	153.5
Weight kg)	44.6	7.3	43.5	40.0	47.7	45.1	7.5	43.9	40.0	49.0	45.5	7.9	44.3	39.8	50.1	45.0	7.4	43.8	40.0	48.5
MUAC (mm)	239.6	25.8	236.0	222.0	252.0	241.7	27.6	238.0	222.0	256.0	240.2	26.3	236.0	222.0	258.0	240.6	26.6	238.0	222.0	256.0
BMI	19.8	3.0	19.3	17.9	21.0	20.1	3.1	19.5	18.0	21.6	20.2	3.2	19.5	18.0	21.8	20.0	3.1	19.4	18.0	21.3
Total	2,108					1,990					728					4,826				

One way analysis of variance, $p<0.05$
Weight: NNP vs comparison , $p=0.04$

Table 5.4.8. Percentage distribution of BMI classification of mothers of 24-59 months old children, NNP Baseline Survey 2004

BMI clasification-1	Survey area							
	NNP		BINP		Comparison		All	
	No.	%	No.	%	No.	%	No.	%
≤15.99	80	3.8	90	4.5	27	3.7	197	4.1
16.00-16.99	180	8.6	128	6.5	49	6.8	357	7.4
17.00-18.49	452	21.5	412	20.8	161	22.3	1025	21.4
18.50-19.99	580	27.6	505	25.5	166	23.0	1251	26.1
20.00 +	807	38.5	844	42.6	318	44.1	1970	41.0
BMI clasification-2								
≤18.49	714	33.9	635	32.0	239	32.9	1587	33.0
18.50 +	1392	66.1	1351	68.0	486	67.1	3230	67.0
Total	2,106		1,986		725		4,817	

5.5 ASSOCIATION OF NUTRITIONAL STATUS & RESULTS OF MULTIVARIATE ANALYSES

Female children are more likely to be under-weight than male children (Table 5.5.7). Both maternal level of education and household asset index were negatively related to children's under-weight and stunting. Stunting was less prevalent in the BINP project area than that in the NNP project area.

The prevalence of good-health practices relating to pregnancy care was more related to food intake, more rest, and increased ANC. They showed an increasing trend with increase in maternal education and household asset index (Table 5.5.8). Mothers' involvement in NGO activities was also related to good pregnancy-care practices. In the BNIP project areas, pregnancy care, in terms of more food intake and ANC, was better compared to the NNP project areas.

The higher the maternal education and household asset index, the higher was the odds ratio of receiving iron supplement during pregnancy, but not receiving vitamin A capsule after delivery (Table 5.5.9). Women in the BINP project areas were more likely to receive iron supplement than women in the NNP project areas. The prevalence of food insecurity was much higher among illiterate and poor women. Surprisingly, the prevalence of receiving iron supplement was higher and food insecurity was lower in the BINP project areas compared to the NNP project areas.

Table 5.5.1. Association of stunting of 24-59 months old children with socioeconomic characteristics, NNP Baseline Survey 2004

Background variable	Percentage distribution of 24-59 months children by z-score									
	HAZ <-3 SD			HAZ <-2 SD			HAZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	Total (n)
Residence										
Barisal	25.9	14.8	21.3	62.6	42.6	62.0	37.4	57.4	38.0	413
Chittagong	32.5	22.6	25.2	63.6	55.1	56.0	36.4	44.9	44.0	1,267
Dhaka	18.7	17.3	12.7	49.0	47.6	41.5	51.0	52.4	58.5	1,348
Khulna	14.0	11.3	10.9	44.6	38.5	43.5	55.4	61.5	56.5	441
Rajshahi	11.9	13.3	14.1	40.8	41.7	51.0	59.2	85.3	49.0	1,058
Sylhet	22.0	33.0	18.0	49.2	62.4	50.0	50.8	37.6	50.0	297
Age of child (months)										
24-35	17.5	17.4	18.0	47.6	43.5	45.2	52.4	56.5	54.8	1,533
36-47	24.9	15.4	20.5	55.6	46.8	54.1	44.4	53.2	45.9	1,893
48-59	23.0	19.6	17.5	54.2	51.2	52.5	45.8	48.8	47.5	1,400
Sex of child										
Male	19.8	15.1	17.5	49.5	43.4	49.5	50.5	56.6	50.5	2,421
Female	24.2	19.5	20.3	55.7	50.6	52.9	44.3	49.4	47.1	2,405
Maternal education										
None	20.9	19.6	20.7	55.2	48.3	48.9	44.8	51.7	51.1	1,990
Primary incomplete	15.9	11.2	16.3	52.2	50.4	43.4	47.8	49.6	56.6	960
Primary complete	14.7	8.8	14.0	42.6	35.6	48.2	57.4	64.4	51.8	637
Secondary+	8.8	2.6	8.9	21.2	19.8	33.3	78.8	80.2	66.7	1,238
Food insecurity at household										
None	30.0	24.1	21.4	66.2	55.1	55.7	33.8	44.9	44.3	3,424
<4 months	27.1	25.2	31.0	57.7	54.7	69.0	42.3	45.3	31.0	517
4-12 months	32.3	31.5	26.9	58.0	63.0	61.5	42.0	37.0	38.5	886
Household wealth index										
1	29.0	30.0	27.1	62.4	59.2	68.4	37.6	40.8	31.6	1,006
2	32.4	19.0	24.3	62.8	51.3	53.6	37.2	48.8	46.4	978
3	16.8	15.4	25.0	48.2	48.4	59.3	51.8	51.6	40.7	960
4	17.5	14.0	11.1	48.7	42.2	43.3	51.3	57.8	56.7	979
5	12.0	7.8	9.1	37.6	33.3	34.0	62.4	66.8	66.0	903
Total	22.1	17.3	18.9	52.7	46.9	51.0	47.3	53.1	49.0	

Table 5.5.2. Association of underweight of 24-59 months old children with socioeconomic characteristics, NNP Baseline Survey 2004

Background variable	Percentage distribution of 24-59 months children by z-score									
	WAZ <-3 SD			WAZ <-2 SD			WAZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	n (Total)
Residence										
Barisal	17.8	9.5	21.1	66.5	52.1	67.6	33.5	47.9	32.4	413
Chittagong	19.0	18.7	16.5	60.3	60.2	59.8	39.7	39.8	40.2	1,267
Dhaka	11.9	11.4	10.1	54.3	52.9	50.9	45.7	47.1	49.1	1,348
Khulna	7.6	8.4	13.0	42.7	54.4	55.6	57.3	45.6	44.4	441
Rajshahi	9.5	11.4	15.4	47.5	57.0	54.4	52.5	43.0	45.6	1,058
Sylhet	17.3	26.6	14.5	58.3	73.4	50.8	41.7	26.6	49.2	297
Age of child (months)										
24-35	16.6	17.4	19.4	57.9	60.2	56.9	42.1	39.8	43.1	1,533
36-47	13.8	9.6	13.3	54.7	53.4	56.8	45.3	46.6	43.2	1,893
48-59	12.1	12.0	13.0	52.5	55.4	55.6	47.5	44.6	44.4	1,400
Sex of child										
Male	11.5	10.4	12.0	50.6	50.9	51.4	49.4	49.1	48.6	2,421
Female	16.6	15.5	18.0	59.3	61.7	61.9	40.7	38.3	38.1	2,405
Maternal education										
None	13.4	13.5	20.0	56.7	56.7	67.4	43.3	43.3	32.6	1,990
Primary incomplete	10.7	11.9	13.1	48.7	53.4	50.5	51.3	46.6	49.5	960
Primary complete	8.5	9.3	10.6	44.6	49.6	45.6	55.4	50.4	54.4	637
Secondary+	5.3	1.7	4.4	26.5	35.2	44.4	73.5	63.8	55.6	1,238
Food insecurity at household										
None	22.3	15.5	17.1	63.5	66.8	51.4	36.5	33.2	48.6	3,424
<4 months	15.0	19.2	19.0	57.1	60.3	67.0	42.9	39.7	33.0	517
4-12 months	19.8	20.4	26.9	65.4	64.8	69.8	34.6	35.2	30.2	886
Household wealth index										
1	21.2	20.1	24.8	64.4	65.1	73.9	35.6	34.9	26.1	1,006
2	19.7	16.0	18.6	61.3	62.8	58.6	38.7	3.0		978
3	19.7	16.0	18.6	61.3	62.8	58.6	38.7	37.3	41.4	960
4	10.9	13.4	17.1	54.7	57.7	64.3	45.3	42.3	35.7	979
5	11.6	8.5	7.1	51.5	48.2	47.4	48.5	51.8	52.6	903
Total	14.2	12.9	14.9	55.1	56.2	56.5	44.9	43.8	43.5	

Table 5.5.3. Association of wasting of 24-59 months old children with socioeconomic characteristics, NNP Baseline Survey 2004

Background variable	Percentage distribution of 24-59 months children by z-score									
	WHZ <-3 SD			WHZ <-2 SD			WHZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	Total (n)
Residence										
Barisal	1.2	1.2	-	16.2	7.7	16.9	83.8	92.3	83.1	413
Chittagong	0.7	0.9	-	9.4	14.5	13.2	90.6	85.5	86.8	1,267
Dhaka	0.2	0.7	0.6	10.0	11.7	8.2	90.0	88.3	91.8	1,348
Khulna	-	1.3	2.2	7.6	16.7	19.6	92.4	83.3	80.4	441
Rajshahi	1.2	0.2	0.7	9.3	14.6	14.1	90.7	85.4	85.9	1,058
Sylhet	-	1.8	-	16.7	15.6	9.8	83.3	84.4	90.2	297
Age of child (months)										
24-35	0.5	0.9	0.5	11.0	14.6	16.6	89.0	85.4	83.4	1,533
36-47	1.3	0.5	0.7	10.2	12.6	9.9	89.8	87.4	90.1	1,893
48-59	0.2	1.1	-	9.8	12.4	13.0	90.2	87.6	87.0	1,400
Sex of child										
Male	0.6	0.5	0.5	10.4	12.3	11.2	89.6	87.7	88.8	2,421
Female	0.8	1.1	0.3	10.2	14.2	14.5	89.8	85.8	85.5	2,405
Maternal education										
None	10.4	11.2	12.2	0.8	1.5	1.2	99.2	98.5	98.8	1,990
Primary incomplete	0.9	0.8	-	10.4	14.0	20.0	89.6	86.0	80.0	960
Primary complete	-	-	1.0	8.0	13.5	11.2	92.0	86.5	88.8	637
Secondary+	0.8	0.9	-	8.8	6.9	13.3	91.2	93.1	86.7	1,238
Food insecurity at household										
None	0.4	0.5	1.4	10.4	17.6	12.9	89.6	82.4	87.1	3,424
<4 months	0.7	0.5	-	13.2	14.0	6.0	86.8	86.0	94.0	517
4-12 months	-	1.9	-	10.8	19.4	23.1	89.2	80.6	76.9	886
Household wealth index										
1	1.1	1.0	0.7	11.2	15.2	12.8	88.8	84.8	87.2	1,006
2	0.7	0.3	0.7	13.0	14.5	10.0	87.0	85.5	90.0	978
3	0.9	0.5	0.7	10.2	14.6	14.3	89.8	85.4	85.7	960
4	0.7	1.3	-	8.7	9.6	11.7	91.3	90.4	88.3	979
5	0.3	1.0	-	8.1	12.0	21.4	91.9	88.0	85.4	903
Total	0.7	0.8	0.5	10.3	13.2	12.7	89.7	86.8	87.3	

Table 5.5.4. Association of stunting of 24-59 months old children with selected household healthcare practices, NNP Baseline Survey 2004

Background variable	Percentage distribution of 24-59 months old children by z-score									
	HAZ <-3 SD			HAZ <-2 SD			HAZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	Total (n)
ANC received										
<3 visitis	8.8	12.0	11.6	35.0	38.7	33.3	65.0	61.3	66.7	941
≥3 visits	24.4	19.1	15.6	55.8	49.7	54.5	44.2	50.3	45.5	3,885
Rest during pregnancy										
More than before	18.2	15.6	19.0	49.7	46.2	51.1	50.3	53.8	48.9	1,886
Less or same as before	24.4	18.4	18.9	54.5	47.4	51.0	45.5	52.6	49.0	2,940
Food intake										
More than before	11.1	13.6	14.6	44.1	45.4	47.7	55.9	54.6	52.3	786
Less or same as before	23.8	18.1	19.8	54.1	47.3	51.8	45.9	52.7	48.2	4,040
Iron supplementation										
Regular	17.3	18.2	7.3	43.1	46.4	44.8	56.9	53.6	55.2	1,229
Irregular/none	23.2	11.3	22.2	55.0	47.2	52.8	45.0	52.8	47.2	3,,597
Vitamin A capsule within 6 weeks of delivary										
Received	12.8	17.4	20.0	50.4	47.2	65.0	49.6	52.8	35.0	306
Not received	22.7	17.3	18.9	52.9	46.9	50.6	47.1	53.1	49.4	4,521
Vitamin A capsule in last 6 months										
Received	21.3	16.4	18.8	51.5	45.5	50.8	48.5	54.5	49.2	4,180
Not received	26.0	24.7	21.7	58.9	58.9	53.3	41.1	41.1	46.7	646
Total	22.1	17.3	18.9	52.7	46.9	51.0	47.3	53.1	49.0	

Table 5.5.5. Association of underweight of 24-59 months old children with selected household healthcare practices, NNP Baseline Survey 2004

Background variable	Percentage distribution of 24-59 months old children by z-score									
	WAZ <-3 SD			WAZ <-2 SD			WAZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	Total (n)
ANC received										
<3 visitis	5.3	11.0	11.6	38.2	51.7	35.0	61.8	48.3	65.0	941
≥ 3 visits	15.8	13.6	15.6	58.0	57.8	60.8	42.0	42.2	39.2	3,885
Rest during pregnancy										
More than before	13.1	12.4	13.2	52.4	55.4	53.7	47.6	44.6	46.3	1,886
Less or same as before	14.8	13.3	16.3	56.7	56.8	58.5	43.3	43.2	41.5	2,940
Food intake										
More than before	9.4	12.5	16.9	50.0	56.5	58.5	50.0	43.5	41.5	786
Less or same as before	15.0	13.0	14.5	55.9	56.2	56.0	44.1	43.8	44.0	4,040
Iron supplementation										
Regular	11.9	13.3	6.7	46.5	57.6	43.3	53.5	42.4	56.7	1,229
Irregular/none	14.7	12.7	17.2	57.1	55.6	60.3	42.9	44.4	39.7	3,597
Vitamin A capsule within 6 weeks of delivery										
Received	8.5	13.9	20.0	47.5	57.8	60.0	52.5	42.4	40.0	306
Not received	14.6	12.8	14.8	55.6	56.1	56.4	44.4	43.9	43.6	4,521
Vitamin A capsule in last 6 months										
Received	12.5	0.8	14.6	54.2	55.7	56.8	45.8	44.3	43.2	4,180
Not received	16.4	0.9	16.5	59.7	60.7	54.3	40.3	39.3	45.7	646
Total	14.2	12.9	14.9	55.1	56.2	56.5	44.9	43.8	43.5	

Table 5.5.6. Association of wasting of 24-59 months old children with selected household healthcare practices, NNP Baseline Survey 2004

Background variable	Percentage distribution of 24-59 months old children by z-score									
	WHZ <-3 SD			WHZ <-2 SD			WHZ ≥-2 SD			
	NNP	BINP	Comparison	NNP	BINP	Comparison	NNP	BINP	Comparison	Total (n)
ANC received										
<3 visits	0.6	0.8	0.8	6.3	15.2	10.8	93.7	84.8	89.2	941
≥ 3 visits	0.8	0.8	0.3	11.1	12.6	13.0	88.9	87.4	87.0	3,885
Rest during pregnancy										
More than before	0.5	1.1	0.3	8.7	13.9	11.9	91.3	86.1	88.1	1,886
Less or same as before	0.8	0.6	0.5	11.3	12.8	13.4	88.7	33.9	86.6	2,940
Food intake										
More than before	0.7	1.1	-	8.8	14.8	13.1	91.2	85.2	86.9	786
Less or same as before	0.7	0.7	0.5	10.6	12.9	12.6	89.4	87.1	87.4	4,040
Iron supplementation										
Regular	0.5	0.8	0.6	9.7	12.7	11.6	90.3	87.3	88.4	1,229
Irregular/none	0.8	0.8	0.4	10.4	13.5	13.0	89.6	86.5	87.0	3,597
Vitamin A capsule within 6 weeks of delivery										
Received	2.1	1.4	-	6.3	13.2	9.5	93.7	86.8	90.5	306
Not received	0.6	0.8	0.4	10.6	13.2	12.9	89.4	86.8	87.1	4,521
Vitamin A capsule in last 6 months										
Received	0.8	0.8	0.5	10.1	13.8	13.5	89.9	86.2	86.5	4,180
Not received	0.3	0.9	-	11.6	8.7	7.6	88.4	91.3	92.4	646
Total	0.7	0.8	0.5	10.3	13.2	12.7	89.7	86.8	87.3	

Table 5.5.7. Adjusted odds ratios (95% confidence interval) of children's malnutrition indices for different background characteristics (children aged 24-59 months, n=4,852)			
Background characteristics	WAZ <-2 SD	HAZ <-2 SD	WHZ <-2 SD
Age of child (months)	0.99 (0.99-1.00)	1.01** (1.01-1.02)	0.99 (0.98-1.00)
Sex of child			
Male	1	1	1
Female	1.55** (1.36-1.77)	1.34 (1.17-1.53)	1.12 (.93-1.35)
Maternal education			
None	1	1	1
Primary incomplete	0.87 (0.72-1.0)	0.89 (0.75-1.06)	1.11 (0.86-1.44)
Primary complete	0.69** (0.56-0.85)	0.93 (0.76-1.14)	0.94 (0.68-1.30)
Secondary incomplete	0.61** (0.50-0.75)	0.68** (0.68-0.83)	0.94 (0.69-1.27)
Secondary +	0.40** (0.29-0.56)	0.35** (0.23-0.51)	0.74 (0.45-1.21)
Food deficit in last 12 months			
No deficit	1	1	1
<4 months	1.04 (0.84-1.30)	1.298 (1.02-1.63)	1.13 (0.85-1.52)
4 months +	0.98 (0.80-1.21)	1.15 (0.94-1.41)	1.15 (0.87-1.53)
Asset index			
Lowest	1	1	1
Second	0.86 (0.69-1.0)	0.87 (0.71-1.07)	1.03 (0.76-1.38)
Middle	0.76* (0.61-.95)	0.70** (0.56-.87)	0.99 (0.73-1.34)
Fourth	0.60** (0.47-.76)	0.62** (0.49-.77)	0.76 (0.54-1.08)
Highest	0.54** (0.42-.70)	0.48** (0.37-.63)	0.93 (0.64-1.35)
Member of any *samity* (NGO)			
No	1	1	1
Yes	0.91 (0.79-1.04)	0.810 (.70-.93)	0.99 (0.81-1.22)
Had more rest when pregnant			
No	1	1	1
Yes	0.95 (0.83-1.08)	0.99 (0.86-1.14)	0.93 (0.77-1.14)
Survey area			
NNP project	1	1	1
NNP comparison	1.15 (0.25-.90)	0.99 (0.79-1.23)	1.30 (0.94-1.81)
BINP project	1.09 (0.94-1.28)	0.83* (0.71-.97)	1.34** (1.07-1.67)
Wald chi-square (14 DF)	682.6 , p<0.001	561.5, p<0.001	399.9, p<0.001

The dependent variable equals to 1 if WAZ <-2 SD, HAZ <-2 SD, or WAZ <-2 SD, 0 otherwise
*p<0.05, **p<0.01

Table 5.5.8. Adjusted odds ratios (95% confidence interval) of good practices during pregnancy of mothers of children aged 24-59 months for different background characteristics (n=4,852)

Background characteristics	More food intake	More rest	Receive ANC
Age of mother (years)	0.96** (0.95-0.97)	0.98** (0.97-0.99)	0.96** (0.95-0.97)
Maternal education			
None	1	1	1
Primary incomplete	1.22** (1.01-1.47)	1.10 (0.91-1.32)	1.20 (0.99-1.45)
Primary complete	1.21 (0.97-1.50)	1.26* (1.01-1.58)	1.60** (1.28-2.00)
Secondary incomplete	1.07 (0.87-1.30)	1.66** (1.35-2.03)	2.01** (1.64-2.48)
Secondary+	1.41* (1.00-1.98)	2.29** (1.65-3.18)	6.56** (4.41-9.74)
Food deficit in last 12 months			
No deficit	1	1	1
<4 months	0.90 (0.72-1.12)	0.96 (0.75-1.22)	1.12 (0.88-1.41)
4 months+	0.76** (0.62-.92)	1.03 (0.84-1.25)	0.96 (0.78-1.18)
Asset index			
Lowest	1	1	1
Second	1.18 (0.96-1.45)	1.08 (0.86-1.34)	1.21 (0.96-1.52)
Middle	1.50** (1.19-1.89)	1.01 (0.80-1.27)	1.40** (1.11-1.78)
Fourth	1.23 (0.99-1.54)	0.94 (0.74-1.19)	1.61** (1.27-2.03)
Highest	1.32* (1.02-1.72)	1.04 (0.81-1.35)	2.79** (2.15-3.62)
Member of any *samity* (NGO):			
No	1	1	1
Yes	1.04 (0.90-1.20)	1.15* (1.01-1.30)	1.29** (1.12-1.49)
Survey area:			
NNP project	1	1	1
NNP comparison	1.32* (1.05-1.66)	1.21 (0.99-1.47)	1.20 (0.91-1.57)
BINP project	1.40** (1.21-1.61)	1.05 (0.90-1.22)	2.28** (1.85-2.81)
Wald chi-square (14 DF)	682.6 , p<0.001	561.5, p<0.001	399.9, p<0.001

The dependent variable equals to 1 if a mother has had more intake, more rest, or received ANC during pregnancy, 0 otherwise

*p<0.05, **p<0.01

Table 5.5.9. Adjusted odds ratios (95% confidence interval) of taking iron supplements during last pregnancy and vitamin A capsule after delivery by mothers of children aged 24-59 months for different background characteristics (n=4,852)

Background characteristics	Intake of iron tablet	Intake of vitamin A capsule	Household food insecurity in last year
Age of mother (years)	0.96** (0.95-0.98)	0.98 (0.96-1.01)	1.02** (1.00-1.03)
Maternal education			
None	1	1	1
Primary incomplete	1.23* (1.02-1.49)	0.85 (0.52-1.39)	0.77* (0.63-0.95)
Primary complete	1.26* (1.00-1.59)	1.19 (0.74-1.92)	0.53** (0.40-0.70)
Secondary incomplete	2.03** (1.64-2.51)	1.02 (0.68-1.52)	0.48** (0.37-0.63)
Secondary +	3.98** (2.80-5.64)	1.93* (1.13-3.31)	0.06** (0.02-.018)
Food deficit in last 12 months			
No deficit	1	1	N/A
<4 months	1.04 (0.82-1.32)	0.95 (0.58-1.54)	N/A
4 months +	0.97 (0.77-1.21)	0.67 (0.38-1.17)	N/A
Asset index			
Lowest	1	1	1
Second	1.13 (0.92-1.40)	0.88 (0.54-1.42)	0.50** (0.41-0.61)
Middle	1.35* (1.07-1.70)	0.97 (0.60-1.55)	0.31** (0.25-0.38)
Fourth	1.35* (1.05-1.73)	1.04 (0.63-1.71)	0.11** (.09-0.15)
Highest	2.10** (1.60-2.75)	1.45 (0.86-2.44)	0.05** (0.03-0.07)
Member of any *samity* (NGO)			
No	1	1	1
Yes	1.16* (1.00-1.34)	1.01 (0.76-1.36)	1.05 (0.80-1.48)
Survey area			
NNP project	1	1	1
NNP comparison	1.10 (0.83-1.44)	0.38** (0.21-0.69)	1.09 (0.80-1.48)
BINP project	2.69** (2.23-3.25)	1.04 (0.75-1.46)	0.73** (0.59-0.89)
Wald chi-square (14 DF)	682.6 , p<0.001	561.5, p<0.001	399.9, p<0.001

The dependent variable equals to 1 if a mother has received iron supplement when pregnant with the current child aged 24-59 months, or has had vitamin A capsule after delivery, or has food insecurity in last year, 0 otherwise

*p<0.05, **p<0.01

CHAPTER 6

HEALTH AND NUTRITIONAL STATUS OF ADOLESCENT GIRLS

6.1 BACKGROUND CHARACTERISTICS OF ADOLESCENT GIRLS

Table 6.1.1 shows percentage distribution of never-married adolescent girls by age, according to programme area. The age distribution of adolescents is similar across the programme areas. Adolescents aged 13-14 years accounted for 43% and adolescents aged 18-19 years accounted for about 10%. Two-thirds of adolescent girls were students, 4% were earning members, and the remaining 30% did housework. Nine in 10 adolescents had attended school and one in 11 adolescents had attended madrasah (religious school for Muslims). Only 4.3% had no education, the majority (68.8%) had secondary education, and 5.9% had education of 10 grade or more. The percentage distribution of adolescent girls by background characteristics and administrative divisions is shown in Table 6.1.2. Adolescents in Sylhet division were less educated than their counterparts in other divisions.

Table 6.1.1. Percentage of sampled adolescent girls by age, occupation, and education, according to NNP programme areas, NNP Baseline Survey 2004

Age, occupation, and education	Survey area			
	NNP	BINP	Comparison	All
Age (years)				
13	21.8	19.3	18.2	20.3
14	22.2	24.7	21.3	23.0
15	21.1	22.1	21.7	21.6
16	16.1	15.0	17.3	15.9
17	8.8	9.8	11.0	9.6
18	8.6	7.8	8.8	8.3
19	1.4	1.3	1.8	1.4
Primary occupation				
Student	67.9	66.9	62.7	66.7
Earning member	3.4	4.3	2.5	3.6
Household work	27.8	27.9	32.8	28.6
Others	0.9	0.9	2.0	1.1
Education institution attended				
School/college	91.2	89.7	85.4	89.7
Madrasah	7.8	7.8	13.4	8.7
None/non-formal	1.0	2.6	1.2	1.6
Education level				
No or non-formal education	4.4	4.8	3.1	4.3
Primary incomplete	13.4	14.0	11.1	13.3
Primary complete	13.3	13.7	14.5	13.6
Secondary incomplete	63.1	61.4	65.8	62.9
Secondary +	5.8	6.1	5.4	5.9
No. of never-married adolescent girls	2,268	1,870	776	4,914

NNP and BINP vs comparison, $p<0.001$, for student
BINP vs comparison, $p=0.02$, for earning member
NNP and BINP vs comparison, $p<0.05$, for household work as occupation
BINP vs comparison, $p=0.04$, for no education

Table 6.1.2. Percentage of sampled adolescent girls by age, occupation, and education, according to administrative division, NNP Baseline Survey 2004						
Age, education, and occupation	Division					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
Age (years)						
13-14	45.7	42.4	42.3	45.3	47.0	34.4
15-17	46.4	47.0	49.0	45.3	44.0	50.6
18-19	7.9	10.6	8.7	9.3	9.0	15.0
Education level						
No education	2.9	4.2	3.8	2.3	4.8	9.8
Primary incomplete	9.7	12.5	17.0	11.5	10.3	17.6
Primary complete	11.7	14.6	15.3	9.6	10.1	20.5
Secondary incomplete	67.0	63.8	59.1	69.8	67.6	46.2
Secondary +	8.6	4.8	4.7	6.8	7.3	5.8
Primary occupation						
Households work	27.9	30.1	30.8	20.7	18.4	54.6
Student	68.9	64.5	64.7	76.2	76.1	40.3
Earning member	2.7	3.6	3.6	2.8	5.0	4.0
Others	0.5	1.8	1.8	0.2	0.4	1.2
Number of adolescent girls	444	1,508	1,450	428	1,030	365

Access to media

Each adolescent girl was asked whether she had a chance to listen to or actually listens to radio, and whether she had a chance to watch or actually watches television, or she reads a newspaper. Watching television was more common among adolescent girls than listening to radio or reading newspapers (Table 6.1.3). However, only half of the girls actually listened to discussion on nutrition in radio or television (Table 6.1.4). Access to media was higher for students than for housekeepers, and for adolescents of households of higher quintiles of wealth index than for adolescents of lower wealth index quintiles (Table 6.1.5)

Table 6.1.3. Percentage of adolescent girls with access to television, radio, and newspapers, according to programme area, NNP Baseline Survey 2004				
Exposure to media	Survey area			
	NNP	BINP	Comparison	All
Has a chance to listen to radio				
No	19.1	12.9	16.8	16.4
Yes	80.9	87.1	83.2	86.6
Has listened to radio				
Not at all	33.4	31.3	34.4	32.8
Less than once a week	30.6	30.1	27.0	29.5
At least once a week	31.0	31.4	32.0	31.3
Every day	5.0	7.3	6.5	6.1
Has a chance to watch TV				
No	24.8	14.0	66.8	19.4
Yes	75.2	86.0	83.4	80.6
Has watched TV				
Not at all	37.4	26.6	30.7	32.2
Less than once a week	23.2	27.9	28.4	25.8
At least once a week	35.4	40.7	37.3	37.7
Every day	4.0	4.8	3.6	4.2
Has read newspaper				
No	58.8	56.8	61.2	58.4
Yes	41.2	43.2	38.8	41.6
Number of adolescents	2,355	1,952	799	5,106

BINP vs comparison, p=0.03, for reading newspapers

Table 6.1.4. Percentage distribution of adolescent girls, who listen to radio or watch TV, listened discussion on nutrition in radio and TV, according to programme area, NNP Baseline Survey 2004

Listened discussion on nutrition in media	Survey area			
	NNP	BINP	Comparison	All
Has listened about nutrition in radio				
No	41.4	40.4	41.4	41.0
Yes	58.6	59.6	58.6	59
No. of adolescent girls who listened radio	1,567	1,342	524	3,433
Has listened about nutrition in TV				
No	47.3	48.7	44.5	47.4
Yes	52.7	51.3	55.4	52.6
No. of adolescent girls who listened TV	1,474	1,432	554	3,460

Table 6.1.5. Percentage of adolescent girls with access to television and radio by background characteristics, NNP Baseline Survey 2004

Background characteristics	Exposure to media			
	Radio	TV	Newspaper	Anyone
Age (years)				
<15	82.3	78.9	34.3	7.6
15-17	85.2	82.6	46.1	5.0
18-19	82.3	78.8	51.8	6.8
Education				
No education	65.2	60.2	6.4	80.5
Primary incomplete	73.3	71.8	15.5	86.1
Primary complete	78.2	74.7	21.0	89.8
Secondary incomplete	87.6	84.6	50.6	96.4
Secondary +	90.3	87.6	77.6	99.7
Primary occupation				
Student	86.9	83.9	49.9	95.8
Earning member	73.4	72.8	29.3	85.9
Household work	78.0	74.2	23.5	89.9
Others	66.1	76.4	48.2	89.3
Wealth index				
Lowest	74.7	70.6	20.6	85.9
Second	73.9	74.9	32.2	89.6
Middle	86.6	78.8	40.8	95.3
Fourth	89.6	85.6	50.0	98.1
Highest	93.4	93.5	64.7	99.4

6.2 ACCESS TO HEALTH AND NUTRITION SERVICES

An adolescent forum is a platform where adolescents know each other, exchange knowledge, and discuss their problems for possible solutions. It is an important activity of the NNP programme. The adolescents were asked whether there was any adolescent forum in their locality and whether they were members of the forum. Table 6.2.1 shows that 41.7% of adolescents in the BINP areas and 6.2% in the NNP areas reported availability of adolescent forums in their locality. Of those who reported the availability of adolescent forums in the locality, 35.4% in the BINP areas and 22% in the NNP areas were members of adolescent forums. Forum members did not always attend meetings; 13.2% in the NNP areas and 27.9% in the BINP area attended the forum meetings in the last 3 months. The forum members were asked whether they had received any counselling services from the forum and also about the topics of counselling. Table 6.2.2 shows that 38.5% of adolescent forum members in the BINP areas and 18.6% in the NNP areas had received counselling. The topics of counselling in order of percentage were general health, followed by food and nutrition, hygiene and sickness care, and reproductive health. It is surprising to note that HIV/AIDS and sexually transmitted diseases were sparingly discussed. Even more surprising was the absence of any counselling relating to preparations for motherhood, i.e. breastfeeding. Forum members who had not attended meetings were asked for reasons for not attending the meetings. Most common reasons stated by them were lack of time followed by the belief that the forums were not necessary or useful. Contrary to popular belief, objection of family members was hardly mentioned as a reason for non-attendance (Tables 6.2.3-4).

Table 6.2.1. Percentage distribution of adolescent girls by availability of adolescent forum in the locality, according to NNP programme area, NNP Baseline Survey 2004

Adolescent forum in locality	Survey area		
	NNP	BINP	Comparison
No	93.8	58.3	99.0
Yes	6.2	41.7	1.0
No. of never-married adolescent girls	2,355	1,952	799

BINP vs NNP and comparison, p< 0.001, for availability of adolescent forum

Table 6.2.2. Percentage distribution of adolescent girls by membership of adolescent forum and attendance in forum meetings in last 3 months among those reporting availability of adolescent forums in their locality, according to NNP programme area, NNP Baseline Survey 2004

Membership and meeting attendance	Survey area	
	NNP	BINP
Has membership with adolescent forum		
No	77.9	64.6
Yes	22.1	35.4
Has attended forum meetings in last 3 months		
No	86.8	72.1
Yes	13.2	27.9
Has received counselling from the forum		
No	81.4	61.5
Yes	18.6	38.5
Number of adolescent girls who have adolescent forum in locality	145	814

NNP vs BINP, p=0.002, for membership of adolescent forum

Table 6.2.3. Percentage distribution of adolescents who had attended forum meetings, by counselling services received, according to NNP programme area, NNP Baseline Survey 2004		
Counselling services received	Survey area	
	NNP	BINP
General health	46.2	69.0
Reproductive health	7.7	14.1
Sexually transmitted diseases	3.8	4.2
HIV/AIDS	-	2.2
Hygiene and sickness care	40.7	42.2
Infant and childcare	7.4	10.9
Morality	-	1.0
Women's empowerment	-	3.8
Protection from acid attack	-	.3
Education on food and nutrition	59.3	61.7
Drug addiction	-	0.6
Others	29.6	20.4
Number of adolescents, who have attended forum meetings	26	313

Table 6.2.4. Reasons cited by adolescent girls for not attending adolescent forum meetings, according to NNP programme area, NNP Baseline Survey 2004		
Reason for not attending forum meetings in last 3 months	Survey area	
	NNP	BINP
Not necessary/useful	6.3	22.5
Family objection	-	0.7
Lack of time	50.0	36.6
Others	43.8	40.1
Number of adolescents who have not attended forum meetings	16	142

Intake of Iron Supplement and Anti-helminthics

Adolescent girls were asked whether they had ever taken any iron supplement and anti-helminthics. The great majority (ranging from 79.1% in the BINP areas to 93.6% in the comparison areas) of adolescent girls did not take iron supplements (Table 6.2.5). Although intake of iron supplement was low, it was less common in the NNP areas (6.8%) and the comparison areas (6.4%) than in the BINP areas (20.9%). Ever intake and intake in the last 6 months of anti-helminthics were also higher in the BINP areas than in the NNP and comparison areas.

Ever intake of iron supplement and intake of anti-helminthics in the the last 6 months varied between divisions and between programme areas. Iron intake has not always been higher in the BINP areas in all divisions; it was higher in Dhaka division, followed by Rajshahi division and lowest in Sylhet division (Table 6.2.6). Intake of anti-helminthics in the BINP areas was higher in Dhaka division and lowest in Sylhet division. Adolescent girls who did not take iron or anti-helminthics were asked for reasons for not taking these supplements. The most common reason stated by them was the belief that they are not necessary, followed by lack of supply (Table 6.2.7). Only a few respondents could not afford the medicines. Lack of appropriate knowledge, therefore, is probably responsible for the poor intake of iron supplements and anti-helminthics. Table 6.2.8 shows that intake of iron supplement and anti-helminthics was higher among older

adolescents than among young adolescents, among more-educated adolescents than among less-educated adolescents, among adolescents of no food-deficit households than among adolescents of food- deficit households, and among adolescents of upper quintiles than among adolescents of lower quintiles (in terms of household wealth index).

Table 6.2.5. Percentage distribution of adolescent girls, by iron intake and anti-helminthics, according to programme area, NNP Baseline Survey 2004

Intake of iron tablets or anti-helminthics	Survey area		
	NNP	BINP	Comparison
Frequency of ever taken iron tablets			
No	93.2	79.1	93.6
Less often	1.9	5.4	2.1
Weekly	0.8	4.4	1.3
Daily	4.1	11.1	3.0
Ever taken anti-helminthics			
No	63.9	65.1	65.8
Yes	35.3	42.0	30.2
Taken anti-helminthics in last 6 months			
No	77.5	72.7	80.1
Yes	22.5	27.3	19.9
Number of adolescents	2,355	1,952	799

BINP vs NNP and comparison, p<0.001, for intake of iron tablets
BINP vs NNP and comparison, p= 0.001; NNP vs comparison, p=0.03, for intake of anti-helminthics in last 6 months

Table 6.2.6. Percentage of adolescent girls who ever took iron tablets and anti-helminthics, according to programme area and administrative division, NNP Baseline Survey 2004

Survey area	Division						
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet	Total (n)
	% of ever taken iron supplement						
NNP	10.6	16.1	19.3	5.0	34.2	14.9	2,356
BINP	7.9	11.8	36.4	10.8	28.3	4.9	1,952
Comparison	2.0	54.0	20.0	4.0	4.0	14.0	798
All areas	8.1	16.4	30.6	8.8	28.7	7.5	5,105
	Intake of anti-helminthics in last 6 months						
NNP	9.0	40.5	13.7	3.8	26.2	6.8	2,356
BINP	7.7	12.9	46.2	6.9	21.0	5.3	1,952
Comparison	10.6	58.1	10.0	3.1	14.4	3.8	799
All areas	8.7	30.8	27.3	5.1	22.4	5.7	5,106

Table 6.2.7. Reasons cited by adolescent girls for not taking iron tablets, according to programme area, NNP Baseline Survey 2004

Reasons for not taking iron tablets	Survey area		
	NNP	BINP	Comparison
Not necessary	49.0	44.7	44.6
Family objection	0.9	0.7	0.6
Side-effects	0.7	1.8	0.4
No supply	7.2	8.6	3.6
Forgot to take	0.2	1.0	0.3
Did not receive sufficient tablets	1.4	2.6	1.0
Lost tablets		0.1	
Cannot afford	2.5	1.1	1.2
Others	38.1	39.5	48.3
Number of adolescents who did not take iron tablets	2,291	1,761	773

Table 6.2.8. Percentage of adolescent girls by intake of iron tablets and anti-helminthics by background characteristics, according to programme area, NNP Baseline Survey

Background characteristics	Ever taken iron tablet/syrup			Ever taken anti-helminthics		
	Survey area			Survey area		
	NNP	BINP	Comparison	NNP	BINP	Comparison
Age (years)						
<15	4.0	15.7	2.5	61.2	64.5	66.5
15-17	8.1	24.2	7.3	65.4	64.7	65.3
18-19	13.2	28.2	15.5	68.5	69.5	65.5
Education						
No education	3.8	10.8	-	57.3	48.5	36.0
Primary incomplete	4.1	13.5	3.3	60.3	59.5	52.2
Primary complete	4.8	13.9	6.1	55.1	59.9	57.8
Secondary incomplete	7.2	23.4	6.6	65.3	67.6	71.1
Secondary +	16.1	35.3	14.0	81.0	77.3	68.2
Food deficit						
No deficit	7.8	22.7	5.0	65.3	66.4	66.0
<4 months	3.6	21.7	11.0	58.6	65.6	51.2
4-6 months	4.3	10.4	12.1	60.5	56.4	79.8
7-12 months	2.6	14.3	-	59.5	62.2	54.5
Wealth index						
Lowest	3.6	16.6	4.7	54.8	58.3	53.4
Second	4.0	18.4	9.4	60.9	60.6	65.8
Middle	6.5	23.8	6.6	60.2	63.6	64.5
Fourth	10.6	24.3	4.3	71.6	66.3	68.8
Highest	9.6	21.3	7.3	72.3	76.3	75.3
Number of adolescents	2,355	1,952	799	2,355	1,952	799

Morbidity and Care of Illnesses

The adolescent girls were asked whether they had any of the following disease symptoms: fever, cough and/or cold, diarrhoea, vomiting and/or stomachache, pneumonia, eye infection, ear infection, skin problems, reproductive tract infection, and other symptoms in the past 2 weeks. Asking about specific symptoms could help her recall and report minor illness that would otherwise not have been reported. The two-weekly prevalence of morbidity was 35.2% with some variations between areas (Table 6.2.9). The prevalence was significantly high (41.9%) in

the comparison areas, followed by 34.4% in the NNP areas and 33.4% in the BINP areas. The symptoms in order of prevalence were fever (17.5%), followed by cough and/or cold (8.9%), stomachache (4.2%), diarrhoeal diseases (2.8%), skin infections (1.4%), and eye infections (0.1%).

Table 6.2.9. Bi-weekly prevalence (%) of illness among adolescent girls, according to programme area, NNP Baseline Survey 2004

Type of illness during last 2 weeks	Survey area			
	NNP	BINP	Comparison	All
No illness	65.6	66.6	58.1	64.8
Any illness	34.4	33.4	41.9	35.2
Fever	15.6	17.9	22.1	17.5
Cough/common cold	9.1	7.6	11.4	8.9
Diarrhoea/dysentery	2.6	2.7	3.4	2.8
Vomiting/stomach ache	4.3	3.1	6.7	4.2
Pneumonia	-	0.1	0.2	0.1
Ear infections	-	0.2	-	0.1
Eye infections	0.1	0.1	0.1	0.1
Skin problems	1.8	1.0	1.4	1.4
Reproductive tract infection	-	33.4	0.2	0.1
Others (specify)	14.1	12.8	17.0	14.1
Number of adolescents	2,355	1,952	799	5,106

BINP vs NNP and comparison, p=0.001, for suffering from any illness in last two weeks

The adolescents were asked about the usual source of treatment they sought in the case of any illness. Table 6.2.10 shows that the most commonly-mentioned treatment option was untrained village quacks (50%), followed by local pharmacies (15%) and private fee-for-service doctors (17.3%). Seven percent mentioned about public sources.

Table 6.2.10. Usual sources of treatment (%) of illness of adolescent girls, according to programme area, NNP Baseline Survey 2004

Usual source of treatment of illness	Survey area			
	NNP	BINP	Comparison	All
Public sector doctors	5.3	4.8	8.4	5.6
Public sector paramedics	1.2	1.4	2.4	1.4
NGO service providers	0.3	0.2	0.6	0.3
Private doctors	17.4	17.4	16.6	17.3
Private sector paramedics	1.0	0.6	0.6	0.8
Untrained village quacks	49.5	51.0	51.3	50.3
Pharmacies	15.8	14.3	12.5	14.7
Homeopaths	5.4	5.6	4.8	5.7
Kabiraj (or herbalist)	0.7	0.9	0.8	0.8
Home care/others	3.4	3.0	2.0	3.0
Number of adolescents	2,355	1,952	799	5,106

6.3 Food Intake and Food Insecurity

The adolescents were asked about the number of meals they ate in the last 2 weeks and whether they skipped any regular meals in the last 2 weeks. One in 20 adolescents had not been able to eat 3 meals a day, and 3 in 10 skipped regular meals during the recall period (Table 6.3.1). However, the main reasons for skipping regular meals were lack of appetite (11.5%), followed by shortage of food (7.3%) and sickness (4.0%). One in 9 adolescent girls ate alone. More than one-third (36.4%) of adolescents were not aware of the increased nutritional requirement during the adolescent period for proper growth, the situation in the BINP areas being better.

Table 6.3.1. Percentage distribution of adolescent girls, by food intake and food habit, NNP Baseline Survey 2004

Food intake and food habit of adolescent girls	Survey area			
	NNP	BINP	Comparison	All
No. of meals taken per day during last 2 weeks				
<3	6.3	3.9	4.7	5.2
3+	93.7	85.9	87.7	85.9
Skipped any regular meals in last two weeks				
No	70.7	70.3	60.9	69.0
Yes	29.3	29.7	39.1	31.0
Due to shortage of food	8.3	6.3	6.9	7.3
Due to lack of appetite	10.1	11.4	15.4	11.5
Due to sickness	3.1	4.2	6.4	4.0
Due to other reasons	7.8	7.8	10.5	8.2
Eat meals with whom				
With all family members	74.2	72.8	69.5	72.9
With female members only	15.5	15.5	17.0	15.7
Alone	10.3	11.6	13.5	11.3
Has knowledge about increased nutritional requirement during adolescent period				
No	39.4	33.2	35.8	36.4
Yes	60.6	66.8	64.2	63.6
Number of adolescents	2,355	1,952	799	5,106

NNP vs BINP, p=0.001, for knowledge of increased nutritional requirement during adolescent period

The adolescent girls were asked about the number of days of intake of different food items in the last week. Table 6.3.2 shows that intake of food items in the last week was similar across the programme areas. While intake of rice was universal, intake of protein and fruits was not regular. The programme areas were similar in adolescents' knowledge about food value (Table 6.3.3). More than a half did not know classification of food in terms of nutritive value.

Table 6.3.2. Mean and standard deviation (SD) of number of days of intake of different food items in the week preceding the interview, according to programme area, NNP Baseline Survey 2004

Name of foods	Survey area							
	NNP		BINP		Comparison		All	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Rice	7.0	0.5	7.0	0.4	7.0	0.3	7.0	0.4
Wheat	1.0	2.0	0.8	1.8	0.9	1.9	1.0	1.9
Leafy vegetables	2.5	2.1	2.6	2.1	2.5	2.1	2.5	2.1
Vegetables	6.1	1.9	6.1	1.9	6.0	2.0	6.1	1.9
Dal	2.0	2.2	2.5	2.3	2.1	2.2	2.2	2.2
Fish	4.0	2.5	4.3	2.5	4.0	2.5	4.1	2.5
Meat	0.9	1.4	1.0	1.3	1.0	1.3	1.0	1.3
Eggs	1.6	1.9	1.5	2.0	1.3	1.9	1.5	1.9
Milk	2.2	2.9	2.5	3.0	2.2	2.9	2.3	2.9
Fruits	2.7	2.5	3.2	2.6	3.1	2.6	2.9	2.6
No. of adolescents	2,355		1,952		799		5,106	

Dal is a soup prepared from lentils, oil, spices, and water

Table 6.3.3. Percentage distribution of adolescent girls, by knowledge about food values, according to programme area, NNP Baseline Survey 2004

Food items and food values	Survey area			
	NNP	BINP	Comparison	All
The following are energy-dense foods				
Rice	30.6	33.0	27.0	31.0
Wheat	11.8	12.7	9.4	11.8
Leafy vegetables	77.5	77.9	80.9	78.2
Vegetables	80.0	80.4	82.0	80.4
Dal	24.6	29.6	24.2	26.4
Fish	47.6	49.6	41.9	47.5
Meat	44.7	46.8	40.6	44.8
Eggs	65.9	57.8	56.8	61.4
Milk	65.5	57.7	62.3	62.0
Fruits	60.1	57.4	62.1	59.4
Oil/ghee	2.6	2.1	2.5	2.4
Others	2.2	3.1	2.6	2.6
Don't know	2.2	1.6	1.5	1.8
The following are high-protein foods				
Rice	13.6	10.8	10.5	12.1
Wheat	6.9	5.5	5.6	6.2
Leafy vegetables	36.4	36.5	33.5	36.0
Vegetables	44.0	44.5	41.6	43.8
Dal	20.9	22.0	16.1	20.6
Fish	43.9	42.3	44.2	43.3
Meat	34.0	31.7	29.7	32.4
Eggs	36.6	31.4	28.3	33.3
Milk	30.0	26.2	23.7	27.6
Fruits	22.7	21.4	22.8	22.2
Oil/ghee	4.2	5.1	4.6	4.6
Others	3.7	4.1	4.4	3.9
Don't know	23.0	23.8	22.2	23.2
The following are vitamin and mineral-rich foods				
Rice	12.2	10.7	12.6	11.7
Wheat	7.3	5.9	4.3	6.3
Leafy vegetables	71.9	78.5	75.8	75.0
Vegetables	72.4	76.3	75.8	74.4
Dal	16.3	18.4	15.8	17.0
Fish	32.7	35.2	30.7	33.3
Meat	27.3	29.6	27.9	28.3
Eggs	41.1	38.8	35.3	39.3
Milk	43.6	41.8	38.7	42.1
Fruits	48.3	53.5	52.4	50.9
Oil/ghee	3.7	3.8	3.6	3.7
Salt	11.8	13.1	9.0	11.9
Others	3.0	3.2	3.3	3.1
Don't know	9.9	6.2	6.6	8.0
Number of adolescents	2,355	1,952	799	5,106

6.4 HEALTH AND NUTRITION-RELATED KNOWLEDGE AND PRACTICE

Personal Hygiene and Disease Knowledge

Adolescent girls were asked about the number of days per week they used soap for bathing. Weekly use of soap for bathing was near universal (98.5%) (Table 6.4.1). The great majority (89.3%) used soap for at least 4 days a week. When asked about the causes of goitre, one-half of adolescents did not know about what causes goitre, 44.3% knew correctly about what causes goitre, and the rest knew, but incorrectly (Table 6.4.2). Knowledge of preventive measures of goitre was even poor; only 44.4% knew about what prevents the development of goitre. More than one-half did not know about any preventive measures of goitre. Overall, knowledge relating to goitre was higher in the BINP areas.

Knowledge of what causes and prevents diarrhoea was widely prevalent, the knowledge being more common among adolescents in the BINP areas. Only 8.7% did not know about any cause of diarrhoea, and 11% were not aware of any preventive measures against it (Table 6.4.3). Knowledge about management and treatment of diarrhoea was near universal.

Adolescents' knowledge of nightblindness was not pervasive; 34.1% did not know about causes of nightblindness, and 35.8% were not aware of any measures that prevent nightblindness (Table 6.4.4). Awareness, however, was better among adolescent girls in the NNP areas.

Table 6.4.1. Percentage distribution of adolescent girls by frequency of soap use per week for bathing, according to programme area, NNP Baseline Survey 2004

Days of soap use weekly for bathing	Survey area			
	NNP	BINP	Comparison	All
None	1.7	1.3	1.4	1.5
1-3 day(s)	9.5	9.1	8.6	9.2
4 or more days	88.8	89.7	90.0	89.3
Number of adolescents	2,355	1,952	799	5,106

Table 6.4.2. Percentage distribution of adolescent girls by knowledge about causes and prevention of goitre

Knowledge about goitre	Survey area			
	NNP	BINP	Comparison	All
Know about goitre	77.3	81.7	77.6	79.0
Causes of goitre				
Not eating enough foods	1.5	0.8	1.3	1.2
Not eating enough fruits	4.5	3.6	4.1	4.1
Not eating enough vegetables	8.3	8.3	9.4	8.5
Not eating iodized salt	36.1	43.0	31.3	38.0
Not eating iodine-rich foods	6.6	7.0	3.4	6.3
Others	13.0	8.2	8.5	10.5
Don't know/not sure	50.6	47.4	57.1	50.4
Measures for prevention of goitre				
Eating enough rice	1.4	0.8	0.6	1.1
Eating enough fruits	6.6	5.7	6.3	6.2
Eating enough vegetables	11.3	11.9	12.5	11.8
Eating iodized salt	35.3	42.2	31.7	37.4
Eating iodine-rich foods	7.4	7.6	4.3	7.0
Others	8.5	5.8	6.6	7.2
Don't know/not sure	53.7	48.7	56.2	52.2
Number of adolescents	2,355	1,952	799	5,106

BINP vs NNP and comparison, $p<0.01$, for knowledge about goitre
Causes of goitre: BINP vs NNP and comparison, $p<0.001$; NNP vs comparison, $p=0.01$, for not taking iodized salt
Prevention of goitre: BINP vs NNP and comparison, $p=0.001$, for intake of iodized salt

Table 6.4.3. Percentage distribution of adolescent girls by knowledge of causes, preventive measures, and treatment of diarrhoea, according to programme area, NNP Baseline Survey 2004

Knowledge of diarrhoea	Survey area			
	NNP	BINP	Comparison	All
Causes of diarrhoea				
Contaminated water/liquid	23.4	22.1	20.9	22.5
Spoiled, stale food	79.9	82.2	79.0	80.6
Not washing hands before taking meal	30.8	33.1	28.3	31.3
Not washing hands with soap after defecation	17.7	19.0	12.1	17.3
Not washing hands with ash/mud after defecation	8.8	10.0	5.5	8.8
Not using sanitary latrine	10.1	11.9	13.5	11.3
Not continuing breastfeeding up to 2 years	.0	0.1	-	.0
Not giving immunization properly	0.1	0.1	0.1	0.1
Others	30.4	32.5	29.3	31.0
Don't know/not sure	9.5	7.2	10.0	8.7
Measures for prevention of diarrhoea				
Use of safe foods	65.1	75.9	72.6	70.4
Use of safe fluids	32.6	27.6	25.8	29.6
Washing hands before taking foods	30.9	32.8	28.8	31.3
Washing hands with soap after defecation	19.5	19.3	13.1	18.4
Washing hands with ash/mud after defecation	8.5	9.6	7.1	8.7
Using sanitary latrine	11.3	11.9	13.4	11.8
Continue breastfeeding up to 2 years	0.1	0.1	-	0.1
Poor immunization	-	-		-
Others	27.3	32.2	27.4	29.2
Don't know/not sure	12.8	8.6	11.8	11.0
Management/treatment of diarrhoea				
Give ORS	99.4	99.6	99.6	99.5
Give home-made fluids	91.5	95.8	94.6	93.6
Feed normal diet	67.8	74.8	74.3	71.5
Continue breastmilk	76.3	82.6	82.9	79.7
Others	34.3	49.2	46.3	41.9
Number of adolescents	2,355	1,952	799	5,106

Prevention of goitre: BINP vs NNP and comparison, p=0.001, for intake of iodized salt
Cause of diarrhoea
BINP vs comparison, p=0.01, for not washing hands before taking meal
BINP and NNP vs comparison, p=0.001, for not washing hands with soap after defecation
BINP and NNP vs comparison, p=0.001, for not washing hands with ash/mud after defecation
Comparison vs NNP, p=0.009, for not using sanitary latrine
BINP vs NNP and comparison, p<0.05, for not having any idea about cause of diarrhoea
Prevention of diarrhoea
BINP and comparison vs NNP, p=0.001, for intake of safe foods
NNP vs BINP and comparison, p=0.001, for drinking safe fluids
BINP vs comparison, p=0.03, for washing hands before taking meal
BINP vs NNP and comparison, p<0.05, for not having any idea about prevention of diarrhoea

Table 6.4.4. Percentage distribution of adolescent girls by knowledge about cause and prevention of nightblindness, according to programme area, NNP Baseline Survey 2004

Knowledge about nightblindness	Survey area			
	NNP	BINP	Comparison	All
Causes of nightblindness				
Not eating *mola* and *dhela* fish	7.5	4.8	3.3	5.8
Not eating enough fruits	6.2	4.5	4.9	5.3
Not eating green-leafy vegetables	31.0	29.0	26.8	29.6
Not eating yellow fruits	11.1	11.8	10.1	11.2
Not eating high-protein foods	2.1	2.5	2.3	2.3
Eating food cook without enough oil	0.3	0.4	0.5	0.4
Not taking vitamin A capsule	12.0	9.2	9.8	10.6
Not taking small fish	7.9	8.4	4.3	7.5
Not taking vitamin A-rich foods	32.6	36.3	31.2	33.8
Others	14.6	12.0	14.1	13.5
Don't know/not sure	34.2	32.4	38.0	34.1
Measures of prevention of nightblindness				
Eating *mola* and *dhela* fish	9.5	6.0	4.6	7.4
Eating enough fruits	7.0	6.9	6.0	6.8
Eating green-leafy vegetables	36.7	36.7	31.3	35.9
Eating yellow fruits	13.8	13.6	12.0	13.5
Eating high-protein foods	2.6	3.6	3.3	3.1
Eating food cooked with enough oil	0.3	0.2	0.4	0.3
Eating vitamin A capsule	9.7	8.0	7.6	8.7
Eating small fish	9.8	10.3	6.5	9.5
Eating not taking vitamin A-rich foods	31.0	33.8	30.0	31.9
Others	9.2	8.7	10.6	9.2
Don't know/not sure	36.4	33.4	39.5	35.8
Number of adolescents	2,355	1,952	799	5,106

Mola and dhela fish: Small fresh-water fish believed to be good for the eye

Causes of nightblindness

NNP vs BINP and comparison, p=0.001, for not eating *mola* and *dhela* fish

NNP vs BINP, p=0.01, for not eating enough fruits

NNP vs comparison, p=0.02, for not eating enough green-leafy vegetables

NNP vs BINP, p=0.03, for not taking vitamin A capsule

BINP vs NNP and comparison, p=0.01, for not taking vitamin A-rich foods

Prevention of nightblindness

NNP vs BINP and comparison, p<0.001, for eating *mola* and *dhela* fish

NNP and BINP vs comparison, p<0.001, for eating enough green-leafy vegetables

NNP and BINP vs comparison, p<0.001, for eating small fish

6.5 SOCIAL INSECURITY AND REPRODUCTIVE HEALTH

Social Insecurity

Freedom of movement without fear and anxiety is a basic human right. Adolescent girls were asked whether they were disturbed on their way to school, college, or social visits by teasers, by people giving threats, enticements, or bad remarks, etc. More than two-fifths (43.5%) of them were disturbed (Tables 6.5.1-3), and the disturbance in order of incidence was staring with ill motive (30.2%), passing bad comments (28.5%), blowing whistle (21.7%), giving proposals for immoral activities (12.4%), threats (10.8%), and enticements (7.9%). They were disturbed by eve teasers (63.5%), followed by neighbours (38.2%) and students (22.4%). Educated girls and those of wealthier households (as indicated by wealth index) were more subject to social insecurity.

Table 6.5.1. Percentage distribution of adolescent girls by disturbance faced on their way to school, college, or social visits, according to programme area, NNP Baseline Survey 2004

Disturbance on their way to school/college/social visits	Survey area			
	NNP	BINP	Comparison	All
No	57.2	54.0	60.8	56.5
Yes	42.8	46.0	39.2	43.5
Number of adolescent girls	2,355	1,952	799	5,106

Table 6.5.2. Percentage of distribution of adolescent girls by type of disturbance they faced on their way to school, college, or social visits, according to programme area, NNP Baseline Survey 2004

Type of disturbance they face on their way to school/college/social visits	Survey area			
	NNP	BINP	Comparison	All
Staring with ill motive	31.8	30.3	25.3	30.2
Blow whistle	21.3	23.8	17.8	21.7
Make bad comments	28.7	30.8	22.2	28.5
Entice	7.8	8.0	8.0	7.9
Threat	9.7	11.2	13.1	10.8
Give proposal for immoral acts	10.2	14.3	14.4	12.4
Disturbance created by				
School/college students	22.4	23.3	19.5	22.4
Eve teasers	63.2	66.0	57.2	63.5
Mastans	6.0	5.7	8.0	6.3
Neighbours	39.9	35.7	39.8	38.2
Others	4.7	4.8	6.4	5.0
No. of adolescents who were subjected to disturbance	1,009	897	314	2,220

Mastans are local hoodlums

Table 6.5.3. Percentage of adolescent girls who were subjected to eve teasing, by background characteristics and administrative divisions, NNP baseline survey 2004

Background characteristics	Division					
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet
Age (years)						
<15	34.7	41.0	39.2	44.3	37.6	29.4
15-17	46.1	49.2	47.1	52.1	50.8	31.4
18-19	48.6	43.8	47.0	62.5	31.2	42.3
Education						
No education	23.1	28.6	32.7	30.0	30.6	20.6
Primary incomplete	32.6	18.5	31.3	36.7	30.2	26.2
Primary complete	19.2	41.2	38.2	42.9	31.7	25.4
Secondary incomplete	44.4	51.9	48.2	51.0	46.6	38.8
Secondary complete+	60.5	52.1	61.9	72.4	49.3	45.0
Primary occupation						
Student	46.7	48.3	46.1	51.8	45.4	38.6
Earning member	41.7	27.8	43.9	50.0	47.1	35.7
Housework	27.4	41.0	39.6	40.9	31.6	28.0
Others	-	39.3	31.6	100.0	25.0	-
Food insecurity in last 12 months	41.6	47.9	44.7	50.5	46.2	33.1
No	45.8	42.8	40.8	56.5	37.9	25.8
<4 months	37.8	37.4	41.0	35.9	36.0	28.6
4-12 months	28.6	32.9	36.2	44.4	22.0	43.5
7-12 months						
Wealth index						
Lowest	31.9	27.3	32.4	46.9	31.3	23.9
Second	36.5	40.2	44.4	42.7	39.0	39.1
Middle	36.6	43.6	47.1	47.9	39.3	31.9
Fourth	48.4	57.8	46.3	51.4	50.2	31.4
Highest	49.5	52.9	51.4	40.0	45.9	34.8
Number of adolescents	443	1,508	1,350	428	1,030	346

Menarche and Related Issues

The sampled adolescent girls were asked whether they had already achieved menarche and whether they had passed any abnormal discharge per vagina (specifically, passage of white discharge with foul smell). 93.9% of the sampled adolescents had had menses with 88.8% of them experiencing regular periods. Food avoidance during menstruation was prevalent in one in 8 adolescents. Foul- smelling vaginal discharge was reported by 22.9%, and its prevalence was significantly lower in the BINP areas than in the NNP or comparison areas (Tables 6.5.4-5).

Table 6.5.4. Percentage distribution of adolescent girls by menarche, according to programme area, NNP Baseline Survey 2004

Has menarche occurred	Survey area			
	NNP	BINP	Comparison	All
No	7.7	5.0	3.9	6.1
Yes	92.3	95.0	96.1	93.9
No. of adolescents	2,355	1,952	799	5,106

Table 6.5.5. Percentage distribution of adolescent girls by menstrual cycle, duration of menstruation cycle, and food avoidance during menstruation cycle, according to programme area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Menstruation				
Regular	89.2	89.1	87.1	88.8
Irregular	10.3	9.6	12.4	10.4
Others	0.5	1.3	0.5	0.8
Average duration of menstruation				
Mean and SD (days)	4.6 (1.4)	4.6 (1.5)	4.6 (1.4)	4.6 (1.4)
Avoidance of any food during menstruation				
Avoided any food	13.9	11.2	9.5	12.1
Rice	5.6	1.5	1.4	3.4
Wheat	0.4	0.2	0.5	0.3
Leafy vegetables	1.6	0.7	0.6	1.1
Vegetables	2.6	1.0	0.8	1.7
Dal	0.5	0.6	0.1	0.5
Fish	3.5	4.5	3.8	3.9
Meat	1.3	1.0	1.0	1.1
Eggs	1.1	0.7	0.3	0.8
Milk	0.8	1.1	0.9	0.9
Fruits	0.8	0.5	0.6	0.7
Others	3.8	3.1	3.5	3.5
White foul-smelling vaginal discharge	76.0	80.4	72.3	77.1
No	24.0	19.6	27.7	22.9
Yes				
No. of adolescent girls who achieved menarche	2,173	1,854	768	4,795

NNP vs BINP and comparison, $p<0.05$, for avoiding specific foods during menstruation
BINP vs NNP and comparison, $p<0.001$, for white foul-smelling vaginal discharge

6.6 NUTRITIONAL STATUS OF ADOLESCENT GIRLS

The mean age of 5,106 adolescent girls interviewed was 15 years (Table 6.6.1). They had a mean height and weight of 149.2 cm and 41.5 kg respectively. The mean MUAC was 22.7 cm, while the mean BMI was 18.6 (interquartile range 17-19.9). The mean weight of girls in the BINP areas was 500 g more than that of girls in the NNP areas. Similarly, the mean MUAC value of girls in the BINP areas was also significantly higher compared to girls in the NNP areas. The mean BMI of girls in the BINP areas was significantly higher than that in the NNP areas, but was similar to that in the comparison areas. Table 6.6.2 shows that a significantly larger proportion of girls in the comparison areas was severely stunted (HAZ <-3 SD; 7.8% compared to 5.6% in the NNP areas). More than half of the adolescent girls had CED, defined as a BMI less than 18.5 (Tables 6.6.3-4). The prevalence of CED was highest in the NNP areas (54%).

Table 6.6.1. Distribution of age, height, weight, MUAC, BMI, and anthropometric indices of unmarried adolescent girls, NNP Baseline Survey 2004

Indicator	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile	Mean	SD	Median	25% ile	75% ile
Age (years)	15.0	1.6	15.0	14.0	16.0	15.0	1.6	15.0	14.0	16.0	15.2	1.6	15.0	14.0	16.0	15.0	1.6	15.0	14.0	16.0
Height (cm)	149.1	6.1	149.3	145.7	153.0	149.2	6.1	149.3	145.7	153.1	149.2	5.8	149.4	146.1	152.5	149.2	6.1	149.3	145.8	152.9
Weight (kg)	41.3	5.9	41.0	37.3	44.7	41.8	6.2	41.2	37.6	45.2	41.7	6.3	41.3	37.6	44.7	41.5	6.1	41.1	37.5	44.9
MUAC (mm)	226.1	22.8	224.0	210.0	238.0	227.8	23.0	226.0	214.0	242.0	226.6	22.5	226.0	210.0	240.0	226.8	22.8	226.0	212.0	240.0
BMI	18.5	2.4	18.4	16.9	19.7	18.8	2.5	18.5	17.1	20.0	18.7	2.4	18.6	17.1	19.8	18.6	2.4	18.4	17.0	19.9
Ht-for-age z-score	-1.7	0.8	-1.7	-2.2	-1.2	-1.7	0.9	-1.7	-2.3	-1.1	-1.8	0.9	-1.8	-2.3	-1.2	-1.7	0.9	-1.7	-2.3	-1.1
Wt-for-age z-score	-1.4	0.7	-1.4	-1.8	-0.9	-1.3	0.7	-1.3	-1.8	-0.8	-1.4	0.7	-1.4	-1.8	-0.9	-1.3	0.7	-1.4	-1.8	-0.9
Total	2,355					1,952					799					5,106				

One way analysis of variance, $p<0.05$

Age: Comparison vs NNP and BINP, $p<0.05$

Weight: BINP vs NNP, $p=0.005$; Comparison vs NNP, $p=0.03$

MUAC: BINP vs NNP, $p=0.01$

BMI: BINP vs NNP, $p=0.00$; Comparison vs NNP, $p=0.02$

Table 6.6.2. Number and percentage distribution of adolescent girls (13-19 years), by nutritional status, based on z-score by programme area, NNP Baseline Survey 2004

Z-score	Survey area							
	NNP		BINP		Comparison		All	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
HAZ								
<-3.00 SD	117	5.6	118	6.7	55	7.8	290	6.4
-3.000 SD to -2.01 SD	635	33.3	496	28.2	208	29.5	1339	29.3
-2.00 SD to -1.01 SD	948	45.2	793	45.1	314	44.5	2055	45.0
-1.00 SD and above	399	19.0	351	20.0	129	18.3	879	19.3
WAZ								
<-3.00 SD	25	1.2	15	0.8	1	0.1	41	0.9
-3.000 SD to -2.01 SD	359	17.0	274	15.5	112	15.8	745	16.3
-2.00 SD to -1.01 SD	1089	51.7	913	51.7	392	55.4	2394	52.3
-1.00 SD and above	634	30.1	564	31.9	202	28.6	1400	30.9
Total	2,107		1,766		707		4,580	

NNP vs comparison, p=0.03, for HAZ <-3 SD
NNP vs comparison, p=0.01, for WAZ <-3 SD

Table 6.6.3. Number and percentage distribution of adolescent girls, according to BMI classification and programme area, NNP Baseline Survey 2004

BMI catagory	Survey area							
	NNP		BINP		Comparison		All	
	No.	%	No.	%	No.	%	No.	%
≤15.99	271	11.6	187	9.6	78	9.9	536	10.6
16.00-16.99	335	14.3	254	13.1	108	13.7	697	13.7
17.00-18.49	651	27.8	532	27.4	203	25.7	1386	27.3
18.50-19.99	566	24.2	476	24.5	215	27.2	1257	24.8
20.00+	517	22.1	492	25.3	186	23.5	1195	23.6
BMI clasification according to previous WHO criteria								
≤18.49	1258	53.7	973	50.1	390	49.3	2621	51.6
18.50 +	1085	46.3	968	49.9	401	50.7	2454	48.4
BMI for age								
<5th percentile	233	9.9	162	8.3	62	7.8	457	9.0
≥5th percentile	2109	90.1	1779	91.7	729	92.2	4617	91.0
Total	2,343		1,941		791		5,075	

NNP vs BINP, p=0.02; NNP vs comparison, p=0.03 for BMI ≤18.49

Table 6.6.4. Percentage distribution of adolescent girls by BMI and background characteristics, according to programme area, NNP baseline survey 2004

Background characteristics	Survey area					
	NNP		BINP		Comparison	
	BMI <18.5	BMI 18.5+	BMI <18.5	BMI 18.5+	BMI <18.5	BMI 18.5 +
Education level						
None	50.0	50.0	49.5	50.5	32.0	68.0
Primary incomplete	56.4	43.6	56.9	43.1	51.1	48.9
Primary complete	57.9	42.1	48.1	51.9	55.8	44.2
Secondary incomplete	53.4	46.6	49.5	50.5	49.4	50.6
Secondary +	44.5	55.5	45.3	54.7	37.2	62.8
Primary occupation						
Student	55.7	44.3	53.9	46.1	53.1	46.9
Earning member	50.6	49.4	42.9	57.1	40.0	60.0
Housework	48.8	51.2	42.9	57.1	41.9	58.1
Other work	61.9	38.1	33.3	66.7	57.1	42.9
Intake of iron tablets						
Yes	56.5	43.5	51.9	48.1	51.0	49.0
No	53.5	46.5	49.7	50.3	49.2	50.8
Intake of anti-helminthics						
Yes	54.0	46.0	49.8	50.2	51.3	48.7
No	53.1	46.9	50.7	49.3	45.4	54.6
Food insecurity in last 12 months						
No insecurity	51.4	48.6	49.0	51.0	50.6	49.4
<4 months	63.6	36.4	54.8	45.2	50.0	50.0
4-6 months	56.4	43.6	48.8	51.2	42.9	57.1
7-12 months	63.4	36.6	62.2	37.8	45.5	54.5
Wealth index						
Lowest	58.4	41.6	51.3	48.7	46.2	53.8
Second	59.7	40.3	54.3	45.7	46.9	53.1
Middle	52.7	47.3	51.4	48.6	52.4	47.6
Fourth	49.2	50.8	46.8	53.2	43.8	56.2
Highest	48.3	51.7	46.7	53.3	58.0	42.0
Number of adolescent girls	2,343		1,941		791	

6.7 MICRONUTRIENT STATUS AND STOOL PARASITES

The mean haemoglobin level of adolescent girls surveyed was 12.64 g/dL. The prevalence of anaemia, defined as a haemoglobin level <12 g/dL, was 24.8% (Tables 6.7.1-2).

Table salt consumed by adolescent girls was examined for iodine content. Overall, the median level of iodine in table salt in all areas was 24.3 ppm, the minimum desirable level being 15 ppm. Consumption of table salt iodine was highest in the NNP areas (median 23.5 ppm). Based on the cut-off of 15 ppm, 42% of households of adolescent girls were consuming table salt that contained inadequate iodine. The proportion of households consuming table salt having iodine in inadequate concentrations was lowest in the NNP areas (Table 6.7.3).

Urinary iodine excretion was measured as a proxy indicator of iodine status of adolescent girls. The median urinary iodine levels were highest among adolescent girls in the NNP areas, followed by the BINP and comparison areas (163, 125, and 113 μg/L respectively). The prevalence of iodine deficiency, defined as a urinary iodine concentration less than 100 μg/L, was 37% overall. It was lowest among adolescent girls in the NNP areas (29%), followed by 40% in the BINP areas and 42% in comparison areas (Tables 6.7.5-6). These data suggest the enormity of the problem of sub-clinical iodine deficiency in the country and its consequent implications on growth and intellectual performance of the population. The data also single out the need for making salt iodization universal in the country and for rendering properly iodized table salt readily available in households.

Table 6.7.7 shows one in 3 adolescent girls had intestinal parasitosis. The most common parasite detected was *Ascaris lumbricoides* (11%), followed by *Entamoeba histolytica* (6.4%) and *Giardia lamblia* (4.7%). Although the National Vitamin A Plus Campaign has provisions for giving 24-59 months old children a dose of the anti-helminthic drug—albendazole 400 mg, there is no such provision for adolescents and adults. Helminthiasis being a common problem in the country and given its effects on nutrition and general well-being, routine anti-helminthic treatment should be considered for these population groups.

Table 6.7.1. Haemoglobin level among adolescent girls by area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Mean (g/dL)	12.53	12.68	12.80	12.64
Standard deviation	1.41	1.38	1.41	1.39
Median	12.60	12.80	13.15	12.80
25^{th}, 75^{th} percentiles	11.82/13.40	12.00/13.50	11.90/14.00	12.00/13.50
Total (n)	124	190	40	354

Table 6.7.2. Anaemia among adolescent girls by area, NNP Baseline Survey 2004				
Haemoglobin level	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Anaemia <12 g/dl	28.2	22.0	27.5	24.8
No anemia ≥12 g/dl	71.8	78.0	72.5	75.2
Total (n)	124	190	40	354

Table 6.7.3. Table salt iodine level in households of adolescent girls by area, NNP Baseline Survey 2004				
Indicator	Survey area			
	NNP	BINP	Comparison	All
Mean (ppm)	25.84	24.10	21.70	24.38
Standard deviation	18.42	19.85	16.79	18.96
Median	23.50	19.20	15.00	20.30
25th, 75th percentiles	9.87/39.50	8.50/33.10	9.05/35.25	8.50/36.30
Total (n)	96	144	37	277

Table 6.7.4. Percentage distribution of households of adolescent girls consuming table salt having adequate iodine (15 ppm or more), NNP Baseline Survey 2004				
HH salt iodine level	Survey area			
	NNP	BINP	Comparison	All
Inadequately iodized (<15 ppm)	36.5	43.8	48.6	41.9
Adequately iodized (≥15 ppm)	63.5	56.3	51.4	58.1
Total (n)	96	144	37	277

Table 6.7.5. Urinary iodine excretion in adolescent girls by area, NNP Baseline Survey 2004				
Indicator	Survey area			
	NNP	BINP	Comparison	All
Mean (μg/L)	210.38	184.47	160.10	190.88
Standard deviation	159.57	162.89	125.93	158.29
Median	162.60	125.40	112.75	135.10
25th, 75th percentiles	84.20/319.70	47.97/262.40	72.57/223.00	65.65/271.00
Total (n)	123	182	40	345

Table 6.7.6. Iodine deficiency (urinary iodine) among adolescent girl by area NNP Baseline Survey 2004				
Urinary iodine level	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Iodine deficiency (<100 μg/L)	29.3	40.4	42.5	36.7
No iodine deficiency (≥100 (μg/L)	70.7	59.6	57.5	63.3
Total (n)	123	183	40	346

Table 6.7.7. Prevalence of stool parasites in adolescent girls by survey area, NNP Baseline Survey 2004

Parasite	Survey area			
	NNP (%)	**BINP** (%)	**Comparison** (%)	**All** (%)
Nil	70.0	58.0	79.2	65.1
Ascaris lumbricoides	11.7	9.1	16.7	11.0
Trichuris trichiura	5.0	3.4	-	3.5
Hookworm	-	-	-	-
Strongyloides stercoralis	-	-	-	-
Entamoeba histolytica	3.3	10.2	-	6.4
Giardia lamblia	1.7	8.0	-	4.7
Blastocystis hominis	3.3	3.4	-	2.9
Lodamoeba butschlii	-	2.3	-	1.2
Entamoeba coli	5.0	4.5	4.2	4.7
Endolimax nana	-	1.1	-	0.6
Total (n)	**60**	**88**	**24**	**172**

6.8 RESULTS OF MULTIVARIATE ANALYSES

The prevalence of a lower BMI (<18.5) showed a gradual decline with an increase in age of adolescent girls (Table 6.8.1). Neither education of adolescents and their household asset index nor their food insecurity was associated with prevalence of lower BMI. The prevalence of lower BMI was lower in the BINP project areas than in the NNP project areas.

Insecurity of adolescent girls was very high (43% had social insecurity) and appeared to be a great concern for their well-being. With increase in age, insecurity increased, and it was more common for educated girls of rich households than that of less-educated and poorer households.

Adolescents' health and nutrition knowledge and practices were influenced by their age and education and to an extent by their household economic characteristics (Table 6.8.2). The higher the level of education the higher was the prevalence of knowledge of taking extra nutrients during adolescence and practice of taking iron supplements and anti-helminthics. The household asset index was positively associated with knowledge of taking extra nutrients, but not with the practice of taking iron supplements and anti-helminthics. Both knowledge and practices were more common among adolescents in the BINP areas than among adolescents in the NNP project areas.

Adolescent girls (whose menstruation has begun) were asked for symptoms of vaginal discharge with foul smell and taboo of avoiding certain foods during menstruation (Table 6.8.3). Vaginal discharge with foul smell was common (22%), and its prevalence was higher among adolescent girls of households with food deficit than their counterparts. Food avoidance during menstruation was also more prevalent among adolescents of food-deficit households. In the BINP project areas, the prevalence of both foul-smelling vaginal discharge and the taboo of food avoidance during menstruation were lower than in the NNP project areas.

Table 6.8.1. Adjusted odds ratios (95% confidence interval) of BMI <18.5 and insecurity[a] of adolescent girls, aged 13-19 years, for different background characteristics (n=5,103)		
Background characteristics	BMI <18.5	Insecurity[a]
Age of adolescent girl (years)	0.76** (0.72-.79)	1.05* (1.00-1.10)
Education of adolescent girls		
None/primary incomplete	1	1
Primary complete	1.04 (0.82-1.30)	1.32* (1.01-1.73)
Secondary incomplete	1.11 (0.91-1.34)	2.00** (1.61-2.49)
Secondary complete +	1.50* (1.03-2.18)	2.22** (1.54-3.20)
Food deficit in last 12 months		
No deficit	1	1
<4 months	1.26 (0.99-1.59)	1.19 (0.93-1.51)
4 months +	1.11 (0.92-1.34)	0.98 (0.80-1.20)
Asset index		
Lowest	1	1
Second	1.12 (0.91-1.37)	1.24 (0.99-1.54)
Middle	1.01 (0.80-1.26)	1.22 (0.97-1.52)
Fourth	0.88 (0.70-1.09)	1.62** (1.26-2.08)
Highest	0.98 (0.77-1.25)	1.55** (1.20-1.99)
Survey area		
NNP project	1	1
NNP comparison	0.87 (0.70-1.06)	0.79 (0.62-1.01)
BINP project	0.86* (0.73-.99)	1.14 (0.97-1.33)
Wald chi-square (14 DF)	682.6 , p<0.001	561.5, p<0.001

The dependent variable equals to 1 if an adolescent girl had BMI<18.5 or had insecurity, 0 otherwise
Defined by asking each adolescent whether, on her way to school or college or social visit, any one stared at her, blowed whistle, made bad comments about her, enticed her, threatened her or gave her a proposal for immoral act
*p<0.05, **p<0.01

Table 6.8.2. Adjusted odds ratios (95% confidence interval) of knowledge of needs for extra nutrients, intake of iron supplements and anti-helminthics of adolescent girls for different background characteristics (n=5,106)

Background characteristics	Need for intake of extra nutrients	Intake of iron supplements	Anti-helminthics in last 6 months
Age of adolescent girls (years)	1.17** (1.11-1.23)	1.20** (1.13-1.27)	0.97 (0.92-1.02)
Education of adolescent girls			
None/primary incomplete	1	1	1
Primary complete	1.24 (0.99-1.56)	1.16 (0.77-1.74)	0.83 (0.62-1.11)
Secondary incomplete	2.42** (1.98-2.96)	1.74** (1.25-2.43)	1.20 (0.95-1.52)
Secondary complete +	5.86** (3.54-9.70)	2.43** (1.54-3.84)	2.21** (1.55-3.14)
Food deficit in last 12 months			
No deficit	1	1	1
<4 months	1.14 (0.89-1.45)	1.06 (0.73-1.52)	0.93 (0.67-1.31)
4 months +	0.94 (0.76-1.15)	0.69* (0.49-.98)	0.96 (0.75-1.24)
Asset index			
Lowest	1	1	1
Second	1.21* (0.99-1.48)	0.93 (0.66-1.31)	0.91 (0.69-1.19)
Middle	1.38** (1.09-1.76)	1.10 (0.78-1.54)	1.08 (0.82-1.43)
Fourth	1.55** (1.22-1.97)	1.12 (0.79-1.61)	1.16 (0.88-1.52)
Highest	2.27** (1.75-2.95)	0.90 (0.63-1.30)	1.30 (1.00-1.69)
Survey area			
NNP project	1	1	1
NNP comparison	1.10 (0.89-1.37)	0.90 (0.56-1.42)	0.85 (0.62-1.16)
BINP project	1.36** (1.13-1.62)	3.77** (2.94-4.84)	1.29* (1.05-1.57)
Wald chi-square (14 df)	682.6 , p<0.001	561.5, p<0.001	399.9, p<0.001

The dependent variable equals to 1 if an adolescent girl had knowledge of taking extra nutrient, had taken iron Supplement, or had taken anti-helminthics, 0 otherwise

*p<0.05, **p<0.01

Table 6.8.3. Adjusted odds ratios (95% confidence interval) of vaginal discharge with foul smell and practice of food avoidance by adolescent girls, aged 13-19 years, during menstruation for different background characteristics (n=4829)

Background characteristics	Vaginal discharge with foul smell	Foods avoided during menstruation
Age of adolescent girls (years)	1.04 (0.99-1.09)	1.02 (0.95-1.09)
Education of adolescent girls		
None/primary incomplete	1	1
Primary complete	0.90 (0.67-1.20)	0.72 (0.47-1.11)
Secondary incomplete	1.17 (0.91-1.49)	1.32 (0.92-1.90)
Secondary complete +	1.13 (0.75-1.72)	1.04 (0.59-1.81)
Food deficit in last 12 months		
No deficit	1	1
<4 months	1.72* (1.01-1.89)	1.72** (1.19-2.50)
4 months+	1.52** (1.19-1.94)	1.51* (1.08-2.12)
Asset index		
Lowest	1	1
Second	1.02 (0.78-1.33)	1.31 (0.92-1.88)
Middle	1.24 (0.94-1.64)	1.35 (0.91-2.01)
Fourth	1.12 (0.82-1.52)	1.67* (1.11-2.50)
Highest	1.05 (0.77-1.43)	1.85** (1.25-2.75)
Survey area		
NNP project	1	1
NNP comparison	1.20 (0.91-1.57)	0.63* (0.42-.95)
BINP project	0.78* (0.63-.95)	0.79* (0.62-.99)
Wald Chi-square (14 df)	682.6 , p<0.001	561.5, p<0.001

The dependent variable equals to 1 if an adolescent girl had vaginal discharge with foul smell or had avoided food during menstruation period, 0 otherwise
*p<0.05, **p<0.01

CHAPTER 7

HEALTH AND NUTRITIONAL STATUS OF PREGNANT WOMEN

Section 7.1 HOUSEHOLD AND BACKGROUND CHARACTERISTICS OF PREGNANT WOMEN

Tubewell was the major source of drinking-water for pregnant women interviewed (Table 7.1.1). Around 12% of tubewells were contaminated with arsenic (as indicated by red colour of tubewell head). However, in the NNP and comparison areas, arsenic contamination of tubewell water was significantly higher compared to the BINP areas. Most households used tubewell and pond water for daily household work, i.e. cleaning household utensils. About 18% of latrines used by the pregnant women were hygienic (septic tank/modern and slab). More than 40% of households shared latrine with other households (Table 7.1.2).

About 88% of households of pregnant women did possess any type of land (Table 7.1.3). Possession of any type of land was significantly less among households in the NNP areas. Half of the households did not own any agricultural land, while 14% of pregnant women lived in households built on others' land. Pregnant women in the comparison areas were better-off in terms of possessing agricultural land. More than two-thirds of households of pregnant women did not have any food deficit last year (Table 7.1.4), the situation being better in the BINP areas. Despite awareness of the adverse effects of iodine deficiency, one-third of households still consumed non-iodized table salt.

A small proportion of households was either subsisting or supplementing their livelihood on vulnerable group feeding and old-age allowance (Table 7.1.5). The households in the BINP areas were more involved in cooperatives and NGO activities. Table 7.1.6 shows that more than half of the households were involved in homestead gardening. More households in the BINP areas took assistance from the government agencies or NGOs in growing vegetables in their homesteads. This assistance was in the form of technical knowledge and seeds. While around 75% households kept poultry, more households in the BINP areas took assistance from the government agencies or NGOs. The majority (71%) of pregnant women had access to radio, while many of them had access to television (Table 7.1.7). Only half of them had ever listened to radio or watched television programmes.

Table 7.1.8 shows the distribution of pregnant women by programme areas and selected background characteristics. About half of the pregnant women were aged 18-24 years. About 85% of women were married before 18 years of age, the mean age of marriage being 15 years. About 30% of women had no education. The proportion of pregnant women without any formal education was significantly less in the comparison areas. About 72% of women became pregnant before 18 years of age, implying that conception quickly follows marriage.

Table 7.1.1. Percentage distribution of arsenic contamination and source of water used by households of pregnant women, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Source of drinking-water				
Tap	1.2	1.7	0.5	1.2
Tubewell	95.6	95.8	97.2	95.9
Ring well	0.8	0.8	0.5	0.8
Pond	1.4	1.0	1.3	1.3
Ditch/canal/lake	0.3	-	-	0.2
River/fountain	0.4	0.3	0.1	0.2
Rain water	-	-	0.1	0.0
Others	0.2	0.4	0.4	0.3
Total	100.0	100.0	100.0	100.0
Colour of tubewell				
Red (arsenic-contaminated)	13.0	9.3	14.4	11.9
Green (not contaminated)	41.8	40.7	28.1	38.9
Not coloured	45.2	50.0	57.5	49.2
Total	100.0	100.0	100.0	100.0
Total (n)	2,602	2,101	1,033	5,733
Source of water for cleaning households utensils				
Tap water	1.3	1.8	1.0	1.4
Tubewell	56.1	66.3	56.9	60.0
Ring well	2.9	3.1	1.4	2.7
Pond	34.8	24.4	34.9	31.0
Ditch/canal/lake	3.7	2.1	3.1	3.0
River/fountain	1.0	2.0	2.5	1.7
Others	0.2	0.3	0.1	0.2
Total	100.0	100.0	100.0	100.0
Total (n)	2,722	2,193	1,063	5,978

NNP and comparison vs BINP, p<0.001, for arsenic contamination of tubewell (red colour of tubewell head)

Table 7.1.2. Percentage distribution of type of latrine of households of pregnant women, NNP Baseline Survey 2004

Latrine facility	Survey area			
	NNP	BINP	Comparison	All
Septic tank/modern latrine	5.3	4.5	8.3	5.5
Slab latrine	13.0	11.2	10.4	11.9
Pit latrine	50.0	50.8	50.8	50.4
Hanging latrine	3.3	4.5	2.6	3.6
Open latrine	19.9	17.6	12.6	17.8
Bush/field/yard	8.1	10.9	14.8	10.3
Others	0.4	0.5	0.6	0.5
Total	100.0	100.0	100.0	100.0
Total (n)	2,723	2,193	1,063	5,978
Latrine shared with other households	40.8	47.0	46.0	43.9
Total (n)	2,492	1,941	900	5,333

Table 7.1.3. Percentage distribution of land ownership of households of pregnant women, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Ownership of any land	86.4	88.4	89.0	87.6
Amount of household land (acre)				
Landless				
0.01-0.49	15.9	12.5	13.0	14.1
0.50-0.99	70.9	75.8	77.6	73.9
1.00-2.49	5.3	5.0	4.3	5.0
2.50-7.49	2.4	2.0	2.1	2.2
7.50+	0.2	0.5	-	0.3
	5.3	4.3	3.0	4.5
Amount of agricultural land (acre)				
Landless				
0.01-0.49	53.6	52.5	48.8	52.4
0.50-0.99	16.8	18.0	19.2	17.7
1.00-2.49	10.1	10.1	9.8	10.1
2.50-7.49	9.7	11.2	14.8	11.2
7.50+	6.6	6.2	5.1	6.2
	3.0	2.1	2.4	2.6
Total (n)	2,723	2,193	1,063	5,979

NNP vs BINP and comparison, p<0.05, for ownership of any land
NNP vs BINP and comparison, p<0.05, for ownership of household land
NNP vs comparison, p=0.008; BINP vs comparison, p=0.04, for ownership of agricultural land

Table 7.1.4. Percentage distribution of food deficit during last year and type of table salt used by households of pregnant women, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Food deficit (months)				
No deficit	75.9	81.9	78.2	78.5
<4	9.7	6.6	7.1	8.1
4-6	10.5	8.3	10.0	9.6
7-12	3.9	3.2	4.8	3.8
Total	100.0	100.0	100.0	100.0
Type of salt used in cooking				
Packet salt (iodized)	66.2	71.5	59.0	66.9
Open salt	33.8	28.5	41.0	33.1
Total	100.0	100.0	100.0	100.0
Total (n)	2,723	2,193	1,063	5,979

Food deficit defined as inability to have 3 meals every day during last year
BINP vs NNP and comparison, p<0.05, for no food deficit

Table 7.1.5. Percentage distribution of households of pregnant women having VGF cards, old-age or destitute allowance, membership of cooperatives and NGOs, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
VGF card holder	2.5	2.6	2.1	2.5
Old-age allowance	1.3	1.6	1.3	1.4
Destitute allowance	0.6	0.6	0.3	0.5
Membership of cooperatives	37.3	40.6	33.5	37.8
NGO membership	37.3	40.6	33.5	37.8
Name of cooperatives				
Government				
BRDB	1.5	1.0	1.7	1.4
Others	1.9	2.5	1.5	2.1
NGO				
BRAC	10.8	9.9	7.3	9.8
Proshika	1.3	1.4	0.9	1.3
ASA	8.7	10.4	5.6	8.7
Grameen Bank	8.4	9.2	8.2	8.6
Others	10.8	11.4	11.3	11.1
Taken loan from cooperative	41.7	43.5	33.5	40.9
Total (n)	2722	2,193	1,063	5,979

VGF= Vulnerable group feeding; BRDB= Bangladesh Rural Development Board
BINP vs NNP and comparison, p=0.02, for membership of cooperatives
BINP vs NNP and comparison, p<0.05, for membership of NGO

Table 7.1.6. Involvement of households of pregnant women in homestead gardening, poultry rearing and fish farming, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Grew vegetables at home last year	53.7	57.7	57.6	55.8
Total (n)	2,722	2,193	1,063	5,979
Sold vegetables grown by households	18.3	15.7	14.5	16.6
Involved with GOB/NGO in home gardening	12.7	16.8	9.6	13.7
Total (n)	1,462	1,265	612	3,339
Involved in poultry rearing	75.1	74.2	76.6	75.1
Total (n)	2,722	2,193	1,063	5,979
Sold eggs grown by households	30.6	31.9	26.9	30.4
Involved with GOB/NGO in poultry rearing	8.3	10.5	6.1	8.7
Total (n)	2,045	1,628	814	4,487
Fish farming	18.0	18.5	21.4	18.8
Total (n)	2,722	2,193	1,063	5,979
Involved with GOB/NGO in fish farming	9.2	9.6	11.0	9.7
Total (n)	490	406	227	1123

NNP vs BINP and comparison, p<0.05, for homestead gardening
NNP vs BINP, p=0.003; BINP vs comparison, p<0.001, for GOB/NGO assistance in home gardening
BINP vs NNP and comparison, p<0.05, for GOB/NGO assistance in poultry rearing

Table 7.1.7. Media access of pregnant women by survey area, NNP Baseline Survey 2004				
Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Having chance to listen to radio/two-in-one	68.0	74.9	72.0	71.3
Frequency of listening to radio/two-in-one				
No	53.7	50.5	53.0	52.4
Everyday	19.9	21.3	20.4	20.5
At least once a week	19.4	21.2	19.0	20.0
Less than once a week	7.0	7.0	7.6	7.1
Total	100.0	100.0	100.0	100.
Total (n)	2,722	2,193	1,064	5,978
Listening to nutrition programme/discussion on radio	73.2	72.0	75.4	73.1
Total (n)	1,260	1,086	499	2,845
Having chance to watch television	61.2	76.8	70.4	68.6
Frequency of watching television				
No	63.0	50.3	52.0	56.4
Everyday	14.2	21.2	15.8	17.1
At least once a week	17.1	22.8	24.3	20.4
Less than once a week	5.7	5.7	7.9	6.1
Total	100.0	100.0	100.0	100.0
Total (n)	2,722	2,193	1,064	5,978
Watch any nutrition programme/discussion on television	59.4	65.0	59.6	61.8
Total (n)	1,007	1,089	510	2,606

Table 7.1.8. Background characteristics of pregnant women , NNP Baseline Survey 2004				
Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Mean (SD) age (years)	22.7(5.9)	22.0(5.6)	22.0(5.6)	22.5(5.8)
≤17	22.0	22.3	23.7	22.4
18-24	42.5	46.1	45.9	44.4
25-29	20.6	19.0	19.4	19.8
30-34	11.4	9.5	8.2	10.1
35-39	2.8	2.4	2.2	2.5
≥40	0.6	0.7	0.8	0.7
Mean (SD) age at first marriage (years)	15.0 (2.3)	15.11 (2.3)	15.34 (2.3)	15.1 (2.3)
≤17	85.7	86.3	83.1	85.4
≥18	14.3	13.7	16.9	14.6
Educational status				
No education	30.9	31.6	22.8	29.7
Primary incomplete	20.5	18.2	20.0	19.6
Primary complete	13.7	13.9	12.8	13.6
Secondary incomplete	28.1	29.0	36.2	29.8
Secondary complete and above	6.8	7.3	8.2	7.2
Total	100.0	100.0	100.0	100.0
Total (n)	2,722	2,193	1,064	5,978
Type of educational institute				
School/college	95.6	95.7	91.4	94.8
Madrasha	3.0	2.4	5.8	3.3
Non-formal	1.5	1.9	2.7	1.9
Total (n)	1,921	1,533	839	4,293
Number of pregnancies (times)				
Single	28.1	28.5	31.6	28.9
2-3	42.0	44.2	42.3	42.9
4-5	20.5	19.0	18.9	19.7
6+	9.4	8.3	7.2	8.6
Total	100.0	100.0	100.0	100.0
Age at first pregnancy (years)				
≤17	72.0	74.4	72.8	73.0
≥18	28.0	25.6	27.2	27.0
Total	100.0	100.0	100.0	100.0
Total (n)	2,722	2,193	1,064	5,978

NNP and BINP vs comparison, $p<0.001$, for no education

7.2 ACCESS OF PREGNANT WOMEN TO HEALTH AND NUTRITIONAL SERVICES

Table 7.2.1 shows that 21% of the pregnant women in the BINP areas and 3% in the NNP areas received supplementary feeding from the CNCs. However, 78% and 13% of women in the BINP and NNP areas respectively reported availability of health/nutrition-education programmes in their locality. They were from areas where NNP had just started its field activities (The BINP had ceased its activities in 2002, while NNP officially commenced its field activities in September 2004). Compared to other administrative divisions, an increased number (24%) of pregnant women in the NNP areas of Sylhet division received supplementary feeding (Tables 7.2.2-3).

More than half of the pregnant women did not receive ANC (Table 7.2.4). Only around one-forth of women received ANC before 4 months of pregnancy. However, ANC was significantly higher in pregnant women living in the BINP areas. Private qualified doctors and NGO service providers were the major source of ANC. In the BINP areas, the CNCs contributed substantially to provision of ANC. Awareness of ANC and its importance was still not optimal; among those women who did not receive ANC, more than 40% considered that ANC was not necessary. Pregnant women of Sylhet and Rajshahi divisions had a better ANC coverage (at least one ANC visit) compared to other divisions (Table 7.2.5). In general, antenatal coverage was better in the BINP areas.

Despite the widespread prevalence of anaemia and the increased need for iron and folic acid during pregnancy, the majority (ranging from 65% in the BINP areas to 75% in the comparison areas) pregnant women did not take iron-folic acid tablets (Tables 7.2.6-7). Only 25% of women regularly took iron supplements in the BINP areas, which is significantly high compared to the other areas. Again in the BINP areas, the CNCs played a major role in providing iron-folic acid tablets. In general, the main reasons for not taking iron supplements regularly were: tablets were not considered necessary, had adverse effects, and forgot to take the tablets.

Overall, 34% of pregnant women did not receive any TT injection during current pregnancy (Table 7.2.8). Pregnancy-related complications were common, ranging from 77% in the NNP to 81% in the BINP areas. About half of the women suffered from headache, while one-quarter suffered from anaemia and fever more than 3 days (Table 7.2.9). Fever and cough were significant causes of morbidity among pregnant women in the 2 weeks prior to interviews for the survey (Table 7.2.10). More than one-third of respondents suffered from any illness in the last 2 weeks; the proportion being significantly less in the BINP areas.

Table 7.2.1. Services received by pregnant women from Community Nutrition Centres, NNP Baseline Survey 2004

Service	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Supplementary feeding	3.1	21.5	-	9.3
Total (n)	2,723	2,193	1,064	5,979
No. of months getting supplementary feeding				
1-3	83.5	64.8	-	67.4
4-6	10.6	33.8	-	30.3
7 and more	5.9	1.5	-	2.3
Total (n)	85	471	-	556
Health/nutrition-education programme in the locality				
Yes	12.6	77.7	3.1	34.8
No	83.9	18.7	93.0	61.6
Not known	3.5	3.6	3.9	3.6
Total (n)	2,723	2,193	1,064	5,979
Attendance of health/nutrition-education session	3.1	22.2	1.8	9.9
No. of attendances in a month				
Once	61.2	62.7	45.0	61.9
2-3 times	17.6	29.3	50.0	28.3
4 times and more	21.2	8.0	5.0	9.8
Total (n)	85	488	20	593

Table 7.2.2. Division-wise percentage distribution of food supplementation of pregnant women, NNP Baseline Survey 2004

Division	Survey area						Total (n)
	NNP		BINP		Comparison		
	Received supple-mentation	No supple-mentation	Received supple-mentation	No supple-mentation	Received supple-mentation	No supple-mentation	
Barisal	-	100	22.6	77.4	-	100	498
Chittagong	0.4	99.6	13.2	86.8	-	100	1,451
Dhaka	6.1	93.9	22.2	77.8	0.4	99.6	1,830
Khulna	1.0	99.0	20.5	79.5	1.4	98.6	457
Rajshahi	0.3	99.7	31.4	68.6	-	100	1,303
Sylhet	23.7	76.3	17.6	82.4	-	100	440

Table 7.2.3. Division-wise health and nutrition programme in the locality of pregnant women, NNP Baseline Survey 2004

Division	Survey area						Total (n)
	NNP (%)		BINP (%)		Comparison (%)		
	Any programme on health and nutrition	Attended any health-education session	Any programme on health and nutrition	Attended any health-education session	Any programme on health and nutrition	Attended any health-education session	
Barisal	7.6	0.4	72.9	14.2	3.8	2.5	498
Chittagong	3.3	2.4	58.9	10.8	2.5	0.6	1,451
Dhaka	21.7	2.9	86.1	25.0	3.8	1.1	1,830
Khulna	5.6	2.6	90.5	27.9	9.7	7.0	457
Rajshahi	5.5	2.7	78.5	34.0	2.4	2.8	1,303
Sylhet	66.7	13.5	61.5	11.8	-	-	440

Table 7.2.4. Antenatal care received by pregnant women, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
No. of ANC visits				
No visit	59.9	52.2	61.3	57.3
Single visit	17.2	18.7	19.0	18.1
Two visits	11.1	12.8	10.0	11.5
Three or more visits	11.8	16.3	9.7	13.1
Total	100.0	100.0	100.0	100.0
Total (n)	2,723	2,193	1,063	5,979
Received first ANC				
1-3 month(s)	26.8	29.9	25.5	27.9
4-6 months	55.0	57.2	59.5	56.6
7 months or more	18.1	12.9	15.0	15.5
Sources of ANC				
Qualified doctors (Government)	19.1	14.8	21.5	17.7
Trained paramedics (Government)	25.1	21.4	10.9	21.3
All NGO service providers	28.0	22.3	34.9	26.8
Private qualified doctors	20.3	21.7	28.6	22.2
Trained private paramedics	0.2	0.2	0.5	0.2
Village quacks/pharmacies	2.7	0.7	1.7	1.7
CNCs	1.6	16.7	-	7.5
Others	2.7	2.1	1.5	2.3
Total	100.0	100.0	100.0	100.0
Types of ANC received				
Measurement of weight	75.0	85.0	65.8	77.6
Measurement of BP	80.5	70.7	82.3	76.8
Urine test	48.8	37.1	45.9	43.5
Total (n)	1,091	1,049	413	2,553
Main reasons for not receiving any or only one ANC				
Did not consider necessary	40.2	43.8	43.4	42.1
Objection of family members	6.6	5.3	6.9	6.2
None to accompany	3.9	2.0	1.5	2.8
Economic constraint	19.4	11.5	17.6	16.2
Poor quality of ANC	2.6	3.4	2.2	2.8
ANC provider at far distance	8.2	4.9	7.4	6.9
Others	8.1	6.9	9.1	7.8
Total (n)	2,722	2,193	1,064	5,978

BINP vs NNP and comparison, $p<0.001$, for having received any ANC

Table 7.2.5. Division-wise antenatal check-up of pregnant women, NNP Baseline Survey 2004

Division	Survey area						Total (n)
	NNP (%)		BINP (%)		Comparison (%)		
	Nil	At least one or more	Nil	At least one or more	Nil	At least one or more	
Barisal	57.2	42.8	45.2	54.8	82.5	17.5	498
Chittagong	63.7	36.3	49.5	50.5	61.6	38.4	1,451
Dhaka	63.8	36.2	57.7	42.3	58.4	41.6	1,830
Khulna	65.8	35.2	51.1	48.9	63.4	36.6	457
Rajshahi	52.6	47.4	39.7	60.3	55.8	44.2	1,303
Sylhet	58.8	41.2	39.7	60.3	55.8	44.2	440

Table 7.2.6. Iron supplementation during pregnancy, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Iron supplementation intake				
Regular	16.1	25.4	15.9	19.5
Irregular	9.1	9.9	8.7	9.6
None	74.1	64.7	75.4	70.9
Total (n)	2,723	2,193	1,063	5,979
Starting of iron supplementation				
1-3 months of pregnancy	21.6	19.7	19.5	20.4
4-6 months of pregnancy	60.3	64.3	62.8	62.4
After 6 months of pregnancy	18.2	16.0	17.6	17.1
Source of iron supplementation				
Qualified doctors (GO)	8.1	5.5	13.4	7.7
Trained paramedics (GO)	24.7	11.4	15.3	17.3
NGO service providers	24.0	16.5	32.4	21.9
Private qualified doctors	4.4	4.1	5.7	4.5
Village quacks/pharmacies	32.1	21.0	32.4	27.2
CNCs	5.0	39.0	-	19.3
Others	1.8	2.3	0.8	1.9
Total (n)	705	775	261	1741
Main reasons for not taking iron tablet/syrup regularly				
Did not consider necessary	20.3	11.5	16.3	16.3
Objection of family members	2.6	1.8	-	1.9
Side-effects of tablet/syrup	22.9	27.5	28.3	25.5
Lack of supply	14.3	11.5	6.5	12.0
Forget to take	19.5	29.8	33.7	19.5
Do not receive enough tablets	4.5	8.3	5.4	6.1
Lost tablets	-	0.5	-	0.2
Economic constraint	6.0	2.3	5.4	4.5
Others	9.8	6.9	4.3	7.8
Total (n)	266	218	92	576

BINP vs NNP and comparison, $p<0.001$, for regular iron supplementation; GO=Government

Table 7.2.7. Division-wise iron supplementation of pregnant women, NNP Baseline Survey 2004							
Division	NNP (%)		BINP (%)		Comparison (%)		Total (n)
	Received supple-mentation	No supple-mentation	Received supple-mentation	No supple-mentation	Received supple-mentation	No supple-mentation	
Barisal	19.8	80.2	31.6	68.4	12.7	87.3	699
Chittagong	21.6	78.4	34.9	65.1	26.2	73.8	2,578
Dhaka	25.9	74.1	37.1	62.9	21.7	78.3	2,256
Khulna	15.8	84.2	21.6	78.4	16.9	83.1	730
Rajshahi	33.9	66.1	39.1	60.9	32.3	67.7	1,980
Sylhet	30.5	69.5	38.0	62.0	21.36	78.7	577

Table 7.2.8. Tetanus toxoid (TT) vaccination-coverage rate of pregnant women, NNP Baseline Survey 2004				
Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
TT received during this pregnancy				
No dose	33.2	34.3	32.8	33.5
Single dose	44.1	42.7	42.7	43.3
Two doses	20.7	21.2	22.8	21.3
Three or more doses	2.1	1.8	1.8	1.9
Total	100.0	100.0	100.0	100.0
TT received before this pregnancy				
No dose	21.2	19.2	18.1	19.9
Single dose	8.0	7.7	5.9	7.5
Two dose	16.9	18.4	18.2	17.7
Three or more doses	53.9	54.7	57.7	54.9
Total	100.0	100.0	100.0	100.0
Total (n)	2,723	2,193	1,062	5,978

Table 7.2.9. Pregnancy-related health complications of women, NNP Baseline Survey 2004				
Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Complications during pregnancy				
No complication	22.8	19.0	19.4	20.8
One or more complications	77.2	81.0	80.6	79.2
Total	100.0	100.0	100.0	100.0
Severe headache/blurred vision	51.2	50.3	54.6	51.5
Oedema	17.8	23.7	18.4	20.1
High blood pressure	4.1	3.6	4.1	3.9
Protein in urine	2.1	1.7	3.7	2.2
Bleeding during pregnancy	4.5	3.7	3.6	4.0
Convulsion	5.0	4.5	3.1	4.5
Anaemia	25.1	28.7	24.2	26.3
Fever for more than 3 days	25.1	25.9	23.3	25.1
Foul-smelling vaginal discharge	18.5	17.7	19.0	18.3
Others	19.6	19.3	21.4	19.8
Total (n)	2,723	2,193	1,063	5,979

Table 7.2.10. Percentage distribution of morbidity in last 2 weeks among pregnant women, NNP Baseline Survey 2004

Illness	Survey area			
	NNP	BINP	Comparison	All
Suffered from any illness during last 2 weeks	36.1	31.5	34.9	34.2
Blood pressure	0.6	0.2	0.6	0.4
Asthma	0.6	0.1	0.5	0.4
Heart disease	0.5	-	0.3	0.3
Diabetes mellitus	0.2	-	0.2	0.1
Pneumonia	0.1	0.1	-	0.1
Diarrhoea	1.7	2.0	1.9	1.8
Tuberculosis	0.1	0.2	-	0.1
Fever	12.5	10.8	11.2	11.7
Cough	9.0	5.7	9.0	7.8
Others	23.8	21.4	24.1	23.0
Total (n)	2,723	2,193	1,063	5,979

NNP vs BINP, $p<0.001$, for suffering from any illness during last 2 weeks

7.3 HEALTH AND NUTRITIONAL-RELATED KNOWLEDGE AND PRACTICE

Table 7.3.1 summarizes practice and knowledge of pregnant women regarding increased food intake and rest during pregnancy. Pregnant women in the BINP areas significantly took more food and rest compared to their peers in the NNP and comparison areas. But even then, only 25% and 55% of women in the BINP areas took more food and rest respectively. This indicates that although the CNCs provide counselling, practice is not optimal, implying the role of other factors, for example, decision-making of pregnant women in their families. Compared to other divisions, Rajshahi division had the highest proportion of pregnant women taking more food during pregnancy (Table 7.3.2). The higher proportions of pregnant women in the NNP (40.3%) and BINP (48.4%) areas of Khulna division had correct knowledge about taking rest during pregnancy, i.e. it benefits both foetus and mother (Tables 7.3.3-5). On the contrary, a lesser proportion of pregnant women of Sylhet division had correct knowledge.

What is of concern is the fact that more than half of the pregnant women took less rice during pregnancy (Table 7.3.6). 43% of pregnant women took less *dal*, an important source of protein, and one-third took less fish and meat. Even vegetables and fruits were taken in less than usual amounts by 17% and 29% of pregnant women. Since only 3% of women reported that increased intake of food during pregnancy complicates child birth, considerably less intake of nutrients during pregnancy indicates knowledge-practice gap.

About 70% of pregnant women used packet (iodized salt) for cooking (Table 7.3.7). Use of iodized salt was significantly more common among pregnant women in the BINP areas than in the NNP or the comparison areas. Only 50% of pregnant women had knowledge that iodized salt benefits both mother and foetus.

About half of the pregnant women interviewed would initiate breastfeeding immediately after birth (Table 7.3.8). Significantly more women in the BINP areas gave an affirmative response

regarding breastfeeding soon after birth of the child. Additionally, more women in the BINP areas planned to feed colostrum to the newborn. However, 6% of women did not have any idea about the beneficial effects of colostrum, while 4% still believed that it can upset the child's stomach. These are probably the reasons why 9% of women will discard colostrum and not feed it to the newborn.

Information was collected during the survey about how breast milk can be increased. It has found that about 54% of pregnant women would take more food to increase breastmilk. Whereas about 43% of respondents would do nothing for increasing breastmilk output (Table 7.3.9).

Pregnant women were asked about how long they planned to exclusively breastfeed their children. Only-one third (32%) of respondents intended to continue exclusive breastfeeding up to 6 months of age of children (Table 7.3.10). More than half of the pregnant women (60.3%) had incorrect knowledge about exclusive breastfeeding. But when asked about complementary feeding, more than 90% of respondents agreed that starting complementary feeding before 6th month is bad for the child. Pregnant women in the BINP areas had more commonly correct knowledge relating to exclusive breastfeeding and complementary feeding.

Table 7.3.11 shows the knowledge of pregnant women regarding goitre. About three-fourths (74.6%) of respondents knew about goitre. However, 40% of respondents did not know about the cause of goitre. Similar observations were made regarding knowledge of preventive measures against goitre.

Like in the case of planning for breastfeeding, women should also prepare themselves for taking care of the newborn during the neonatal period and thereafter. This includes awareness of the common diseases that affect neonates and children, notably pneumonia. When asked about signs and symptoms of pneumonia in children, most women identified cough and cold (73.3%), rapid breathing (44.4%), and fever (33.7%) as manifestations of pneumonia (Table 7.3.12). Pregnant women in the BINP areas had significantly better knowledge about signs and symptoms of childhood pneumonia.

The prevalence of substance abuse among pregnant women was not high (Table 7.3.13). Taking *zarda* (processed tobacco) with betel leaf (*paan)* (11.0%) was the most common habit of substance abuse. 3.2% of women took chewing tobacco. The prevalence of smoking among pregnant women was 1.2%, while that of snuff (*gul*) was 2.8%. More than 60% of respondents were aware that substance abuse is harmful for the foetus. While around 20% of respondents did not know about the consequence of substance abuse during pregnancy.

Table 7.3.1. Health and nutrition-related knowledge and practice of pregnant women, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Food intake during pregnancy				
More than before	22.2	25.2	21.5	23.2
Same as before	40.5	40.7	42.3	40.9
Less than before	37.3	34.1	36.1	35.9
Knowledge about intake of more food during pregnancy				
Complicates delivery	3.4	2.1	2.6	2.8
Benefits mother	17.7	19.9	19.8	18.9
Benefits foetus	15.0	14.9	14.1	14.8
Benefits both mother and foetus	41.1	47.7	43.0	43.9
Makes no difference	1.4	0.6	1.0	1.1
Others	13.4	10.3	13.5	12.2
Do not know	8.0	4.4	5.9	6.3
Rest during pregnancy				
More than before	46.3	55.4	55.2	51.2
Same as before	29.8	29.4	27.5	29.2
Less than before	23.9	15.2	17.3	19.6
Knowledge about taking more rest during pregnancy				
Causes weight gain of mother	6.0	4.7	5.0	5.3
Benefits mother	23.9	29.7	30.5	27.2
Benefits foetus	4.3	5.6	3.5	4.6
Benefits both mother and foetus	27.9	33.1	26.4	29.5
Makes no difference	1.6	0.6	1.4	1.2
Others	26.8	20.6	24.5	24.1
Do not know	9.5	5.9	8.7	8.0
Total (n)	2,723	2,193	1,063	5,979

BINP vs NNP and comparison, $p<0.05$, for more intake of food during pregnancy
BINP vs NNP and comparison, $p<0.05$, for knowledge of more intake of food during pregnancy benefiting both mother and fetus
BINP and comparison vs NNP, $p<0.001$, for more rest during pregnancy
BINP vs NNP and comparison, $p<0.001$, for knowledge of more rest during pregnancy benefiting both mother and foetus

Table 7.3.2. Division-wise percentage distribution of food intake practice of pregnant women, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	More than before	Less than/ same as before	More than before	Less than/ same as before	More than before	Less than/ same as before	
Barisal	23.9	76.1	28.4	71.6	21.5	78.5	498
Chittagong	15.4	84.6	16.9	83.1	11.4	88.6	1,451
Dhaka	17.9	82.1	25.3	74.7	24.8	75.2	1,830
Khulna	26.5	73.5	32.6	67.4	21.1	78.9	457
Rajshahi	32.2	67.8	37.2	62.8	34.7	65.3	1,303
Sylhet	15.8	84.2	10.7	89.3	11.8	88.2	440

Table 7.3.3. Division-wise percentage distribution of knowledge about food intake of pregnant women, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	Correct knowledge	Incorrect knowledge	Correct knowledge	Incorrect knowledge	Correct knowledge	Incorrect knowledge	
Barisal	47.5	52.5	43.9	46.1	51.3	48.8	498
Chittagong	35.4	64.6	33.6	66.4	24.1	75.9	1451
Dhaka	47.0	53.0	52.8	47.2	52.7	47.3	1830
Khulna	45.4	54.6	60.5	39.5	49.3	50.7	457
Rajshahi	42.2	57.8	52.6	47.4	55.0	45.0	1303
Sylhet	27.1	72.9	31.6	68.4	36.0	64.0	440

Table 7.3.4. Division-wise percentage distribution of taking rest during of pregnancy, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	More than before	Less than /same as before	More than before	Less than /same as before	More than before	Less than /same as before	
Barisal	64.8	35.2	67.7	63.8	63.8	36.3	498
Chittagong	41.6	58.4	46.8	53.2	52.8	47.2	1451
Dhaka	50.0	50.0	58.4	41.6	63.7	36.3	1830
Khulna	41.3	58.7	60.5	39.5	56.3	43.7	457
Rajshahi	43.4	56.6	52.9	47.1	50.0	50.0	1303
Sylhet	44.1	55.9	45.5	54.5	44.0	56.0	440

Table 7.3.5. Division-wise percentage distribution of respondents having correct knowledge about rest during pregnancy, NNP Baseline Survey 2004

Division	NNP		BINP		Comparison		Total (n)
	Correct knowledge	Incorrect knowledge	Correct knowledge	Incorrect knowledge	Correct knowledge	Incorrect knowledge	
Barisal	37.9	62.1	27.7	72.3	33.8	66.3	498
Chittagong	26.8	73.2	26.9	73.1	13.9	86.1	1451
Dhaka	32.3	67.7	36.2	63.8	38.9	61.1	1830
Khulna	40.3	59.7	48.4	51.6	35.2	64.8	457
Rajshahi	21.8	78.2	33.0	67.0	27.1	72.9	1303
Sylhet	15.3	84.7	17.6	82.4	18.7	81.3	440

Correct knowledge: taking rest during pregnancy is beneficial to both mother and foetus

Table 7.3.6. Practice of different types of food intake during pregnancy by survey area, NNP Baseline Survey 2004

Name of food	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Rice				
Less than before	53.8	49.1	53.1	51.9
More than before	14.2	15.9	13.6	14.7
Same as before	32.0	35.0	33.2	33.3
Dal				
Less than before	43.0	42.6	43.5	42.9
More than before	12.1	15.1	12.7	13.3
Same as before	36.2	35.6	37.4	36.2
Never eaten	8.7	6.7	6.4	7.5
Fish				
Less than before	33.1	28.5	32.2	31.2
More than before	24.6	28.8	24.6	26.1
Same as before	41.0	41.5	41.3	41.2
Never eaten	1.4	1.2	2.0	1.4
Meat				
Less than before	36.9	35.3	36.5	36.3
More than before	13.2	15.9	15.1	14.5
Same as before	46.6	47.0	44.9	46.4
Never eaten	3.3	1.8	3.5	2.8
Egg				
Less than before	28.6	32.9	30.5	30.5
More than before	25.3	25.4	27.4	25.7
Same as before	40.2	37.9	37.3	38.9
Never eaten	5.9	3.7	4.8	4.9
Vegetables				
Less than before	19.3	16.3	15.4	17.5
More than before	45.2	48.3	52.9	47.7
Same as before	34.8	35.1	30.9	34.2
Never eaten	0.8	0.2	0.8	0.6
Milk				
Less than before	28.4	28.6	31.4	29.0
More than before	26.7	29.8	32.0	28.8
Same as before	34.5	35.0	28.7	33.7
Never eaten	10.4	6.6	7.9	8.6
Fruits				
Less than before	30.2	27.7	26.3	28.6
More than before	20.9	22.8	26.6	22.6
Same as before	40.7	47.2	43.7	43.6
Never eaten	8.3	2.4	3.3	5.3
Total (n)	2,723	2,193	1,064	5,980

Table 7.3.7. Percentage distribution of knowledge and use of iodized salt by pregnant women, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Salt intake				
Packet (iodized) salt	67.9	74.1	60.6	68.9
Open salt	32.1	25.9	39.4	31.1
Knowledge about use of iodized salt				
Harms foetus	0.7	0.2	0.9	0.6
Benefits mother	16.6	17.9	19.6	17.6
Benefits foetus	13.5	18.7	10.8	14.9
Benefits both mother and foetus	48.9	51.6	49.3	50.0
Make no difference	0.7	0.5	0.3	0.6
Others	1.2	0.8	0.8	1.0
Do not know	18.3	10.4	18.2	15.4
Total (n)	2,723	2,193	1,062	5,978

NNP vs BINP, p<0.001; NNP vs comparison, p<0.001; BINP vs comparison, p<0.001, for intake of packet (iodized) salt

Table 7.3.8. Percentage distribution of knowledge and practice of colostrum feeding and initiation of breastfeeding of pregnant women, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Breastfeeding initiation				
Just after birth	49.5	53.5	53.0	51.6
Within 24 hours of birth	40.5	39.6	37.1	39.6
After 24 hours of birth	10.0	6.9	10.0	8.9
Colostrum feeding				
Will be fed to baby	90.0	93.0	91.0	91.3
Will be discarded	10.0	7.0	9.0	8.7
Knowledge on colostrum feeding				
Upsets baby's stomach	4.3	3.1	4.0	3.8
Benefits mother	2.4	0.2	0.8	1.3
Benefits baby	84.5	90.5	86.5	87.1
Benefits both mother and fetus	0.4	0.4	0.4	0.4
Makes no difference	0.3	0.3	0.6	0.4
Others	1.6	1.0	1.1	1.3
Not known	6.4	4.6	6.7	5.8
Total	2,720	2,193	1,064	5,977

BINP vs NNP, p=0.005, for breastfeeding initiation immediately after birth
BINP vs NNP, p<0.001; BINP vs comparison, p=0.04, for colostrum feeding

Table 7.3.9. Knowledge and practice of pregnant women about increasing breastmilk by survey area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Knowledge about ways to increase breastmilk				
Will do nothing to increase breastmilk	43.4	43.4	42.7	43.3
Will increase intake of foods	53.3	54.4	55.0	54.0
Will increase intake of fluids	0.2	0.2	0.2	0.2
Others	3.1	2.1	2.1	2.6
Food intake to be increased for more breastmilk				
Rice	17.6	12.0	18.3	15.7
Dal	6.8	5.5	5.2	6.0
Fish	34.2	37.3	34.6	35.4
Meat	16.3	17.3	16.5	16.7
Eggs	20.6	18.1	20.2	19.7
Vegetables	38.8	41.5	43.2	40.5
Milk	26.4	24.0	26.7	25.6
Fruits	14.6	17.6	18.0	16.3
Others	9.7	8.0	9.6	9.0
Total (n)	2,722	2,193	1,063	5,978

Table 7.3.10, Knowledge and practice of pregnant women about exclusive breastfeeding and supplementary feeding by survey area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Planning of exclusive breastfeeding (EB)				
Will EB correctly	33.2	34.3	26.8	32.5
Will not EB correctly	58.7	59.6	66.0	60.3
Do not know	8.1	6.1	7.1	7.2
Will start complementary feeding correctly	48.1	53.8	51.2	50.7
Knowledge of complementary feeding if started before 6th month				
Bad for child	88.5	94.4	91.7	91.2
Makes no difference	0.8	0.2	1.7	.8
Others	4.9	2.3	2.9	3.6
Not known	5.8	3.0	3.7	4.4
Knowledge of complementary feeding if started after 6th month				
Bad for child	92.5	97.2	96.7	92.5
Makes no difference	0.6	0.5	0.9	0.6
Others	1.3	0.2	-	0.7
Not known	5.6	2.2	2.4	3.8
Total (n)	2,722	2,193	1,063	5,978

BINP and NNP vs comparison, p<0.001, for planning of EB correctly
BINP vs NNP, p<0.001, for planning of complementary feeding correctly
BINP vs NNP and comparison, p<0.001; comparison vs NNP, p=0.003, bad for child if complementary feeding started before 6 months of age

Table 7.3.11. Knowledge of pregnant women about cause and prevention of goitre, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Know about goitre	71.3	77.9	76.1	74.6
Knowledge about causes of goitre				
Not eating enough food	0.6	0.5	0.4	0.5
Not eating enough fruits	1.8	2.3	3.1	2.2
Not eating enough vegetables	3.9	5.4	7.0	5.0
Not eating iodized salt	24.4	34.9	24.1	28.2
Not eating iodine-rich foods	2.3	4.4	2.0	3.0
Others	7.1	4.4	4.0	5.6
Do not know	40.0	37.9	46.2	40.3
Knowledge about prevention of goitre				
Eating enough rice	0.4	0.3	0.2	0.3
Eating enough fruits	2.2	3.1	4.1	2.9
Eating enough vegetables	4.8	6.9	7.3	6.0
Eating iodized salt	24.6	34.3	23.8	28.0
Eating iodine-rich foods	3.2	5.3	2.5	3.9
Others	4.5	3.7	3.8	4.1
Do not know	41.8	38.8	46.0	41.4
Total (n)	1,942	1,709	809	4,460

Table 7.3.12. Knowledge of pregnant women about signs, symptoms and prevention of pneumonia in children, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Knowledge about signs and symptoms of pneumonia				
Cough and cold	70.5	75.9	75.4	73.3
Fever	32.8	35.1	33.4	33.7
Rapid breathing	41.4	49.2	42.1	44.4
Chest indrawing	19.8	22.4	18.7	20.6
Inability to suck breast	6.8	5.0	6.5	6.1
Others	8.8	9.0	8.0	8.7
Not known	9.4	9.3	10.1	9.5
Knowledge about prevention of pneumonia				
Keep baby warm	73.7	80.3	81.8	77.6
Exclusive breastfeeding	0.3	0.3		0.2
Continue breastfeeding	0.1	.0		.1
Proper immunization	1.4	.9	0.5	1.1
Others	6.5	6.4	6.9	6.6
Do not Know	12.3	10.7	9.8	11.3
Total (n)	2,723	2,193	1,063	5,979

BINP and comparison vs NNP, $p<0.001$, for cold and cough as a sign of pneumonia
BINP vs NNP and comparison, $p<0.001$, for rapid breathing as a sign of pneumonia
BINP vs NNP and comparison, $p<0.05$, for chest indrawing as a sign of pneumonia

Table 7.3.13. Substance abuse by pregnant women according to the survey area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Taking z*arda* with *pan* (betel leaf)	10.4	12.0	10.2	11.0
Chewing tobacco	3.7	3.4	1.4	3.2
Smoking *biri*/cigarettes	1.1	1.5	0.8	1.2
Taking *gul* (snuff)	2.9	3.1	2.1	2.8
Perception about taking *pan, gul, zarda,* and tobacco during pregnancy				
Refreshing	1.9	2.9	2.2	2.3
Harms foetus	60.5	59.3	61.3	60.2
Others	15.2	18.7	16.2	16.7
Do not know	22.3	19.0	20.4	20.8
Total (n)	2,722	2,193	1,064	5,978

Z*arda* is processed tobacco; *gul* is powdered tobacco

7.4 NUTRITIONAL STATUS OF PREGNANT WOMEN

Of 5,978 pregnant women interviewed, more than 50% were in 4-6 months of pregnancy. Their mean age was 22.5 years. Women in the comparison areas were significantly younger than women in the NNP and BINP areas. Their mean height was 150.1 cm; the respondents of the comparison areas being significantly taller than those in the BINP areas. The mean weight was 48.7 kg with a standard deviation of 6.7 kg and interquartile range of 44.1-52.3 kg. The mean BMI of pregnant women was 21.6 kg/m^2, with a standard deviation of 2.6 and interquartile range of 19.8-23.0 kg/m^2.

Overall monthly weight increments for all women were 1.1 kg between 5th and 4th month, 1.2 kg between 6th and 5th month, 0.8 kg between 7th and 6th month, 1.3 kg between 8th and 7th month, and 0.1 kg between 9th and 8th month. The mean weight increment per month between 4th and 9th month of gestation was 0.9 kg. The only significant difference in body weight between groups was noted at 6 months between the comparison women (mean 49.4 kg, n=237) and the BINP women (mean 48.0 kg, n=471).

Table 7.4.1. Distribution of age, height, weight, MUAC. and BMI of pregnant women by survey area, NNP Baseline Survey 2004

Indicators	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile
Age (years)	22.7	5.9	22.0	18.0	27.0	22.4	5.7	21.0	18.0	26.0	22.1	5.7	21.0	18.0	26.0	22.5	5.8	22.0	18.0	26.0
Height (cm)	150.1	5.4	150.3	146.7	153.6	149.9	5.4	150.1	146.6	153.4	150.5	5.3	150.4	147.1	154.0	150.1	5.4	150.2	146.7	153.6
Weight (kg)	48.6	6.5	48.0	44.2	52.3	48.6	6.8	48.0	43.9	52.3	49.0	6.9	48.0	44.3	52.5	48.7	6.7	48.0	44.1	52.3
MUAC (mm)	235.2	22.8	232.0	220.0	248.0	235.4	22.4	232.0	220.0	248.0	235.8	21.9	232.0	222.0	250.0	235.3	22.5	232.0	220.0	248.0
BMI	21.5	2.5	21.3	19.9	22.9	21.6	2.8	21.3	19.8	23.0	21.6	2.6	21.2	19.8	23.1	21.6	2.6	21.3	19.8	23.0
Total	2,723					2,193					1,063					5,978				

One-way analysis of variance
NNP vs comparison, $p<0.001$; BINP vs comparison, $p=0.03$, for age of pregnant women
BINP vs comparison, $p=0.02$, for height of pregnant women

Table 7.4.2. Distribution of pregnancy weight gain by months of pregnancy by survey area, NNP Baseline Survey 2004

Months	Survey area																			
	NNP					BINP					Comparison					All				
	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile	Mean	SD	Median	25% ile	75%ile
4 months	46.0	6.2	45.1	41.3	49.2	46.3	6.8	46.2	41.8	49.4	45.8	6.7	44.9	41.3	49.2	46.1	6.6	45.7	41.7	49.2
5 months	46.9	5.9	46.1	43.1	50.6	47.3	6.3	46.4	43.1	51.0	47.5	6.3	46.5	43.6	50.1	47.2	6.1	46.3	43.2	50.7
6 months	48.2	6.6	47.3	44.0	52.2	48.0	6.3	47.8	43.4	51.3	49.4	7.8	47.6	44.6	53.3	48.4	6.7	47.6	43.9	51.8
7 months	48.9	6.3	48.2	44.8	52.5	49.4	6.6	48.9	45.2	53.4	49.8	6.1	49.0	45.0	53.8	49.2	6.4	48.6	44.9	52.9
8 months	50.1	6.7	49.5	45.8	53.4	50.6	7.1	50.2	45.6	54.9	51.4	6.3	50.5	46.6	54.7	50.5	6.8	49.8	45.9	54.1
9 months	50.2	6.7	50.0	45.6	54.3	51.2	7.2	50.1	46.6	54.6	50.6	6.5	49.2	46.6	53.9	50.6	6.8	50.0	46.2	54.3

Number of women by month of pregnancy							
Months	Number	Months	Number	Months	Number	Months	Number
4 months	145	4 months	268	4 months	136	4 months	549
5 months	430	5 months	395	5 months	195	5 months	1020
6 months	635	6 months	471	6 months	237	6 months	1342
7 months	715	7 months	513	7 months	231	7 months	1459
8 months	541	8 months	351	8 months	164	8 months	1056
9 months	182	9 months	106	9 months	57	9 months	345

BINP vs comparison, p=0.03, for weight at 6 months of pregnancy

7.5 MICRONUTRIENT STATUS AND STOOL PARASITES OF PREGNANT WOMEN

The mean haemoglobin level of pregnant women was 11.1 g/dL. Overall, 45% of pregnant women had anaemia, defined as a haemoglobin level less than 11 g/dL. The prevalence of anaemia among pregnant women was significantly lower among women in the BINP areas (36%) as opposed to 51% in the NNP and 60% in the comparison areas. This reflects the increased intake of iron-folate tablets in the BINP areas.

Almost 39% of households of pregnant women were consuming table salt that had inadequate iodine levels (less than 15 ppm). Urinary iodine excretion was measured as a proxy indicator of iodine status. The median urine iodine levels were 154 μg/L, 125 μg/L, and 124 μg/L in the NNP, BINP and comparison areas respectively. Four in 10 women had sub-clinical iodine deficiency, defined as a urine iodine level less than 100 μg/L.

Table 7.5.1. Haemoglobin level of pregnant women, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Mean (g/dL)	11.02	11.32	10.81	11.15
Standard deviation	1.50	1.37	1.18	1.41
Median	10.90	11.40	10.70	11.10
25^{th}, 75^{th} percentiles	10.10/12.00	10.50/12.32	9.95/11.70	10.20/12.20
Total (n)	107	122	25	254

Table 7.5.2. Anaemia among pregnant women, NNP Baseline Survey 2004

	Survey area			
Haemoglobin level	NNP (%)	BINP (%)	Comparison (%)	All (%)
Anaemia (Hb <11 g/dL)	51.4	36.1	60.0	44.9
No anaemia (Hb ≥11 g/dL)	48.6	63.9	40.0	55.1
Total (n)	107	122	25	254

BINP >NNP and comparison for Hb ≥11 g/dL; Chi-square, $p<0.05$

Table 7.5.3. Urinary iodine excretion in pregnant women by area, NNP Baseline Survey 2004

Indicator	Survey area			
	NNP	BINP	Comparison	All
Mean (μg/L)	216.14	152.99	186.62	182.77
Standard deviation	175.90	130.36	146.67	154.92
Median	153.65	125.25	124.00	132.90
25th, 75th percentiles	76.02/327.00	50.07/214.27	88.90/242.25	64.45/257.80
Total (n)	106	122	25	253

Table 7.5.4. Iodine deficiency (urinary iodine) among pregnant women by area, NNP Baseline Survey 2004

Urinary iodine level	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Iodine deficiency (<100 μg/L)	34.9	45.9	32.0	39.9
No iodine deficiency (≥100 μg/L)	65.1	54.1	68.0	60.1
Total (n)	106	122	25	253

Table 7.5.5. Table salt iodine level in households of pregnant women by area, NNP Baseline Survey 2004

Indicators	Survey area			
	NNP	BINP	Comparison	All
Mean (ppm)	28.40	24.88	23.35	26.18
Standard deviation	22.12	22.10	17.90	21.70
Median	21.40	18.20	16.55	19.20
25th,75th percentiles	10.70/43.80	9.60/34.70	9.60/37.12	10.70/38.40
Total (n)	87	101	22	210

Table 7.5.6. Table salt iodine deficiency in households of pregnant women, NNP Baseline Survey 2004

HH salt iodine level	Survey area			
	NNP	BINP	Comparison	All
Not adequately iodize (<15 ppm)	33.3	41.6	45.5	38.6
Adequately iodize (≥15 ppm)	66.7	58.4	54.5	61.4
Total (n)	87	101	22	210

Table 7.5.7. Prevalence of stool parasites in lactating and pregnant women by survey area, NNP Baseline Survey 2004

Parasite	Survey area			
	NNP (%)	BINP (%)	Comparison (%)	All (%)
Nil	64.3	54.8	69.0	59.8
Ascaris lumbricoides	14.3	8.7	10.3	10.6
Trichuris trichiura	3.6	1.9	-	2.1
Hookworm	-	-	3.4	0.5
Strongyloides stercoralis	-	-	-	-
Entamoeba histolytica	3.6	11.5	-	7.4
Giardia lamblia	3.6	5.8	10.3	5.8
Blastocystis hominis	5.4	4.8	-	4.2
Lodamoeba butschlii	3.6	2.9	-	2.6
Entamoeba coli	1.8	7.7	3.4	5.3
Endolimax nana	-	1.9	3.4	1.6
Total (n)	56	104	29	189

7.6 RESULTS OF MULTIVARIATE ANALYSES

None, but household asset index strongly correlated with women's BMI; the higher the asset index the lower was the risk of BMI <18.5 (Table 7.6.1). The odds ratio of women's visit for ANC increased with increase in women's level of education and household asset index. The likelihood of receiving iron supplements also increased with increase in women's education and household asset index. The likelihood of making a visit for ANC and receiving iron supplement was higher in the BINP project areas than in the NNP project areas.

The odds ratios of taking more food and rest during pregnancy and use of iodized salt showed a monotonic increase with increase in women's level of education (Table 7.6.2). The household wealth index positively correlated with taking more food during pregnancy, but not taking more rest. Household socioeconomic conditions also correlated positively with use of iodized salt for cooking. In the BINP project areas, taking more rest during pregnancy and use of iodized salt were higher than in the NNP project areas, controlling for all other variables.

One in 6 women chewed tobacco products, and its prevalence increased with increases in women's age, but decreased with increase in women's level of education (Table 7.6.3). Chewing tobacco did not correlate with household asset index, but positively correlated with household chronic food deficit (for 4 months or more). Household food deficit showed strong negative correlation with women's level of education and asset index. Surprisingly, food deficit was less frequent in the BINP project areas than in the NNP project areas.

Table 7.6.1. Adjusted odds ratios (95% confidence interval) of pregnant women's BMI <18.5, receiving ANC and iron supplements for different background characteristics (n=5772)

Background characteristics	BMI <18.5	ANC visit	Intake of iron supplements
Age of pregnant women (years)	1.00 (0.98-1.02)	0.99 (0.98-1.01)	1.00 (0.99-1.02)
Gestation age (months)	0.61** (0.55-0.68)	1.25** (1.19-1.32)	1.18** (1.11-1.25)
Education of pregnant women			
None	1	1	1
Primary incomplete	1.01 (0.74-1.39)	1.28* (1.05-1.58)	1.13 (0.91-1.39)
Primary complete	1.03 (0.71-1.48)	1.39** (1.12-1.72)	1.05 (0.84-1.32)
Secondary incomplete	0.99 (0.70-1.39)	2.00** (1.63-2.45)	1.37** (1.11-1.71)
Secondary+	0.83 (0.44-1.57)	4.16** (3.11-5.57)	3.13** (2.31-4.25)
Food deficit in last 12 months			
No deficit	1	1	1
<4 months	1.15 (0.79-1.67)	0.92 (0.72-1.18)	0.97 (0.72-1.30)
4 months+	1.07 (0.76-1.49)	1.11 (0.90-1.37)	0.97 (0.76-1.23)
Asset index			
Lowest	1	1	1
Second	0.85 (0.63-1.14)	1.43** (1.15-1.76)	1.41** (1.12-1.78)
Middle	0.51** (0.37-0.72)	1.49** (1.19-1.86)	1.35* (1.06-1.71)
Fourth	0.62** (0.44-0.88)	2.02** (1.61-2.53)	1.41** (1.12-1.78)
Highest	0.29** (0.18-0.46)	2.68** (2.08-3.44)	1.90** (1.47-2.45)
Survey area			
NNP project	1	1	1
NNP comparison	0.80 (0.56-1.14)	0.90 (0.68-1.20)	0.90 (0.68-1.21)
BINP project	1.09 (0.86-1.39)	1.49** (1.22-1.82)	1.60** (1.28-2.00)
Wald chi-square (14 df)	682.6 , p<0.001	561.5, p<0.001	399.9, p<0.001

The dependent variable is equal to 1 if a woman's BMI was <18.5, had received ANC, or had received iron supplements, 0 otherwise

*p<0.05, **p<0.01

Table 7.6.2. Adjusted odds ratios (95% confidence interval) of pregnant women's taking more food, resting more during pregnancy, and taking iodized salt for different background characteristics (n=5,772)

Background characteristics	More intake of food during pregnancy	Rest during pregnancy	Use of iodized salt
Age of pregnant women (years)	0.98* (0.97-0.99)	0.99 (0.98-1.01)	1.00 (0.99-1.01)
Gestational age (months)	1.02 (0.97-1.07)	1.04 (0.99-1.09)	N/A
Education of pregnant women			
None	1	1	1
Primary incomplete	1.26** (1.06-1.50)	1.29** (1.07-1.55)	1.51** (1.25-1.82)
Primary complete	1.46** (1.18-1.81)	1.42** (1.16-1.74)	1.67** (1.32-2.11)
Secondary incomplete	1.66** (1.36-2.02)	1.64** (1.36-1.97)	1.85** (1.50-2.28)
Secondary+	2.48** (1.82-3.40)	1.84** (1.40-2.42)	3.17** (2.18-4.61)
Food deficit in last 12 months			
No deficit	1	1	1
<4 months	0.68** (055-0.85)	1.09 (0.87-1.37)	0.75* (0.60-.94)
4 months+	0.61** (0.51-0.74)	1.10 (0.90-1.33)	0.75* (0.60-.93)
Asset index			
Lowest	1	1	1
Second	1.09 (0.90-1.18)	0.77** (0.63-0.93)	1.55** (1.27-1.90)
Middle	1.18 (0.98-1.43)	0.74** (0.60-0.91)	1.09 (0.88-1.36)
Fourth	1.35** (1.10-1.66)	0.84 (0.68-1.04)	1.44** (1.15-1.81)
Highest	1.37** (1.09-1.73)	0.80 (0.64-1.01)	2.57** (1.92-3.44)
Survey area			
NNP project	1	1	1
NNP comparison	0.99 (0.81-1.22)	1.46** (1.23-1.75)	0.63* (0.44-0.90)
BINP project	1.10 (0.94-1.30)	1.47** (1.27-1.70)	1.33* (1.03-1.71)
Wald chi-square (DF)	682.6 (14), p<0.001	561.5 (14), p<0.001	399.9 (13), p<0.001

The dependent variable is equal to 1 if a pregnant woman had had more intake or more rest during pregnancy than normal time or use iodized salt, 0 otherwise
*p<0.05, **p<0.01

Table 7.6.3. Adjusted odds ratios (95% confidence interval) of pregnant women's household food insecurity for different background characteristics (n=5,772)	
Background characteristics	Household food deficit
Age of pregnant women (years)	1.02* (1.01-1.03)
Education of pregnant women	
None	1
Primary incomplete	0.83 (0.68-1.01)
Primary complete	0.66** (0.52-0.84)
Secondary incomplete	0.45** (0.35-0.57)
Secondary +	0.29** (0.15-0.57)
Food deficit in last 12 months	
No deficit	N/A
<4 months	N/A
4 months +	N/A
Asset index	
Lowest	1
Second	0.46** (0.23-0.37)
Middle	0.29** (0.23-0.37)
Fourth	0.15** (0.11-0.19)
Highest	0.04** (0.03-0.07)
Survey area	
NNP project	1
NNP comparison	1.11 (0.83-1.48)
BINP project	0.69** (0.57-0.83)
Wald chi-square (df)	505.2 (11), p<0.001

The dependent variable is equal to 1 if pregnant women chewed tobacco and household had food deficit, 0= otherwise
*p<0.05, **p<0.01

CHAPTER 8

PREGNANCY WEIGHT GAIN AND BIRTH-WEIGHT

8.1 INTRODUCTION

Malnutrition is one of the major causes of morbidity and mortality in Bangladesh. Malnutrition has severe consequences on pregnancy-related complications, premature birth, intrauterine growth retardation, LBW, and aggravate the risk of perinatal and neonatal deaths. Addressing the synergic effect of malnutrition, the NNP undertakes nutritional interventions for mothers, children, and adolescent girls in 105 upazilas of Bangladesh. One of the important aims of the programme is to intervene in inter-generational effects of malnutrition through improving the nutritional status of pregnant and lactating women for reducing the incidence of LBW and getting better health of children.

Pregnancy weight gain and birth-weight are two important outcome parameters of the NNP. It is expected that as a determinant of LBW, appropriate pregnancy weight gain could be a means for reducing the incidence of LBW. However, there is evidence that women who begin pregnancy with low pre-pregnancy weight need to gain more weight during pregnancy than others (Krasovec and Anderson, 1991). This reflects that pre-pregnancy nutritional status of women is important for both pregnancy weight gain and incidence of LBW. Results of studies also showed direct relationship between the nutritional status of women and the incidence of LBW (Pojda and Kelley, 2000). In this context, the aim of the survey is to present the baseline estimates of pregnancy weight gain and the incidence of LBW and associated non-programme factors for the purpose of programme evaluation.

8.2 METHODS AND PROCEDURES

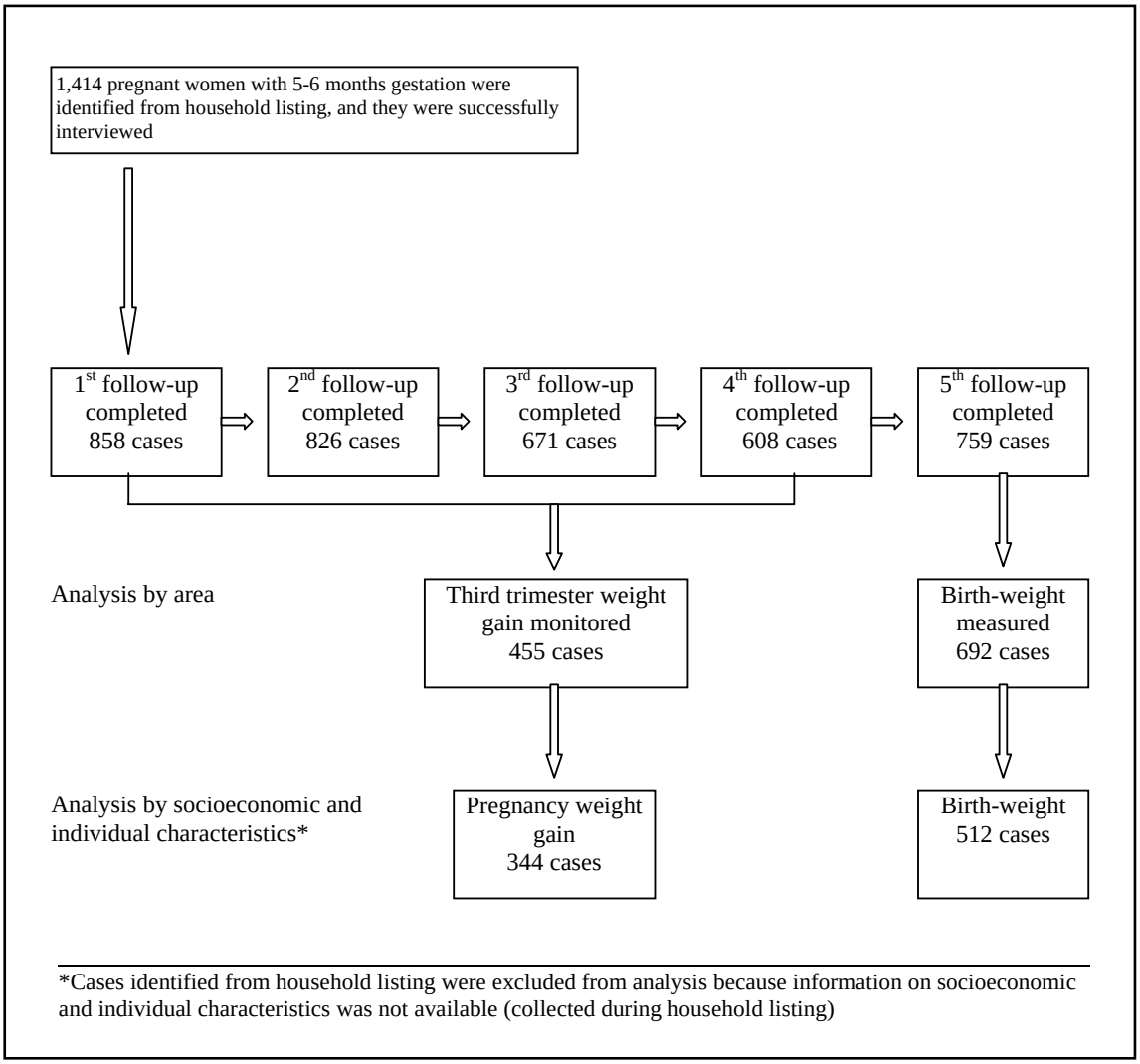
The survey used a community-based prospective design for collecting data on pregnancy weight gain. The pregnant women, identified and interviewed during the survey, were listed for collection of data on pregnancy weight gain and birth-weight. Among them, women with 5-6 months gestation were targeted for prospective data collection. The women were followed up at monthly intervals (±4 days) in the third trimester, and information on weight gain was collected 4 times. Pregnancy outcome of each mother was also recorded, and the newborn was weighted within 48 hours of birth. In this process, weight was measured using a uniscale that shows single digit after decimal point.

In total, 1,414 pregnant women were targeted for follow-ups and were drawn from 279 unions (118 unions of NNP, 52 unions of comparison, and 109 unions of BINP areas), covering 91 upazilas of all administrative divisions, as shown in Table 8.2.1. The first follow-up visit was made on an average one and a half months after the field survey successfully collected information from 858 women. The remaining targeted pregnant women (39.3%) were dropped from follow-up visit because of termination of pregnancy, women were not found at the listed household, and women planned to deliver their babies in some other places. Subsequently, in the second, third and fourth follow-up visits, information were collected from 826, 671, and 608 women respectively. In the subsequent visits, the number of follow-up cases was reduced due to early delivery, women left the place, and flood. Transfer and personal problem of FWVs were also responsible for reducing the number of cases in a few occasions. Finally, the study successfully followed up 455 cases, 4 times in the third trimester, for collecting information on pregnancy weight gain.

Table 8.2.1. Data-collection status of pregnancy weight gains and birth-weight						
Area	Pregnant women identified from the survey	Successfully completed				
		1st follow-up visit	2nd follow-up visit	3rd follow-up visit	4th follow-up visit	5th follow-up visit (including birth-weight)
NNP	610	345	340	280	244	286
Comparison	245	164	156	130	119	148
BINP	559	349	330	261	245	325
Total	1,414	858	826	671	608	759

On the other hand, irrespective of the number of follow-up visits, information on birth-weight was collected within 48 hours of births, and finally came up with birth-weight of 692 newborn cases. In this case, birth-weight was recorded from the hospital records if the birth took place at health facilities.

Figure 8.2.1. Flow chart of data collection and data analysis



The Family Welfare Visitors (FWVs–female paramedics) working in the selected unions conducted the data-collection activities. Before assigning the tasks, the FWVs were trained on data-collection procedures, weight-measurement techniques for pregnant women, and birth-weight using uniscale. They were also provided with a standard checklist for recording collected information. Uniscale was also provided for weight measurement. The quality-control team from ICDDR,B and NIPORT visited most FWVs in the field and checked proper case identification, weight measurement, and consistency of data. Refresher training, especially on birth-weight measurement procedures, was provided during quality-assurance operation. Data collection was carried out during June 2004–February 2005.

8.3 PREGNANCY WEIGHT GAIN

Proper weight gain during pregnancy is necessary for a healthy outcome of pregnancy. In Bangladesh context, recommended total gestational weight gain is 9 kg, and the standard set for the third trimester is >4 kg. The results of weight gain in the third trimester of pregnancy are presented in Table 8.3.1. Only one-third of pregnant women (33.8%) were able to maintain the standard weight gain (>4 kg) in the third trimester. The mean weight gain in the third trimester was 3.44 kg (95% CI 3.28-3.60) against the recommended standard of >4 kg. There was a very little difference in levels of weight gain across the NNP, BINP and comparison areas. The proportion of women gained >4 kg weight in the third trimester was almost similar in the NNP (33.5%) and BINP (35.8%) areas. However, it was lowest in the comparison (30%) areas.

Table 8.3.1 Weight gain during the third trimester of pregnancy by survey areas

Weight gain	NNP	Comparison	BINP	Total
≤4 kg (%)	66.5	70.0	64.2	66.2
>4 kg (%)	33.5	30.0	35.8	33.8
Mean	3.47	3.35	3.45	3.44
95% CI	3.21-3.74	2.99-3.71	3.21-3.69	3.28-3.60
N	164	90	201	455

Table 8.3.2 shows the differentials of pregnancy weight gain by socioeconomic and individual characteristics of women. The data showed wide variation in pregnancy weight gain by age, education, wealth quintiles, exposure to TV, number of pregnancies, mother's height and BMI, duration of pregnancy, and food intake. Older (aged ≥30 years) women were less likely to have standard weight gain (>4 kg) in the third trimester. Level of education and economic status of households (wealth quintiles) demonstrated linear relationship with pregnancy weight gain. The proportion of women having standard weight gain increased with increase of their educational level and economic status of households. Women who had a chance to watch TV were 33% more likely to gain standard weight compared to those who did not have a chance. However, standard weight gain was significantly lower among women who had 4 or more pregnancies.

Table 8.3.2. Weight gain during the third trimester of pregnancy by socioeconomic and individual characteristics of women

Characteristics	% of women gained >4 kg weight during the third trimester	χ^2 (p value)	N
Age (years)			
≤17	29.9	NS	67
18-24	34.6		165
25-29	40.6		64
≥30	20.8		48
Education			
No education	25.8	<.05	97
Primary	30.2		126
Secondary or higher	41.3		121
Wealth quintiles			
Lowest	22.6	NS	62
Second	28.6		63
Middle	35.8		81
Fourth	35.9		78
Highest	40.0		60
Access to TV			
Have a chance to watch TV	35.4	<.05	246
Don't have a chance to watch TV	26.5		98
Number of pregnancies			
Single	32.6	<.05	89
2-3	38.4		164
≥4	23.1		91
Mother's height (cm)			
<145	30.6	NS	49
≥145	32.6		285
BMI during 4-6 months of pregnancy			
<18.5	36.2	NS	58
18.5-19.9	33.7		89
≥20.0	31.5		197
Duration week of pregnancy			
<40	28.6	<.05	192
≥40	37.6		234
Food intake during pregnancy			
Less than before	30.4	NS	135
Same as before	32.1		134
More than before	38.7		77

NS= Not significant

There was no difference in pregnancy weight gain by mother's height. As expected, the data showed an indication that more acutely-malnourished women (BMI <18.5) were able to achieve standard weight gain in the third trimester, may be, due to food supplementation, but the difference was not statistically significant. The data also indicated that standard weight gain increased with increase in food intake and duration of pregnancy.

8.4 BIRTH-WEIGHT

The World Health Organization defined 'low birth-weight' as the weight of children born with less than 2.5 kg of weight. The incidence of LBW in Bangladesh is considered one of the highest in the world. Table 8.4.1 presents the incidence of LBW found in the survey. The data indicated that the incidence of LBW in rural Bangladesh was 20.7% with the mean birth-weight of 2.78 kg (95% CI 2.75-2.81 kg). Earlier studies reported wide variations in the incidence of LBW in different settings. A community-based rural study (Chowdhury *et al.*1993) in early 1990s reported a significantly high incidence of LBW (46.7%). The incidence was quite lower (20.9%) in another community-based rural study (Nahar *et al.* ,1998). As expected, urban hospital-based studies found a comparatively lower incidence of LBW. The hospital-based studies also indicated a significant decline in the incidence of LBW in the last decade. Ahmed and Das (1992) found 26.7% LBW cases at MCHTI, Dhaka, while Dhar *et al.*(2002) observed 15.2% LBW cases at the same institution. However, none of the studies covered wide population across all administrative divisions of the country, except the present one.

Table 8.4.1. Percentage of newborns having low birth-weight by survey areas

Birth-weight	NNP	Comparison	BINP	Total
<2.5 kg	26.0	17.5	17.3	20.7
≥2.5 kg	74.0	82.5	82.7	79.3
Mean	2.75	2.83	2.79	2.78
95% CI	2.69-2.80	2.76-2.90	2.74-2.84	2.75-2.81
N	265	126	301	692

Among the survey areas, the BINP areas exhibited the lowest incidence of LBW (17.3%), while it was highest in the NNP areas (26.0%). The plausible explanation of such a variation might be that the mothers in the NNP areas had lower nutritional and socioeconomic status than the mothers in the BINP and comparison areas.

Table 8.4.2 shows the incidence of LBW by socioeconomic and maternal characteristics. The incidence of LBW was higher among mothers aged below 18 years, and it was almost similar in other age-groups. The data indicated that only secondary or higher level of maternal education could significantly contribute to reducing the incidence of LBW. Similarly, only mothers who belonged to the highest wealth quintiles had a significantly lower incidence of LBW.

There is evidence that nutritional indicators of mothers are major contributing factors for the incidence of LBW. The data demonstrated that short stature (height <145 cm) and thin (BMI <18.5) women were highly likely to give birth of LBW babies. Pre-maturity (birth <37 weeks) tended to remain another leading contribution to LBW. The relationship between the number of pregnancies and the incidence of LBW exhibited a U-shaped pattern. Mothers of both single and 4+ pregnancies experienced the highest incidence of LBW. The data also indicated that standard weight gain (>4 kg) in the third trimester reduced the incidence of LBW, but the difference was not statistically significant. There was, however, no difference in the incidence of LBW by nature of food intake during pregnancy.

Table 8.4.2. Percentage of newborns having low birth-weight by socioeconomic and maternal characteristics

Characteristics	% of newborns having LBW (birth-weight <2.5 kg)	χ^2 (p value)	N
Mother's age (years)			
≤17	27.6	NS	98
18-24	17.4		235
25-29	19.1		110
≥30	20.3		69
Mother's education			
No education	23.5	<.05	153
Primary	23.2		181
Secondary or higher	14.0		178
Wealth quintiles			
Lowest	23.1	NS	104
Second	22.0		82
Middle	24.3		115
Fourth	18.1		116
Highest	12.6		95
Access to TV			
Have chance to watch TV	19.7	NS	366
Don't have chance to watch TV	21.2		146
Number of pregnancies			
Single	26.1	<.01	134
2-3	14.0		221
≥4	23.6		157
Mother's height (cm)			
<145	35.2	<.001	71
≥145	17.5		423
BMI during 4-6 months of pregnancy			
<18.5	39.8	<.001	83
18.5-19.9	19.2		130
≥20.0	15.1		299
Weight gain during 3rd trimester			
≤4 kg	17.0	NS	259
>4 kg	11.8		136
Durationweeks of pregnancy			
<37	38.6	<.001	88
37-39	22.0		277
≥40	14.2		318
Food intake during pregnancy			
More than before	18.3	NS	104
Same as before	20.7		208
Less than before	20.5		200

Multivariate analysis revealed that maternal nutrition and pregnancy-related factors were important predictors of the incidence of LBW. Controlling for the independent effects of other covariates, BMI and mother's height remained as powerful predictors of LBW (Table 8.4.3). Like Hoa *et al.* (1996) showed that BMI of 18.5 or more was significantly associated with a lower risk of LBW. Mothers with BMI of ≥20 had only a quarter risk of delivering a LBW baby compared to mothers who had BMI of <18.5 (thin women). Similarly, mothers with BMI of 18.5-19.9 had 63% lower risk. Short-stature women (height <145 cm) also need special attention

during pregnancy. Compared to them, women with height of ≥145 had 54% lower risk of having a LBW baby. Hirve and Ganatra (1994) in India also observed that maternal height had an adverse affect on the risk of LBW.

Table 8.4.3. Logistic regression coefficient and odds ratios for low birth weight

Independent variable	Coefficient	Odds ratios	95% CI of odds ratios
Area			
NNP (Ref)			
Comparison	-.463	0.629	0.315-1.258
BINP	-.684**	0.505	0.292-0.871
Mother's education			
No education (Ref)			
Primary	.067	1.070	0.604-1.894
Secondary or higher	-.381	0.683	0.351-1.332
Number of pregnancies			
Single (Ref)	-		
2-3	-1.012**	0.364	0.197-0.669
≥4	-.478	0.620	0.328-1.172
Mother's height (cm)			
<145 (Ref)			
≥145	-.773**	0.462	0.252-0.847
BMI during 4-6 months of pregnancy			
<18.5 (Ref)			
18.5-19.9	-.992**	0.371	0.189-0.729
≥20.0	-1.373**	0.253	0.139-0.462
Duration (weeks) of pregnancy			
<37 (Ref)			
37-39	-.537	0.584	0.295-1.158
≥40	-1.228**	0.293	0.144-0.596

*p<0.05, **p<0.01

Pregnancy-related factors, such as duration and number of pregnancies demonstrated a significant effect on the incidence of LBW. Compared to the first pregnancy, the second or the third pregnancy had only one-third risk. Similarly, compared to premature birth (<37 weeks), risk of LBW was only less than 30% among women who delivered after completion of 40 weeks of pregnancy. Previous studies also reported prematurity as a prime contributor of LBW (Hirve and Ganatra, 1994; Pojda and Kelley, 2000). The analysis highlighted significant programme effect in reducing the incidence of LBW. Compared to women in the NNP areas (new programme), the women in the BINP areas (old programme) showed 50% less risk of having a LBW baby.

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CHAPTER 9

QUALITY CONTROL OF DATA COLLECTION

ICDDR,B was the lead agency for conducting the baseline survey in 44 new upazilas under the NNP, 53 BINP upazilas, and 16 comparison upazilas, in association with the Institute of Public Health Nutrition (IPHN) and National Institute of Population Research and Training (NIPORT). The data-collection agency—Mitra and Associates—was responsible for household data collection and anthropometry. The major responsibility of ICDDR,B was to ensure the quality of collected data and its analyses.

9.1 QUALITY CONTROL OF HOUSEHOLD DATA COLLECTION AND ANTHROPOMETRY

The well-trained quality-control (QC) teams from ICDDR,B regularly monitored the data-collection process. These teams comprised 12 Field Supervisors, and 6 Field Research Officers were recruited especially for the survey. The teams observed 5% of the respondents' interviews in the field and re-interviewed another 5%. The re-interview was done within 3 days of the actual interview. Specifically, the QC teams monitored the data-collection procedure, interviewing technique, and anthropometric measurement, and corrected the procedures as and where necessary. The teams also checked collected records for accuracy and consistency. Discrepancies were recorded in the field and sorted out in Dhaka with relevant staff/agencies to prevent errors in the survey process.

Of 13,710 under-5 children, collection of data on 768 children was directly observed, while 708 children were re-interviewed. In total, 268 adolescent girls were re-interviewed, and 263 girls were directly observed during data collection from a total of 5,106 respondent adolescent girls. Of 5,978 pregnant women, 293 were re-interviewed and 330 women were directly observed during data collection. Measures of central tendencies of different measurements taken during actual data collection and re-interview were compared for detecting inconsistencies. Paired t-tests were done on measurements taken during actual data collection and during re-interview. The tables (9.1.1–9.1.3) show the consistency between the two groups of measurements.

Table 9.1.1. Distribution of mean (SD) of survey and re-interview (quality control) data on height, and weight of under-5 children and their mothers					
Indicator	Actual survey		Re-interview		p value
	Mean	SD	Mean	SD	
Child height (cm)	74.95	12.28	75.15	12.78	0.9
Child weight (kg)	8.78	2.57	8.87	2.59	0.4
Maternal height (cm)	149.73	5.57	149.81	5.64	0.06
Maternal weight (kg)	44.37	6.51	44.25	6.44	0.6
Total (n)	710		710		

Table 9.1.2. Distribution of mean (SD) of survey and re-interview (quality control) data on height, weight, and MUAC of adolescent girls					
Indicator	Actual survey		Re-interview		p value
	Mean	SD	Mean	SD	
Height (cm)	149.75	5.90	149.73	5.92	0.7
Weight (kg)	41.62	5.80	41.58	5.79	0.5
MUAC (mm)	225.93	22.37	225.93	21.45	0.5
Total (n)	268		268		

Table 9.1.3. Distribution of mean (SD) of survey and re-interview (quality control) data on height, weight, and MUAC data of pregnant women					
Indicator	Actual survey		Re-interview		p value
	Mean	SD	Mean	SD	
Height (cm)	150.07	5.43	149.99	5.51	0.3
Weight (kg)	48.13	6.22	48.21	6.24	0.2
MUAC (mm)	233.72	21.29	233.33	20.06	0.4
Total (n)	330		330		

9.2 QUALITY CONTROL OF MICRONUTRIENT SURVEY

The officers and staff of IPHN were trained by the researchers of ICCDR,B and Institute of Nutrition and Food Science, Dhaka University, on the technical issues relating to the survey. Subsequently, they formed quality-control teams, comprising two officers in each team for

conducting re-interviews. They also observed the interview method of IPHN staff in the field. Collected salt was stored in a dark and cool place to avoid any change in iodine content.

Quality control of table salt iodine and urinary iodine assays were done through repeating tests of samples to confirm the accuracy of results. Coefficient of variation was similar. The internal quality-assurance method was followed throughout the salt sample analysis. Two samples of salt (1 kg/pack) were collected from the market. The iodine contents in the salt samples were analyzed 20 times in 5 consecutive days (4 times daily), and the mean and two standard deviation values were calculated. These samples were then divided in small sachets of 10 g each, preserved at room temperature away from heat and moisture, and treated as known samples. Whenever the samples were analyzed (30-35 unknown samples), one of the sachets of the known sample was tested for internal quality assessment. Prior to salt analysis in the laboratory of IPHN, technologists were given refresher training on salt analysis. Inter-personal and intra-personal variations of salt analysis were calculated and found within acceptable limits (less than 5%). For validation of the test results, 10% of the collected samples were cross-checked by an expert Biochemist of IPHN, and results from these samples were found to be very close. The quality-control team of IPHN and researchers from ICDDR,B ensured the quality of laboratory procedures involved in salt iodine estimation.

9.3 QUALITY CONTROL OF PREGNANCY WEIGHT GAIN AND WEIGHT OF NEWBORNS

The FWVs (female paramedics) working in selected unions were primarily responsible for collecting data in the field. Before assigning the tasks, the FWVs were trained on data-collection procedures and weight-measurement techniques for pregnant women and newborn birth-weight using a Uniscale. All of them were provided with a standard checklist for recording collected information and a protocol for measuring weight. A Uniscale was also provided to each FWV for measurement of weight.

The quality-control teams from ICDDR,B and NIPORT visited most FWVs in the field and checked proper case identification, weight measurement, and consistency of data. Refresher training, especially on birth-weight measurement procedures, was provided to FWVs during the survey.

9.4 SUPERVISOR-LEVEL QUALITY-CONTROL TEAMS

The supervisor-level quality-control (QC) teams from ICDDR,B regularly monitored data collection of the data-collecting agency teams and the QC teams mentioned above. The teams visited fields and organized field refresher training classes on anthropometry. These teams also visited IPHN teams to ensure proper respondent identification and use of the proper technique for haemoglobin estimation by the HemoCue method. The FWVs were also visited by the ICDDR,B Supervisor-level QC teams and provided refresher training in the field. The independent quality-control teams (IQCT) monitored the overall quality of data collection. These teams consisted of members from ICDDR,B, NIPORT, and IPHN.

CHAPTER 10

RECOMMENDATIONS

The BINP had ceased its activities in 2002, while the NNP commenced its field activities in September 2004. The household component of the Baseline Survey of the NNP and individual interviews of the respondents took place during March-October 2004. The micronutrient status component was completed in January 2005, while the pregnancy weight gain and birth-weight components were completed in March 2005. The results of the survey, therefore, reflect baseline characteristics for the NNP, but not an evaluation of the BINP or its successor.

The following recommendations are based on observations made during the survey and its results:

Coverage of growth monitoring and promotion

Because of the reasons mentioned above, only 28% of children in the BINP areas actually received the GMP cards from the CNCs, and a similar proportion of children was weighed 3 times over the last 3 months. For the Programme to be successful in achieving its objectives, it is imperative that the coverage of GMP be broadened to ensure to include all eligible children, adolescent girls, and pregnant/lactating women.

Prioritizing activities of Community Nutrition Promoters

Visits to the CNCs revealed that the Community Nutrition Promoters (CNPs) spend a substantial portion of their time in making arrangements for preparation and distribution of the food supplement—*pushti* packets. This allows little time for them to carry out other important activities, including effective counselling. Job description of the CNPs should be re-evaluated, and their activities be prioritized.

Participatory management of CNCs and appropriate supervision

The field-level staff of the Programme, including CNPs, CNOs, and supervisors, should be involved before and during the anticipated changes in the intervention(s). This will impart a sense of belonging, thereby improving the outcome of the Programme. Targets should be set for achieving desired weight gains for children and pregnant women. Incentives in the form of rewards or recognition should be introduced for the field staff. The nutrition management committees at the village and upazila levels should be strengthened, and their roles in proper functioning of the CNCs be ensured. Teams dedicated for implementation, evaluation, and field trouble-shooting should have stakeholder representation—NGOs, local elites, and beneficiaries. Accountability has also to be enforced.

Targeting for food supplementation

Although it was beyond the scope of the survey to look at issues relating to mistargeting, data from the survey do indicate mistargeting of subjects for food supplementation. Mistargeting should be avoided to reduce the numbers of eligible subjects not receiving food supplements and vice-versa. The feasibility of more-focused supplementation should be considered, e.g. moderately-malnourished and growth-faltered children, instead of any child with growth faltering, all mothers, and adolescent girls with acute malnutrition (BMI <16).

Modifying food supplements

One of the reasons why the *pushti* packet may not be resulting in the desired efficacy is its limited nutrient content. The supplements do not contain extra micronutrients, rather their high phytate content is very likely to reduce absorption of several micronutrients. It is, therefore, important that the supplements be reinforced with micronutrients required for malnourished children and women as per the guidelines of the World Health Organization. There are concerns that food supplements may substitute for usual food taken at home. The amount of supplement may be increased so that more food is available to the target child or woman even after some of it is shared with others.

Promoting use of iodized salt

Almost half of the households were still consuming table salt containing inadequate iodine concentration. The survey results also revealed the enormity of the problem of sub-clinical iodine deficiency (about 45% deficient) in the country and its consequent implications on growth and intellectual performance of the population. It was clear from the results of the survey that salt iodization was far from being satisfactory. It should be made universal in the country so that appropriately iodized salt is readily available throughout the country. Organizations directly or indirectly involved in salt iodization, including UNICEF, Institute of Public Health Nutrition, Bangladesh Standards Institution, and the Salt Mill Owners Association, should be alerted about the magnitude of the problem so that remedial measures can be taken and ensured.

Iron supplementation

Despite the widespread prevalence of anaemia and the increased need for iron and folic acid during pregnancy, only 25% of women regularly took iron supplements in the BINP areas, which is significantly high compared to the other areas. The major reason for not taking iron supplements regularly was that the supplements were not considered necessary. This calls for creating enhanced awareness regarding the importance of iron supplements and increased provision of the same through the CNCs.

Postpartum vitamin A supplementation of mothers

Even in the BINP areas, a 200,000 dose of vitamin A was given to only 8% of mothers within 6 weeks of delivery. Postpartum vitamin A administration has to be scaled up.

Antenatal care

ANC was significantly higher for pregnant women living in the BINP areas where the CNCs contributed substantially to provision of ANC. However, the situation is far from being satisfactory. More than half of the pregnant women did not receive ANC, while only around one-fourth of women received ANC before 4 months of pregnancy. A substantial proportion of women still considered ANC unnecessary. The provision of ANC should be broadened. In line with prioritizing activities of CNPs, they should receive short training on feasible and relevant aspects of ANC and in enhancing awareness about the benefits of ANC and ill-effects of not seeking it.

Women with very low BMI

Seventeen percent of mothers of under-2 children had a BMI of <17; 4% were acutely malnourished with a BMI of <16; and 24% of adolescent girls had a BMI of <17. Pre-pregnancy body weight is a predictor of adverse outcomes, including low birth-weight. Since many of these women will soon prepare for pregnancy, it is important that they are enrolled for counselling and supplementation.

Adolescent forums

Adolescent forums were found to be appropriate platforms for increasing and sharing knowledge about good-health and nutrition practices. Given the emerging burden of HIV/AIDS in the region, discussion on HIV/AIDS should be promoted in the forums. The forums should also have scope for discussions relating to preparations for motherhood, i.e. breastfeeding.

Anti-helminthic treatment

The survey results revealed that intestinal helminthiasis is common in Bangladesh. Single-dose albendazole treatment at intervals of 6 months should be initiated from the CNCs.

Safety-net for the poor

Of 25,000 households covered by the survey, 20% belonged to the lowest quintile of wealth index, while 35-40% belonged to the lowest and fourth quintiles. Food insecurity, defined as inability of a household to produce or access at all times the minimum food needed for 3 meals, for 4-6 months last year, was faced by 10-12% of the households. This implies that some subjects registered for food supplementation will be poor enough to use the supplement as a substitute for the usual food. The Programme should, therefore, consider a safety-net for such registrants.

Counselling male household heads and mothers-in-law

The survey clearly showed that mothers in the BINP areas had better knowledge compared to their peers in other areas. However, there was a divide between knowledge and practice. As this depends to a large extent on lack of decision-making of the mother, male household heads and mothers-in-law should also be counselled so that they can support the mother. This will, again,

depend on prioritizing the activities of the CNPs. The CNPs and supervisors can hold group discussions with fathers and mothers-in-law.

Establishing an effective referral system

The extrapolated number of under-5 children with severe wasting in the country is around 0.25 million, and an effective referral system should, therefore, be established to take care of acutely-ill, severely-malnourished children.

APPENDIX A

Anthropometry and Reference Standards

Nutritional status of individuals and populations can be assessed by anthropometry and by biomedical methods. Anthropometry involves measurement of body dimensions, e.g. weight and height, and comparing them with reference standards. It is simple, safe, easy to perform, relatively inexpensive, non-invasive, and portable, and requires minimal training. It can identify individuals and populations with normal and abnormal nutritional status and social and economic inequity. Anthropometry can predict who will benefit from specific interventions and also help evaluate the impact of interventions. Yet, it cannot identify specific deficiencies, e.g. scurvy or rickets, and is quite slow to respond to very recent changes in nutritional status. The major variables used in anthropometry include sex, age, weight, length or height, and mid-upper arm circumference. When two variables are used together for comparison with a reference standard, they form an anthropometric index, i.e. weight-for-age, weight-for-height, or height (or length)-for-age. The effect of a sudden nutritional deficiency in any population is first detectable in under-5 children in that community. The onset of acute food scarcity by war or famine is manifested by an increase in the prevalence of wasting which is expressed as a reduction in weight-for-height. Long-term nutritional shortcomings in a community are also measurable in under-5 population in terms of number of children who are stunted (decline in height-for-age). Therefore, the measurement of weight and height in young children has become a well-recognized method for determining nutritional status of people in a community or a country.

Biomedical methods of assessment require measurement of body constituents, e.g. biochemical measurements (serum albumin) or assessment of body composition using techniques, such as bioelectric impedance analysis. These methods, yet expensive, are not readily available in situations where they are needed most.

Anthropometric indices

Weight-for-age (WA) is a measure of the child's weight in relation to his age. It tells us how deviant the child’s weight is from the reference standard weight of children of same age and sex. A child with low weight-for-age is underweight. Only the body weight has to be measured and the age of the child determined from records or by asking the mother. As age can be unreliable in many communities, weight-for-age may not always be correct.

Height-for-age (HA) is a measure of how tall or short the child is in relation to his age. A child with low height-for-age suffers from stunting. Since height does not increase in children as rapidly as weight does, an inadequacy in height-for-age is a reflection of long-term food shortages or chronic malnutrition. For children aged less than 2 years, shorter than 85 cm tall or too ill to stand, length is measured instead of height.

Weight-for-height (WH) is a measure of how thin or fat a child is compared to his height. It is affected by an acute shortage of food and is, therefore, a good indicator of short-term malnutrition both at the clinical level when dealing with the individual sick child and at the population level when faced with an emergency situation, like a famine. The advantage of weight-for-height is that it does not depend on the age of the child. This is of great advantage

in populations where caregivers are unaware of the child's date of birth, hence an accurate age in months. However, a limitation is that both weight and height have to be measured which is difficult in field settings.

The three anthropometric indices (i.e. weight-for-height, height-for-age, and weight-for-age) can be quantified in three different ways:

a. Z-scores (WAZ, HAZ, WHZ)
b. Percentiles (WAP, HAP, WHP)
c. Percentage of median (WAM, HAM, WHM).

a. Z-scores

Z-score (or standard deviation score) is the deviation of the value for an individual from the median value of the reference population, divided by the standard deviation for the reference population. Z-score is calculated from the following formula:

$$\text{SD score} = \frac{\text{Individual's value} - \text{median value of reference population}}{\text{SD value of reference population}}$$

Z-score cut-off values of anthropometric indices in children

Anthropometric indicator	Cut-off value	Term
Weight-for-age z-score	-3.00 to 2.01	Moderate underweight
	<-3.00	Severe underweight
Weight-for-height z-score	-3.00 to 2.01	Moderate wasting
	<-3.00	Severe wasting
Height-for-age z-score	-3.00 to 2.01	Moderate stunting
	<-3.00	Severe stunting

b. Percentiles

Percentile means the rank position of an individual on a given reference distribution, stated in terms of what percentage of the group the individual equals or exceeds. If a child's weight-for-age falls on the 25th percentile, this means that 25% of the population in his age-group and sex have a weight lower than his height and 75% of that age- and sex-matched population have a weight which is higher. Percentiles are more commonly used in clinical work, because many growth charts are categorized by percentile cut-offs: 3rd, 10th, 25th, 50th, 75th, 90^{th}, and 97^{th} percentiles. Percentile growth charts are a quick screening tool for an individual child but are of no use in population-based nutrition surveys of young children.

c. Percentage of median

Percentage of median is the ratio of a measured value in the individual, for instance weight, to the median value of the reference data for the same age or height, expressed as a percentage. This is now hardly used when comparing large datasets or in international literature.

Z-scores are considered to be the best way of reporting anthropometric indices (1). They are superior to percentiles, because they are on a linear scale, which allows for summary statistics, e.g. mean and SD to be calculated for a group of z-scores. In addition, they are useful for detecting changes at the extremes of the distribution, e.g. a child with severe wasting (WHZ 4.5), admitted for nutrition rehabilitation, who can be followed up with serial WHZ to decide when he is ready for discharge. The following table summarizes the characteristics of the 3 methods of expressing and reporting anthropometric data.

Comparison of characteristics of z-score, percentile, and percentage of median in reporting anthropometric data

Characteristics	Z-score	Percentile	Percentage of median
Adherence to reference distribution	Yes	Yes	No
Linear scale permitting summary statistics	Yes	No	Yes
Uniform criteria across indices	Yes	Yes	No
Useful in detecting changes at extreme of the distribution	Yes	No	Yes

Mid-upper arm circumference

Mid-upper arm circumference (MUAC) is a useful measure of nutritional status of children. It is used extensively in emergency situations where a quick nutritional assessment of a community is required. It is easy to measure with a tape, which is portable and is applicable for children aged 12-59 months. The cut-offs for nutritional status using MUAC are:

MUAC	**Nutritional status**
>13.5 cm	Not malnourished
12.5-13.5 cm	Moderately malnourished
<12.5 cm	Severely malnourished

International reference standards for anthropometry: which one to use?

Assessment of child growth generally involves comparison with a reference population, making use of an appropriate reference growth chart. Growth charts are widely used as a clinical and research tool to assess the nutritional status and general health and well-being of infants, children, and adolescents. Over the past 20 years, reference growth charts have proven to be important tools in aiding such assessments. A reference growth chart is a tool that provides a common basis for purposes of comparison. The reference population should reflect the growth expected for children.

NCHS charts, 1977

In 1977, the National Center for Health Statistics (NCHS), which is now part of the Centers for Disease Control and Prevention (CDC), developed growth reference charts that were based on representative samples of the population of the United States. The infant charts in 1977 were developed using longitudinal data from the Fels Research Institute, collected in Yellow Springs, Ohio, between 1929 and 1975. While the Fels data had many technical strengths as a study of child growth, its sample was acknowledged to be quite limited in geographic, cultural, socioeconomic and genetic variability (2).

WHO reference growth charts, 1983

In 1978, the CDC modified the 1977 growth reference charts to develop a set of growth curves approximating normal distributions that would allow calculation of standard deviation scores (z-scores) for values above and below the median (3). These modified charts have been subsequently widely and extensively used, not only in the United States, but also globally because of their adoption for international use by the World Health Organization (WHO) (4-6). The international version of the reference was published by WHO in 1979 and was slightly revised 4 years later to create the 1983 WHO reference growth charts. This international adoption was made because it was judged that these data from the United States were the best available at the time and because of our understanding that children who are living in good conditions grow very similarly. In other words, genetics and ethnicity contribute much less variability to infant growth than do the wide disparities in living environments across the world.

Review of the growth charts

About 10 years ago, both NCHS/CDC and WHO independently but cooperatively began the processes of extensively reviewing the uses and interpretations of growth information. Included in these reviews was consideration of the limitations of the currently-used reference growth charts. Although these reviews differed somewhat in process and outcomes, both the reviews reached a consensus that there were the following 4 main limitations of the current reference:

1. The sample of Caucasian, middle-class infants from Ohio used in the very initial years of life was not adequate to describe well the growth of infants in the United Sates.
2. The frequency of measurements on young children was not sufficient to capture well early growth trends.
3. There were inadequate numbers of infants who were breastfed.
4. Technical problems with curve construction could be improved through the use of more modern statistical tools.

As a result of the recommendations from these reviews, both NCHS/CDC and WHO set out to construct new reference growth charts.

Revised CDC reference growth charts for the United States

In May 2000, the NCHS/CDC released revised reference growth charts for the United States. These charts were created with improved data and statistical curve smoothing techniques. Data were taken from 5 national health examination surveys collected from 1963 to 1994 and 5 supplementary sources. These were combined into one analytic data set to produce the reference growth charts. These data better represent racial and ethnic diversity in the United States and contain a mixture of growth data from infants who were breast- and formula-fed. The new reference growth charts were largely constructed using a descriptive approach, although some aspects of a prescriptive approach were taken in that some data were excluded to avoid the influence of an increase in body weight that was observed in the more recent data. Included in the revised charts for the first time were charts for body mass index.

Differences between the 1977 NCHS and the revised CDC 2000 growth charts

When the 1977 NCHS and the CDC 2000 growth charts are compared, some minor differences in the percentile lines are observed. These differences vary by chart and by percentile within a given chart. As expected, more differences occur between the two versions among the charts for infants than among the charts for older children and adolescents. Since BMI-for-age represents a new chart, comparisons cannot be made with an earlier version. For the age below 24 months, the revised CDC 2000 weight-for-age curves are generally higher than those in the 1977 charts. *This will result in more frequently classifying infants as underweight. Similarly, this shift would be expected to result in lower comparative estimates of overweight when the revised charts are used* (7).

After approximately age 6 months, across the major percentiles for both boys and girls, the revised CDC 2000 length-for-age curves tend to be lower than those for the 1977 curves. The magnitude of this change appears to be slightly larger for girls than for boys. *This shift would be expected to result in less frequent classification of low length-for-age when using the revised charts* (7).

At small lengths (approximately 50–70 cm), the revised weight-for-length percentiles are somewhat higher than the 1977 percentiles. The accentuated dip that occurred in the 50–70 cm range for the 5th and 10th percentiles in the 1977 charts is no longer apparent in the revised charts. Shorter infants will more frequently be classified as wasted, that is, a low weight-for-length, when the revised charts are used instead of the 1977 charts (7).

Compared to the 1977 charts, the use of the revised weight-for-stature curves will result in more boys and girls aged 2-5 years classified as under-weight when either the 5th or the 10th percentile cut-off criteria are applied. This is attributable to the finding that the revised curves are higher for these percentiles compared to the 1977 version. *The 1977 10th percentile is now equivalent to the revised 5th percentile for both boys and girls.* In contrast to the 1977 charts, shorter boys and girls will more often be classified as over-weight, and taller children will less often be classified as over-weight when the revised charts are used. This is attributable to a downward shift in the revised weight values at lower statures and an upward shift in weight at the higher statures. The upward shift of the revised curves is more apparent for girls than for boys. Beginning at statures ≥110 cm, the revised percentile curve is ≥2 lb higher than the 1977 curves (7).

Overall, from age 2 to 14 years, the revised weight-for-age percentiles are quite similar to the 1977 percentiles for boys and girls. From 14 to 17 years, the shapes of the 1977 curves are more erratic than those of the revised curves. *This may be attributable to limitations of the smoothing procedures used in the development of the 1977 charts in combination with the availability of only limited data beyond age 17 years that reduced the stability of the end points of the percentile curves. This suggests that the revised charts are an improvement in that regard* (7).

The revised stature-for-age percentiles and the 1977 percentiles for boys and girls are remarkably similar. As with the weight-for-age charts for older children, the revised percentiles beyond 17 years are smoother than the 1977 percentiles mainly because more data were available. *The differences between the 1977 and the revised charts are attributable to a combination of factors, including datasets used, exclusion criteria applied, and statistical curve smoothing procedures selected* (7).

Implications for the use of reference growth charts

The construction and release of new reference growth charts has 3 important implications for healthcare workers, childcare-givers, agency officials, and others who use growth information.

First, after about 20 years of there being a single growth reference widely endorsed and used in the United States and globally, multiple reference growth charts are now available. Consequently, there is the potential for confusion in the choice and use of these reference growth charts. The Revised CDC reference growth charts for the United States will likely to be widely adopted in the USA. *However, the 1983 WHO reference growth charts continue to be preferred for international use.* A working group of the World Health Organization is collecting data at 7 international study centres to develop a new set of international growth charts for infants and pre-schoolers through age 5 years (8). When the new WHO reference is released this year (2005), the new reference will be adopted for international use. Even in the United States, it may be that the new WHO reference will sometimes be preferred for assessing the growth of breastfed infants.

Second, the adoption of any new reference growth charts means that many decisions must be made on how to transit from the old to the new. For example, existing copies of the previous growth charts need to be replaced, growth information for some children may need to be transferred to the new charts, and computer software may need modifications. Guidance and training are required to help people who use growth information to make the transition to the new charts.

Third, any new reference growth charts will likely portray the expected growth differently than did the previous charts that they are replacing. That is, the growth of the reference populations will be somewhat different. For example, for the age below 24 months, the weight-for-age curves in the 2000 revised CDC reference growth charts for the United States are generally higher than those for the 1978 NCHS charts. This will result in classifying infants more often as under-weight and less often as over-weight than before. Similarly, when the new WHO reference is constructed, breastfed infants will be less likely to appear to be faltering early in the first year, while formulafed infants may be more likely to be identified as being over-weight, with the risk that parents may react by placing the child on a low-energy diet, which is not recommended during infancy.

Use of growth charts—Bangladesh context

NNP Baseline Survey:	ANTHROPAC (using 1978 CDC/WHO reference values)
Child Nutrition Survey of Bangladesh 2000:	Epi Info 6.04 (using 1978 CDC/WHO reference values
BDHS 2004:	ANTHROPAC (using 1978 CDC/WHO reference values)
BINP Baseline / Mid-term / Endline:	'Appropriate package'

To maintain comparability with other survey results done in the past and also with international data on growth, it was decided to use 1978 CDC/WHO reference values.

Summary

- In 1977, the National Center for Health Statistics (NCHS), which is now part of the Centers for Disease Control and Prevention (CDC), developed growth reference charts. It was decided that future revisions would be necessary to replace data, modify population estimates, or improve statistical quality.
- In 1978, the CDC modified the 1977 growth reference charts which have been subsequently widely and extensively used, not only in the United States, but also globally because of their adoption for international use by the WHO.
- In May, 2000, the NCHS/CDC released revised reference growth charts for the United States.
- As expected, more differences occurred among the charts for infants than among the charts for older children and adolescents.
- For the age below 24 months, the revised weight-for-age curves in CDC 2000 growth charts are generally higher than those in the NCHS 1977 charts. This will result in more frequently classifying infants as under-weight.
- For both boys and girls, the revised length-for-age curves in CDC 2000 growth charts tend to be lower than those for the NCHS 1977 curves. This shift would be expected to result in less frequent classification of low length-for-age when using the revised charts. The magnitude of this change appears to be slightly larger for girls than for boys.
- The revised weight-for-length percentiles in CDC 2000 are somewhat higher than the NCHS 1977 percentiles. Short infants will more frequently be classified as underweight (wasting), that is, a low weight-for-length, when the revised charts are used in place of the 1977 charts.
- Overall, from age 2 years to approximately 14 years, the revised weight-for-age percentiles are quite similar to the 1977 percentiles for boys and girls.

Data for infants used for construction of NCHS 1977 and CDC 2000 growth charts

Characteristics	**NCHS 1977** (Fels Research Institute)	**CDC 2000** (Third National Health and Nutrition Examination Survey)
Location	Within a convenient distance of Yellow Spring, OH	U.S. nationwide, non-industrialized population
Study design	Longitudinal follow-up	Cross-sectional
Year of data collection	1929-1975	1988-1994
Exclusion criteria	Triplets excluded	VLBW (<1500 g) excluded
Socioeconomic background	Middle-class	Representative of USA
Racial/ethnic background	Caucasian	Representative of USA Matches census distribution
Age	Measurements made at birth, 1, 3, and 6 months	Cross-sectional population spanning 2-6 months of age
Sample size	In total, 876 infants were measured. The output varied by indicator and age Length: M F; Weight: M F Birth 156 142 300 296 1 mo 247 251 296 281 3 mo 438 426 496 482 6 mo 425 409 458 438	Length: M F; Weight: M F 2-2.99 - - 38 34 3-3.99 89 118 89 118 4-4.99 104 92 104 93 5-5.99 96 99 95 98
Infant-feeding pattern	Nearly all formula-fed	Currently Breastfed (%); Exclusively Breastfed (%) 2 mo 56.3 32.2 4 mo 37.3 19.4 6 mo 27.9 9.5
Anthropometric data quality	All measurements well-standardized. Data quality considered high. Large discrepancies between length and stature data have raised questions about the quality of the recumbent length data (2)	All measurements well-standardized [Lohman *et al*., 1988]. Data quality considered high

mo=months
VLBW =Very low birth-weight

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APPENDIX B

Comparison of

CDC/WHO 1978 and

CDC 2000 Reference Standards

for anthopometry

Table A-C-An-0-23.1. Percentageage distribution of categories of malnutrition of 0-23 month(s) old children by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=5,026	n=5,023	n=2,086	n=2,085	n=1,707	n=1,705	n=8,819	n=8,814
<-3.00	11.5	8.3	10.4	7.9	11.3	7.4	11.2	8.0
-3.00 SD to -2.01	24.6	20.7	23.5	19.0	23.2	19.4	24.1	20.1
-2.00 SD to -1.01	32.4	33.5	31.9	32.2	31.0	31.0	32.0	32.7
≥-1.00	31.5	37.4	34.3	40.9	34.5	42.2	32.7	39.2
WAZ (SD)	n= 5,026	n=4,984	n=2,086	n=2,062	n=1,707	n=1,692	n=8,819	n=8,738
<-3.00	11.7	26.1	10.5	23.2	11.4	25.0	11.4	25.2
-3.00 to -2.01	28.9	23.8	30.2	26.8	29.3	24.0	29.3	24.6
-2.00 to -1.01	31.9	26.1	28.6	22.4	28.5	24.0	30.5	24.8
≥-1.00	27.5	23.9	30.6	27.6	30.8	27.0	28.9	25.4
WHZ (SD)	n=5,026	n=4,895	n=2,086	n=2,033	n=1,707	n=1,674	n=8,819	n=8,603
<-3.00	1.7	5.7	1.6	5.7	1.1	6.3	1.6	5.8
-3.00 to -2.01	11.8	16.5	11.6	16.4	12.2	15.2	11.8	16.2
-2.00 to -1.01	33.4	30.2	31.9	28.0	33.7	30.7	33.1	29.8
≥-1.00	53.0	47.5	54.9	49.9	53.0	47.8	53.5	48.1

Table A-C-An-0-23.2. Percentage distribution of categories of malnutrition of 0-23 month(s) old children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	Survey area															
	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n= 2,542	n= 2,484	n= 2,539	n= 2,484	n= 1,049	n= 1,037	n= 1,048	n= 1,037	n=838	n=869	n=837	n=869	n= 4,429	n= 4,390	n= 4,424	n= 4,390
<-3.00	11.2	11.9	10	6.6	10.9	9.8	9.7	6.1	11.1	11.5	9	5.9	11.1	11.3	9.8	6.3
-3.00 to -2.01	25.1	24.1	21.1	20.3	23.9	23	19.1	19	23.5	23	19.7	19.1	24.5	23.6	20.4	19.7
-2.00 to -1.01	33.9	30.8	32.8	34.3	31.8	31.9	31.5	32.9	30.5	31.4	28.5	33.4	32.8	31.2	31.7	33.8
≥-1.00	29.7	33.3	36.1	38.8	33.4	35.2	39.7	42	34.9	34.1	42.7	41.7	31.6	33.9	38.2	40.1
WAZ (SD)	n= 2,542	n= 2,484	n= 2,532	n= 2,453	n= 1,049	n= 1,037	n= 1,040	n= 1,022	n=838	n=869	n=836	n=856	n= 4,429	n= 4,390	n= 4,407	n= 4,331
<-3.00	11.7	11.7	24.4	27.9	10.9	10.2	20.9	25.5	10.8	11.9	23.2	26.7	11.4	11.4	23.4	27.1
-3.00 to -2.01	27.8	30.1	24	23.5	29.2	31.3	28.9	24.7	30.2	28.3	26.0	22.0	28.6	30	25.6	23.5
-2.00 to -1.01	32	31.8	27.2	25	29	28.3	22.8	22	27.9	29.2	24.1	23.8	30.5	30.4	25.6	24.1
≥-1.00	28.5	26.4	24.3	23.5	31	30.2	27.4	27.8	31	30.7	26.6	27.4	29.6	28.1	25.5	25.3
WHZ (SD)	n= 2,542	n= 2,484	n= 2,472	n= 2,424	n= 1,049	n= 1,037	n= 1,022	n= 1,011	n=838	n=869	n=826	n=848	n= 4,429	n= 4,390	n=4,429	n= 4,283
<-3.00	2.1	1.3	5.4	6.1	2.1	1.2	5	6.3	1	1.3	5.4	7.1	1.9	1.3	5.3	6.3
-3.00 to -2.01	12.8	10.8	14.7	18.4	11.8	11.3	16	16.8	13.1	11.2	16.1	14.3	12.7	11	15.3	17.2
-2.00 to -1.01	30.6	36.2	29.7	30.8	31.1	32.8	27.1	29	33.5	34	29.2	32.2	31.3	34.9	29	30.7
≥-1.00	54.4	51.7	50.3	44.7	55	54.8	51.9	47.9	52.4	53.6	49.3	46.4	54.2	52.8	50.5	45.8

Table A-C-An-0-23.3. Percentage distribution of categories of malnutrition of 0-5 month(s) old children by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=1,092	n=1,092	n=411	n=411	n=347	n=345	n=1,850	n=1,848
<-3.00	3.4	4.5	0.7	1.9	2.3	1.8	2.6	3.4
-3.00 to -2.01	10.0	9.0	7.3	6.3	5.9	5.0	8.6	7.7
-2.00 to -1.01	28.8	25.6	26.8	22.4	25.6	21.4	27.8	24.1
≥-1.00	57.8	60.9	65.2	69.3	66.2	71.7	61.0	64.8
WAZ (SD)	n=1,092	n=1,090	n=411	n=411	n=347	n=347	n=1,850	n=1,848
<-3.00	1.6	4.2	0.7	3.2	0.7	2.1	1.2	3.6
-3.00 to -2.01	7.3	10.3	5.4	8.0	2.9	5.6	6.0	8.9
-2.00 to -1.01	25.5	28.4	20.9	22.4	21.1	24.6	23.7	26.3
≥-1.00	65.6	57.1	73.0	66.4	75.4	67.7	69.1	61.2
WHZ (SD)	n=1,092	n=1,066	n=411	n=407	n=347	n=345	n=1,850	n=1,818
<-3.00	1.4	1.8	0.7	2.0	0.3	0.6	1.0	1.6
-3.00 to -2.01	1.4	9.2	0.5	4.9	0.2	5.9	1.0	7.6
-2.00 to -1.01	11.8	19.2	8.5	18.7	8.2	17.9	10.4	18.8
≥-1.00	85.5	69.8	90.3	74.4	91.3	75.5	87.6	71.9

Table A-C-An-0-23.4. Percentage distribution of categories of malnutrition of 0-5 month(s) children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=560	n=531	n=560	n=531	n=223	n=188	n=223	n=188	n=167	n=180	n=166	n=180	n=950	n=899	n=949	n=899
<-3.00	4.1	2.6	6.3	2.6	1.3	0.0	3.6	0.0	4.7	0	3.8	0	3.5	1.6	5.2	1.6
-3.00 to -2.01	9.9	10.0	9.3	8.7	9.4	4.8	8.5	3.7	3.9	7.8	4.9	5.2	8.8	8.5	8.3	6.9
-2.00 to -1.01	31.9	25.6	28.6	22.5	28.3	25.0	24.7	19.7	24.5	26.7	21.8	21.1	26.7	25.7	26.5	21.6
≥-1.00	54.1	61.7	55.8	66.2	61.0	70.2	63.2	76.6	67.0	65.5	69.5	73.7	58.0	64.3	60.0	69.9
WAZ (SD)	n=560	n=531	n=558	n=531	n=223	n=188	n=223	n=188	n=167	n=180	n=167	n=180	n=950	n=899	n=948	n=899
<-3.00	1.3	1.8	5.0	3.5	0.4	1.1	4.0	2.1	0.7	0.6	3.5	0.8	1	1.4	4.5	2.7
-3.00 to -2.01	6.3	8.4	9.0	11.6	6.3	4.3	9.4	6.4	3.6	2.1	4.6	6.6	58.8	6.3	8.3	9.5
-2.00 to -1.01	28.0	22.9	28.9	27.8	22.4	19.1	22.4	22.3	21.2	21.1	25.2	24.1	25.5	21.7	26.7	25.9
≥-1.00	64.5	66.8	57.1	57.1	70.9	75.5	64.1	69.1	74.4	76.2	66.7	68.5	67.7	70.5	60.5	61.9
WHZ (SD)	n=560	n=531	n=548	n=2.7	n=223	n=188	n=223	n=184	n=167	n=180	n=167	n=178	n=950	n=899	n=938	n=879
<-3.00	1.8	0.9	1.0	2.7	0.0	1.6	1.3	2.7	0.0	0.6	0.0	1.2	10.0	1	0.9	2.4
-3.00 to -2.01	0.8	2.0	8.5	9.9	0.0	1.1	5.4	4.3	0.0	0.4	5.8	6	0.5	1.5	7.3	8
-2.00 to -1.01	10.2	13.4	19.7	18.7	9.9	6.9	20.2	16.8	10.0	6.5	17.5	18.3	10.1	10.7	19.4	18.2
≥-1.00	87.2	83.7	70.9	68.7	90.1	90.4	73.1	76.1	90.0	92.5	76.7	74.4	88.4	86.9	72.4	71.4

Table A-C-An-0-23.5. Percentage distribution of categories of malnutrition of 6-11 months old children by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=1,459	n=1,456	n=653	n=652	n=481	n=481	n=2,592	n=2,588
<-3.00	6.9	5.2	6.3	4.4	5.5	4.7	6.5	4.9
-3.00 to -2.01	21.6	16.2	18.8	15.5	18.1	12.4	20.2	15.3
-2.00 to -1.01	35.4	34.7	36.0	32.2	37.2	34.3	35.9	34.0
≥-1.00	36.1	43.9	38.9	47.9	39.2	48.7	37.4	45.8
WAZ (SD)	n=1,459	n=1,454	n=653	n=650	n=481	n=479	n=2,592	n=2,582
<-3.00	7.5	16.8	5.2	11.8	5.1	13.8	6.5	15.0
-3.00 to -2.01	23.3	23.2	25.7	26.9	24.2	24.3	24.1	24.3
-2.00 to -1.01	41.3	34.1	34.9	29.1	38.1	30.9	39.1	32.2
≥-1.00	27.9	25.9	34.2	32.2	32.5	31.1	30.4	28.5
WHZ (SD)	n=1,459	n=1,425	n=653	n=653	n=481	n=472	n=2,592	n=2539
<-3.00	0.8	3.2	0.6	1.7	0.5	3.1	0.7	2.8
-3.00 to -2.01	5.0	11.3	3.1	12.1	5.1	11.6	4.5	11.6
-2.00 to -1.01	28.6	29.3	27.9	26.5	26.6	26.2	28.1	28.0
≥-1.00	65.6	56.2	68.5	59.7	67.7	59.1	66.7	57.6

Table A-C-An-0-23.6. Percentage distribution of categories of malnutrition of 6-11 months old children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=746	n=713	n=743	n=713	n=307	n=346	n=306	n=346	n=253	n=227	n=253	n=227	n=1306	n=1286	n=1302	n=1286
<-3.00	7.3	6.4	7.0	3.3	6.2	6.4	5.6	3.5	4.8	6.3	4.9	4.4	6.6	6.4	6.2	3.5
-3.00 to -2.01	22.0	21.1	17.3	15.0	19.5	18.2	14.7	16.2	20.2	15.8	14.5	10	21.1	19.4	16.1	14.4
-2.00 to -1.01	36.7	34.1	32.1	37.5	39.7	32.7	34.6	30.1	36.6	37.8	32.4	36.4	37.4	34.4	32.8	35.3
≥-1.00	34.0	38.3	43.6	44.2	34.5	42.8	45.1	50.3	38.4	40	48.2	49.3	35.0	39.8	44.8	46.8
WAZ (SD)	n=746	n=713	n=742	n=712	n=307	n=346	n=305	n=345	n=253	n=227	n=253	n=226	n=1306	n=1286	n=1300	n=1282
<-3.00	7.6	7.4	16.6	17.1	4.6	5.8	11.1	12.5	5.5	4.7	17.1	10	6.4	6.5	15.4	14.6
-3.00 to -2.01	22.1	24.5	22.4	23.9	27.4	24.3	29.5	24.6	26.9	21.2	26.4	21.9	24.3	23.9	24.9	23.8
-2.00 to -1.01	40.3	42.2	34.8	33.4	34.9	35.0	29.5	28.7	33.7	43	25.6	36.7	37.8	40.4	31.7	32.7
≥-1.00	30.0	25.8	26.2	25.7	33.2	35.0	29.8	34.2	33.8	31.1	30.9	31.3	31.5	29.2	28	28.9
WHZ (SD)	n=746	n=713	n=729	n=696	n=307	n=346	n=302	n=340	n=253	n=227	n=249	n=222	n=1306	n=1286	n=1280	n=1258
<-3.00	0.6	1.1	3.1	3.4	1.0	0.3	2.3	1.2	0.5	0.5	2.6	3.6	0.7	0.8	2.8	2.8
-3.00 to -2.01	5.8	4.1	9.8	12.9	3.3	2.9	11.3	12.9	5.8	4.4	17	5.6	5.2	3.8	11.5	11.6
-2.00 to -1.01	27.7	29.6	27.8	30.8	29.6	26.3	25.2	27.6	30.8	22	24.5	28.1	28.7	27.4	26.5	29.5
≥-1.00	66.0	65.2	59.4	52.8	66.1	70.5	61.3	58.2	62.9	73.1	55.9	62.7	65.4	68	59.2	56

Table A-C-An-0-23.7. Percentage distribution of categories of malnutrition of 12-23 months old children by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=2,476	n=2,476	n=1,022	n=1,022	n=879	n=879	n=4,377	n=4,377
<-3.00	17.9	11.9	16.8	12.5	18.0	11.1	17.7	11.9
-3.00 to -2.01	32.9	28.5	33.0	26.4	32.8	28.9	32.9	28.1
-2.00 to -1.01	32.1	36.3	31.3	36.1	29.7	32.9	31.4	35.6
≥-1.00	17.1	23.3	18.9	25.0	19.4	27.0	18.0	24.4
WAZ (SD)	n=2,476	n=2,441	n=1,022	n=1,001	n=879	n=866	n=4,377	n=4,308
<-3.00	18.7	41.5	17.9	38.8	19.0	40.4	18.6	40.6
-3.00 to -2.01	41.8	30.2	43.2	34.5	42.4	31.2	42.2	31.4
-2.00 to -1.01	29.2	20.4	27.7	18.1	26.2	19.9	28.2	19.7
≥-1.00	10.4	7.9	11.3	8.7	12.3	8.5	11.0	8.2
WHZ (SD)	n=2,476	n=2,404	n=1,022	n=984	n=879	n=858	n=4,377	n=4,246
<-3.00	2.4	9.0	2.6	9.8	1.7	10.3	2.3	9.4
-3.00 to -2.01	20.5	22.8	21.4	24.0	20.7	20.9	20.8	22.7
-2.00 to -1.01	45.7	35.7	43.9	32.9	47.7	38.3	45.7	35.6
≥-1.00	31.3	32.5	32.0	33.3	29.9	30.5	31.2	32.3

Table A-C-An-0-23.8. Percentage distribution of categories of malnutrition of 12-23 months old children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=1,236	n=1,240	n=1,236	n=1,240	n=519	n=503	n=519	n=503	n=418	n=462	n=418	n=462	n=2,173	n=2,204	n=2,173	n=2,204
<-3.00	16.8	18.9	13.5	10.2	17.7	15.9	14.8	10.1	17.5	18.5	13.6	8.9	17.2	18.2	13.8	9.9
-3.00 to -2.01	34.0	31.8	28.8	28.3	32.8	33.2	26.2	26.6	33.3	32.4	28.8	29	33.5	32.2	28.2	28
-2.00 to -1.01	33.1	31.1	35.0	37.6	28.7	34.0	32.6	39.8	29.3	30.1	28.8	36.7	31.3	31.5	33.2	37.9
≥-1.00	16.1	18.2	22.6	23.9	20.8	16.9	26.4	23.5	19.9	19	28.8	25.4	17.9	18.1	24.7	24.1
WAZ (SD)	n=1,236	n=1,40	n=1,231	n=1,210	n=519	n=503	n=512	n=489	n=418	n=462	n=415	n=451	n=2,173	n=2,204	n=2,159	n=2,149
<-3.00	19.0	18.4	38.0	45.0	19.1	16.7	34.0	43.8	18.1	19.8	34.9	45.4	18.8	18.3	36.4	44.8
-3.00 to -2.01	40.9	42.6	31.8	28.6	40.1	46.3	37.1	31.7	42.9	42	34.4	28.3	41.1	43.3	33.6	29.2
-2.00 to -1.01	28.7	29.6	21.9	18.9	28.3	27.0	18.9	17.2	27.1	25.5	22.8	17.2	28.3	28.2	21.4	18.1
≥-1.00	11.4	9.4	8.3	7.6	12.5	9.9	10.0	7.4	11.9	12.7	7.8	9.1	11.8	10.2	8.6	7.8
WHZ (SD)	n=1,236	n=1,240	n=1,194	n=1,210	n=519	n=503	n=497	n=487	n=418	n=462	n=410	n=48	n=2,173	n=2,204	n=2,101	n=2,145
<-3.00	3.3	1.6	8.9	9.1	3.7	1.6	8.2	11.3	1.6	1.9	9.2	11.2	3.0	1.6	8.8	10
-3.00 to -2.01	22.6	18.5	20.5	25.2	22.0	20.9	23.7	24.2	22.8	18.8	19.7	21.9	22.5	19.1	21.1	24.3
-2.00 to -1.01	41.7	49.7	35.4	36.0	41.0	46.9	31.4	34.5	44.5	50.5	36.9	39.7	42.1	49.3	34.7	36.4
≥-1.00	32.5	30.2	35.3	29.7	33.3	30.6	36.6	30.0	31.1	28.8	34.1	27.2	32.4	30	35.4	29.3

Table A-C-An-6-23.1. Percentage distribution of categories of malnutrition of 6-23 months old children by different reference standards, NNP baseline survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=3,934	n=3,931	n=1,675	n=1,674	n=1,360	n=1,360	n=6,969	n=6,965
<-3.00	13.8	9.4	12.7	9.4	13.6	8.8	13.5	9.3
-3.00 to -2.01	28.7	24.0	27.5	22.2	27.6	23.1	28.2	23.4
-2.00 to -1.01	33.4	35.7	33.1	34.6	32.3	33.4	33.1	35.0
≥-1.00	24.2	30.9	26.7	33.9	26.4	26.4	25.2	32.4
WAZ (SD)	n=3,934	n=3,895	n=1,675	n=1,651	n=1,360	n=1,345	n=6,969	n=6,891
<-3.00	14.5	32.3	13.0	28.2	14.1	30.9	14.1	31.0
-3.00 to -2.01	34.9	27.6	36.4	31.5	36.0	28.8	35.5	28.8
-2.00 to -1.01	33.7	25.5	30.5	22.4	30.4	23.8	32.3	24.4
≥-1.00	16.9	14.7	20.2	17.9	19.5	16.5	18.2	15.8
WHZ (SD)	n=3,934	n=3,829	n=1,675	n=1,626	n=1,360	n=1,330	n=6,969	n=6,785
<-3.00	1.8	6.8	1.9	6.6	1.3	7.7	1.7	6.9
-3.00 to -2.01	14.7	18.5	14.3	19.3	15.2	17.6	14.7	18.5
-2.00 to -1.01	39.4	33.3	37.7	30.4	40.2	34.0	39.1	32.7
≥-1.00	44.0	41.3	46.2	43.7	43.2	40.7	44.4	41.8

Table A-C-An-6-23.2. Percentage distribution of categories of malnutrition of 6-23 months old children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=1,981	n=1,953	n=1,979	n=1,953	n=826	n=849	n=825	n=849	n=671	n=689	n=671	n=689	n=3,479	n=3,491	n=3,475	n=3,491
<-3.00	13.2	14.4	11.1	7.7	13.4	12.0	11.4	7.4	12.7	14.5	10.3	7.4	13.2	13.8	11.0	7.6
-3.00 to -2.01	29.4	27.9	24.5	23.4	27.8	27.1	21.9	22.4	28.4	27.0	23.4	22.7	28.9	27.5	23.7	23.0
-2.00 to -1.01	34.5	32.2	33.9	37.5	32.8	33.5	33.3	35.8	32.1	32.6	30.2	36.6	33.6	32.6	33.1	36.9
≥-1.00	22.8	25.5	30.5	31.3	25.9	27.4	33.3	34.4	26.9	25.9	36.1	33.3	24.3	26.1	32.3	32.5
WAZ (SD)	n=1,981	n=1,953	n=1,973	n=1,921	n=826	n=849	n=817	n=834	n=671	n=689	n=699	n=676	n=3479	n=3,491	n=3,459	n=3,432
<-3.00	14.7	14.4	29.9	34.7	13.7	12.2	25.5	30.8	13.3	14.8	28.2	33.6	14.2	14.0	2.1	33.5
-3.00 to -2.01	33.8	36.0	28.3	26.8	35.4	37.3	34.3	28.8	36.9	35.1	31.4	26.2	34.8	36.2	16.0	27.2
-2.00 to -1.01	33.1	34.2	26.7	24.2	30.8	30.3	22.9	21.9	29.6	31.3	23.9	23.7	31.9	32.7	37.1	23.6
≥-1.00	18.4	15.4	15.1	14.3	20.2	20.1	17.4	18.5	20.2	18.8	16.6	16.5	19.2	17.2	44.8	15.7
WHZ (SD)	n=1,981	n=1,953	n=1,923	n=1,906	n=826	n=849	n=799	n=827	n=671	n=689	n=659	n=670	n=3,479	n=3,491	n=3,381	n=3,404
<-3.00	2.2	1.4	6.7	7.0	2.7	1.1	6.0	7.1	1.2	1.4	6.7	8.7	2.1	1.3	6.5	7.4
-3.00 to -2.01	16.2	13.2	16.4	20.7	15.0	13.5	19.0	19.6	16.4	14.1	18.7	16.5	16.0	13.5	17.5	19.6
-2.00 to -1.01	36.4	42.4	32.5	34.1	36.8	38.5	29.0	31.7	39.3	41.1	32.2	35.8	37.1	41.2	31.6	33.9
≥-1.00	45.1	43.0	44.4	38.2	45.5	46.9	45.9	41.6	43.1	43.4	42.4	39.0	44.8	44.0	44.4	39.2

Table A-C-An-24-59.1. Percentage distribution of categories of malnutrition of 24-59 months old children by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=2,108	n=2,108	n=1,990	n=1,969	n=728	n=721	n=4,826	n=4,783
<-3.00	22.1	19.6	17.3	15.9	18.9	17.8	19.6	17.8
-3.00 to -2.01	30.6	29.9	29.6	26.8	32.2	26.0	30.5	28.0
-2.00 to -1.01	28.0	28.9	33.0	35.0	30.8	34.8	30.5	32.3
≥-1.00	19.3	21.6	20.1	22.3	18.2	21.4	19.5	21.9
WAZ (SD)	n=2,108	n=2,094	n=1,990	n=1,978	n=728	n=725	n=4,826	n=4,797
<-3.00	14.2	27.7	12.9	29.3	14.9	29.2	13.8	28.6
-3.00 to -2.01	40.9	31.1	43.3	30.6	41.5	30.5	42.0	30.8
-2.00 to -1.01	33.6	27.3	32.4	26.1	32.9	28.1	33.0	27.0
≥-1.00	11.3	13.8	11.4	14.0	10.6	12.2	11.2	13.7
WHZ (SD)	n=2,108	n=2,016	n=1,990	n=1,900	n=728	n=702	n=4,826	n=4,618
<-3.00	0.7	7.8	0.8	10.8	0.5	8.3	0.7	9.1
-3.00 to -2.01	9.6	21.2	12.4	24.3	12.3	22.8	11.2	22.7
-2.00 to -1.01	45.9	37.4	48.1	34.9	50.2	41.5	47.5	37.0
≥-1.00	43.8	33.7	38.6	29.9	37.1	27.4	40.7	31.2

Table A-C-An-24-59.2. Percentage distribution of categories of malnutrition of 24-59 months old children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		*CDC 2000*		*CDC/WHO 1978*		*CDC 2000*		*CDC/WHO 1978*		*CDC 2000*		*CDC/WHO 1978*		*CDC 2000*	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=1,026	n=1,082	n=1,022	n=1,071	n=1011	n=979	n=999	n=970	n=384	n=344	n=380	n=341	n=2,421	n=2,405	n=2,401	n=2,383
<-3.00	19.8	24.2	19.7	19.6	15.1	19.5	15.8	16.1	17.5	20.4	17.8	17.9	17.5	21.8	17.8	17.9
-3.00 to -2.01	29.8	31.5	28.3	31.3	28.3	31.1	26.1	27.4	31.9	32.5	25.5	26.4	29.5	31.4	27	29
-2.00 to -1.01	28.9	27.2	28.7	29.1	33.8	32.1	33.5	36.5	32.7	28.7	34.9	34.7	31.5	29.4	31.7	32.9
≥-1.00	21.6	17.1	23.4	19.9	22.7	17.4	24.5	20	17.9	18.4	21.9	20.9	21.5	17.4	23.6	20.1
WAZ (SD)	n=1,026	n=1,082	n=1,019	n=1,076	n=1,011	n=979	n=1,002	n=976	n=384	n=344	n=384	n=341	n=2,421	n=2,405	n=2,404	n=2,393
<-3.00	11.5	16.7	24.7	30.6	10.4	15.5	25.9	32.7	12.1	18.1	25.4	33.5	11.1	16.4	25.3	31.9
-3.00 to -2.01	39	42.7	30.4	31.8	40.6	46.2	30	31.1	39.4	44	30.9	30.0	39.7	44.3	30.3	31.3
-2.00 to -1.01	37.1	30.2	29.4	25.4	35.5	29.2	27	25.2	37.8	27.4	31.8	24.1	36.6	29.4	28.8	25.1
≥-1.00	12.3	10.5	15.5	12.2	13.6	9.1	17	11	10.7	10.5	11.9	12.5	12.6	9.9	15.6	11.7
WHZ (SD)	n=1,026	n=1,082	n=999	n=1,017	n=1,011	n=979	n=982	n=918	n=384	n=344	n=373	n=330	n=2421	n=2,405	n=2354	n=2,264
<-3.00	0.6	0.8	7.4	8.2	0.5	1.1	9	12.9	0.6	0.3	6.4	10.4	0.6	0.9	7.9	10.4
-3.00 to -2.01	9.9	9.4	22.6	19.8	11.8	13.1	24	24.6	10.5	14.2	22.9	22.7	10.8	11.6	23.2	22.2
-2.00 to -1.01	47.6	44.3	36.4	38.4	48.9	47.4	35.4	34.3	51.3	49.1	41	42.1	48.7	46.2	36.7	37.3
≥-1.00	42.0	45.5	33.6	33.7	38.9	38.4	31.6	28.2	37.6	36.4	29.7	24.8	40	41.3	32.1	30.2

Table A-C-An-24-59.3. Percentage distribution of categories of malnutrition of 24-35 months old children by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=656	n=651	n=666	n=658	n=211	n=206	n=1,533	n=1,515
<-3.00	17.5	18.1	17.4	18.2	18.0	18.0	17.5	18.2
-3.00 to -2.01	30.1	30.7	26.1	26.0	27.2	27.6	28.0	28.2
-2.00 to -1.01	31.6	30.8	32.6	34.0	26.8	26.7	31.4	31.7
≥-1.00	20.9	20.3	23.9	21.7	27.9	27.6	23.1	21.9
WAZ (SD)	n=656	n=650	n=666	n=663	n=211	n=210	n=1,533	n=1,524
<-3.00	16.5	30.2	17.4	34.5	19.6	35.7	17.3	32.8
-3.00 to -2.01	41.4	33.5	42.8	31.2	37.4	24.7	41.5	31.3
-2.00 to -1.01	31.0	25.5	28.4	22.6	26.9	24.0	29.3	24.0
≥-1.00	11.0	10.8	11.4	11.6	16.1	15.6	11.9	11.8
WHZ (SD)	n=656	n=588	n=666	n=598	n=211	n=192	n=1,533	n=1,378
<-3.00	0.5	7.9	0.9	12.2	0.5	10.0	0.7	10.0
-3.00 to -2.01	10.0	24.9	13.7	27.1	15.8	24.4	12.6	25.8
-2.00 to -1.01	46.2	35.1	49.4	33.9	44.5	36.9	47.4	34.8
≥-1.00	42.8	32.1	36.0	26.8	39.1	28.7	39.4	29.3

Table A-C-An-24-59.4. Percentage distribution of categories of malnutrition of 24-35 months children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=314	n=343	n=313	n=338	n=318	n=348	n=314	n=344	n=107	n=103	n=105	n=101	n=739	n=794	n=732	n=783
<-3.00	14.0	20.7	16.0	20.2	14.8	19.8	17.8	18.6	19.2	16.9	21.9	14.1	15.1	19.8	17.6	18.7
-3.00 to -2.01	25.0	34.7	26.5	34.6	23.9	28.2	22.9	28.8	27.5	27	26.4	28.8	24.9	30.8	25	31.3
-2.00 to -1.01	36.1	27.4	33.4	28.4	32.4	32.8	32.8	35.2	26.2	27.4	25.4	28.1	33.1	29.8	32	31.3
≥-1.00	24.9	17.1	24.1	16.9	28.9	19.3	26.4	17.4	27.1	28.7	26.3	29	27.0	19.6	25.4	18.7
WAZ (SD)	n=314	n=343	n=308	n=343	n=318	n=348	n=315	n=348	n=107	n=103	n=105	n=103	n=739	n=794	n=730	n=794
<-3.00	11.7	21.0	21.3	38.1	15.1	19.5	27.6	40.8	17.8	21.5	29.3	42.4	14	20.4	25.2	39.9
-3.00 to -2.01	42.7	40.2	38.4	29.0	39.0	46.3	32.7	29.9	35.5	39.4	28.2	21	40.1	42.8	34.4	28.4
-2.00 to -1.01	34.1	28.2	28.3	23.0	30.5	26.4	24.1	21.3	30.6	23.2	27.1	20.6	32	26.8	26.3	21.9
≥-1.00	11.5	10.6	11.9	9.8	15.4	7.8	15.6	8.0	16.2	15.9	15.3	16	13.9	10	14	9.8
WHZ (SD)	n=314	n=343	n=295	n=294	n=318	n=348	n=299	n=299	n=107	n=103	n=98	n=94	n=739	n=794	n=692	n=686
<-3.00	0.4	0.6	7.0	8.7	0.6	1.1	11.0	13.4	0.8	0.3	5.3	14.9	0.6	0.8	8.5	11.6
-3.00 to -2.01	9.2	11.5	27.2	22.6	13.2	14.1	25.8	28.4	13.6	18.2	27.3	21.3	11.6	13.5	26.6	25
-2.00 to -1.01	48.2	44.4	32.8	37.4	49.1	49.7	32.4	35.5	45.3	43.6	36.2	37.7	48.2	46.6	33.1	36.6
≥-1.00	42.1	43.5	33.0	31.3	37.1	35.1	30.8	22.7	40.4	37.9	31.2	26.1	39.7	39.1	31.8	26.8

Table A-C-An-24-59.5. Percentage distribution of categories of malnutrition of 36-47 months old children by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=840	n=834	n=759	n=751	n=294	n=294	n=1,893	n=1,879
<-3.00	24.9	22.5	15.4	14.2	20.5	19.1	20.4	18.7
-3.00 to -2.01	30.7	29.7	31.4	28.8	33.4	25.5	31.4	28.6
-2.00 to -1.01	24.7	26.6	33.2	34.4	30.2	37.3	29.0	31.4
≥-1.00	19.7	21.2	20.0	22.6	15.9	18.2	19.2	21.3
WAZ (SD)	n=840	n=833	n=759	n=755	n=294	n=292	n=1,893	n=1,880
<-3.00	13.9	27.4	9.6	25.7	13.2	25.2	12.1	26.4
-3.00 to -2.01	40.9	29.9	43.7	29.7	43.6	34.9	42.4	30.6
-2.00 to -1.01	32.8	25.4	34.1	27.9	35.3	29.9	33.7	27.1
≥-1.00	12.5	17.3	12.5	16.7	7.9	10.0	11.8	15.9
WHZ (SD)	n=840	n=817	n=759	n=742	n=294	n=288	n=1,893	n=1,848
<-3.00	1.3	7.4	0.5	9.4	0.7	4.6	0.9	7.8
-3.00 to -2.01	9.0	19.2	12.1	23.9	9.3	23.1	10.3	21.7
-2.00 to -1.01	45.9	40.0	46.4	33.6	52.8	45.2	47.1	38.2
≥-1.00	43.9	33.5	41.0	33.2	37.3	27.1	41.7	32.3

Table A-C-An-24-59.6. Percentage distribution of categories of malnutrition of 36-47 months old children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=434	n=406	n=432	n=402	n=398	n=361	n=393	n=358	n=149	n=145	n=149	n=145	n=981	n=912	n=974	n=905
<-3.00	25.6	24.2	25.6	19.3	13.6	17.5	15.0	13.4	14.9	26.3	15.8	22.4	19.1	21.9	19.8	17.4
-3.00 to -2.01	29.6	31.9	29.2	30.2	30.7	32.1	29.5	27.9	30.5	36.4	24.3	26.7	30.2	32.7	28.6	28.7
-2.00 to -1.01	22.6	27.0	21.9	31.7	35.2	31.0	32.1	36.9	33.5	26.8	38.1	36.4	29.4	28.5	28.5	34.5
≥-1.00	22.2	16.9	23.4	18.8	20.6	19.4	23.4	21.8	21.1	10.5	21.8	14.4	21.4	16.9	23.1	19.3
WAZ (SD)	n=434	n=406	n=433	n=400	n=398	n=361	n=397	n=358	n=149	n=145	n=149	n=143	n=981	n=912	n=979	n=901
<-3.00	13.8	13.9	29.0	25.6	6.8	12.7	24.2	27.4	6.8	19.7	17	33.8	9.9	14.4	25.2	27.6
-3.00 to -2.01	36.6	45.4	25.6	34.5	42.2	45.4	29.2	30.2	40.3	47.1	36	33.9	39.4	45.7	28.6	32.7
-2.00 to -1.01	34.5	31.0	25.2	25.7	36.4	31.6	27.5	28.5	42.6	27.8	34.8	24.7	36.5	30.7	27.6	26.6
≥-1.00	15.1	9.6	20.1	14.2	14.6	10.2	19.1	14.0	10.2	5.4	12.3	7.7	14.2	9.2	18.5	13.1
WHZ (SD)	n=434	n=406	n=427	n=390	n=398	n=361	n=391	n=351	n=149	n=145	n=148	n=141	n=981	n=912	n=966	n=882
<-3.00	1.1	1.5	7.8	7.0	0.3	0.8	7.4	11.7	1.0	0.5	5.1	4.2	0.7	1.1	7.2	8.4
-3.00 to -2.01	9.5	8.4	20.6	17.6	11.3	13.0	24.0	23.6	7.9	10.6	21	25.4	10	10.6	22	21.3
-2.00 to -1.01	48.8	42.7	38.9	41.2	47.2	45.4	34.5	32.5	55.6	49.8	46.5	43.8	49.2	44.9	38.3	38.1
≥-1.00	40.6	47.3	32.8	34.2	41.2	40.7	34.0	32.2	35.5	39	27.5	26.6	40.1	43.4	32.5	32.2

Table A-C-An-24-59.7. Percentage distribution of categories of malnutrition of 48-59 months old children by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=611	n=608	n=565	n=560	n=223	n=222	n=1,400	n=1,390
<-3.00	23.0	17.3	19.6	15.5	17.5	15.9	20.8	16.4
-3.00 to -2.01	31.1	29.2	31.5	25.0	35.1	25.1	31.9	26.9
-2.00 to -1.01	28.7	30.0	33.1	37.0	35.3	39.0	31.5	34.2
≥-1.00	17.2	23.5	15.8	22.5	12.0	20.0	15.8	22.5
WAZ (SD)	n=611	n=611	n=565	n=560	n=223	n=223	n=1,400	n=1,394
<-3.00	12.1	25.6	12.0	27.9	12.8	28.4	12.2	27.0
-3.00 to -2.01	40.4	30.3	43.4	31.1	42.7	30.1	42.0	30.6
-2.00 to -1.01	37.4	31.8	34.9	27.9	35.3	29.8	36.1	29.9
≥-1.00	10.1	12.3	9.7	13.2	9.2	11.7	9.8	12.6
WHZ (SD)	n=611	n=610	n=565	n=560	n=223	n=222	n=1,400	n=1,392
<-3.00	0.2	8.2	1.1	11.3	0.0	11.7	0.5	10.0
-3.00 to -2.01	9.6	20.2	11.3	22.0	12.8	21.0	10.8	21.1
-2.00 to -1.01	45.5	36.2	49.0	37.7	52.3	40.7	48.0	37.5
≥-1.00 SD	44.7	35.4	38.6	29.1	34.8	26.6	40.7	31.5

Table A-C-An-24-59.8. Percentage distribution of categories of malnutrition of 48-59 months old children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=278	n=333	n=277	n=331	n=295	n=270	n=292	n=268	n=127	n=96	n=126	n=95	n=700	n=699	n=695	n=695
<-3.00	17.2	28.0	14.5	19.6	17.6	21.9	14.7	16.4	19.2	15.3	16.7	15	17.7	23.9	15	17.7
-3.00 to -2.01	35.4	27.5	29.0	29.4	29.8	33.3	25.0	25.0	37.1	32.4	26.3	23.5	33.4	30.4	26.8	26.9
-2.00 to -1.01	30.4	27.2	33.9	26.7	33.6	32.6	36.3	37.7	37.1	32.9	38.8	39.2	33	30.1	35.8	32.7
≥-1.00	17.0	17.3	22.6	24.3	19.0	12.2	24.0	20.9	6.5	19.4	18.2	22.3	15.9	15.6	22.4	22.7
WAZ (SD)	n=278	n=333	n=278	n=333	n=295	n=270	n=290	n=270	n=127	n=96	n=127	n=96	n=700	n=699	n=695	n=699
<-3.00	7.8	15.6	21.6	29.0	10.2	14.1	26.6	29.3	13.5	12	32.1	23.5	9.8	14.5	25.6	28.3
-3.00 to -2.01	38.7	41.8	29.1	31.4	40.0	47.0	28.3	34.1	41.5	44.2	27.2	33.9	39.8	44.2	28.4	32.8
-2.00 to -1.01	44.8	31.2	37.0	27.4	39.7	29.6	29.7	25.9	38.3	31.3	32.1	26.8	41.5	30.6	33.1	26.8
≥-1.00	8.7	11.3	12.3	12.2	10.2	9.3	15.5	10.7	6.7	12.5	8.6	15.8	8.9	10.7	13	12.1
WHZ (SD)	n=278	n=333	n=277	n=332	n=295	n=270	n=292	n=268	n=127	n=96	n=126	n=96	n=700	n=699	n=696	n=696
<-3.00	0.0	0.3	7.2	9.0	0.7	1.5	8.9	13.8	0.0	0	9.0	15.2	0.3	0.7	8.2	11.7
-3.00 to -2.01	11.2	8.3	20.9	19.7	10.8	11.9	22.3	21.6	11.1	15.1	21.7	20.2	11	10.6	21.6	20.5
-2.00 to -1.01	44.8	46.0	36.4	36.0	50.8	47.0	39.7	35.4	51.1	53.9	38.4	43.8	48.5	47.5	38.2	36.9
≥-1.00	44.0	45.3	35.6	35.2	37.6	39.6	29.1	29.1	37.7	31	31	20.7	40.2	41.2	32	30.9

Table A-C-An-0-59.1. Percentage distribution of categories of malnutrition of 0-59 month(s) old children by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=7,134	n=7,117	n=4,076	n=4,054	n=2,435	n=2,426	n=13,645	n=13,597
<-3.00	14.6	11.7	13.7	11.8	13.6	10.5	14.2	11.5
-3.00 to -2.01	26.4	23.4	26.5	22.8	25.9	21.4	26.3	22.9
-2.00 to -1.01	31.1	32.2	32.4	33.5	30.9	32.1	31.4	32.6
≥-1.00	27.9	32.8	27.4	31.8	29.6	36.0	28.0	33.1
WAZ (SD)	n=7,134	n=7,079	n=4,076	n=4,040	n=2,435	n=2,417	n=13,645	n=13,536
<-3.00	12.4	26.6	11.7	26.2	12.4	26.3	12.2	26.4
-3.00 to -2.01	32.5	26.0	36.6	28.7	32.9	25.9	33.8	26.8
-2.00 to -1.01	32.4	26.5	30.5	24.2	29.8	25.2	31.4	25.6
≥-1.00	22.7	20.9	21.2	20.9	24.8	22.6	22.6	21.2
WHZ (SD)	n=7,134	n=6,911	n=4,076	n=3,933	n=2,435	n=2,377	n=13,645	n=13,221
<-3.00	1.4	6.3	1.2	8.2	0.9	6.9	1.3	7.0
-3.00 to -2.01	11.2	17.9	12.0	20.2	12.2	17.4	11.6	18.5
-2.00 to -1.01	37.1	32.3	39.8	31.4	38.7	33.9	38.2	32.3
≥-1.00	50.3	43.5	47.0	40.2	48.2	41.8	48.9	42.2

Table A-C-An-0-59.2. Percentage distribution of categories of malnutrition of 0-59 month(s) old children by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=3,568	n=3,566	n=3,561	n=3,555	n=2,060	n=2,016	n=2,047	n=2,007	n=1,222	n=1,213	n=1,216	n=1,210	n=6,850	n=6,795	n=6,824	n=6,773
<-3.00	13.7	15.6	12.8	10.5	13.0	14.5	12.7	10.9	13.1	14.0	11.8	9.3	13.4	15.0	12.6	10.4
-3.00 to -2.01	26.5	26.3	23.2	23.6	26.1	26.9	22.5	23.1	26.1	25.7	21.5	21.2	26.3	26.4	22.7	23.0
-2.00 to -1.01	32.4	29.7	31.6	32.8	32.8	32.0	32.5	34.6	31.2	30.6	30.5	33.8	32.3	30.5	31.7	33.5
≥-1.00	27.4	28.4	32.4	33.1	282.2	26.5	32.3	31.4	29.5	29.7	36.2	35.8	28.0	28.1	33.1	33.1
WAZ (SD)	n=3,568	n=3,566	n=3,550	n=3,528	n=2,060	n=2,016	n=2,042	n=1,998	n=1,222	n=1,213	n=1,220	n=1,198	n=6,850	n=6,795	n=6,812	n=6,724
<-3.00	11.7	13.2	24.5	28.7	10.6	12.8	23.4	29.0	11.2	13.6	23.9	28.7	11.3	13.2	24.1	28.8
-3.00 to -2.01	31.0	33.9	25.9	26.1	34.8	38.5	29.5	27.8	33.1	32.8	27.6	24.3	32.5	35.1	27.3	26.3
-2.00 to -1.01	33.5	31.3	27.8	25.1	32.2	28.7	24.9	23.6	31.0	28.7	26.5	23.9	32.6	30.1	26.7	24.4
≥-1.00	23.9	21.6	21.8	20.1	22.4	19.9	22.3	19.6	24.6	24.9	22.0	23.2	23.6	21.7	22.0	20.5
WHZ (SD)	n=3,568	n=3,566	n=3,471	n=3,440	n=2,060	n=2,016	n=2,004	n=1,929	n=1,222	n=1,213	n=1,199	n=11,778	n=6,850	n=6,795	n=6,673	n=6,547
<-3.00	1.7	1.2	6.0	6.7	1.3	1.1	6.9	9.4	0.8	1.0	5.7	8.0	1.4	1.1	6.2	7.7
-3.00 to -2.01	12.0	10.4	16.9	18.8	11.8	12.2	20.0	20.5	12.3	12.1	18.2	16.7	12.0	11.2	18.1	18.9
-2.00 to -1.01	35.5	38.6	31.6	33.1	39.8	39.9	31.2	31.5	39.1	38.2	32.9	34.9	37.4	38.9	31.7	32.9
≥-1.00	50.8	49.8	45.5	41.5	47.1	46.8	41.9	38.5	47.8	48.7	43.2	40.3	49.2	48.7	44.0	40.4

Table D-1-C-An-0-23.1. Percentage distribution of categories of malnutrition of 0-23 month(s) old children of Barisal division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=366	n=366	n=166	n=166	n=167	n=167	n=699	n=699
<-3.00	14.5	10.4	11.4	9.0	18.4	15.6	14.7	11.3
-3.00 to -2.01	23.7	22.1	22.3	18.2	24.3	16.6	23.5	19.9
-2.00 to -1.01	30.4	30.5	30.1	31.3	30.9	32.1	30.4	31.1
≥-1.00	31.4	37.0	36.1	41.6	26.5	35.6	31.3	37.7
WAZ (SD)	n=366	n=366	n=166	n=166	n=167	n=167	n=699	n=699
<-3.00	15.1	27.6	10.2	22.1	15.7	35.2	14.1	28.1
-3.00 to -2.01	25.5	21.3	24.7	23.3	32.5	21.7	27.0	21.9
-2.00 to -1.01	29.6	25.4	31.9	22.7	25.5	21.2	29.2	23.8
≥-1.00	29.7	25.7	33.1	31.9	26.3	21.9	29.7	26.2
WHZ (SD)	n=366	n=366	n=166	n=166	n=167	n=167	n=699	n=699
<-3.00	2.1	7.2	1.2	5.0	0.3	10.5	1.4	7.5
-3.00 to -2.01	13.1	14.8	13.3	16.1	16.5	15.2	14.0	15.2
-2.00 to -1.01	30.5	29.1	24.7	21.1	34.8	32.4	30.1	28.0
≥-1.00	54.3	49.0	60.8	57.8	48.3	42.0	54.4	49.4

Table D-1-C-An-0-23.2. Percentage distribution of categories of malnutrition of 0-23 months children of Barisal division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=184	n=182	n=184	n=182	n=76	n=90	n=76	n=90	n=77	n=90	n=77	n=90	n=337	n=362	n=337	n=362
<-3.00	12.5	16.6	10.0	10.8	11.8	11.1	9.2	8.9	23.7	13.8	22.2	10	14.9	14.5	12.6	10.2
-3.00 to -2.01	26.0	21.4	24.6	19.7	17.1	26.7	17.1	18.9	17.6	30	9.2	23	22.1	24.8	19.4	20.3
-2.00 to -1.01	28.2	32.5	28.6	32.4	35.5	25.6	34.2	28.9	35.4	27.1	34.3	30.2	31.5	29.5	31.2	31
≥-1.00	33.3	29.5	36.8	37.1	35.5	36.7	39.5	43.3	23.3	29.1	34.2	36.8	31.5	31.2	36.8	38.6
WAZ (SD)	n=184	n=182	n=184	n=182	n=76	n=90	n=76	n=90	n=77	n=90	n=77	n=90	n=337	n=362	n=337	n=362
<-3.00	15.5	14.7	26.7	28.6	10.5	10.0	21.1	23.0	18.5	13.3	35.2	35.3	15.1	13.2	27.4	28.8
-3.00 to -2.01	25.1	26.0	22.8	19.7	23.7	25.6	22.4	24.1	31	33.7	23.3	20.2	26.1	27.8	22.8	20.9
-2.00 to -1.01	30.1	29.2	24.2	26.7	31.6	32.2	22.4	23.0	23	27.7	18.6	23.5	28.8	29.6	22.5	25
≥-1.00	29.4	30.1	26.3	25.0	34.2	32.2	34.2	29.9	27.5	25.3	22.8	21.1	30	29.4	27.3	25.2
WHZ (SD)	n=184	n=182	n=184	n=182	n=76	n=90	n=76	n=90	n=77	n=90	n=77	n=90	n=337	n=362	n=337	n=362
<-3.00	2.3	1.9	7.1	7.3	1.3	1.1	4.0	5.8	0.7		8.5	12.2	1.7	1.2	6.7	8.2
-3.00 to -2.01	12.8	13.5	15.5	14.1	15.8	11.1	17.3	15.1	13.6	19	13.1	17	13.7	14.3	15.3	15.1
-2.00 to -1.01	31.6	29.3	29.0	29.2	21.1	27.8	18.7	23.3	35.8	34	31.6	33	30.2	30.1	27.2	28.7
≥-1.00	53.3	55.4	48.5	49.4	61.8	60.0	60.0	55.8	49.9	47	46.8	37.9	54.5	54.4	50.7	48.1

Table D-2-C-An-0-23.1. Percentage distribution of categories of malnutrition of 0-23 month(s) old children of Chittagong division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=1,606	n=1,606	n=361	n=361	n=611	n=611	n=2,578	n=2,578
<-3.00	11.1	8.1	8.3	6.1	10.0	5.2	10.4	7.1
-3.00 to -2.01	20.0	17.3	19.4	15.2	20.0	18.2	19.9	17.2
-2.00 to -1.01	33.7	33.2	28.0	29.6	31.2	31.2	32.3	32.2
≥-1.00	35.2	41.4	44.3	49.0	38.8	45.4	37.3	43.4
WAZ (SD)	n=1,606	n=1,606	n=361	n=361	n=611	n=611	n=2,578	n=2,578
<-3.00	12.7	26.6	8.9	21.3	11.5	22.3	11.9	24.8
-3.00 to -2.01	26.6	21.6	30.5	27.2	25.8	25.2	27.0	23.3
-2.00 to -1.01	32.6	28.1	23.3	18.3	32.6	26.3	31.3	26.3
≥-1.00	28.1	23.7	37.4	33.1	30.1	26.1	29.9	25.6
WHZ (SD)	n=1,606	n=1,606	n=361	n=361	n=611	n=611	n=2,578	n=2,578
<-3.00	2.6	7.6	2.5	5.7	1.5	6.9	2.3	7.2
-3.00 to -2.01	13.5	16.7	10.8	17.2	13.5	16.4	13.1	16.2
-2.00 to -1.01	33.1	29.5	34.9	31.9	34.2	32.6	33.6	30.6
≥-1.00	50.8	46.2	51.8	45.1	50.8	44.1	50.9	45.5

Table D-2-C-An-0-23.2. Percentage distribution of categories of malnutrition of 0-23 month(s) children of Chittagong division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=808	n=798	n=808	n=798	n=174	n=187	n=174	n=187	n=299	n=312	n=299	n=312	n=1,282	n=1,296	n=1,282	n=1,296
<-3.00	9.5	12.6	9.3	6.9	10.3	6.4	9.2	3.2	8.4	11.5	5.4	5.1	9.3	11.5	8.3	5.9
-3.00 to -2.01	22.4	17.7	18.4	16.3	20.7	18.2	16.7	13.9	22.1	18.1	20.3	16.1	22.1	17.8	18.6	15.9
-2.00 to -1.01	36.7	30.7	33.0	33.3	25.9	29.9	27.6	31.6	32.0	30.4	31.0	31.5	34.2	30.5	31.8	32.6
≥-1.00	31.4	39.0	39.4	43.5	43.1	45.5	46.6	51.3	37.5	40.0	43.4	47.3	34.4	40.2	41.3	45.5
WAZ (SD)	n=808	n=798	n=808	n=798	n=174	n=187	n=174	n=187	n=299	n=312	n=299	n=312	n=1,282	n=1,296	n=1,282	n=1,296
<-3.00	10.9	14.5	23.6	29.6	9.8	8.0	20.3	22.3	9.6	13.3	22.8	21.8	10.4	13.3	23	26.7
-3.00 to -2.01	26.2	27.1	23.4	19.7	28.7	13.9	29.1	25.5	29.5	22.2	27.7	22.8	27.3	26.6	25.2	21.3
-2.00 to -1.01	35.9	29.3	31.6	24.5	24.7	31.6	19.2	17.4	32.7	32.5	25.9	26.8	33.6	29.0	28.6	24.0
≥-1.00	27.0	29.1	21.3	26.2	36.8	51.3	31.4	34.8	28.2	32	23.5	26.8	28.6	31.1	23.2	28.0
WHZ (SD)	n=808	n=798	n=808	n=798	n=174	n=187	n=174	n=187	n=299	n=312	n=299	n=312	n=1,282	n=1,296	n=1,282	n=1,296
<-3.00	3.2	2.1	6.7	8.6	2.3	2.7	5.4	6.1	0.4	2.5	6.6	7.2	2.4	2.3	6.5	7.9
-3.00 to -2.01	14.2	12.8	14.3	19.1	12.1	9.6	16.1	18.3	17.0	10.0	18.1	14.8	14.5	11.7	15.5	18.0
-2.00 to -1.01	30.1	36.2	30.2	28.8	33.9	35.8	31.5	32.2	33.1	35.4	33.2	31.9	31.3	35.9	31.1	30.0
≥-1.00	52.6	48.9	48.8	43.6	51.7	51.8	47.0	43.3	49.5	52.1	42.1	46.0	51.7	50.1	47.0	44.1

Table D-3-C-An-0-23.1. Percentage distribution of categories of malnutrition of 0-23 month(s) old children of Dhaka division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=1,133	n=1,133	n=734	n=734	n=389	n=389	n=2,256	n=2,256
<-3.00	12.1	9.2	9.8	7.5	10.6	7.6	11.1	8.4
-3.00 to -2.01	28.9	22.8	27.1	21.3	29.7	23.9	28.4	22.5
-2.00 to -1.01	33.1	36.1	31.5	31.9	29.8	30.8	32.0	33.8
≥-1.00	26	31.9	31.6	39.4	29.9	37.7	28.4	35.3
WAZ (SD)	n=1,133	n=1,133	n=734	n=734	n=389	n=389	n=2,256	n=2,256
<-3.00	13.6	29.8	10.4	24.2	11.4	25.8	12.2	27.3
-3.00 to -2.01	32.5	26.0	30.1	25.7	32.9	24.4	31.8	25.6
-2.00 to -1.01	30.7	23.5	32.0	25.2	23.4	21.4	29.9	23.7
≥-1.00	23.2	20.8	27.5	24.9	32.4	28.4	26.2	23.4
WHZ (SD)	n=1133	n=1133	n=734	n=734	n=389	n=389	n=2,256	n=2,256
<-3.00	1.9	5.8	1.1	5.9	1.1	5.7	1.5	5.8
-3.00 to -2.01	13.8	19.3	12.3	14.2	9.5	13.1	12.6	16.6
-2.00 to -1.01	33.4	31.2	32.4	29.8	35.0	28.7	33.3	30.3
≥-1.00	50.9	43.7	54.2	50.1	54.3	52.4	52.6	47.3

Table D-3-C-An-0-23.2. Percentage distribution of categories of malnutrition of 0-23 month(s) old children of Dhaka division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=566	n=566	n=566	n=566	n=376	n=358	n=376	n=358	n=190	n=199	n=190	n=199	n=1,132	n=1,124	n=1,132	n=1,124
<-3.00	13.0	11.1	11.8	6.5	10.4	9.2	9.6	5.3	12.2	9.1	10.9	4.6	12.0	10.1	10.9	5.8
-3.00 to -2.01	26.8	30.9	22.0	23.6	29.0	25.1	21.0	21.5	29.0	30.4	25.8	22.2	27.9	29.0	22.3	22.7
-2.00 to -1.01	34.8	31.4	34.1	38.2	30.1	33.0	31.4	32.4	27.2	32.2	24.3	37.0	31.9	32.0	31.5	36.1
≥-1.00	25.4	26.6	32.1	31.7	30.6	32.7	38.0	40.8	31.6	28.3	39.1	36.3	28.2	28.8	35.3	35.4
WAZ (SD)	n=566	n=566	n=566	n=566	n=376	n=358	n=376	n=358	n=190	n=199	n=190	n=199	n=1,132	n=1,124	n=1,132	n=1,124
<-3.00	14.4	12.8	27.8	31.8	10.4	10.3	22.0	26.6	12.4	10.4	24.4	27.1	12.7	11.6	25.3	29.3
-3.00 to -2.01	31.0	34.0	26.2	25.7	29.8	30.4	28.2	23.2	32.4	33.4	25.0	23.8	30.8	32.7	26.7	24.6
-2.00 to -1.01	27.5	33.9	22.6	24.5	30.9	33.2	24.4	26.0	23.6	23.1	24.3	18.7	28.0	31.8	23.5	23.9
≥-1.00	27.1	19.4	23.5	18.0	29.0	26.0	25.5	24.3	32.6	33.2	26.3	30.4	28.5	23.9	24.6	22.2
WHZ (SD)	n=566	n=566	n=566	n=566	n=376	n=358	n=376	n=358	n=190	n=199	n=190	n=199	n=1,132	n=1,124	n=1,132	n=1,124
<-3.00	2.3	1.6	5.9	5.7	1.6	0.6	4.4	7.4	1.6	0.6	4.3	7.1	1.9	1.1	5.1	6.5
-3.00 to -2.01	14.9	12.6	16.6	22.0	11.4	13.1	14.4	14.0	9.4	9.6	16.3	10.1	12.8	12.3	15.8	17.3
-2.00 to -1.01	29.4	37.3	29.2	33.3	32.2	32.7	28.6	31.1	39.0	31.2	25.7	31.0	31.9	34.8	28.4	32.3
≥-1.00	53.4	48.5	48.3	39.1	54.8	53.6	52.6	47.4	50.0	58.5	53.8	51.2	53.3	51.9	50.6	43.9

Table D-4-C-An-0-23.1. Percentage distribution of categories of malnutrition of 0-23 month(s) old children of Khulna division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=376	n=376	n=253	n=253	n=100	n=100	n=730	n=730
<-3.00	8.6	5.1	7.5	7.5	5.8	3.9	7.9	5.8
-3.00 to -2.01	23.7	19.7	19.8	12.3	16.4	13.9	21.3	16.3
-2.00 to -1.01	34.3	35.5	35.6	37.2	37.2	30.5	35.1	35.4
≥-1.00	33.3	39.8	37.2	43.1	40.7	51.8	35.7	42.5
WAZ (SD)	n=376	n=376	n=253	n=253	n=100	n=100	n=730	n=730
<-3.00	9.5	20.6	7.1	15.9	6.7	17.0	8.3	18.5
-3.00 to -2.01	24.8	23.4	27.7	28.6	26.6	24.3	26.1	25.3
-2.00 to -1.01	31.8	27.0	28.1	21.4	32.9	27.7	30.6	25.2
≥-1.00	33.9	29.1	37.2	34.1	33.9	31.0	35.0	31.1
WHZ (SD)	n=376	n=376	n=253	n=253	n=100	n=100	n=730	n=730
<-3.00	0.7	4.2	0.8	5.2	1.9	5.3	0.9	4.7
-3.00 to -2.01	9.0	14.0	10.7	13.2	10.4	14.9	9.8	13.8
-2.00 to -1.01	32.9	29.9	27.7	26.8	29.4	28.9	30.6	28.7
≥-1.00	57.4	51.9	60.9	54.8	58.4	51.0	58.7	52.8

Table D-4-C-An-0-23.2. Percentage distribution of categories of malnutrition of 0-23 month(s) old children of Khulna division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=189	n=188	n=189	n=188	n=127	n=126	n=127	n=126	n=45	n=56	n=45	n=56	n=361	n=369	n=361	n=369
<-3.00	8.4	8.9	6.4	3.7	7.9	7.1	7.9	7.1	7.0	4.7	5.8	2.4	8.1	7.7	6.8	4.7
-3.00 to -2.01	24.3	23.1	20.5	18.8	18.1	21.4	12.6	21.4	14.0	18.5	13.0	14.6	20.8	21.8	16.8	15.8
-2.00 to -1.01	35.8	32.8	34.6	36.3	35.4	35.7	35.4	35.7	39.5	35.3	30.7	30.2	36.1	34.2	34.4	36.3
≥-1.00	31.5	35.2	38.5	41.2	38.6	35.7	44.1	35.7	39.5	41.7	50.7	52.9	35.0	36.4	41.9	43.2
WAZ (SD)	n=189	n=188	n=189	n=188	n=127	n=126	n=127	n=126	n=45	n=56	n=45	n=56	n=361	n=369	n=361	n=369
<-3.00	10.6	8.3	20.7	20.5	6.3	7.9	15.0	16.8	6.4	6.9	12.8	20.5	8.6	8.0	17.7	19.2
-3.00 to -2.01	25.9	23.8	24.7	22.0	28.3	27.0	27.6	29.6	25.7	27.3	26.5	22.5	26.7	25.4	25.9	24.6
-2.00 to -1.01	27.9	35.6	24.7	29.8	26.8	29.4	23.6	19.2	30.3	34.9	28.3	27.2	27.8	33.4	24.5	25.8
≥-1.00	35.6	32.3	30.3	27.8	38.6	35.7	33.9	34.4	37.6	30.8	32.4	29.8	36.9	33.3	31.8	30.3
WHZ (SD)	n=189	n=188	n=189	n=188	n=127	n=126	n=127	n=126	n=45	n=56	n=45	n=56	n=361	n=369	n=361	n=369
<-3.00	1.2	0.1	5.2	3.2	-	1.6	6.3	4.1	2.0	1.8	5.8	4.9	0.9	0.9	5.7	3.7
-3.00 to -2.01	11.8	6.3	13.9	14.1	12.6	8.7	11.8	14.8	10.0	10.7	10.2	18.9	11.8	7.8	12.7	15.0
-2.00 to -1.01	33.7	32.0	31.3	28.5	29.9	25.4	31.5	22.0	26.2	31.9	26.1	31.1	31.4	29.8	30.7	26.7
≥-1.00	53.3	61.5	49.6	54.2	57.5	64.3	50.4	59.3	61.7	55.7	57.9	45.4	55.8	61.6	50.9	54.6

Table D-5-C-An-0-23.1: Percentage distribution of categories of malnutrition of 0-23 month(s) old children of Rajshahi division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=1,234	n=1,234	n=451	n=451	n=294	n=294	n=1,979	n=1,979
<-3.00	10.5	7.5	12.0	8.4	11.8	7.1	11.0	7.7
-3.00 to -2.01	27.0	22.5	22.2	20.2	24.0	20.0	25.4	21.6
-2.00 to -1.01	30.2	32.4	33.7	32.4	30.5	30.3	31.0	32.1
≥-1.00	32.4	37.5	32.2	38.9	33.7	42.5	32.5	38.6
WAZ (SD)	n=1,234	n=1,234	n=451	n=451	n=294	n=294	n=1,979	n=1,979
<-3.00	7.7	22.1	12.0	24.5	11.5	26.6	9.3	23.3
-3.00 to -2.01	29.6	25.0	31.9	28.6	30.0	22.0	30.2	25.3
-2.00 to -1.01	33.0	26.7	26.8	19.8	25.8	21.5	30.5	24.4
≥-1.00	29.7	26.2	29.3	27.0	32.7	29.8	30.0	26.9
WHZ (SD)	n=1,234	n=1,234	n=451	n=451	n=294	n=294	n=1,979	n=1,979
<-3.00	0.6	3.4	2.2	5.5	1.1	4.8	1.1	4.1
-3.00 to -2.01	8.1	14.0	10.4	19.5	11.7	15.2	9.1	15.4
-2.00 to -1.01	33.3	29.9	32.8	29.9	32.2	29.2	33.0	28.9
≥-1.00	58.0	52.7	54.5	49.1	55.0	50.7	56.8	51.8

Table D-5-C-An-0-23.2. Percentage distribution of categories of malnutrition of 0-23 months old children of Rajshahi division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=646	n=588	n=649	n=588	n=230	n=221	n=230	n=221	n=153	n=141	n=153	n=141	n=1030	n=949	n=2,030	n=949
<-3.00	10.8	10.1	9.4	5.4	13.0	10.9	11.4	5.4	9.3	14.5	6.9	7.5	11.1	11.0	9.4	5.7
-3.00 to -2.01	27.1	26.8	22.7	22.3	23.0	21.3	20.5	19.9	24.3	23.7	17.9	22.3	25.8	25.1	21.5	21.8
-2.00 to -1.01	31.0	29.8	31.8	33.0	33.0	34.4	31.0	33.9	27.7	33.5	25.4	35.5	31	31.1	30.7	33.6
≥-1.00	31.1	33.8	36.1	39.3	30.9	33.5	37.1	40.7	38.7	28.3	49.8	34.7	32.2	32.9	38.4	38.9
WAZ (SD)	n=646	n=588	n=649	n=588	n=230	n=221	n=230	n=221	n=153	n=141	n=153	n=141	n=1030	n=949	n=2,030	n=949
<-3.00	9.1	6.3	21.7	22.5	13.9	10.0	22.1	27.1	10.3	12.9	20.1	33.8	10.3	8.1	21.6	25.2
-3.00 to -2.01	26.5	33.1	21.9	28.5	28.7	35.3	31.4	25.7	27.9	32.3	24	19.7	27.2	33.5	24.3	26.5
-2.00 to -1.01	33.0	33.0	28.6	24.7	29.1	24.4	19.9	19.7	24.6	27.1	20.9	22.2	30.9	30.1	25.5	23.2
≥-1.00	31.4	27.7	27.8	24.4	28.3	30.3	26.5	27.5	37.3	27.8	34.9	24.2	31.6	28.3	28.6	25.1
WHZ (SD)	n=646	n=588	n=649	n=588	n=230	n=221	n=230	n=221	n=153	n=141	n=153	n=141	n=1030	n=949	n=2,030	n=949
<-3.00	1.0	0.2	3.0	3.8	3.9	0.5	5.9	5.0	1.4	0.8	3.2	6.6	1.7	0.3	3.7	4.5
-3.00 to -2.01	9.3	6.7	12.7	15.3	10.9	10.0	19.4	19.7	10.9	12.6	14.1	16.5	9.9	8.3	14.4	16.5
-2.00 to -1.01	29.5	37.3	27.7	32.4	29.6	36.2	23.0	28.9	31.0	33.5	28.9	29.6	29.8	36.5	26.9	31.1
≥-1.00	60.1	55.7	56.5	48.6	55.7	53.4	51.8	46.3	56.7	53.1	53.9	47.2	58.6	54.8	55.1	47.8

Table D-6-C-An-0-23.1. Percentage distribution of categories of malnutrition of 0-23 months old children of Sylhet division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=311	n=311	n=121	n=121	n=146	n=146	n=578	N=578
<-3.00	16.2	11.1	18.2	13.2	13.5	9.7	15.9	11.1
-3.00 to -2.01	25.6	23.1	28.1	28.1	21.2	18.4	25.0	22.9
-2.00 to -1.01	31.2	31.9	33.9	31.4	30.1	30.9	31.5	31.5
≥-1.00	27.0	34.0	19.8	27.3	35.1	41.0	27.6	34.3
WAZ (SD)	n=311	n=311	n=121	n=121	n=146	n=146	n=578	n=578
<-3.00	14.4	32.0	19.0	34.2	8.9	24.7	14.0	30.6
-3.00 to -2.01	33.8	26.0	37.2	26.7	30.9	24.5	33.8	25.8
-2.00 to -1.01	30.9	22.7	27.3	29.2	31.5	26.1	30.3	24.9
≥-1.00	20.8	19.3	16.5	10.0	28.8	24.7	21.9	18.7
WHZ (SD)	n=311	n=311	n=121	n=121	n=146	n=146	n=578	n=578
<-3.00	1.4	5.7	2.5	6.8		3.6	1.3	5.4
-3.00 to -2.01	13.2	20.5	13.2	23.1	10.9	15.6	12.6	19.8
-2.00 to -1.01	39.5	33.5	35.5	25.6	32.8	30.6	37.0	31.2
≥-1.00	45.9	40.3	48.8	44.4	56.3	50.2	49.1	43.7

Table D-6-C-An-0-23.2. Percentage distribution of categories of malnutrition of 0-23 month(s) old children of Sylhet division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=148	n=162	n=148	n=162	n=66	n=55	n=66	n=55	n=74	n=72	n=74	n=72	n=288	n=289	n=288	n=289
<-3.00	17.5	14.9	14.4	8.1	12.1	25.5	10.6	16.4	12.7	14.3	11.9	7.4	15	16.8	12.9	
-3.00 to -2.01	25.4	25.8	22.9	23.2	25.8	30.9	24.2	32.7	25.1	17.2	20.7	16.2	25.4	24.7	22.9	9.5
-2.00 to -1.01	32.4	30.2	33.3	30.7	42.4	23.6	33.3	29.1	28.4	31.9	28.3	33.6	33.6	29.4	32	32.7
≥-1.00	24.8	29.0	29.4	38.1	19.7	20.0	31.8	21.8	33.8	36.7	39.1	42.9	25.9	29.2	32.5	63.8
WAZ (SD)	n=148	n=162	n=148	n=162	n=66	n=55	n=66	n=55	n=74	n=72	n=74	n=72	n=288	n=289	n=288	n=289
<-3.00	14.4	14.4	29.7	34.1	15.2	23.6	22.7	14.1	7.7	10.0	22.3	27.2	12.9	15.1	26.2	35.0
-3.00 to -2.01	34.8	32.9	29.1	23.2	36.4	38.2	34.8	16.7	34.6	27.0	28.4	20.6	35.1	32.4	30.2	21.3
-2.00 to -1.01	30.6	31.3	22.2	23.1	30.3	23.6	31.8	25.9	30.0	33.0	26.3	25.8	30.4	30.2	25.5	24.3
≥-1.00	20.1	21.5	19.0	19.6	18.2	14.5	10.6	9.3	27.6	30.0	23.0	26.4	21.6	22.3	18.1	19.4
WHZ (SD)	n=148	n=162	n=148	n=162	n=66	n=55	n=66	n=55	n=74	n=72	n=74	n=72	n=288	n=289	n=288	n=289
<-3.00	1.6	1.2	5.3	6.0	3.0	1.8	3.2	11.1	-	-	14.1	3.0	1.5	1.0	4.5	6.2
-3.00 to -2.01	14.4	12.0	17.1	23.6	10.6	16.4	20.6	25.9	13.0	8.8	18.3	12.8	13.2	12.0	18.2	21.3
-2.00 to -1.01	38.4	40.6	35.8	31.4	36.4	34.5	22.2	29.6	28.0	37.7	22.1	39.4	35.3	38.7	29.2	33.1
≥-1.00	45.6	46.1	41.8	39.0	50.0	47.3	54.0	33.3	59.0	53.6	55.4	44.9	50.1	48.2	48	39.4

Table D-1-C-An-24-59.1. Percentage distribution of categories of malnutrition of 24-59 months old children of Barisal division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=174	n=174	n=169	n=169	n=71	n=71	n=413	n=413
<-3.00	25.7	23.1	14.8	15.6	26.9	23.4	21.5	20.1
-3.00 to -2.01	37.0	34.4	27.8	24.0	34.6	30.9	32.8	29.5
-2.00 to -1.01	22.9	26.7	34.9	35.3	22.8	28.4	27.8	30.5
≥-1.00	41.5	15.8	22.5	25.1	15.6	17.2	17.9	19.9
WAZ (SD)	n=174	n=174	n=169	n=169	n=71	n=71	n=413	n=413
<-3.00	17.8	37.9	9.5	25.4	21.4	37.7	15.0	32.8
-3.00 to -2.01	48.6	32.6	42.6	29.0	46.6	34.2	45.8	31.4
-2.00 to -1.01	24.6	20.0	33.1	27.2	23.2	18.6	27.8	22.7
≥-1.00	9.1	9.6	14.8	18.3	8.7	9.5	11.3	13.2
WHZ (SD)	n=174	n=174	n=169	n=169	n=71	n=71	n=413	n=413
<-3.00	1.2	12.0	1.2	4.9	0.6	13.0	1.1	9.2
-3.00 to -2.01	15.1	24.8	6.5	26.2	15.9	28.2	11.7	26.0
-2.00 to -1.01	48.7	37.8	50.3	35.4	50.3	38.4	49.6	36.9
≥-1.00	35.0	25.4	42.0	33.5	33.2	20.4	37.6	27.9

Table D-1-C-An-24-59.2. Percentage distribution of categories of malnutrition of 24-59 months old children of Barisal division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=88	n=85	n=88	n=85	n=78	n=91	n=78	n=91	n=37	n=34	n=37	n=34	n=203	n=210	n=203	n=210
<-3.00	25.7	25.7	25.5	20.7	16.7	13.2	18.4	13.2	26.3	27.6	23	23.9	22.4	20.6	22.4	17.9
-3.00 to -2.01	33.7	40.3	32.4	36.5	29.5	26.4	27.6	20.9	29	41	29.9	32	31.2	34.4	30.1	29
-2.00 to -1.01	27.8	17.8	28.8	24.4	28.2	40.7	25	44.0	31.7	13	34.1	22.2	28.7	26.9	28.4	32.5
≥-1.00	12.8	16.2	13.3	18.4	25.6	19.8	28.9	22.0	13.1	18.5	13.1	21.9	17.8	18.1	19.2	20.5
WAZ (SD)	n=88	n=85	n=88	n=85	n=78	n=91	n=78	n=91	n=37	n=34	n=37	n=34	n=203	n=210	n=203	n=210
<-3.00	15.8	19.9	34.6	41.3	5.1	13.2	23.1	27.5	14.6	29.1	37.5	37.9	11.5	18.5	30.7	34.7
-3.00 to -2.01	47.3	49.9	34.7	30.4	43.6	41.8	26.9	30.8	55.5	36.8	36.2	31.9	47.4	44.3	32	30.8
-2.00 to -1.01	27.5	21.6	20.6	19.3	35.9	30.8	28.2	26.4	18.7	28.2	13.5	24.3	29.1	26.6	22.2	23.2
≥-1.00	9.5	8.6	10.1	9.1	15.4	14.3	21.8	15.4	11.2	5.9	12.7	5.9	12.1	10.6	15.1	11.3
WHZ (SD)	n=88	n=85	n=88	n=85	n=78	n=91	n=78	n=91	n=37	n=34	n=37	n=34	n=203	n=210	n=203	n=210
<-3.00	0.7	1.8	12.7	11.3		2.2	3.9	5.7		1.3	12.4	13.6	0.3	1.9	9.3	9.2
-3.00 to -2.01	15.6	14.5	25.3	24.3	7.7	5.5	18.4	33.0	14.8	17.1	30.6	25.6	12.4	11	23.6	28.3
-2.00 to -1.01	46.1	51.3	32.5	43.4	44.9	54.9	40.8	30.7	54.1	46.1	32.9	44.4	47.1	52	35.8	37.9
≥-1.00	37.6	32.4	29.5	21.0	47.4	37.4	36.8	30.7	31.1	35.6	24	16.4	40.2	35	31.4	24.5

Table D-2-C-An-24-59.1: Percentage distribution of categories of malnutrition of 24-59 months old children of Chittagong division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=693	n=693	n=332	n=332	n=242	n=242	n=1,267	n=1,267
<-3.00	32.5	28.7	22.6	21.5	25.2	23.1	28.5	25.8
-3.00 to -2.01	31.2	31.4	32.5	29.1	30.8	23.1	31.4	29.2
-2.00 to -1.01	20.8	22	28.6	30.3	27.9	34.4	24.2	26.5
≥-1.00	15.5	17.9	16.3	19.1	16.1	19.4	15.8	18.5
WAZ (SD)	n=693	n=693	n=332	n=332	n=242	n=242	n=1,267	n=1,267
<-3.00	19.1	34.7	18.7	32.1	16.4	30.9	18.4	33.3
-3.00 to -2.01	41.3	28.7	41.6	32.4	43.2	30.8	41.7	30.1
-2.00 to -1.01	29.7	25.0	29.2	23.9	32.6	29.9	30.1	25.6
≥-1.00	10.0	11.7	10.5	11.5	7.7	8.3	9.7	11.0
WHZ (SD)	n=693	n=693	n=332	n=332	n=242	n=242	n=1,267	n=1,267
<-3.00	0.8	6.3	0.9	14.1		6.9	0.6	8.4
-3.00 to -2.01	8.6	20.8	13.6	21.6	13.1	23.8	10.7	21.6
-2.00 to -1.01	44.0	35.9	46.4	35.6	52.2	42.9	46.2	37.2
≥-1.00	46.7	37.0	39.2	28.8	34.7	26.3	42.4	32.8

Table D-2-C-An-24-59.2: Percentage distribution of categories of malnutrition of 24-59 months old children of Chittagong division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=336	n=357	n=336	n=357	n=159	n=173	n=159	n=173	n=119	n=123	n=119	n=123	n=614	n=653	n=614	n=653
<-3.00	30.5	34.4	293.8	27.8	19.5	25.4	20.9	22.1	24.8	25.6	24.3	21.9	26.5	30.4	26.4	25.2
-3.00 to -2.01	29.0	33.2	26.1	36.4	33.3	31.8	30.4	27.9	33.4	28.2	25.0	21.3	31.0	31.9	27.0	31.3
-2.00 to -1.01	22.4	19.3	24.1	20.1	30.2	27.2	29.7	30.8	28.9	27.1	32.9	35.7	25.7	22.8	27.2	25.9
≥-1.00	18.1	13.1	20.1	15.8	17.0	15.6	19.0	19.2	12.9	19.2	17.7	21.0	16.8	14.9	19.3	17.7
WAZ (SD)	n=336	n=357	n=336	n=357	n=159	n=173	n=159	n=173	n=119	n=123	n=119	n=123	n=614	n=653	n=614	n=653
<-3.00	15.1	22.8	31.6	37.7	18.9	18.5	29.1	34.9	13.2	19.4	27.2	34.5	15.7	21.0	30.1	36.3
-3.00 to -2.01	39.9	42.8	25.9	31.2	35.8	46.8	32.9	32.0	41.3	45.1	31.6	30.0	39.1	44.2	28.8	31.2
-2.00 to -1.01	32.9	26.6	27.8	22.3	33.3	25.4	24.1	23.8	38.8	26.7	34.5	25.5	34.2	26.3	28.1	23.3
≥-1.00	12.1	8.0	14.7	8.8	11.9	9.2	13.9	9.3	6.6	8.8	6.6	10.0	11.0	8.5	12.9	9.2
WHZ (SD)	n=336	n=357	n=336	n=357	n=159	n=173	n=159	n=173	n=119	n=123	n=119	n=123	n=614	n=653	n=614	n=653
<-3.00	-	1.5	6.4	6.2	0.6	1.2	12.5	15.6	-	-	3.1	10.8	0.2	1.1	7.3	9.5
-3.00 to -2.01	10.5	6.8	22.8	18.7	12.6	14.5	19.7	23.4	10.6	15.4	25.0	22.6	11.1	10.4	22.4	20.7
-2.00 to -1.01	44.9	43.2	35.2	36.6	44.7	48.0	34.9	36.4	51.4	53.0	41.7	44.2	46.1	46.3	36.4	38.0
≥-1.00	44.6	48.6	35.6	38.5	42.1	36.4	32.9	24.7	37.9	3106	30.3	22.4	42.7	42.2	33.9	31.8

Table D-3-C-An-24-59.1. Percentage distribution of categories of malnutrition of 24-59 months old children of Dhaka division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=461	n=461	n=729	n=729	n=159	n=159	n=1,349	n=1,349
<-3.00	18.7	15	17.3	15.5	12.9	14.2	17.2	15.2
-3.00 to -2.01	30.3	30.6	30.3	26.7	28.7	23.3	30.1	27.6
-2.00 to -1.01	31.4	31.8	31.4	34.9	40.8	40.8	32.5	34.5
≥-1.00	19.7	22.6	21.0	23.0	17.7	21.7	20.1	22.7
WAZ (SD)	n=461	n=461	n=729	n=729	n=159	n=159	n=1,349	n=1,349
<-3.00	12.0	25.7	11.4	26.2	10.0	24.8	11.4	25.8
-3.00 to -2.01	42.4	33.5	41.6	30.9	41.1	29.3	41.8	31.6
-2.00 to -1.01	35.2	27.4	34.8	28.3	36.7	32.6	35.2	28.5
≥-1.00	10.5	13.4	12.2	14.7	12.2	13.3	11.6	14.1
WHZ (SD)	n=461	n=461	n=729	n=729	n=159	n=159	n=1,349	n=1,349
<-3.00	0.3	7.4	0.7	9.4	0.5	5.1	0.5	8.2
-3.00 to -2.01	9.6	23.2	11.0	23.4	7.9	18.7	10.1	22.8
-2.00 to -1.01	49.2	38.8	46.9	34.8	52.6	49.0	48.4	37.8
≥-1.00	40.9	30.6	41.4	32.5	39.0	27.1	41.0	31.2

Table D-3-C-An-24-59.2. Percentage distribution of categories of malnutrition of 24-59 months old children of Dhaka division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=199	n=262	n=199	n=262	n=374	n=355	n=374	n=355	n=86	n=73	n=86	n=73	n=659	n=690	n=659	n=690
<-3.00	14.8	21.6	13.3	16.2	13.4	21.4	14.2	16.8	11.4	14.5	14.0	14.5	13.6	20.8	13.9	16.3
-3.00 to -2.01	32.3	28.7	34.0	28.0	28.3	32.4	24.5	29.1	26.0	31.8	20.0	27.3	29.2	30.9	26.8	28.5
-2.00 to -1.01	31.4	31.4	27.6	35.1	32.4	30.4	33.9	35.9	43.0	38.3	39.1	42.8	33.4	31.6	32.7	36.3
≥-1.00	21.5	18.3	25.0	20.7	25.9	15.8	27.4	18.2	19.6	15.4	27.0	15.4	23.8	16.7	26.6	18.8
WAZ (SD)	n=199	n=262	n=199	n=262	n=374	n=355	n=374	n=355	n=86	n=73	n=86	n=73	n=659	n=690	n=659	n=690
<-3.00	10.0	13.5	22.2	28.3	8.3	14.6	22.8	29.7	8.7	11.4	22.8	27.1	8.9	13.9	22.6	28.9
-3.00 to -2.01	40.6	43.7	35.2	32.3	37.4	45.9	29.1	32.8	34.9	48.5	26.3	32.8	38.0	45.4	30.6	32.6
-2.00 to -1.01	38.3	32.8	27.9	27.1	38.5	31.0	30.2	26.3	46.4	25.3	40.2	23.6	39.5	31.1	30.8	26.3
≥-1.00	11.2	10.0	14.7	12.4	15.8	8.5	17.9	11.3	10.0	14.7	10.6	16.4	13.6	9.7	16.0	12.2
WHZ (SD)	n=199	n=262	n=199	n=262	n=374	n=355	n=374	n=355	n=86	n=73	n=86	n=73	n=659	n=690	n=659	n=690
<-3.00	0.7	-	6.5	8.1	0.5	0.8	8.2	10.6	1.0	-	4.4	6.0	0.6	0.4	7.2	9.1
-3.00 to -2.01	8.5	10.5	27.5	19.9	11.5	10.4	24.3	22.4	7.0	9.0	20.1	17.0	10.0	10.3	24.7	20.9
-2.00 to -1.01	54.1	45.5	37.2	40.0	47.1	46.8	33.3	36.3	54.6	50.2	48.2	50.0	50.2	46.6	36.4	39.2
≥-1.00	36.7	44.0	28.8	32.0	40.9	42.0	34.2	30.7	37.4	40.8	27.3	26.9	39.2	42.6	31.6	30.8

Table D-4-C-An-24-59.1. Percentage distribution of categories of malnutrition of 24-59 months old children of Khulna division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=157	n=157	n=239	n=239	n=46	n=46	n=442	n=442
<-3.00	14.3	13.4	11.3	8.1	11.4	8.8	12.4	10.0
-3.00 to -2.01	30.1	25.5	27.2	24.7	32.3	27.3	28.7	25.2
-2.00 to -1.01	30.8	34	38.9	42.6	31.9	36.2	35.3	38.8
≥-1.00	24.9	27.1	22.6	24.7	24.4	27.7	23.6	25.9
WAZ (SD)	n=157	n=157	n=239	n=239	n=46	n=46	n=442	n=442
<-3.00	7.6	17.1	8.4	26.8	13.8	27.7	8.7	23.4
-3.00 to -2.01	35.4	30.8	46.0	32.6	41.7	32.3	41.8	31.9
-2.00 to -1.01	41.6	32.3	34.7	25.9	28.4	22.5	36.5	27.8
≥-1.00	15.5	19.8	10.9	14.6	16.1	17.4	13.1	16.8
WHZ (SD)	n=157	n=157	n=239	n=239	n=46	n=46	n=442	n=442
<-3.00	0.2	5.7	1.3	13.5	1.9	15.5	0.9	10.9
-3.00 to -2.01	7.4	17.0	15.5	25.8	17.3	24.4	12.8	22.5
-2.00 to -1.01	39.7	36.1	46.0	32.8	40.8	30.4	43.2	33.7
≥-1.00	52.7	41.2	37.2	27.9	40.0	29.7	43.0	32.8

Table D-4-C-An-24-59.2. Percentage distribution of categories of malnutrition of 24-59 months old children of Khulna division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=85	n=72	n=85	n=72	n=120	n=119	n=120	n=119	n=24	n=21	n=24	n=21	n=230	n=212	n=230	n=212
<-3.00	15.2	13.2	16.8	9.3	9.2	13.4	6.0	10.2	9.5	13.6	9.5	8.1	11.4	13.4	10.4	9.6
-3.00 to -2.01	28.2	32.3	24.1	27.2	20.8	33.6	22.2	27.1	37.3	26.6	32.3	21.4	25.3	32.4	24	26.6
-2.00 to -1.01	30.4	31.2	32.9	35.4	48.3	29.4	47.9	37.3	28.3	36	29.9	43.6	39.5	30.7	40.3	37.3
≥-1.00	26.1	23.3	26.2	28.2	21.7	23.5	23.9	25.4	25.0	23.8	28.3	27.0	23.7	23.5	25.3	26.5
WAZ (SD)	n=85	n=72	n=85	n=72	n=120	n=119	n=120	n=119	n=24	n=21	n=24	n=21	n=230	n=212	n=230	n=212
<-3.00	7.0	8.3	16.1	18.1	5.5	11.8	20.0	33.6	9.2	19.1	20.0	36.8	6.2	11.3	18.6	28.7
-3.00 to -2.01	32.6	38.6	30.2	31.5	40.8	51.3	31.7	33.6	43.8	39.2	39.2	24.3	38.1	45.8	31.9	32.0
-2.00 to -1.01	44.3	38.3	33.1	31.4	42.5	26.9	30.8	21.0	31.9	24.4	23.2	21.7	42.1	30.5	30.8	24.6
≥-1.00	16.0	14.9	20.6	18.9	11.7	10.1	17.5	11.8	15.1	17.3	17.9	17.2	13.6	12.4	18.7	14.7
WHZ (SD)	n=85	n=72	n=85	n=72	n=120	n=119	n=120	n=119	n=24	n=21	n=24	n=21	n=230	n=212	n=230	n=212
<-3.00	0.3	-	4.9	6.6	0.8	1.7	9.5	17.7	1.1	2.9	10.4	21.7	0.7	1.2	7.9	14.3
-3.00 to -2.01	6.6	8.4	16.8	17.2	13.3	17.9	25.9	25.7	13.6	21.6	22.0	27.1	10.9	14.9	22.1	22.9
-2.00 to -1.01	39.7	39.7	35.7	36.6	48.3	43.7	35.3	30.1	40.3	41.6	31.7	28.9	44.3	42.1	35.1	32.2
≥-1.00	53.3	51.9	42.6	39.5	37.5	37.0	29.3	26.5	45.0	34.3	35.9	22.3	44.2	41.8	34.9	30.6

Table D-5-C-An-24-59.1. Percentage distribution of categories of malnutrition of 24-59 months old children of Rajshahi division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=497	n=497	n=412	n=412	n=149	n=149	n=1,058	n=1,058
<-3.00	11.8	11.6	13.3	13.3	14.1	14.8	12.7	12.7
-3.00 to -2.01	29.1	28.2	28.4	25.9	36.9	28.5	29.9	27.3
-2.00 to -1.01	33.8	32.9	35.9	37.2	29.4	33.2	34.0	34.6
≥-1.00	25.4	27.3	22.3	23.6	19.6	23.5	23.4	25.4
WAZ (SD)	n=497	n=497	n=412	n=412	n=149	n=149	n=1,058	n=1,058
<-3.00	9.5	18.4	11.4	30.3	15.5	28.4	11.1	24.5
-3.00 to -2.01	38.0	32.6	45.6	29.1	38.8	30.6	41.1	30.9
-2.00 to -1.01	38.6	31.9	31.1	25.2	33.6	26.1	35.0	28.5
≥-1.00	13.9	17.1	11.9	15.4	12.1	14.9	12.9	16.1
WHZ (SD)	n=497	n=497	n=412	n=412	n=149	n=149	n=1,058	n=1,058
<-3.00	1.3	8.1	0.2	11.7	0.8	9.4	0.8	9.7
-3.00 to -2.01	8.0	19.4	14.3	24.9	13.3	22.7	11.2	22.0
-2.00 to -1.01	46.7	38.9	51.5	35.6	47.8	39.3	48.7	37.7
≥-1.00	44.1	33.6	34.0	27.7	38.1	28.7	39.3	30.6

Table D-5-C-An-24-59.2. Percentage distribution of categories of malnutrition of 24-59 months old children of Rajshahi division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=253	n=244	n=253	n=244	n=219	n=193	n=219	n=193	n=76	n=73	n=76	n=73	n=549	n=510	n=549	n=510
<-3.00	8.4	15.4	9.0	14.2	13.7	13.0	15.3	11.1	12.8	15.3	14.2	15.3	11.1	14.5	12.3	13.2
-3.00 to -2.01	28.9	29.3	28.7	27.7	28.8	28.0	26.9	24.7	33.9	39.9	25.0	32.2	29.6	30.3	27.4	27.2
-2.00 to -1.01	33.6	33.9	32.1	33.8	32.9	39.4	32.4	42.6	28.7	30.3	34.9	31.4	32.6	35.5	32.6	36.8
≥-1.00	29.1	21.5	30.2	24.3	24.7	19.7	25.5	21.6	24.6	14.5	25.9	21.0	26.7	19.8	27.7	22.8
WAZ (SD)	n=253	n=244	n=253	n=244	n=219	n=193	n=219	n=193	n=76	n=73	n=76	n=73	n=549	n=510	n=549	n=510
<-3.00	7.3	11.7	14.9	22.1	9.6	13.5	28.1	32.8	14.4	16.5	22.8	34.4	9.2	13.1	21.3	27.9
-3.00 to -2.01	36.8	39.3	33.3	31.8	45.2	46.1	30.0	28.1	31.5	46.3	29.0	32.3	39.4	42.9	31.4	30.5
-2.00 to -1.01	42.8	34.4	34.6	29.1	31.1	31.1	23.0	27.6	37.2	29.9	29.3	22.8	37.3	32.5	29.3	27.6
≥-1.00	13.1	14.6	17.2	17.0	14.2	9.3	18.9	11.5	16.8	7.3	18.9	10.5	14.0	11.6	18.1	14.0
WHZ (SD)	n=253	n=244	n=253	n=244	n=219	n=193	n=219	n=193	n=76	n=73	n=76	n=73	n=549	n=510	n=549	n=510
<-3.00	1.5	1.0	7.4	8.8	-	0.5	8.8	15.2	1.5	-	9.4	9.5	0.9	0.7	8.2	11.3
-3.00 to -2.01	7.1	9.0	20.0	18.8	11.4	17.6	23.7	26.4	12.2	14.4	18.7	26.8	9.5	13.0	21.3	22.8
-2.00 to -1.01	50.8	42.4	38.8	38.9	55.7	46.6	39.1	31.5	47.9	47.8	41.7	36.7	52.4	44.8	39.3	35.8
≥-1.00	40.6	47.6	33.8	33.4	32.9	35.2	28.4	27.0	38.4	37.9	30.2	27.0	37.2	41.5	31.1	30.1

Table D-6-C-An-24-59.1. Percentage distribution of categories of malnutrition of 24-59 months old children of Sylhet division by different reference standards, NNP Baseline Survey 2004

Indicator	Survey area							
	NNP		BINP		Comparison		All	
	Reference		Reference		Reference		Reference	
	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000	CDC/WHO 1978	CDC 2000
HAZ (SD)	n=127	n=127	n=109	n=109	n=61	n=61	n=297	n=297
<-3.00	22.2	21.5	33.0	29.6	17.9	14.2	25.3	23.0
-3.00 to -2.01	27.0	24.4	29.4	32.4	32.3	31.0	29.0	28.7
-2.00 to -1.01	36.1	37.1	29.4	25.0	27.5	31.1	31.8	31.4
≥-1.00	14.7	17.1	8.3	13.0	22.3	23.7	13.9	16.9
WAZ (SD)	n=127	n=127	n=109	n=109	n=61	n=61	n=297	n=297
<-3.00	17.2	33.2	26.6	48.6	14.0	27.5	20.0	37.7
-3.00 to -2.01	41.0	28.6	46.8	26.6	36.0	26.0	42.2	27.3
-2.00 to -1.01	32.0	25.7	24.8	21.1	36.9	29.4	30.4	24.3
≥-1.00	9.8	12.5	1.8	3.7	12.5	17.2	7.4	10.2
WHZ (SD)	n=127	n=127	n=109	n=109	n=61	n=61	n=297	n=297
<-3.00	-	12.6	1.8	11.7	-	8.6	0.7	11.4
-3.00 to -2.01	16.7	22.9	13.8	30.1	9.9	22.9	14.2	25.5
-2.00 to -1.01	44.7	35.8	50.5	35.0	49.1	33.8	47.7	35.0
≥-1.00	38.6	28.8	33.9	23.3	41.0	34.7	37.4	28.1

Table D-6-C-An-24-59.2. Percentage distribution of categories of malnutrition of 24-59 months old children of Sylhet division by gender and different reference standards, NNP Baseline Survey 2004

Indicator	NNP				BINP				Comparison				All			
	Reference				Reference				Reference				Reference			
	CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000		CDC/WHO 1978		CDC 2000	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
HAZ (SD)	n=65	n=62	n=65	n=62	n=61	n=48	n=61	n=48	n=41	n=20	n=41	n=20	n=167	n=130	n=167	n=130
<-3.00	21.8	22.5	23.5	19.3	29.5	37.5	30.0	29.2	14.9	24.0	14.0	14.6	22.9	28.3	23.6	22.3
-3.00 to -2.01	25.9	28.2	20.8	28.1	26.2	33.3	28.3	37.5	35.3	26.2	31.7	29.4	28.4	29.8	26.2	31.8
-2.00 to -1.01	35.2	37.0	37.0	37.2	34.4	22.9	28.3	20.8	33	16.2	35.1	23.1	34.4	28.6	33.3	28.9
≥-1.00	17.0	12.3	18.7	15.4	9.8	6.3	13.3	12.5	16.8	33.5	19.2	32.9	14.4	13.4	16.9	17.0
WAZ (SD)	n=65	n=62	n=65	n=62	n=61	n=48	n=61	n=48	n=41	n=20	n=41	n=20	n=167	n=130	n=167	n=130
<-3.00	14.9	19.5	32.7	33.7	21.3	33.3	44.3	54.2	11.0	20.2	23.1	36.6	16.3	24.7	34.6	41.8
-3.00 to -2.01	35.6	46.7	22.0	35.4	50.8	41.7	29.5	22.9	40.2	29.2	32.0	13.5	42.3	42.1	27.2	27.4
-2.00 to -1.01	37.3	26.5	28.9	22.4	24.6	25.0	21.3	20.8	39.2	32.3	32.2	23.4	33.1	26.9	26.9	22.0
≥-1.00	12.1	7.3	16.4	8.5	3.3	-	4.9	2.1	9.7	18.3	12.7	26.6	8.3	6.3	11.2	8.9
WHZ (SD)	n=65	n=62	n=65	n=62	n=61	n=48	n=61	n=48	n=41	n=20	n=41	n=20	n=167	n=130	n=167	n=130
<-3.00	-	-	11.2	14.0	1.6	2.1	10.5	13.0	-	-	7.0	11.9	0.6	0.8	9.9	13.3
-3.00 to -2.01	18.3	15.0	20.7	25.3	14.8	12.5	38.6	19.6	9.0	11.7	24.4	19.8	14.7	13.6	27.9	22.3
-2.00 to -1.01	40.8	48.8	36.6	34.8	52.5	47.9	29.8	41.3	53.9	39.4	35.6	29.9	48.3	47.0	34.0	36.4
≥-1.00	40.9	36.1	31.5	25.8	31.1	37.5	21.1	26.1	37.1	48.9	32.9	38.3	36.4	38.6	28.2	27.9

APPENDIX C

NNP BASELINE SURVEY 2004

QUESTIONNAIRES

NNP BASELINE SURVEY 2004

HOUSEHOLD QUESTIONNAIRE

ICDDR,B: Centre for Health and Population Research

Questionnaire 1

NNP Baseline Survey
Household Questionnaire

IDENTIFICATION

DIVISION _____ □

DISTRICT _____ □□

UPAZILA _____ □□□

UNION/WARD _____ □□□

MOUZA _____ □□□

VILLAGE/MOHALLA/BLOCK _____

PSU NUMBER _____

NAME OF HOUSEHOLD HEAD _____ □□□

HOUSEHOLD NUMBER _____ □□□

*RELIGION _____ □

**ETHNICITY _____ □

NAME OF RESPONDENT _____

ID # OF THE RESPONDENT _____ □□

*CODES FOR RELIGION:
1 = ISLAM, 2 = HINDUISM, 3 = CHRISTIANITY, 4 = BUDDHISM

**CODES FOR ETHNICITY:
1 = BENGALI, 2 = NON-BENGALI

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY □□
				MONTH □□
INTERVIEWER'S NAME				YEAR 2004
RESULT*				INTV. CODE □□
				RESULT* □
NEXT VISIT: DATE				TOTAL NO. OF VISITS □
TIME				

*RESULT CODES:
1 COMPLETED
2 NO HOUSEHOLD MEMBER AT HOME OR NO COMPETENT RESPONDENT AT HOME AT TIME OF VISIT
3 ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME
4 POSTPONED
5 REFUSED
6 DWELLING VACANT OR ADDRESS NOT A DWELLING
7 DWELLING DESTROYED
8 DWELLING NOT FOUND
9 OTHER _____ (SPECIFY)

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____ □□	NAME _____ □□	□□	□□
DATE _____	DATE _____		

INTRODUCTION AND CONSENT

INFORMED CONSENT

Hello. My name is_____. We came from the Mitra and Associates, a private research organization, located at Dhaka. To assist in the implementation of socio-development programmes in the country, we conduct different types of surveys. We are now conducting a national survey about the health and nutrition of women and children under the authority of ICDDR,B. We would very much appreciate your participation in this survey. I would like to ask you some questions about your health and nutrition (and the health and nutrition of your children). This information will help the Government plan health and nutrition services. The survey usually takes between 20 and 45 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary, and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since your views are important.

At this time, do you want to ask me anything about the survey?

May I begin the interview now?

Signature of interviewer: _____Date:

RESPONDENT AGREES TO BE INTERVIEWED....1 ↓

RESPONDENT DOES NOT AGREE TO BE INTERVIEWED .....2 → END

Starting time: Hour ☐☐
Minute ☐☐

Questionnaire 1

I would like to ask you some questions. Please tell me the names of usual members of your household. By usual member, I mean, a person:

- who has been living in this household for last 6 months; or
- who has been staying in this household for less than 3 months, but plans to stay in this household for 6 or more months; or
- who has lived in this household for at least 6 months and has now been away for less than 6 months.

Don't consider a person as usual member of your household if he/she has moved out of the household for marriage or out-migration, even if his/her duration of stay outside this household is less than 6 months.

Household Schedule

ID #	Usual member	Sex	*Relation-ship with Head of Household	Age	**Marital status	***Education		Employment		Foot-wares
						For age ≥5 years				
	Now, please give me the names of usual members of your household. (Starting with the head of the household)	Is (Name) male or female?	What is the relationship of (Name) with the head of the household?	How old is (Name)?	For age ≥10 years	Has (Name) ever been to school? (SKIP to Q14a for No)	***What is the type of school that (Name) last attended?	For age ≥5 years		For age 1 year or more
				Record age in years and months if age is less than 10 years	What is (Name's) current marital status?		What is the highest class (Name) passed at that school?	Is (Name) currently working?	(If yes in Q14a) Does (Name) receive wages/ income in cash or kind?	(Name) usually use foot-wares?
Q01	Q02	Q08	Q09	Q10	Q11	Q12	Q13	Q14a	Q14b	Q15

01		M F 1 2	☐☐	Years Months ☐☐ ☐☐	☐	Yes No 1 2	Type Class ☐ ☐☐	Yes No 1 2	Cash Kind Both None 1 2 3 4	Yes No 1 2
02		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
03		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
04		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
05		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
06		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
07		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
08		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
09		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
10		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
11		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
12		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
13		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
14		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2
15		1 2	☐☐	☐☐ ☐☐	☐	1 2	☐ ☐☐	1 2	1 2 3 4	1 2

Tick here if continuation sheet used ☐					
	Just to make sure that I have a complete listing:				
Q04	Have we not listed any child/infant who lives in your household?	Yes ☐ →	Enter Each in Table	No	☐
Q05	Have we missed listing any person, like servant, friend, or boarder, who lives in your household?	Yes ☐ →	Enter Each in Table	No	☐
Q06	Have we missed listing any person who lives here, but is away for less than 6 months?	Yes ☐ →	Enter Each in Table	No	☐
Q07	Have we missed listing any person who has stayed in your household for at least 6 months or who has stayed for less than 6 months but intends to stay for at least 6 months?	Yes ☐ →	Enter Each in Table	No	☐

*Codes for Q09: Relationship with household head	**Codes for Q11: Marital status	***Codes for Q13: Type of education	
1=self, 2=spouse, 3=son/daughter, 4=son/daughter-in-law, 5=grand son/daughter, 6=father/mother, 7=father/mother-in-law, 8=brother/sister, 9=relatives, 10=non-relatives.	1=never married, 2=married, 3=divorced, 4=separated, 5=widow/widower	Type 1=school/college 2=Madrasah 3=non-formal 8=Don't know	Clase 00=Less than class one 98=Don't know

Section 2: Household's Characteristics

Q#	Questions and Filters	Codes and Categories	Skip
16	What is the main source of drinking-water for your household?	Tap (pipe) ..... 1 Tubewell ..... 2 Ring well..... 3 Pond ..... 4 Ditch/Canal/Lake..... 5 River/Fountain ..... 6 Rain water..... 7 Others_____ 8 (Specify)	→ 19
17a	Where is the (main water source) located?	Inside the house ..... 1 Outside the house, but inside *bari* . 2 Outside the *bari* 3	
17b	CHECK Q16: Main source of drinking-water is Tubewell ☐ Other ☐		→ 19
18a	What is the colour of the head of the tubewell that you use?	Red..... 1 Green ..... 2 Not coloured 3	→ 19
18b	Has the tubewell been tested for arsenic?	Tested..... 1 Not tested..... 2 Don't know..... 3	
19	What is the main source of water for cleaning utensils in your household?	Tap (pipe) ..... 1 Tubewell ..... 2 Ring well..... 3 Pond ..... 4 Ditch/Canal/Lake..... 5 River/Fountain..... 6 Rain water..... 7 Others_____ 8 (Specify)	
20	What kind of toilet facility does your household have?	Septic tank/Modern latrine ..... 1 Slab latrine..... 2 Pit latrine..... 3 Hanging latrine ..... 4 Open larine ..... 5 Bush/Field/Yard..... 6 Others_____ 7 (Specify)	→ 22
21	Do you share this facility with other households?	Yes..... 1 No 2	

Q#	Questions and Filters	Codes and Categories	Skip
22	Does your household/any member of your household have: Electricity? Almirah/wardrobe? Table? Chair/bench? Dining table? Khat/chowki? Functioning radio/two-in-one? Functioning TV? Bicycle? Motor bike? Sewing machine? Electric fan? Telephone (cell/land)?	Yes No Electricity..... 1 ..... 2 Almirah/wardrobe..... 1 ..... 2 Table ..... 1 ..... 2 Chair/bench ..... 1 ..... 2 Dining table ..... 1 ..... 2 Khat/chowki..... 1 ..... 2 Functioning radio/ Two-in-one ..... 1 ..... 2 Functioning TV..... 1 ..... 2 Bicycle..... 1 ..... 2 Motor bike ..... 1 ..... 2 Sewing machine..... 1 ..... 2 Electric fan..... 1 ..... 2 Telephone (cell/land)..... 1 2	
23a	How many dwelling units do your household have?	Number of dwelling units..... ☐	
23b	What are the materials of roof, wall, and floor of the (main) dwelling unit	Materials / Roof / Wall / Floor Leaves/straw: 1 / 1 / [shaded] Mud: [shaded] / 2 / 2 Bamboo: 3 / 3 / 3 Tin: 4 / 4 / [shaded] Pucca/ cement/tiles: 5 / 5 / 5	
24	Does your household own any land?	Yes..... 1 No 2	→ 26
25	How much land does your household own under homestead/business enterprise? Under cultivation? Homestead/business enterprise? _____ In cultivation? _____	Homestead/business enterprise ..... Decimals ☐☐☐ Land under cultivation..... ☐☐☐	
26	Some households may not have food for all members for three times everyday for all times. Has your household been able to have food for all members for three times everyday for all months of the last year?	Yes..... 1 No 2	→ 31

Q#	Questions and Filters	Codes and Categories	Skip
27	For how many months of the last year, was your household not able to have food for three times everyday for all members?	Number of months..... ☐☐	
31	What type of salt is used for coocking today by your household?	Packet (iodized) salt..... 1 Unpacked (non-iodized) salt..... 2	
32	Does any member of your household have VGF card?	Yes..... 1 No 2	
33	Does any member of your household get old-age allowance?	Yes..... 1 No 2	
33a	Does any member of your household get destitute allowance?	Yes..... 1 No 2	
34	Is anyone of your household a member of any *samity*?	Yes..... 1 No 2	
34a	In which *samity*? Anything else?	GO BRDB..... A Others..... X1 NGO BRAC..... B PROSHIKA..... C ASHA..... D GRAMEEN BANK .....E Others..... X2	
35	Has any one of your household ever taken loan from any *samity*?	Yes..... 1 No 2	
36a	Did your household grow vegetables in homestead in last year?	Yes..... 1 No 2	→ 38a
36b	Does your household sell the vegetables it grows?	Yes..... 1 No 2	→ 37a
36c	How much did your household earn from selling vegetables in the last year?	**Earning** (in Taka): .....☐☐☐☐	
37a	Do/did any GO/NGOs encourage/provide any assistance for homestead gardening?	Yes..... 1 No 2	→ 38a

Q#	Questions and Filters	Codes and Categories	Skip
37b	Which GO/NGO encouraged/provided assistance for homestead gardening? Any things else?	GO: BINP ..... A NNP..... B BRDB..... C DAE ..... D NGO: HKI .....E BRAC.....F PROSHIKA..... G Others_____ X (Specify)	
38a	Does your household have poultry birds?	Yes.....1 No .....2 → 40	
38b	How many poultry birds does your household have?	Number of poultry birds .... ☐☐☐	
38c	Does your household sell poultry birds/eggs?	Yes.....1 No .....2 → 39a	
38d	How much did your household earn from selling poultry birds/eggs in the last year?	**Earning** (in Taka): ..... ☐☐☐	
39a	Did any GO/NGOs provide any assistance for raising poultry?	Yes.....1 No .....2 → 40	
39b	Which GO/NGOs provided assistance for poultry raising? Anything else?	GO: BINP ..... A NNP..... B BRDB..... C DAE ..... D Livestock Department.....E NGO: HKI .....F BRAC..... G PROSHIKA..... H Others_____ X (Specify)	
40	Did your household have a fish farm in the last year?	Yes.....1 No .....2 → App Ques.	Next
41a	Do/did any GO/NGOs encourage/provide any assistance for fish farming?	Yes.....1 No .....2 → App Ques.	Next

Q#	Questions and Filters	Codes and Categories	Skip
41b	Which GO/NGO encouraged/provided assistance for fish farming? Anything else?	GO: BINP ..... A NNP..... B BRDB..... C DAE ..... D Fisheries department .....E NGO: HKI .....F BRAC..... G PROSHIKA..... H CARE.....I Others..... X (Specify)	

Ending Time: Hour ☐☐
Minute ☐☐

NNP BASELINE SURVEY 2004

UNDER-5 CHILDREN QUESTIONNAIRE

ICDDR,B: Centre for Health and Population Research

Questionnaire 2

NNP Household Survey for Under-5 Children

Section 1: Identification of Under-5 Children

Division Code: ☐ Name: _____ District Code: ☐☐ Name: _____

Upazila Code: ☐☐☐ Name: _____ Union Code: ☐☐☐ Name: _____

Mouza Code: ☐☐☐ Name: _____ Village Name: _____

Bari Name:_____ Household (HH) #: ☐☐☐

HH Head's Name:_____ Ind. # of the child: ☐☐ Name: _____

Ind. # of the mother: ☐☐ Mother's Name:_____

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY ☐☐ MONTH ☐☐ YEAR 2004
INTERVIEWER'S NAME				INTV. CODE ☐☐
RESULT*				RESULT* ☐
NEXT VISIT: DATE				TOTAL NO. OF VISITS ☐
TIME				

**RESULT CODES:

1 COMPLETED
2 NOT AT HOME
3 POSTPONED
4 REFUSED
5 PARTLY COMPLETED
6 RESPONDENT INCAPACITATED
7 OTHER _____ (SPECIFY)

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____ ☐☐ DATE _____	NAME _____ ☐☐ DATE _____	☐☐	☐☐

INTRODUCTION AND CONSENT

INFORMED CONSENT

Hello. My name is_____. We came from the Mitra and Associates, a private research organization, located at Dhaka. To assist in the implementation of socio-development programmes in the country, we conduct different types of surveys. We are now conducting a national survey about the health and nutrition of women and children under the authority of ICDDR,B. We would very much appreciate your participation in this survey. I would like to ask you about your health and nutrition (and the health and nutrition of your children). This information will help the Government plan health and nutrition services. The survey usually takes between 20 and 45 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since your views are important.

At this time, do you want to ask me anything about the survey?
May I begin the interview now?

Signature of interviewer: _____Date:

RESPONDENT AGREES TO BE INTERVIEWED ... 1 ↓ RESPONDENT DOES NOT AGREE TO BE INTERVIEWED.....2 → END

Section 2: Access to and Use of Child's Health and Nutrition Services

Starting time: Hour ☐☐
Minutes ☐☐

Now I would like to ask you some questions about your child (Name).

Q#	Questions and Filters	Codes and Categories	Skip
42A	How old is (Name)? (PROBE)	Years Months Age..... ☐☐ ☐☐	
42b	Write (Name's) reported age from Q10(HH). **Compare Q42a and Q42b, and then correct Q42a and/or Q42b if inconsistent**	Years Months Age in HH list..... ☐☐ ☐☐	
43.	How old are you? (PROBE)	Age (in years) ..... ☐☐	
43a	How old were you when at your (first) marriage? (PROBE)	Age (in years) ..... ☐☐	

43b	Have you ever attended school? (PROBE)	Yes ..... 1 No ..... 2→	44a
43c	What type of schooling have you last attended?	School/college ..... 1 Madrasah ..... 2 Non-formal 3	
Q#	**Questions and Filters**	**Codes and Categories**	**Skip**
43d	What is the highest class that you have passed?	Class..... ☐☐	
44a	Is there any Community Nutrition Centre (CNC) in your area/village? **(If 'No', probe)**	Yes ..... 1 No 2	
44b	Do you know about the services provided in the CNC?	Yes ..... 1 No ..... 2→	45
44c	What are the services that are provided in the CNC? Anything else?	Measurement of weight of child ..... A Measurement of hight of child..... B Supply of nutritious food to child C Supply of food to pregnant mothers ..... D Measurement of weight of pregnant women .....E Measurement of weight of newborn child .....F Arrange meeting with adolescents and others ..... G Arrange meeting with mothers and children ..... H Others_____ X (Specify)	
45	Do you take (Name) to the CNC? **(If 'No', probe)**	Yes ..... 1 No ..... 2→	48a
46	Is (Name) under supplementary feeding?	Yes ..... 1 No ..... 2→	48a
47	How many times per week do you take (Name) to the CNC?	..... ☐ Times	
48a	Was (Name) ever given a growth card or GMP card?	Yes ..... 1 No ..... 2→	49
48b	May I see the growth card or GMP card of (Name)?	Card seen ..... 1 Card not seen ..... 2 Have card with pusti apa 3	
49	How many growth monitoring sessions did you take (Name) in the last 3 months?	Number of sessions attended .. ☐☐	

Q#	Questions and Filters	Codes and Categories	Skip
50a	**CHECK Q49:** Number of sessions attended Less than 3 ☐	3 or more ☐	→ 51a
50b	What were the major reasons for your not taking or taking less than 3 times (Name) to (all) growth-monitoring session(s)	Didn't feel necessary ..... A HH members object ..... B Lack of money ..... C Lack of time..... D Poor quality of service ..... E Forgot to attend..... F Illness in the household ..... G Others..... X Don't know..... Y Didn't want to mention ..... Z	
51a	**CHECK Q42a** **Age 6 months** or more ☐	Age less than 6 months ☐	→ 52a
51b	Has (Name) received a vitamin A capsule like this (SHOW CAPSULE) in last 6 months?	Yes ..... 1 No 2	
52a	Did (Name) suffer from any of the following disease symptoms in last two weeks? Fever/cough/cold? Diarrhoea? Dysentery? Pneumonia? Ear infections? Eye infections? Skin disease? Any other diseases?	Yes No Fever/cough/cold 1 ..... 2 Diarrhoea 1 ..... 2 Dysentery 1 ..... 2 Pneumonia 1 ..... 2 Ear infections 1 ..... 2 Eye infections 1 ..... 2 Skin disease 1 ..... 2 Other diseases (i) 1 ..... 2 (ii) 1 2	
52b	Check Q52a: Circled at least one '1' ☐	Circled no '1' ☐	→ 54a
53a	Did you seek any treatment for (Name's) illness?	Yes ..... 1 No 2	→ 54a

Q#	Questions and Filters	Codes and Categories	Skip
53b	From where was the treatment sought last time?	Public Sector Hospital/medical college ..... 01 Family Welfare Centre/FWV ..... 02 Thana Health Complex ..... 03 Satellite Clinic/EPI outreach centre ..... 04 Maternal and Child Welfare Centre (MCWC) ..... 05 Community Clinic ..... 06 Govt. field worker/FWA..... 07 NGO sector NGO static clinic ..... 08 NGO satellite clinic ..... 09 NGO field worker..... 10 Private sector Private hospital/clinic ..... 11 Qualified doctor..... 12 SACMO/MA ..... 13 Traditional doctor ..... 14 *Kabiraj*..... 15 Pharmacy ..... 16 CNC ..... 17 Homeopathic..... 18 Dai..... 19 Other _____ 20 (Specify)	
53c	**Check Q52a:** If mentioned diarrhoea, then ask: Did (NAME) give ORS or packet saline?	Yes..... 1 No 2	
54a	Do you have a card where (NAME'S) vaccinations are written down? IF YES: May I see it please?	Yes, Seen ..... 1 Yes, Not seen..... 2 No card 3	→ 54c → 54f
54b	Did you ever have a vaccination card for (NAME)?	Yes..... 1 No 2	→ 54f

Q#	Questions and Filters	Codes and Categories	Skip
54c	(1) COPY VACCINATION DATE FOR EACH VACCINE FROM THE CARD (2) WRITE "44" IN "DAY" COLUMN IF CARD SHOWS THAT A VACCINATION WAS GIVEN, BUT NO DATE IS RECORDED BCG POLIO 0 POLIO1 POLIO 2 POLIO 3 DPT 1 DPT 2 DPT 3 MEASLES	Day Month Year BCG .....☐☐ ☐☐ ☐☐☐☐ P0 .....☐☐ ☐☐ ☐☐☐☐ P1 .....☐☐ ☐☐ ☐☐☐☐ P2 .....☐☐ ☐☐ ☐☐☐☐ P3 .....☐☐ ☐☐ ☐☐☐☐ D1.....☐☐ ☐☐ ☐☐☐☐ D2.....☐☐ ☐☐ ☐☐☐☐ D3.....☐☐ ☐☐ ☐☐☐☐ MEA.....☐☐ ☐☐ ☐☐☐☐	
54d	**Did (NAME) receive any polio vaccine on the National Immunization Day (NID)?** IF YES, How many times did you receive from NID campaign? RECORD '00' IF NOT RECEIVED	Times..... ☐☐	
54e	Has (NAME) received any vaccinations that were not recorded on this card? RECORD "YES" ONLY IF RESPONDENT MENTIONS BCG, POLIO 1-3, DPT 1-3, AND/OR MEASLES VACCINE(S)	Yes .....1 (Probe for vaccinations and write "66" in the corresponding day column in 54c) No.....2 Don't know 8	→56a
54f	Did (NAME) ever receive any vaccinations or polio vaccine in the NID to prevent him/her from getting diseases?	Yes .....1 No.....2	→56a
54g 54h	**Please tell me if (NAME) received any of the following vaccinations:** A BCG vaccination against tuberculosis, that is, an injection in the left shoulder that caused a scar?	Yes .....1 No.....2	
55a	Polio vaccine, that is, drops in the mouth?	Yes .....1 No.....2 Don't know 8	→55d

Q#	Questions and Filters	Codes and Categories	Skip
55b	**How many times did (NAME) receive polio vaccine:** From clinic? In NID?	Times from Clinic..... ☐ Times in NID ..... ☐☐	
55c	When was (NAME) the first polio vaccine received, just after birth or later?	Just after birth ..... 1 Later..... 2	
55d	DPT vaccination, that is, an injection given in the thigh or buttocks, sometimes at the same time as polio drops?	Yes ..... 1 No ..... 2 Don't know 8	→55f
55e	How many times?	Number of times ..... ☐	
55f	An injection to prevent measles?	Yes ..... 1 No ..... 2 Don't know 8	→56a
55g	How old was (NAME) when measles vaccine was given?	Month..... ☐☐	

Section 3: Pregnancy History and Maternal Care of the Child's Mother

Q#	Questions and Filters	Codes and Categories	Skip
56a	Until now, how many times have you been pregnant? (PROBE)	Number of pregnancies..... ☐☐	
56b	How many times have you been pregnant before (Name) was born? (PROBE)	Number of pregnancies..... ☐☐	
57a	How many surviving sons and daughters do you have, including (Name)?	Number of surviving sons..... ☐☐ Number of surviving daughters..... ☐☐	
57b	How many of your surviving sons and daughters are younger than (Name)?	Younger sons ..... ☐ Younger daughters..... ☐	
58	Did you receive any antenatal care (ANC) when you were pregnant with (Name)?	Yes ..... 1 No 2	→ 63
59	How many times did you receive antenatal care (ANC) when you were pregnant with (Name)?	Number of ANC visits..... ☐☐	
60	For how many months were you pregnant with (Name) when you first received antenatal care (ANC) for this pregnancy?	Month of pregnancy..... ☐☐	

Q#	Questions and Filters	Codes and Categories	Skip
61	Last time, from where did you receive antenatal care (ANC) for this pregnancy?	Public sector Hospital/ medical college ..... 01 Family Welfare Centre/FWV ..... 02 Thana Health Complex ..... 03 Satellite Clinic/EPI outreach centre ..... 04 Maternal and Child Welfare Centre (MCWC) ..... 05 Community Clinic ..... 06 Govt. field worker/FWA..... 07 NGO sector NGO static clinic ..... 08 NGO satellite clinic ..... 09 NGO field worker..... 10 Private sector Private hospital/clinic ..... 11 Qualified doctor..... 12 SACMO/MA ..... 13 Traditional doctor ..... 14 *Kabiraj*..... 15 Pharmacy ..... 16 CNC..... 17 Homeopathic..... 18 Dai ..... 19 Others _____ 20 (Specify)	
62	(a). Now I would like to ask you about the services you received at your antenatal care (ANC) visits during your pregnancy with (Name) In any of your antenatal care visits during this pregnancy: (i) Was your weight measured? (ii) Blood pressure measured? (iii) Urine tested? ..... (iv) Blood (Hb%) tested..... (v) Were you given iron tablets?..... (vi) Were given any other services?.....	Yes No (i) Weight measured..... 1 ..... 2 (ii) Blood pressure measured..... 1 ..... 2 (iii) Urine tested ..... 1 ..... 2 (iv) Blood (Hb%) tested..... 1 ..... 2 (v) Iron tablets given..... 1 ..... 2 (vi) Others _____ 1 ..... 2 (Specify)	

Q#	Questions and Filters	Codes and Categories	Skip
63	During your pregnancy with (Name), or during or after the delivery of (Name), did you have any pregnancy-related complications, like:	Yes No	
	Severe headache/blurred vision.....	Severe headache/blurry vision1 2	
	Swollen arms and legs (oedema).....	Swollen arms and legs (oedema) 1 2	
	High blood pressure	High blood pressure..... 1 2	
	Protein in urine.....	Protein in urine 1 2	
	Vaginal bleeding during pregnancy	Vaginal bleeding during pregnancy..... 1 2	
	Labour for more than 12 hours.....	Labour for more than 12 hours 1 2	
	Excessive bleeding during/after delivery.....	Excessive bleeding during/after delivery 1 2	
	Convulsion	Convulsion..... 1 2	
	Anaemia	Anaemia..... 1 2	
	Fever for more than 3 days during pregnancy	Fever for more than 3 days during pregnancy or after delivery 1 2	
	Fever for more than 3 days after delivery.....	Fever for more than 3 days after delivers 1	
	Bad-smelling vaginal discharge	Bad-smelling vaginal discharge..... 1 2	
	Others	Others_____ 1 ..... 2 (Specify)	
64a	How many TT vaccinations did you have had during your pregnancy with (Name)?	Number of times vaccinated during pregnancy ..... ☐☐	
64b	How many TT vaccinations did you have had before your pregnancy with (Name)?	Number of times vaccinated before pregnancy ..... ☐☐	
65	Did you take vitamin A capsule within 6 weeks of delivery of (Name)?	Yes..... 1 No 2	
66	Did you take iron tablets during pregnancy with (Name)?	Yes..... 1 No ..... 2 →	68c

Q#	Questions and Filters	Codes and Categories	Skip
67	From which month of this pregnancy did you start to take iron tablet?	Month ..... ☐☐	
67a	From the starting date of iron tablet in this pregnancy, did you take iron tablet everyday?	Yes ..... 1 → 69 No 2	
68b	What were the reasons for your not taking iron tablet regularly? (Single response)	Didn't feel its necessity ..... 1 Family objection ..... 2 Side-effect ..... 3 No supply ..... 4 Forgot to take ..... 5 → 69 Didn't receive enough tablets ..... 6 Lost tablets ..... 7 Couldn't afford ..... 8 Others_____ 9 (Specify)	
68c	Have you ever taken iron syrup during this pregnancy?	Yes ..... 1 No ..... 2 → 71a	
68d	From which month of this pregnancy did you start to take iron syrup?	Month ..... ☐☐	
68e	From the starting date of iron syrup in this pregnancy, how many days did you take iron syrup in a month?	Days ..... ☐☐ → 71a	

Q#	Questions and Filters	Codes and Categories	Skip
69	From where did you receive iron tablets most of the times when you were pregnant with (Name)? (single response)	Public sector Hospital/medical college ..... 01 Family Welfare Centre/FWV ..... 02 Thana Health Complex ..... 03 Satellite Clinic/EPI outreach centre ..... 04 Maternal and Child Welfare Centre (MCWC) ..... 05 Community Clinic ..... 06 Govt. field worker/FWA..... 07 NGO sector NGO static clinic ..... 08 NGO satellite clinic ..... 09 NGO field worker..... 10 Private sector Private hospital /clinic ..... 11 Qualified doctor..... 12 SACMO/MA ..... 13 Traditional doctor ..... 14 *Kabiraj*..... 15 Pharmacy ..... 16 CNC..... 17 Homeophatic..... 18 Dai ..... 19 Others _____ 20 (Specify)	
71a	Check Q 58 and Q59: Made no antenatal care visit ☐ Made only 1 antenatal care visits ☐ Made 2 or more antenatal care visits ☐ → 71c		
71b	What were the reasons you did not make any antenatal visit or you made only one antenatal visits? Anything else?	Didn't feel its necessity..... A Objection of family members..... B None to accompany ..... C Economic constraint ..... D Poor quality of ANC.....E ANC provider at far distance .....F Others_____ X (Specify)	
71c	Are you currently pregnant?	Yes..... 1 No 2	

Section 4: Mothers' Nutrition Knowledge and Practices

Q#	Questions and Filters	Codes and Categories	Skip
72	When you were pregnant with (Name), did you eat as much food as you usually ate before the pregnancy, or did you eat more or less food than you usally ate before?	More than before..... 1 Same as before..... 2 Less than before..... 3	
73	What happens if a woman eats more food during pregnancy than she usually did before the pregnancy? (Single response)	Complicates delivery ..... 1 Benefits mother ..... 2 Benefits foetus ..... 3 Benefits both mother and foetus . 4 Makes no difference ..... 5 Others _____ 6 (Specify) Don't know/not sure 7	
74	When you were pregnant with (NAME), did you take enough rest as you took before the pregnancy, or did you take more rest or less rest than you usually took before?	More than before..... 1 Same as before..... 2 Less than before..... 3	
75	What happens if a woman have had more rest during pregnancy than before the pregnancy?	Weight gain..... 1 Benefits mothers ..... 2 Benefits foetus ..... 3 Benefits both mother and foetus . 4 Makes no difference ..... 5 Others _____ 6 (Specify) Don't know/not sure 7	
76	What type of salt did you take when you were pregnant with (Name)? (**Probe**)	Packed (iodized) salt..... 1 Unpacked salt..... 2	
77	What happens if a woman eats iodized salt during pregnancy?	Harms foetus..... 1 Benefits mother..... 2 Benefits foetus ..... 3 Benefits both mother and foetus . 4 Makes no difference ..... 5 Others _____ 6 (Specify) Don't know/not sure 7	
78	Did you breastfeed (Name)?	Yes ..... 1 No 2	→ 80
79	How long after birth of (Name), did you begin breastfeeding him/her?	Immediately after birth ..... 1 Within 24 hours of birth ..... 2 After 24 hours of birth 3	

Q#	Questions and Filters	Codes and Categories	Skip
80	Did you feed the first milk (colostrum) to (Name)?	Yes ..... 1 No 2	
81	What happens if a mother feeds colostrum to a newborn?	Upsets baby's stomach ..... 1 Benefits mother..... 2 Benefits baby ..... 3 Benefits both mother and baby ... 4 Makes to difference ..... 5 Others _____ 6 (Specify) Don't know/not sure 7	
82	What did/do you do to increase breastmilk production?	Did nothing to increase..... 1 Increased intake of foods..... 2 Increased intake of fluid ..... 3 Others _____ 4 (Specify)	→ 84
83	What were the foods that you increased the intake for? Anything else?	Rice .....A Pulses .....B Fish .....C Meat .....D Eggs .....E Vegetables..... F Milk.....G Fruits.....H Others _____ X (Specify)	
84	Are you still breastfeeding (Name)?	Yes .....1 No 2	
85	Are you still exclusively breastfeeding (Name)? I mean, do you still not give him/her anyhing else, even plain water, other than breastmilk?	Yes ..... 1 No ..... 2 Don't know..... 3	→ 93
86	At anytime, has (NAME) eaten or drunk anything other than breastmilk?	Yes .....1 No .....2 Don't know.....3	
87	At any time was (Name) given any other liquids including cow's or goat's milk, water, or semi-solid or solid foods besides breastmilk?	Yes .....1 No .....2 Don't know.....3	
88	At what age (in days) did you first give (Name) plain water, sugar water, honey water, or juice or cow's or goat's milk?	Age (in days)..... ☐☐☐ Not applicable/Not yet.....999	
89	At what age (in days) you first gave (Name) fruits, vegetables, porridge, or *dal* ?	Age (in days)..... ☐☐☐ Not applicable/Not yet.....999	

Q#	Questions and Filters	Codes and Categories	Skip
90	At what age (in days) did you first give (Name) rice, wheat, meat, fish, or eggs?	Age (in days)..... ☐☐☐ Not applicable/Not yet.....999	
91	At what age did you give any other thing in addition to breastmilk?	Age (in months) ..... ☐☐☐ Still not introduced.....998 Cannot remember.....999	
92a	What happens if solid food is introduced to a child before 6 months?	Bad for child ..... 1 Makes no difference ..... 2 Others _____ 3 (Specify) Don't know/not sure 4	
92b	What happens if solid food is not introduced to a child after 6 months?	Bad for child ..... 1 Makes no difference ..... 2 Others _____ 3 (Specify) Don't know/not sure 4	
93	Have you heard about goitre?	Yes ..... 1 No 2	→ 96
94	What are the major causes of goitre? Anything else?	Not eating enough food ..... A Not eating enough fruits ..... B Not eating enough vegetables ..... C Not eating iodized salt ..... D Not eating iodine-rich foods .....E Others _____ X (Specify) Don't know/not sure ..... Y	
95	What prevents goitre? Anything else?	Eating more rice..... A Eating more fruits ..... B Eating more vegetables..... C Eating iodized salt..... D Eating iodine-rich foods .....E Others _____ X (Specify) Don't know/not sure ..... Y	

Q#	Questions and Filters	Codes and Categories	Skip
96	What are the major causes of diarrhoea? Anything else?	Dirty or contaminated water/liquid ..... A Spoiled, stale food ..... B Not washing hands before taking meal..... C Not washing hands with soap after defecating ..... D Not washing hands with ash/ mud after defecating .....E Not using sanitary latrine.....F Not continuing breastfeeding up to 2 years..... G Not giving immunization properly..... H Others _____ X (Specify) Don't know/not sure ..... Y	
97	What prevents diarrhoea?	Use of safe foods ..... A Use of safe fluids ..... B Washing hands before taking foods ..... C Washing hand with soap after defecation..... D Washing hand with ash/mud after defecation .....E Using sanitary latrine.....F Continue breastfeeding up to 2 years..... G Proper immunization .....I Others _____ X (Specify) Don't know/not sure ..... Y	
98	During diarrhoea in a child, should the mother (caretaker) : Feed him/her ORS?..... Feed him/her home-made fluid? ..... Feed normal diet?..... Continue feeding breastmilk? ..... Others?	Yes No DK Feed him/her ORS ...1.....2..... 8 Feed him/her home-made fluid .....1.....2..... 8 Feed normal diet .....1.....2..... 8 Continue feeding breastmilk .....1.....2..... 8 Others _____1.....2..... 8 (Specify)	
99	Have you heard about pneumonia?	Yes ..... 1 No 2	▶102

Q#	Questions and Filters	Codes and Categories	Skip
100	What are major symptoms of pneumonia? Anything else?	Cough and cold. ..... A Fever ..... B Rapid breathing..... C Chest in-drawing..... D Inability to suck breastmilk .....E Others _____ X (Specify) Don't know/not sure ..... Y	
101	What prevents pneumonia? Anything else?	Keep baby warm..... A Exclusive breastfeeding ..... B Continue breastfeeding up to 2 years..... C Proper immunization ..... D Others _____ X (Specify) Don't know/not sure ..... Y	
102	Are you a member of any *samity*?	Yes ..... 1 No 2	
103	Do you have a chance to listen to radio/two-in-one?	Yes ..... 1 No ..... 2 → 106	
104	Do you listen to radio/two-in one?	Yes ..... 1 No ..... 2 → 106	
104a	How often do you listen to radio/two-in-one? Everday? Atleast once a week? Less than once a week?	 Everday ..... 1 Atleast once a week ..... 2 Less than once a week 3	
105	Did/do you listen to any discussion on nutrition in radio?	Yes ..... 1 No 2	
106	Do you have a chance to watch TV?	Yes ..... 1 No ..... 2 → 111	
107	Do you watch TV?	Yes ..... 1 No ..... 2 → 111	
107a	How often do you watch TV? Everday? Atleast once a week? Less than once a week?	 Everday ..... 1 Atleast once a week ..... 2 Less than once a week 3	
108	Did/do you listen to any discussion on nutrition in TV?	Yes ..... 1 No 2	

Section 5: Anthropometry of Mother and Child

Interviewer: Check Q42a. Please take MUAC if age 1 year or more.

111	Mother	Height (cm)☐☐☐.☐	Weight (kg) ☐☐.☐	MUAC (mm)☐☐☐
112	Child	Height (cm)☐☐☐.☐	Weight (kg) ☐☐.☐	MUAC (mm)☐☐☐

Ending time: Hour ☐☐
Minutes ☐☐

NNP BASELINE SURVEY 2004

ADOLESCENT GIRLS QUESTIONNAIRE

ICDDR,B: Centre for Health and Population Research

Questionnaire 3

NNP Household Survey for Adolescent Girls

Section 1: Identification of Adolescent Girls

Division Code: ☐ Name: _____ District Code: ☐☐ Name: _____

Upazila Code: ☐☐☐ Name: _____ Union Code: ☐☐☐ Name: _____

Mouza Code: ☐☐☐ Name: _____ Village Name: _____

Bari Name:_____ Household (HH) #: ☐☐☐

HH Head's Name:_____ Ind. # of the adolescent girl: ☐☐

Her Name:_____

INTERVIEWER VISITS				
	1	2	3	FINAL VISIT
DATE	_____	_____	_____	DAY ☐☐ MONTH ☐☐ YEAR 2 0 0 4
INTERVIEWER'S NAME	_____	_____	_____	INTV. CODE ☐☐
RESULT*				RESULT* ☐
NEXT VISIT:DATE	_____	_____		TOTAL NO. OF VISITS ☐
TIME	_____	_____		

**RESULT CODES:

1 COMPLETED
2 NOT AT HOME
3 POSTPONED
4 REFUSED
5 PARTLY COMPLETED
6 RESPONDENT INCAPACITATED
7 OTHER _____ (SPECIFY)

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____ ☐☐ DATE _____	NAME _____ ☐☐ DATE _____	☐☐	☐☐

INTRODUCTION AND CONSENT

INFORMED CONSENT

Hello. My name is_____. We came from the Mitra and Associates, a private research organization, located at Dhaka. To assist in the implementation of socio-development programmes in the country, we conduct different types of surveys. We are now conducting a national survey about the health and nutrition of women and children under the authority of ICDDR,B. We would very much appreciate your participation in this survey. I would like to ask you about your health and nutrition (and the health and nutrition of your children). This information will help the Government plan health and nutrition services. The survey usually takes between 20 and 45 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since your views are important.

At this time, do you want to ask me anything about the survey?
May I begin the interview now?

Signature of interviewer: _____Date:

RESPONDENT AGREES TO BE INTERVIEWED....1 ↓

RESPONDENT DOES NOT AGREE TO BE INTERVIEWED .....2 → END

Section 2: Adolescent Girls' Access to Health and Social Services

Starting time: Hour ☐☐
Minutes ☐☐

Q#	Questions and Filters	Codes and Categories	Skip
41	How old are you? (**Probe)**	Age (in years) ..... ☐☐ (If age not between 13-19, then End Interview)	
42	What is your main occupation? I mean what do you mainly do? _____ _____ **Record the response here verbatim and then circle the category on the right**	Student ..... 1 Earning member ..... 2 Household work..... 3 Others_____ 4 (Specify)	

Q#	Questions and Filters	Codes and Categories	Skip
43	Have you ever attended school? (**Probe**)	Yes ..... 1 No ..... 2 → 44c	
44a	What type of school have you attended last?	School/college ..... 1 Madrasah ..... 2 Non-formal 3	
Q#	**Questions and Filters**	**Codes and Categories**	**Skip**
44b	What is the highest class that you have passed?	Class..... ☐☐	
44c	Is there any adolescent forum in your area?	Yes ..... 1 No ..... 2 → 51a	
45	Are you a member of any adolescent forum?	Yes ..... 1 No ..... 2 → 47a	
46	How long have you been a member of the forum?	Number of months ..... ☐☐	
47a	Have you ever attended any meeting of the forum in the last 3 months?	Yes ..... 1 No ..... 2 → 49a	
47b	How many meetings have you attended in the last 3 months?	Number of meetings attended..... ☐	
48a	Check Q47b: Attended less than 3 meetings ☐ ↓	Attended 3 or more meetings ☐ →	49a
48b	What was the main reason of your not attending the meeting regularly?	Don't feel it is necessary ..... 1 Family objection ..... 2 Social insecurity (i.e. tease) ..... 3 Lack of time ..... 4 Found not useful ..... 5 Others_____ 6 (Specify)	
49a	Have you received any counselling/services from the forum?	Yes ..... 1 No ..... 2 → 50a	
49b	What are the services you received from the forum? **(Probe)** Anything else?	**Counselling/services about** General health ..... A Reproductive health ..... B Sexaully transmitted diseases ..... C HIV/AIDS ..... D Hygiene and sickness care ..... E Infant and childcare ..... F Morality ..... G Women's empowerment ..... H Protection from acid attack ..... I Education on food and nutrition ..... J Drug addiction ..... K Others_____ X (Specify)	

Q#	Questions and Filters	Codes and Categories	Skip
50a	Check Q45: Not a member ☐	Member ☐	→ 51a
50b	What is the main reason of your not being a member of the forum?	No such forum of BINP/NNP/NGO ..... 0 Not included in the programme ..... 1 Don't feel it is necessary ..... 2 Family objection ..... 3 Social insecurity (i.e. tease) ..... 4 Lack of time ..... 5 Others_____ 6 (Specify)	
51a	Have you ever taken iron tablets?	Yes ..... 1 No 2	→ 52b
51b	How often do you take iron tablet?	Daily ..... 1 Weekly ..... 2 Less often 3	
52a	Check Q51b: Take tablets less often ☐	Take tablets daily/weekly ☐	→ 53a
52b	What is the main reason of your not taking iron tablets at least once a week?	Don't feel it's necessary ..... 1 Family objection ..... 2 Side-effect ..... 3 No supply ..... 4 Forgot to take ..... 5 Didn't receive sufficient tablets ..... 6 Lost the tablets ..... 7 Expensive/can't afford ..... 8 Others_____ 9 (Specify)	
53a	Do you take anti-helmintics?	Yes ..... 1 No 2	→ 54a
53b	During the last 6 months, did you take antihelmintics?	Yes ..... 1 No 2	

Section 3: Adolescent's Food Security

Q#	Questions and Filters	Codes and Categories	Skip
54a	During last two weeks, how many meals did you usually eat a day?	# of meals taken a day ..... ☐	
54b	What were the meals you usually ate?	Breakfast ..... A Lunch ..... B Dinner ..... C Others_____ X (Specify)	

54c	Check Q54b: Did 'Respondent' eat all the three main meals (breakfast, lunch, dinner)?	Yes ..... 1 No ..... 2 →	55bii
55a	During the last two weeks, did you have to skip any regular meals any day, that is, breakfast, lunch or dinner?	Yes ..... 1 No ..... 2 →	56
55b	i. What were the reasons you had to skip regular meals on somedays during the last two weeks? (Skip to Q56) ii. What were the reasons that you did not eat three regular meals a day during the last two weeks?	Shortage of food ..... 1 Lack of appetite ..... 2 Sickness ..... 3 Others_____ 4 (Specify)	
56	With whom do you usually eat your meals?	With all family merbers .....1 With female members only.....2 Alone 3	
57	Do you know that during adolescent period one needs an increased amount of food for proper physical growth and development?	Yes .....1 No 2	
58	How many times do you usually take food in a day?	Number of times meals eaten..... ☐	
59	Last week, how many days did you take: Rice? Wheat? Leafy vegetables? Vegetables? *Dal ?* Fish? Meat? Egg? Milk? Fruit?	Number of days Rice ..... ☐ Wheat ..... ☐ Leafy vegetables ..... ☐ Vegetables ..... ☐ *Dal* ..... ☐ Fish ..... ☐ Meat ..... ☐ Eggs ..... ☐ Milk ..... ☐ Fruits ..... ☐	

Sections 4: Adolescents' Nutritional and Health related Knowledge

Q#	Questions and Filters	Codes and Categories	Skip
60	What are energy-densed foods? Anything else?	Rice ..... A Wheat ..... B Leafy vegetables ..... C Vegetables..... ..... D *Dal*.....E Fish.....F Meat ..... G Egg ..... H Milk I Fruit J Oil/ghee K Others _____X (Specify) Don't know ..... Y	
61	What are the high-protein foods? Anything else?	Rice ..... A Wheat ..... B Leafy vegetables ..... C Vegetables..... ..... D *Dal*.....E Fish.....F Meat ..... G Egg ..... H Milk I Fruit J Oil/ghee K Others _____X (Specify) Don't know ..... Y	
62	What are the foods that are vitamin- and mineral-rich? Anything else?	Rice ..... A Wheat ..... B Leafy vegetables ..... C Vegetables..... ..... D *Dal* .....E Fish.....F Meat ..... G Eggs ..... H Milk.....I Fruist .....J Oil/ghee..... K Salt .....L Others_____ X (Specify) Don't know ..... Y	

Q#	Questions and Filters	Codes and Categories	Skip
63a	Did you suffer from any diseases in the last two weeks?	Yes ..... 1 No ..... 2 → 65	
63b	What were the diseases you had in the last two weeks? Anything else?	Fever ..... A Cugh/cold..... B Diarrhoea/dysentery..... C Vomiting/stomachche……..... D Pneumonia .....E Ear infections.....F Eye infections ..... G Skin problems..... H RTI.....I Others (specify) X	
64	How long you were sick?	Number of days ..... ☐☐	
65	In the event of your illness, where/who do you usually go for treatment?	Public Sector Hospital/medical college ..... 01 Family Welfare Centre/FWV ..... 02 Thana Health Complex ..... 03 Satellite Clinic/EPI outreach centre ..... 04 Maternal and Child Welfare Centre (MCWC) ..... 05 Community clinic ..... 06 Govt. field worker (FWA) ..... 07 NGO sector NGO static clinic ..... 08 NGO satellite clinic ..... 09 NGO field worker..... 10 Private sector Private hospital /clinic ..... 11 Qualified doctor..... 12 SACMO/MA ..... 13 Traditional doctor ..... 14 *Kabiraj*..... 15 Pharmacy ..... 16 CNC ..... 17 Homeopathic..... 18 Dai..... 19 Home care..... 20 Others _____ 21 (Specify)	
66	How is your physical condition now?	Well ..... 1 → 68a Sick 2	

Q#	Questions and Filters	Codes and Categories	Skip
67	Have you consulted any doctor for your illness?	Consulted ..... 1 Not consulted 2	
68a	Do you usually bathe with soap?	Yes ..... 1 No ..... 2 → 69	
68	During the last week, how many days did you bathe with soap?	Number of days ..... ☐	
69	Have you heard of goitre?	Heard ..... 1 Not heard 2	
70	What are the major causes of goitre? Anything else?	Not eating enough foods ..... A Not eating enough fruits ..... B Not eating enough vegetables ..... C Not eating iodized salt ..... D Not eating iodine-rich foods ..... E Others_____ X (Specify) Don.t know/not sure ..... Y	
71	How can goitre be prevented? Anything else?	Eating enough rice ..... A Eating enough fruits ..... B Eating enough vegetables ..... C Eating iodized salt ..... D Eating iodine-rich foods ..... E Others_____ X (Specify) Don't know/not sure ..... Y	
72	What are the major causes of diarrhoea? Anything else?	Dirty/contaminated water/liquid ... A Spoiled, stale food ..... B Not washing hands before taking meal ..... C Not washing hands with soap after defecating ..... D Not washing hands with ash/ mud after defecating ..... E Not using sanitary latrine ..... F Not continuing breastfeeding up to 2 years ..... G Not giving immunization properly ..... H Others_____ X (Specify) Don't know/not sure ..... Y	

Q#	Questions and Filters	Codes and Categories	Skip
73a	How can diarrhoea be prevented? Anything else?	Use of safe foods ..... A Use of safe fluids ..... B Washing hands before taking foods ..... C Washing hands with soap after defecation..... D Washing hand with ash/mud after defecation .....E Using sanitary latrine.....F Continue breastfeeding up to 2 years..... G Proper immunization .....I Others_____ X (Specify) Don't know/not sure ..... Y	
73b	During diarrhoea in a child, should the mother (caretaker) Feed him/her ORS? ..... Feed him/her home-made fluid? ..... Feed normal diet? ..... Continue feeding breastmilk? ..... Others?	Yes No.... DK Feed him/her ORS . 1 ..... 2 8 Feed him/her Home-made fluid .. 1 ..... 2 8 Feed normal diet .... 1 ..... 2 8 Continue feeding Breastmilk..... 1 ..... 2 8 Others_____ 1 ..... 2 8 (Specify)	
74	What are the major causes of night blindness? Anything esle?	Not eating mola, dhela fish ..... A Not eating enough fruits..... B Not eating green leafy vegetables . C Not eating yellow fruits ..... D Not eating high-protein foods .....E Eating foods cooked without enough oil/fat .....F Not taking vitamin A capsule ..... G Not taking samll fish..... H Not taking vitamin A-rich foods .....I Others_____ X (Specify) Don't know/not sure ..... Y	

Q#	Questions and Filters	Codes and Categories	Skip
75	How can nightblindness be prevented? Anything else?	Eating mola, dhela fish ..... A Eating enough fruits ..... B Eating green leafy vegetables ..... C Eating yellow fruits ..... D Eating protein foods ..... E Eating food cooked with enough fat ..... F Eating vitamin A capsule ..... G Eating samll fish ..... H Eating vitamin A-rich foods ..... I Others_____ X (Specify) Don't know/not sure ..... Y	
Section 5: Entertainment			
76	Do you have a chance to listen to radio/two-in-one?	Yes ..... 1 No ..... 2 → 79	
76a	Do you listen to radio/two-in-one?	Yes ..... 1 No ..... 2 → 79	
77	How often do you listen to the radio/ two-in-one? Every day? At least once a week? Less than once a week?	 Every day ..... 1 At least once a week ..... 2 Less than once a week 3	
78	Did/do you listen to any discussion on nutrition in radio?	Yes ..... 1 No 3	
79	Do you have a chance to watch TV?	Yes ..... 1 No ..... 2 → 82	
79a	Do you watch TV?	Yes ..... 1 No ..... 2 → 82	
80	How often do you watch television: Every day? At least once a week? Less than once a week?	 Every day ..... 1 At least once a week ..... 2 Less than once a week 3	
81	Did/do you listen to any discussion on nutrition in TV?	Yes ..... 1 No 2	
82	Do you read newspapers, no matter how often?	Yes ..... 1 No 2	

Section 6: Social Insecurity:

Q#	Questions and Filters	Codes and Categories	Skip
83	When you go to school/college or on your way to social visit, does any one Stares at you? Blows whistle at you? Makes bad comments about you? Entices you? Threatens you? Gives you bad proposals?	Yes No Stares..... 1..... 2 Blows whistle..... 1..... 2 Makes bad comments..... 1..... 2 Entices..... 1..... 2 Threatens..... 1..... 2 Gives bad proposals ..... 1..... 2	
84	**Check Q83:** At leat one '1' Circled ☐ ↓	Not a single '1' circled ☐ →	87
85	Who are the people behaving with you this way? Anything else?	School/college students..... A Eveteasers ..... B *Mastans*..... C Neighbours..... D Others..... X (Specify)	
87	Now I like to ask you a very personal question. Has your mentstruation begun?	Yes ..... 1 No..... 2 →	93
88	When did you have had your first menstruation ?	Year Month Time of first menstruation..... ☐☐☐☐	
89	Do you have your menstruation in regular cycle?	Regular..... 1 Not regular ..... 2 Others_____ 3 (Specify)	
90	What is the usual duration (in days) of your menstruation cycle	Duration (in days)..... ☐	
91a	Is there any food that you avoid eating during your menstration period?	Yes ..... 1 No..... 2 →	91c

Q#	Questions and Filters	Codes and Categories	Skip
91b	What foods do you avoid eating during your menstruation period?	Rice ..... A Wheat ..... B Leafy vegetables ..... C Vegetables ..... D *Dal* ..... E Fish ..... F Meat ..... G Eggs ..... H Milk ..... I Fruits ..... J Others ..... X (Specify)	
91c	Do you have white foul smelling discharge ?	Yes ..... 1 No 2	

Section 7: Anthropometric Measurements

93	Height (cm) ... ☐☐☐.☐	Weight (kg)....☐☐☐.☐	MUAC (mm).....☐☐☐

Ending time: Hour ☐☐
Minutes ☐☐

NNP BASELINE SURVEY 2004

PREGNANT WOMEN QUESTIONNAIRE

ICDDR,B: Centre for Health and Population Research

Questionnaire 4

NNP Household Survey for Pregnant Women (in 3rd Trimester)

Section 1: Identification of Women in 3rd Trimester of Pregnancy

Division Code: ☐ Name: _____ District Code: ☐☐ Name: _____

Upazila Code: ☐☐☐ Name: _____ Union Code: ☐☐☐ Name: _____

Mouza Code: ☐☐☐ Name: _____ Village Name: _____

Bari Name:_____ Household (HH) #: ☐☐☐

HH Head's Name:_____

Ind. # of the pregnant woman:_____ ☐☐ Her Name:_____

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE				DAY ☐☐ MONTH ☐☐ YEAR 2004
INTERVIEWER'S NAME				
RESULT*				INTV. CODE ☐☐ RESULT* ☐
NEXT VISIT: DATE				TOTAL NO. OF VISITS ☐
TIME				

**RESULT CODES:
1 COMPLETED
2 NOT AT HOME
3 POSTPONED
4 REFUSED
5 PARTLY COMPLETED
6 RESPONDENT INCAPACITATED
7 OTHER _____ (SPECIFY)

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____ ☐☐ DATE _____	NAME _____ ☐☐ DATE _____	☐☐	☐☐

INTRODUCTION AND CONSENT

INFORMED CONSENT

Hello. My name is_____. We came from the Mitra and Associates, a private research organization, is located at Dhaka. To assist in the implementation of socio-development programs in the country, we conduct different types of surveys. We are now conducting a national survey about the health and nutrition of women and children under the authority of ICDDR,B. We would very much appreciate your participation in this survey. I would like to ask you some questions about your health and nutrition (and the health and nutrition of your children). This information will help the government to plan health and nutrition services. The survey usually takes between 20 and 45 minutes to complete. Whatever information you provide will be kept strictly confidential and will not be shown to other persons.

Participation in this survey is voluntary and you can choose not to answer any individual question or all of the questions. However, we hope that you will participate in this survey since your views are important.

At this time, do you want to ask me anything about the survey?
May I begin the interview now?

Signature of interviewer: _____Date:

RESPONDENT AGREES TO BE INTERVIEWED ... 1

RESPONDENT DOES NOT AGREE TO BE INTERVIEWED ..... 2 → END

Section 2: Pregnancy History and Pregnancy Care

Starting time: Hour ☐☐
Minutes ☐☐

Q#	Questions and Filters	Codes and Categories	Skip
40	How old are you?	Age (in years) ..... ☐☐	
41	How old were you at the time of your (first) marriage? **(Probe)**	Age (in years) ..... ☐☐	
41a	Have you ever attended school? **(Probe)**	Yes ..... 1 No ..... 2 → 42a	
41b	What type of school have you attended last?	School/college ..... 1 Madrasah ..... 2 Non-formal 3	
41c	What is the highest class that you passed?	Class ..... ☐☐	
42a	How many times have you ever been pregnant, including your current pregnancy? **(Probe)**	# of times ever pregnant ..... ☐☐	
42b	**Check Q42a:** Times pregnant More than once ☐ ↓	Only once ☐ →	45

Q#	Questions and Filters	Codes and Categories	Skip
43	How old were you at the time of your first pregnancy?	Age (in years) ..... ☐☐	
44	Please think of the time of your previous pregnancy. When did that pregnacy end? (PROBE)	Year Month Time the previous pregnancy ended..... ☐☐ ☐☐	
45	When did your last menstrual period start? (PROBE)	Day Month Year ☐☐ ☐☐ ☐☐	
46	How many surviving sons and surviving daughters do you have?	# of surviving sons ..... ☐☐ # of surviving daughters..... ☐☐	
47	Did you receive any antenatal care (ANC) during this pregnancy?	Yes..... 1 No ..... 2 →	53a
48a	How many times did you make antenatal care (ANC) visits during this pregnancy?	Times ..... ☐☐	
48b	In which month of this pregnancy did you first make antenatal care visit?	Month ..... ☐☐	
49	Where or whom did you receive antenatal care (ANC) services the last time for this pregnancy?	Public Sector Hospital/medical college ..... 01 Family Welfare Centre/FWV ..... 02 Thana Health Complex ..... 03 Satellite Clinic/EPI outreach centre ..... 04 Maternal and Child Welfare Centre (MCWC)..... 05 Community Clinic ..... 06 Govt. field worker/FWA ..... 07 NGO sector NGO static clinic ..... 08 NGO satellite clinic ..... 09 NGO field worker..... 10 Private sector Private hospital/clinic ..... 11 Qualified doctor..... 12 SACMO/MA ..... 13 Traditional doctor ..... 14 *Kabiraj*..... 15 Pharmacy ..... 16 Community Nutrition Centre..... 17 Homeopath ..... 18 Dai ..... 19 Others _____ 20 (Specify)	

Q#	Questions and Filters	Codes and Categories	Skip
50a	Now I would like to ask you about the services you recevied at your antenatal care visits during this pregnancy. Was your weight measured during this pregnancy?	Yes ..... 1 No ..... 2 → 51	
50b	How many times were your weight measured during this pregnancy	# of times weight measured ..... ☐	
51	Was your blood pressure checked?	Yes ..... 1 No 2	
52	Was your urine tested?	Yes ..... 1 No 2	
53a	**Check Q47 and Q48a**: Made no antenatal care visit ☐ ↓ Made one antenatal care visit ☐ ↓ Made 2 or more antenatal care visits ☐ → 54		
53b	What were the reasons for not making any antenatal care visit/you made one antenal care visit, during this pregnancy? (Anything else?)	Didn't feel its necessity ..... A Objection of family members..... B None to accompany ..... C Economic constraint ..... D Poor quality of ANC..... E ANC provider at far distance..... F Others _____ X (Specify)	
54	Did/do you have any complications relating to this pregnancy? Such as: Severe headache/blurred vision ..... Oedema ..... High BP..... Protein in urine..... Bleeding ..... Convulstion..... Anemia..... Fever more than 3 days..... Foul-smelling discharge..... Others_____	Yes No Severe headache/ blurred vision..... 1 2 Oedema..... 1 2 High blood pressure..... 1 2 Protein in urine ..... 1 2 Bleeding..... 1 2 Convulstion ..... 1 2 Anaemia..... 1 2 Fever more than 3 days ..... 1 2 Foul-smelling discharge ..... 1 2 Others _____ 1 2 (Specify)	
56a	How many TT vaccinations did you have during this pregnancy?	# of times vaccinated during this pregnancy ..... ☐	
56b	How many TT vaccinations did you have before this pregnancy?	# of times vaccinated before this pregnancy ..... ☐	

Q#	Questions and Filters	Codes and Categories	Skip
57a	Have you ever taken iron tablets during this pregnancy?	Yes ..... 1 No ..... 2 → 58c	
57b	From which month of this pregnancy did you start to take iron tablet?	Month ..... ☐☐	
58a	From the starting date of iron tablet in this pregnancy, did you take iron tablet everyday?	Yes ..... 1 → 59 No 2	
58b	What were the reasons for your not taking iron tablet regularly? (single response)	Didn't feel its necessity ..... 1 Family objection ..... 2 Side-effect ..... 3 No supply ..... 4 Forgot to take ..... 5 Didn't receive enough tablets ..... 6 Lost tablets ..... 7 Couldn't afford ..... 8 Others _____ 9 (Specify)	→ 59
58c	Have you ever taken iron syrup during this pregnancy?	Yes ..... 1 No ..... 2 → 60	
58d	From which month of this pregnancy did you start to take iron syrup?	Month ..... ☐☐	
58e	From the starting date of iron syrup in this pregnancy, how many days did you take iron syrup per month?	Day ..... ☐☐ → 60	

Q#	Questions and Filters	Codes and Categories	Skip
59	From where did you receive iron tablets most of the times during your this pregnancy? [Single response]	Public Sector Hospital/medical college ..... 01 Family Welfare Centre/FWV ..... 02 Thana Health Complex ..... 03 Satellite Clinic/EPI outreach centre ..... 04 Maternal and Child Welfare centre (MCWC)..... 05 Community Clinic ..... 06 Govt. field worker/FWA ..... 07 NGO sector NGO Static Clinic ..... 08 NGO Satellite Clinic ..... 09 NGO field worker..... 10 Private sector Private hospital /clinic ..... 11 Qualified doctor..... 12 SACMO/MA ..... 13 Traditional doctor ..... 14 *Kabiraj*..... 15 Pharmacy ..... 16 Community Nutrition Centre..... 17 Homeopath ..... 18 Dai ..... 19 Others _____ 20 (Specify)	
60	Did you have any disease symptoms in the last 2 weeks?	Yes..... 1 No ..... 2 → 62	
61	What were the disease symptoms you had in the last two weeks, did you have: High blood pressure, asthma, heart disease, diabetes, pneumonia, diarrhoea, TB, fever, and cough? Anything else?	High blood pressure..... A Asthma.....B Heart disease.....C Diabetes ..... D Pneumonia .....E Diarrhoea ..... F TB..... G Fever..... H Cough .....I Other_____ J (Specify)	

Sections 3: Health and Nutritional Knowledge and Practices

Q#	Questions and Filters	Codes and Categories	Skip
62	Do you eat the following foods, as much during your current pregnacy as you usually ate before the pregnancy, or do you eat more or less food than you usually ate before? Rice ..... Pulses ..... Fish..... Meat ..... Eggs..... Vegetables..... Milk..... Fruits ..... Others.....	Less More Same as Never previous ate Rice.....1 .....2 .....3 ..... 4 Pulses.....1 .....2 .....3 ..... 4 Fish .....1 .....2 .....3 ..... 4 Meat.....1 .....2 .....3 ..... 4 Eggs .....1 .....2 .....3 ..... 4 Vegetables ...1 .....2 .....3 ..... 4 Milk .....1 .....2 .....3 ..... 4 Fruit .....1 .....2 .....3 ..... 4 Others .....1 .....2 .....3 4	
63	Please tell now, altogether (above-mentioned foods), do you eat as much food during your current pregnacy as you usually ate before the pregnancy, or do you eat more or less food than you usually ate before?	Less than before..... 2 More than before ..... 1 Same as before 3	
66	What happens if a woman have more intake of food during pregnancy than she usually did before the pregnancy?	Complicates delivery and should be avoided..... 1 Benefits mother ..... 2 Benefits foetus..... 3 Benefits both mother and foetus.... 4 Makes no difference ..... 5 Others _____ 6 (Specify) Don't know/not sure..... 7	
67	Do you receive supplementary food from any feeding programme for weight gain during the pregnancy?	Yes..... 1 No 2	→ 69a
68	For how many months have you been receiving supplementary food?	# of months..... ☐	
69a	Is there any programme on health or nutrition education in your area?	Yes..... 1 No ..... 2 Don't know..... 3	
69b	Do you go to any health-education session?	Yes..... 1 No 2	→ 71
70	How many times a month do you go to health-education session?	# of times/month..... ☐	

Q#	Questions and Filters	Codes and Categories	Skip
71	Do you take as much rest during your current pregnancy than you usually took before the pregnancy, or do you take more or less rest than you usually took before?	More than before ..... 1 Same as before..... 2 Less than before..... 3	
72	What happens if a woman takes more rest during pregnancy than before the pregnancy?	Weight gain ..... 1 Benefits mother ..... 2 Benefits foetus..... 3 Benefits both mother and foetus.... 4 Makes no difference ..... 5 Others _____ 6 (Specify) Don't know/not sure..... 7	
73	What type of salt are you eating now?	Packet (iodized) salt ..... 1 Unpacked (not-iodized) salt 2	
74	What happens if a woman eats iodized salt during pregnancy?	Harms foetus..... 1 Benefits mother ..... 2 Benefit foetus ..... 3 Benefits both mother and foetus.... 4 Makes no difference ..... 5 Others _____ 6 (Specify) Don't know/not sure..... 7	
75	How long after birth of the baby do you plan to begin breastfeeding him/her?	Initiate immediately after birth..... 1 Initiate within 24 hours..... 2 Initiate after 24 hours of birth..... 3	
76	What would you do with the first milk (colostrum)?	Will feed the baby ..... 1 With throw away 2	
77	What happens if a mother gives colostrum to a new born?	Upsets baby's stomach ..... 1 Benefits mother ..... 2 Benefits baby..... 3 Benefits both mother and baby..... 4 Makes no difference ..... 5 Others _____ 6 (Specify) Don't know/not sure..... 7	
78	What would you do to increase production of your breastmilk?	Will do nothing to increase ..... 1 Will increase intake of foods..... 2 Will increase intake of liquid ..... 3 Others _____ 4 (Specify)	→ 80

Q#	Questions and Filters	Codes and Categories	Skip
79	What are the foods that you would increase the intake for? Anything else?	Rice ..... A Pulses ..... B Fish ..... C Meat ..... D Eggs ..... E Vegetables ..... F Milk ..... G Fruits ..... H Others _____ X (Specify)	
80	How long (in months) do you plan to exclusively breastfeed baby, that is, give him/her only the breastmilk and not anything else, even plain water?	# of months ..... ☐☐ Don't know 98	
81	At what age of the baby do you plan to start giving him/her solid/semi-solid foods in addition to breastmilk?	Age (in months) ..... ☐☐	
82a	What happens if solid food is not introduced to a child before 6 months?	Bad for child ..... 1 Makes no difference ..... 2 Others _____ 3 (Specify) Don't know/not sure 4	
82b	What happens if solid food is not introduced to a child after 6 months?	Bad for child ..... 1 Makes no difference ..... 2 Others _____ 3 (Specify) Don't know/not sure 4	
82c	Have you ever heard of goitre?	Yes ..... 1 No 2	→ 85
83	What are the major causes of goitre? Anything else?	Not eating enough foods ..... A Not eating enough fruits ..... B Not eating enough vegetables ..... C Not eating iodized salt ..... D Not eating iodine-rich foods ..... E Others _____ X (Specify) Don't know/not sure ..... Y	
84	What prevents goitre? Anything else?	Eating more rice ..... A Eating more fruits ..... B Eating more vegetables ..... C Eating iodized salt ..... D Eating iodine-rich foods ..... E Others _____ X (Specify) Don't know/not sure ..... Y	

Q#	Questions and Filters	Codes and Categories	Skip
85	What are major causes of diarrhoea? Anything else?	Dirty, contaminated water/liquid.. A Spoiled, stale food .....B Not washing hands before taking meal .....C Not washing hands with soap after defecating ..... D Not washing hands with ash/mud after defecating.....E Not using sanitary latrine .....F Not continuing breastfeeding up to 2 years ..... G Not giving immunization properly H Others _____ X (Specify) Don't know/not sure..... Y	
86	What prevents diarrhoea? Anything else?	Use safe food..... A Use safe liquid food.....B Wash hands before taking meal.....C Wash hands with soap after defecating ..... D Wash hands with ash/mud after defecating .....E Use sanitary latrine.....F Continue breastfeeding up to 2 years..... G Proper Immunization.....I Others _____ X (Specify) Don't know/not sure..... Y	
87	What is the common treatment for diarrhoea? Anything else?	Withdraw food and fluid ..... A Keep warm .....B Seek help from faith healers.....C Feed ORS ..... D Feed home-made liquid.....E Feed normal food.....F Seek advice from doctor..... G Others _____ X (Specify) Don't know/not sure..... Y	
87a	Have you ever heard of pneumonia?	Yes..... 1 No 2	▶90a

Q#	Questions and Filters	Codes and Categories	Skip
88	What are the major symptoms of pneumonia? Anything else?	Cold and cough..... A Fever.....B Fast breathing .....C Chest in-drawing ..... D Inability to suck breastmilk .....E Others _____ X (Specify) Don't know/not sure..... Y	
89	What prevents pneumonia? Anything else?	Keep baby warm..... A Exclusive breastfeeding.....B Continue breastfeeding up to 2 years .....C Proper immunization ..... D Others _____ X (Specify) Don't know/not sure..... Y	
90a	Do you eat *pan* with *jarda* or *sada pata* or only tobacco leaf or bidi/cigarettes or gul?	Yes..... 1 No ..... 2 → 91	
90	How many times per day do you eat *pan* with *jarda* or *sada pata* or only tobacco leaf or bidi/cigarettes or gul?	# of times take with *pan* .....☐ # of times take only tobacco.....☐ # of times smoke biri/cigarettes/ cigars .....☐ # of times use gul.....☐	
91	What happens if you take *gul/jarda*/ tobacco in pregnancy?	Refreshing ..... 1 Harms foetus..... 2 Others _____ 3 (Specify) Do not know 4	
92	Do you have a chance to listen to radio/two-in-one?	Yes..... 1 No ..... 2 → 95	
93	Do you listen to radio/two-in-one?	Yes..... 1 No ..... 2 → 95	
93a	How often do you listen to radio/two-in-one? Everyday? Atleast once a week? Less than once a week?	 Everyday..... 1 Atleast once a week..... 2 Less than once a week..... 3	
94	Did/do you listen to any discussion on nutrition in radio?	Yes..... 1 No 2	
95	Do you have a chance to watch TV?	Yes..... 1 No ..... 2 → 98	

Q#	Questions and Filters	Codes and Categories	Skip
96	Do you watch TV?	Yes ..... 1 No ..... 2 → 98	
96a	How often do you watch TV? Everyday? Atleast once a week? Less than once a week?	 Everyday ..... 1 Atleast once a week ..... 2 Less than once a week 3	
97	Did/do you listen to any discussion on nutrition in TV?	Yes ..... 1 No 2	

Section 4: Anthropometry of pregnant women

98	Height (cm) ... ☐☐☐.☐	Weight (kg)..... ☐☐.☐	MUAC (mm)..... ☐☐☐

Ending time: Hour ☐☐
Minutes ☐☐