ncipal Investigator S. D'Souza   Trainee Investigator (if any) _____

lication No. 80-021(P)   Supporting Agency (if Non-ICDDR,B) WHO

le of Study Mortality and   Project status:
                                         ( ) New Study
socioeconomic status   (✓) Continuation with change
                                         ( ) No change (do not fill out rest of form)

cle the appropriate answer to each of the following (If Not Applicable write NA).

Source of Population: 5. Will signed consent form be required:
(a) Ill subjects   Yes (No)   (a) From subjects   Yes (No)
(b) Non-ill subjects   (Yes) No   (b) From parent or guardian
(c) Minors or persons   (if subjects are minors) Yes (No)
     under guardianship   (Yes) No   6. Will precautions be taken to protect
Does the study involve: anonymity of subjects   (Yes) No
(a) Physical risks to the   7. Check documents being submitted herewith to
     subjects   Yes (NO)   Board:
(b) Social Risks   Yes (NO)   ____ Umbrella proposal - Initially submit an
(c) Psychological risks   overview (all other requirements will
     to subjects   Yes (NO)   be submitted with individual studies).
(d) Discomfort to subjects   Yes (No)   ✓ Protocol (Required) linked study addendum
(e) Invasion of privacy   (Yes) No   ✓ Abstract Summary (Required)
(f) Disclosure of informa-   ____ Statement given or read to subjects on
     tion damaging to sub-   nature of study, risks, types of quest-
     ject or others   Yes (No)   ions to be asked, and right to refuse
Does the study involve: to participate or withdraw (Required)
(a) Use of records, (hosp-   ____ Informed consent form for subjects
     ital, medical, death,   ____ Informed consent form for parent or
     birth or other)   (Yes) No   guardian
(b) Use of fetal tissue or   ____ Procedure for maintaining confidential-
     abortus   Yes (No)   ity
(c) Use of organs or body   ____ Questionnaire or interview schedule *
     fluids   Yes (No)   * If the final instrument is not completed
Are subjects clearly informed about: prior to review, the following information
(a) Nature and purposes of   should be included in the abstract summary:
     study   (Yes) No   1. A description of the areas to be
(b) Procedures to be   covered in the questionnaire or
     followed including   interview which could be considered
     alternatives used   (Yes) No   either sensitive or which would
(c) Physical risks   Yes (NO)   constitute an invasion of privacy.
(d) Sensitive questions   Yes (NO)   2. Examples of the type of specific
(e) Benefits to be derived   Yes (NO)   questions to be asked in the sensitive
(f) Right to refuse to   areas.
     participate or to with-   3. An indication as to when the question-
     draw from study   (Yes) No   naire will be presented to the Board
(g) Confidential handling   for review.
     of data   (Yes) No
(h) Compensation &/or treat-
     ment where there are risks
     or privacy is involved in
     any particular procedure (Yes) No

gree to obtain approval of the Review Board on the Use of Human Subjects for any change
oiving the rights and welfare of subjects before making such change.

D'Souza   A - 033754

(Cover Page - Use this format exactly as outlined with
numbers and headings)

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SECTION I - RESEARCH PROTOCOL

Title: Limited Study Protocol on Mortality and Socioeconomic Status

Principal Investigator: Dr. Stan D'Souza

Starting Date: June 1980

Completion Date: November 1980

Total Direct Cost: US $ 1045.00

Scientific Program Head:

This protocol has been approved by the _Community Services Research
Working Group.

●Signature of Scientific Program Head: _____

Date: 08.5.80

~~signed. Signature implies that the Scientific Program Head takes responsibility for the planning execution and budget for this particular protocol.~~

Abstract Summary: (250 words or less)

    Demographers and medical professionals have become increasingly
aware of the fact that health care is not reaching the various classes
of society in an egalitarian manner. This study proposes to use data
collected in Matlab as part of the DSS to investigate mortality
differentials by socioeconomic status (SES). Reliable data to
study this problem are not available in other third-world countries.

Mortality data from 1974 through 1977 (age and sex-specific) will be matched with 1974 individual and household SES data. In addition, cause-specific rates for children (<15) will be investigated for correlations with SES. Methods of analysis will include simple pairwise comparison of specific mortality rates by socioeconomic group. Differences observed will be assessed for significance by t-test.

This protocol is a limited study addendum to the current DSS protocol. It involves no additional collection of data and procedures to ensure confidentiality have already been implemented as part of the DSS protocol.

Abstract Summary — particular items

1.   Not applicable

2.   No risks; not applicable

3.   Not applicable

4.   See next page

5.   No additional informed consent required

6.   No interview; not applicable

7.   No benefits to individual; to society in general, a
     better understanding of the relationship between mortality
     and socioeconomic status, which may in future allow health
     care to be distributed more equally   .

8.   Use of census records only

Confidentiality Statement

Study involves use of collected data only; consent was obtained at the time of original data collection.

a) Data to be used in the study was collected as part of the DSS from 1974 through 1977

b) All data are on tape

c) Not necessary to record any identifying information

d) No follow up required

e) Access to data tapes only: S. D'Souza, A. Bhuiya, M. Rahman

f) Data will be published only in aggregate; no possibility of identifying individuals

g) Raw data will remain on tape; new file constructed with only some SES variables as outlined in methods will, if not useful to other investigators, be deleted.

(Cover Page contd.)

(e)   <u>Reviews:</u>   (Leave Blank)

    (a)   Ethical Review Committee: _____

    (b)   Research Review Committee: _____

    (c)   Director: _____

    (d)   BMRC: _____

Limited Study Protocol on Mortality and Socioeconomic Status

Stan D'Souza
Abbas Bhuiya
Mizanur Rahman

INTRODUCTION

The DSS protocol No.78-001 for Matlab and Teknaf covers the
large-scale data collection in the two areas relating largely to
the registration of vital events for the three-year period starting
in September 1977. The 1974 census indicated in the protocol
included collection of SES data on a variety of characteristics
for the entire population. Earlier collection of SES data on a
few items was carried out in 1968 for the old trial area and in
1970 for the new trial area. These data sets form an important
resource that can throw light on some of the issues raised
recently on the question of mortality. Infant mortality rates
remain high in less-developed countries. Within these countries
as well as in affluent ones, demographers and medical professionals
have become increasingly aware of the fact that health care
is not reaching the various classes of society in an egalitarian
manner. Mortality rates tend to be higher in "lower" classes
of society. A recent WHO-UN sponsored conference in Mexico
(1979) on the socioeconomic determinants of mortality has
focused concern in this area. In third-world countries, reliable
data do not exist to study the problem of mortality differentials.
Indirect estimation procedures are resorted to, based on retrospective
surveys. The Matlab data set — with special reference to the

1974 census — could provide important information on these differentials. In fact, a study on the subject with small financing by the WHO, Geneva has been requested and awarded to ICDDR,B. This study will be presented in Manila in November 1980 (See Appendix 2). The ICDDR,B has made an official request for UNFPA regional funds in a project entitled - Matlab Demographic and Operational Research and Training (Project No. RAS/78/P29). This project was committed by the UNFPA to ICDDR,B at the interim international committee meeting in Geneva in February 1979, was submitted after approval by the Director and Management Committee to the UNFPA in March 1979, and revised in June 1979. At the Board of Trustees meeting in July 1979, the Trustees approved and accepted the commitment of funds. Under this project the ICDDR,B contracted to do research on various items including "Policy and programme applications of medical and socioeconomic causes of fertility and mortality."

Some of the implications of socioeconomic differentials in mortality for the health systems have been well developed by Antonovsky (1979) who states "it is incumbent upon us to urge the establishment of a systematic, continuous monitoring programme to assemble appropriate data." He points out that socioeconomic differentials in mortality mean that success has been achieved in one section of the community which is not available to other segments.

Socioeconomic Criteria

As regard the criteria for socioeconomic classification, a paper by Bradley and Johnston (1979) reviews the situation for several countries. The following are considered to have special relevance to mortality studies:

a) Occupation and status in employment

b) Income

c) Education

d) Industry

e) Housing condition

f) Urban and rural residence

g) National and ethnic groups

However, the authors note that obtaining such data is difficult. Kitagawa and Havser (1973) consider education as the most satisfactory of the several indices of socioeconomic status. Education defined by years of schooling is generally reliably reported. In the case of India, Vaidyanathan (1972) has reported mortality differentials by geographical location, rural-urban habitat, religion and caste, occupation, education, type of housing and lighting, landholding, and income.

Evidence for Mortality Differentials by SES

1. Other countries

In India, Vaidyanathan (1972) has collected data from various surveys showing an inverse relationship between occupational class and mortality. Owners and tenant cultivators have lower mortality than agricultural labourers. White-collar workers have lower mortality rates than blue-collar workers. The UN Mysore Population Study (1961) uses the type of housing and type of lighting as a proxy for socioeconomic status in urban areas and landholding status in rural areas. Mortality differentials are as described above, with labourers and tenants having an infant mortality rate 59 percent above the rural rate. In the urban area of Bangalore City, the infant mortality rate for the population living in huts or mud houses with thatched roofs and for those without electric lighting was about 11 percent higher than the rate for the whole city population.

In Nigerian data, Caldwell has shown that education, especially that of the mother, is correlated negatively with child mortality rates (Caldwell, 1979). Preston has studied the changing relation between mortality and economic development (Preston, 1975).

In a review paper Doan (1979) has provided results of a
Committee for the International Cooperation in National
Research in Demography, Paris survey: 318 centres affiliated
to CICRED were addressed and 194 replies were received in the
following areas:

1.   Variations of mortality level caused by socioeconomic
      factors

2.   Infant and childhood mortality

On-going research is listed for 30 centres, and 53 papers on
socioeconomic differentials of mortality are cited.

The Mexico Conference (1979) set of papers include background
papers for regions such as Latin America (Behm) and Asia and
the Pacific (Hashmi).

2. Bangladesh

Since independence in 1971, Bangladesh has suffered two severe
crisis periods, one linked to the liberation struggle and
the other to the 1974 famine. Death rates have been higher
during these periods, particularly among poorer groups
(Chowdhury and Chen 1977). The 1975 crude death rate among
landless families was three times that of families with 3 or
more acres (McCord 1976).

The Bangladesh Retrospective Survey on Fertility and Mortality (1974) has documented mortality differentials in childhood by socioeconomic status. Children of women who live in houses with walls of brick had a higher chance of survival than children whose mothers live in houses with walls or mud. Infant and child mortality decreased with the educational level of both husband and wife. These data are based on indirect estimation procedures, which have their own particular limitations. Vital registration is practically nonexistent in Bangladesh and hence the main data sources on mortality differentials have to be obtained from small area surveys. Companigonj thana has been the scene of innovative health interventions, and survey data on mortality rates for a 10% sample exist (Langsten 1976).

The Matlab and Teknaf Surveillance Systems are unique in Bangladesh as sources for information on mortality differentials. Using the Matlab data set, D'Souza and Chen (1979) have focused on sex biases of mortality differentials. Earlier work on the same subject has been recorded in the Matlab area (Ruzicka and Chowdhury 1978). Occupation has been correlated with mortality differentials in the Matlab area (Chowdhury and Aziz 1974). Becker has shown in the study of seasonality data of deaths analyses with SES.

Chen et al. (1979) have shown that children under 5 constituted 53.1 percent of all deaths in the period 1975-77. Among infants the most significant cause of deaths was tetanus. Tetanus neonatorum accounted for 26.2 percent of all infant deaths. A significant shift in causes of death occurs for children under 1-4 years. 43.9 percent of deaths were due to diarrhoeal diseases. Measles was the next cause of death with 13 percent. The paper associates under-5 mortality with socioeconomic and nutrition status; children residing in crowded housing (<242 sq. ft.) had nearly a two-fold higher mortality rates than children residing in less crowded housing (>242 sq. ft.). Children who were below the 65% cut off of the Harvard weight-for-age standard or below 70% of the Harvard weight-for-height standard experienced about three-fold higher rates of mortality in comparison to their better-nourished counterparts.

SPECIFIC AIMS

The mortality study will in its first phase review mortality patterns, trends, causes and socioeconomic correlates under the following heads:

a)   patterns: infant, child 1-4, adult

b)   rates (age-specific)

c) trends over time — 1974-77

d) main cause (as now registered)

e) SES by linkage with censuses, initially the 1974 census

In its second, third and fourth phases, which will be outside the purview of this limited study protocol, it will cover the following areas:

Part II Mortality: intermediate variables

a) nutrition, food

b) breastfeeding

c) fertility linkages

d) health care utilization/access/availability

Part III Mortality: intervention

a) technologies: tetanus vaccine, oral therapy, family planning, measles, DPT, and other

b) evaluation of impact methodology

c) delivery system operational research

Part IV Mortality: policy/implications

METHODS AND MATERIALS

Occupational data were collected for the new trial area in 1968. In 1970, a few SES items were collected for the old trial area (occupation, education of head only, landholding and crops). These data will be studied as made available from tapes now being cleaned at the Johns Hopkins University.

A more immediate study of mortality differentials linked to SES items will be carried out using the 1974 census SES items. With regard to the individual, occupation and education data were collected. At the household level, the items collected were house structure, house space, crop yield, the receipt of remittances, the possession of radio, watch, hurricanes, quilt, cow and boat. Sources of water and latrine use for households were also documented (Table 1).

Mortality data for the years 1974 through 1977 will be matched with 1974 SES data of individuals and households. Since 1974 was a year of crisis, shifting of ownership and economic status took place during the period 1974-75. A small survey taken in 1976 indicated that care should be taken in using the SES data of 1974 since patterns had changed during the years since the census was taken (Huffman et al. 1976).

The following tables will be prepared for the analysis for each of the years 1974 through 1977:

1. Mortality rates by age, sex and education of household head

2. Mortality rates by age, sex and education of male household head

3. Mortality rates by age, sex and education of mother

4. Mortality rates by age, sex and highest education in the family

5. Mortality rates by age, sex and education of individual

6. Mortality rates by age, sex and marital status of individual

7. Mortality rates by age, sex and religion.

8. Mortality rates by age, sex and occupation of household head

9. Mortality rates by age, sex and occupation of individual

10. Mortality rates by age, sex and structure of household

11. Mortality rates by age, sex and area of dwellings in household

12. Mortality rates by age, sex and family size

13. Mortality rates by age, sex and type of the family

14. Mortality rates by age, sex and number of boats owned by the household

15. Mortality rates by age, sex and number of cows owned by the household

16. Mortality rates by age, sex and articles possessed by the family

17. Mortality rates by age, sex and sources of drinking water

18. Mortality rates by age, sex and use of fixed latrine

The methods of analysis will include the use of simple pairwise comparison over the four years of age-specific mortality rates by particular socioeconomic groups. t-tests will be used to assess significance of differences, if any. Findings will be compared with results from the Bangladesh Retrospective Survey on Fertility and Mortality and Companigonj.

Some procedures are as follows:

1. Selecting SES variables for individuals in the 1974
    Census to create a new census file.

2. Matching deaths 1974-77 with the new census file.

3. Matching out-migrations 1974-77 with the new census file.

4. From (2) and (3) determining relevant numerators and
    denominators for age-sex-SES-specific mortality rate.

5. Matching births 1974-77 with families of new census file.

6. Matching deaths of persons 0-4 years in 1974-77 with the
    file from (5).

7. Using (5) and (6) determine numerators and denominators
    for the age-sex-SES-specific mortality rates for the
    youngest ages.

8. Comparisons by SES group in 4 and 7.

Separate analysis would include setting up of scales regarding the use of SES factors and their applicability to the study of mortality differentials.

With regard to the age-specific mortality rates some problems exist in linking mortality of infants and children under 5 to SES data. Successive years 1975, 1976 and 1977 would exclude respectively deaths upto age 0, 1 and 2 respectively as the 1974 cohort is followed over time. The introduction of the births, deaths and migration components at these ages will be done.

The present study will attempt to link the main causes of death of children with socioeconomic characters. Causes of death are not easily identifiable. Apart from the fact that death is usually not monocausal, the fact that the Matlab data are collected by workers without formal medical training does impose a serious limitations in the diagnosis of causes of death. The workers however have extensive experience in the diagnosis of diarrhoeal diseases as well as some infectious diseases such as tetanus and measles. The data will be analysed from the records with causes of death as registered. These data will assist in throwing light on the type of interventions needed to lower mortality and the type of policy decisions that would be needed.

The registered causes of death that will be taken for children under 15 years are: tetanus, measles, diarrhoea (acute and chronic), dysentery (acute and chronic), respiratory diseases. Mortality rates for each cause will be tabulated by age, sex, and the following SES characteristics:

1. Education of household head

2. Education of male household head

3. Education of mother

4. Highest education in the family

5. Religion

6. Occupation of household head

7. Structure of household

8. Area of dwellings in the household

9. Family size

10. Type of the family

11. Number of boats owned by the household

12. Number of cows owned by the household

13. Articles possessed by the family

14. Sources of drinking water

15. Use of fixed latrine

The breakdown of characteristics will be same as in Appendix 1. except for age:

1m, 1-11m, 1 yr, 2 yrs, 3 yrs, 4 yrs, 1-4 yrs, 5-9 yrs, 10-14 yrs.

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Table 1

SES data collection by year of census

Census year	OTA	NTA
1966	No SES data	No census
1968	No census	Occupation of individuals.
1970	Occupation and Education of head Landholding Crop	No census
1974	Individual - Education, Occupation Family - House structure, House-space, Crop yield Receive remittance, possession of radio, watch, huricane, quilt, cow, boat, source of water, latrine	

BUDGET SUMMARY

CATEGORY	TAKAS	DOLLARS
1. Personnel	7,257	
2. Supplies		300
3÷8 Nil items		
9. Rent, Communications		100
10. Printing and Reproduction	2,743	
11-12 Nil items		
Total	·10,000	400
Total (in dollars) $ 645*		400
Grand total = 1,045		

*Calculated at Tk. 15.50/$ 1.00

ADDITIONAL BUDGET
(DETAILS)

Position	% Effort	No. of days	Annual Salary	Requirements TAKA	DOLLARS
1. PERSONNEL SERVICES					
Statistical Assistant (Mr. Abbas Bhuiya)	30%	78	Tk.25,092.00	7,527	-
2. SUPPLIES AND MATERIALS					
Computer time and paper					300
3-8 NIL					
9. RENT, COMMUNICATION, UTILITIES					
Postage, Cables, Stamps					100
10. PRINTING AND REPRODUCTION					
Papers and Xeroxing				2,743	-
11-12. NIL					
				TOTAL TK.10,000	$ 400
				Total (in dollars) $ 645.00	$ 400
				Grand total - $ 1,045.00	

BREAKDOWN OF CHARACTERISTICS

Age:

1m, 1-11m, 1-4 yrs, 5-14 yrs, 15-24 yrs, 25-34 yrs, 35-44 yrs

45 yrs +

1-5 Education (household head, male household head, mother,

highest education in the family, individual)

No schooling, Maktab, 1-3 yrs of schooling, 4-6 yrs, 7-9 yrs,

10 yrs +

6   Marital status:

Never married, currently married, widowed, divorced

7   Religion:

Muslim, Hindu

8   Occupation of household head:

Landowner, Owner worker, Self employed and Employer, Agri-

labourer, Employed for salary and wages, Others

9   Occupation of individual:

Male: (a) Student, (b) Unemployed, (c) Agri-labourer and

domestic labourer, (d) Mill worker — unskilled worker,

unskilled service, (e) Owner worker, Agents or share croppers

of others land, Land owner, (f) Skilled worker, skilled

service, (g) Catches fish, sells fish and rents fishing

equipment, boatman, (h) Beggars, (i) Disabled, (j) Business, (k) Cottage industry, (l) No occupation, (m) Others

Female: (a) Housewives, (b) Student, (c) Unemployed, (d) Beggar, (e) Disabled, (f) No occupation, (g) Have some other occupation, (land owner, self employed and employer, employed for salary and wages, others)

10 Structure of household:

Tin, Tin and Others, Others

11. Area of the dwellings of the household (in sq. ft.):

169, 170-242, 243+

12 Family size:

1-2, 3-4, 5-6, 7-10, 10+

13 Family type:

Single person, One generation, Two generation, Three generation, Others

14 Number of boats:

0, 1, 2, 3+

15 Number of cows:

0, 1, 2, 3-4, 5+

16 Articles possessed by the family:

Hurricane and Quilt, Watch and Remittances (may be including hurricane or quilt or both), None of the articles

17 Use of fixed latrine:

Yes, No

The objectives of the Manila meeting are:

a) To review available evidence on trends and differentials in mortality in countries of South and East Asia between 1950 and 1975;

b) To focus attention on differences in the rate of change among as well as within countries;

c) To examine the factors underlying the differential rates of change with emphasis on the role of health intervention programmes;

d) To explore the social, economic and politico institutional consequences of mortality trends and differentials;

e) To discuss methodological issues involved in the study of inequality of death among and within countries including the evaluation of the effects of health intervention programmes;

f) To formulate guidelines and recommendations for follow-up research and action on the country as well as international levels.