

# chronic disease news

a newsletter of



VOLUME 4

ISSUE 2

November 2012



Page 2

Impact of indoor air pollution on adult cardiopulmonary mortality

Page 4

Identifying important breast cancer control strategies

Page 5

CCCD initiates joint PhD programme

Page 6

Prevalence, awareness and determinants of hypertension in rural and urban Bangladeshis

## Editorial



Dear Readers,

Welcome to the eighth issue of *Chronic Disease News*. The Centre for Control of Chronic Diseases (CCCD) of icddr,b generates this newsletter to keep you up-to-date with the recent status of chronic disease prevalence in Bangladesh and the findings of recent research projects of the centre.

**Research:** In our previous issues, we mostly focused on the common chronic diseases and risk factors, such as hypertension, diabetes, stroke. In this issue we will share with you research findings on two new NCD topics: indoor air pollution and breast cancer. In Bangladesh, women and children living in the rural areas are highly exposed to indoor air pollution due to using of solid fuel for cooking. Breast cancer is another rising concern in the developed as well as developing countries. It is still the most frequent cause of cancer death in women in both developing and developed regions. Here, we will share with you the findings of a research that identified some important strategies for control of breast cancer in Asia, Latin America, the Middle East and North Africa. In addition, this issue will also report on the findings of another CCCD study on hypertension in rural and urban settings in Bangladesh.

**Academics:** I am happy to inform you that CCCD has introduced a joint PhD programme for the young researchers of this centre and you will find details on this education programme in this issue.

**Policy:** CCCD aims at ensuring lifetime health for the people of Bangladesh and to achieve this CCCD has been working closely with the policymakers and high profile chronic disease experts in the country. As we have already informed you that CCCD has a Technical Advisory Group (TAG) which is comprised of the high officials from the Ministry of Health and Family Welfare, it's Directorate General of Health Services; national institutes on cardiovascular diseases, respiratory diseases, diabetes, kidney disease and mental health; World Health Organization-Bangladesh; and also NGOs working on non-communicable diseases.

CCCD held its TAG meeting in June 2012 and formed five working groups in the areas of cardiovascular disease, respiratory disease, mental health, cancer and poverty. Responding to the call for joining hands to combat with chronic diseases in Bangladesh, TAG members provided feedback on current CCCD activities and gave important recommendations and suggestions on the future of non-communicable disease research.

I hope, you enjoy reading about our current activities in this issue of the newsletter.

Professor Louis Wilhelmus Niessen  
Principal Investigator and Director, CCCD

# Impact of indoor air pollution on adult cardiopulmonary mortality

## Findings from a 10-yr retrospective cohort study in a low-income rural setting

Nearly half of the world population depend on traditional biomass fuel such as wood, crop residue, cow dung, charcoal for cooking and heating their homes. This causes high level of indoor air pollution (IAP) due to emission of health-damaging pollutants, such as small particles and carbon monoxide.

According to the World Health Organization report on Global Health Risks, indoor air pollution is accountable for 2 million deaths annually and 2.7% global burden of disease. In 2002, an estimated 46,000 deaths in children under five years mostly due to acute respiratory infection (ARI) and among adults aged 30 years or older, due to chronic obstructive pulmonary disease (COPD), and 3.6% of national disease burden was attributable to IAP due to biomass fuel use in Bangladesh.

More recent research has revealed that IAP exposure has greater deleterious effect on cardiovascular mortality and morbidity. Therefore, the burden of disease due to IAP estimated based primarily on respiratory morbidity and mortality is considered grossly underestimated particularly in economically less developed countries where nearly three-quarters of people still use solid fuel for cooking and heating.

Data from Bangladesh showed burning biomass fuel (e.g., wood, cow dung, crop residue) produce high concentrations of particulate matter in and around the cooking areas including the living rooms. Over 80% of the Bangladesh population depends on solid fuel for household cooking and heating.

Although high-level IAP due to solid fuel burning in traditional cook stoves is well documented in Bangladesh, its long-term impact on adult cardiopulmonary mortality is not known.

IAP due to solid fuel use is a major risk factor of respiratory and cardiovascular mortality and morbidity. Rural Matlab in Bangladesh has been partly supplied with natural gas since the early 1990s, which offered a natural experiment to investigate the long-term impact of IAP on cardiopulmonary mortality.

This study sought to compare adult cardiopulmonary mortality in relation to household fuel type as a surrogate for exposure to indoor air pollution.

In this retrospective cohort study, icddr,b researchers identified all households in 11 villages in Matlab and categorised them as either supplied with natural gas or using solid fuel for cooking or heating since January 1, 2001. Cause-specific mortality data including cardiopulmonary deaths were obtained through verbal autopsy as part of a permanent surveillance. Person-years of exposure were computed from baseline.

Of 39,035 individuals from 8,073 households in the 11 selected villages, 22,337 adults (46.5% men) aged 18 years or older, were available on January 1, 2001, of which 508 households with 1,580 adult residents had a liquid propane gas supply. Over the 10-year period, 1,721 individuals died, of which 1,617 deaths took place in solid-fuel using households and 104 deaths in the



gas-supplied households.

Deaths due to non-communicable diseases (NCDs), which included cardiovascular-, respiratory-, endocrine-, and cancer-related deaths, accounted for 1,241 or 72% of total deaths. Among NCD deaths, 777 were cardiovascular deaths and 169 died of diseases of respiratory system.

Cerebrovascular events ranked top among cardiovascular deaths, which accounted for 363 deaths, followed by ischemic heart disease, which caused 183 deaths. Among

respiratory deaths, chronic obstructive pulmonary disease and allied conditions caused 57 deaths, and 85 deaths were attributable to respiratory tract infection. Another 27 died of all other respiratory diseases.

Altogether, 946 deaths occurred due to cardiopulmonary causes, of which 884 occurred in solid-fuel using and 62 occurred in gas-using households. In total, 5,625 people migrated out of the study villages. In total 155,669 person-years of observation were available, of

which 143,743 were from those households exposed to solidfuel using and 11,926 to gas-using.

The study findings also showed that the mean age at death was 65 years and 56% of deaths occurred in men. However, age and sex distribution of deceased individuals did not differ significantly between the two groups, neither did the occupation category. Of the total deaths, 5.5% occurred before 40 years of age and 71% occurred in the 60 years or older age group. The prevalence of smoking was 47% among those who died in the solid-fuel group compared to 38% among those from the gas-user group, but the difference did not reach statistical significance.

However, gas-supplied households were relatively more educated and richer than the households using solid fuel.

Through this study, researchers demonstrated that solid fuel use is associated with excess risk of mortality due to overall NCDs, combined cardiopulmonary mortality, and cardiovascular and respiratory mortality in a rural area less affected by traffic or industrial pollution in Bangladesh. To our knowledge, this icddr,b study is the first one that has looked at the association between adult cardiopulmonary mortality due to IAP using fuel type (solid vs gas) as a surrogate for IAP in low-income countries.

Household solid-fuel use is associated with significantly increased mortality from respiratory diseases and nonsignificantly increased risk of cardiovascular mortality. Although this study data are not sufficiently powered to make strong conclusions for all types of cardiopulmonary mortality, these findings have important public health significance considering the size of the population exposed. So, further study is needed to investigate the contribution of IAP in the Bangladeshi population. Results suggest that efforts to reduce exposure to pollution due to solid-fuel use are likely to improve survival.

*Authors: Dewan S Alam, Muhammad Ashique H Chowdhury, Ali Tanweer Siddiquee, Shyfuiddin Ahmed, Mohammad Didar Hossain, Sonia Pervin, Kim Streatfield, Alejandro Cravioto, Louis W Niessen*

*[This paper has been published in GLOBAL HEART, Vol.7, No.3, 2012]*



# Identifying important breast cancer control strategies

Breast cancer ranks as the fifth cause of death from cancer overall, but it is still the most frequent cause of cancer death in women in both developing and developed regions. As such, breast cancer control has become a global imperative, yet global inequities persist.

Many countries in Asia, Latin America, the Middle East and North Africa lack adequate breast cancer services for screening and treatment and experience higher mortality rates compared to more favorable survival from breast cancer in (high-incidence) developed regions.

This gap will widen further as many recent advances in early detection and treatment remain largely confined to industrialised nations and significant disparities in breast cancer research exist. To address disparities in breast cancer control, a concerted international effort is necessary. Such an effort must be supported and informed by evidence on national priorities for breast cancer control.

## International Inventory

We conducted a study to identify and compare important breast cancer control strategies in different regions—Asia, Latin America and the Middle East/North Africa to develop a common framework as a guide to the development of national breast cancer control strategies. This is an important question, as little can be found in the literature on the perceived public policy needs of smaller or lower-resourced countries.

This study identified elements of breast cancer control strategy relevant to public policy and clinical practice in the study countries. This was achieved through the use of qualitative research methods to identify strategies relevant to a variety of stakeholders (clinicians, policy makers and patient advocates). The regions covered in this study (Asia, Latin America, and the Middle East/North Africa) account for approximately 60% of the world's population of women and a growing percentage of the incident cases of breast cancer. Australia and Canada were included in the study as controls.

The respondents of this study included

a broad range of stakeholders with relevant experiences and understanding of breast cancer control. They were physicians, surgeons, hospital managers, academics, researchers, nurses, policy makers, and patient advocates. The total number of respondents was 221 spanning 29 countries.

Based on the analysis of the interview data, national breast cancer control strategies can be described across four broad themes: building capacity, developing evidence, removing barriers, and promoting advocacy, each specified across five sub-ordinate dimensions.

The theme of building capacity represents dimensions such as developing the capacity for science and research, need for skilled nurses, funding and development of research infrastructure, collecting and disseminating national statistics, and public education of the issues associated with breast cancer.

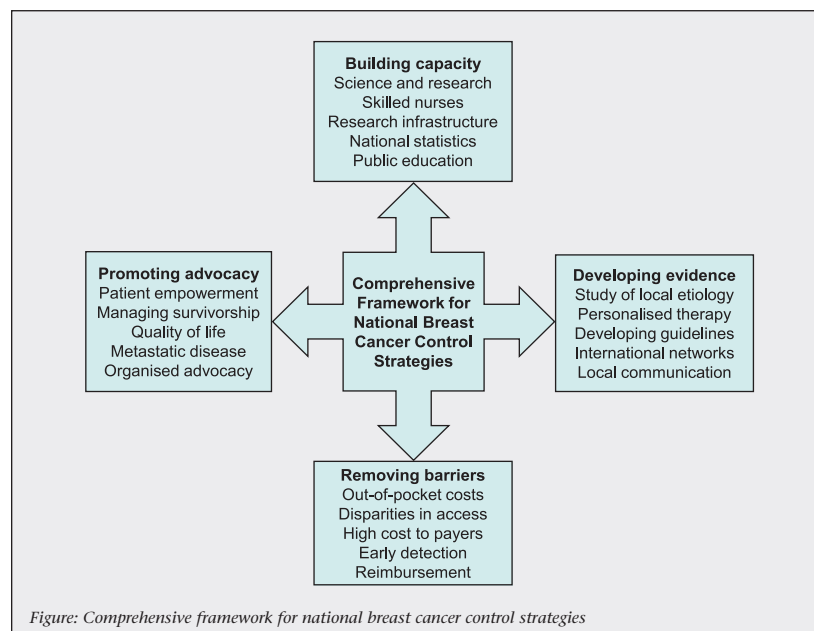
The second theme was centered on developing evidence. It included dimensions like the study of local etiology, developing suitable approaches to personalised therapy, developing guidelines, fostering

international networks and promoting local communication to enable sharing of and the ability to build upon collective experience.

The third theme focused on removing barriers to cancer control, including dimensions related to the high out-of-pocket costs faced by many women with breast cancer, addressing disparities in access, the high cost to payers of breast cancer, the need for early detection of breast cancer, and issues of cost-effectiveness that can act as a barrier to the reimbursement of breast cancer treatments.

The fourth theme considers a framework for national breast cancer control in promoting advocacy, which covers issues such as promoting patient empowerment, managing survivorship, the quality of life of women with breast cancer, the need to focus on metastatic disease, and the need for organised advocacy efforts in breast cancer.

The tendency to discuss most dimensions was similar across regions, but managing advocacy was discussed more frequently ( $p=0.004$ ) and organised advocacy was discussed less frequently





( $p < 0.001$ ) in Australia and Canada.

The themes and strategies identified in this study provide countries with a template for developing national breast cancer control plans or, potentially, a mechanism for the assessment of existing control strategies.

### Framework National Breast Cancer Control Strategies

The comprehensive framework for national breast cancer control strategies (given in figure) presents taxonomy for comprehensive breast cancer control implementation. The study finds that such a framework must build capacity, take into account developing evidence, remove barriers, and promote patient advocacy. The taxonomy outlining the dimensions of these four themes offers a useful template that can foster both local and global action. As such, this study is an important step towards developing an evidence-based approach to assessing preparedness for

implementing comprehensive breast cancer control strategies.

While it is certain that some countries lack the resources to implement such a plan, focus on just a limited number of factors may lead to imbalances (for example, screening is not useful if treatments are not available/affordable and there is not capacity to care for patients). This finding contrasts with existing calls for cancer control strategies that are conditioned on the level of resources available.

Just as cancer care is complex and requires coordination, so does a national cancer control program. As outlined in this study, the comprehensive framework for national breast cancer control requires activities in several different areas (building capacity, developing evidence, removing barriers, and promoting advocacy). The simultaneous implementation of such a framework would require dedicated resources for management

and stakeholder engagement, and a great deal of political will.

This unique research identified common themes grounded in the experience of local practitioners, policy makers and advocacy leaders across diverse regions.

While this framework offers a template for countries around the world to assess their preparedness to address the challenges of breast cancer, additional research is needed to validate this taxonomy. Upon validation, the researchers envision that this framework can also be used to make detailed comparisons across countries and to develop comprehensive evidence-based policy strategies for breast cancer management.

*Authors: John FP Bridges, Benjamin O Anderson, Antonio C Buzaid, Abdul R Jazieh, Louis W Niessen, Barri M Blauvelt and David R Buchanan*

*[This paper has been published in BMC Health Services Research 2011, 11:227]*

## CCCD initiates joint PhD programme

The Centre for Control of Chronic Diseases (CCCD) of icddr,b has introduced its PhD programme for the young researchers working on chronic diseases. The joint programme, with eight candidates, has been set off in collaboration with three universities in Australia and Germany. This programme is new for the University of Newcastle, Australia. Other two universities are University of Queensland in Australia and Ludwig-Maximilians-Universität in Germany.

Considering the number of young researchers engaged in the new field of chronic disease in Bangladesh, CCCD has started this programme to increase the knowledge and expertise of its young researchers. It will enhance their skills to design and carry out advanced research on non-communicable diseases in Bangladesh.



Two CCCD PhD candidates: Dr Masuma Akter Khanam and Dr SM Shariful Islam

According to the arrangement with the University of Newcastle (UoNC), icddr,b supervisors and professors will be able to participate in advanced training of the PhD candidates from icddr,b. Thus, the University and icddr,b will jointly supervise the PhD candidates. CCCD Director Professor Louis Wilhelmus Niessen will lead the icddr,b supervision. A PhD committee with participation of UoNC faculty and icddr,b supervisors and led by Professor Anwar Islam, Adjunct

Scientist of icddr,b, select the candidates.

In this PhD programme, the research topics will be based on either an ongoing or past CCCD project. The research will be carried out through icddr,b and the candidates will go to their concerned universities for short periods of 3-5 months to complete suitable additional required courses.

The candidates will write their PhD thesis at icddr,b and, for a limited period of time, at the university.

PhD procedures should comply with the general policies and regulations as issued by icddr,b.

Earlier, CCCD introduced a six-month long MPH-Plus programme titled 'Certificate in Advanced Research Methods' and 18 interns in three batches have already completed this programme since 2010.

# Prevalence, awareness and determinants of hypertension in rural and urban Bangladeshis

Global trends of alarming rise in non-communicable diseases (NCDs) are affecting Bangladesh also. Cardiovascular diseases are the most frequent among NCDs. Hypertension or high blood pressure is a silent killer. It is considered as one of the most important risk factors for cardiovascular diseases but often present without any symptoms. Hypertension is also considered as potentially modifiable risk factor for cardiovascular diseases. Undiagnosed and untreated hypertension is the major cause of stroke, coronary heart disease, and chronic kidney diseases.

To bring into light the current status of hypertension prevalence in Bangladeshi adults and to know the level of awareness in the population, CCCD researchers started a study in February 2011. This on-going study also aims at identifying the risk factors of hypertension in urban and rural settings in the country. The baseline and first round follow-up (~6 month after the baseline) have been completed.

In total 1678 individuals aged  $\geq 20$  years participated at baseline. The participants were selected randomly from rural Matlab (n=853) in Chandpur district and from urban Kamalapur (n=825) in Dhaka.

In this study data were collected on socio-economic status, lifestyle factors and medical history using a precoded questionnaire. CCCD research team also measured the participants' blood pressure, weight, height, and waist and hip circumferences. Hypertension was defined as systolic blood

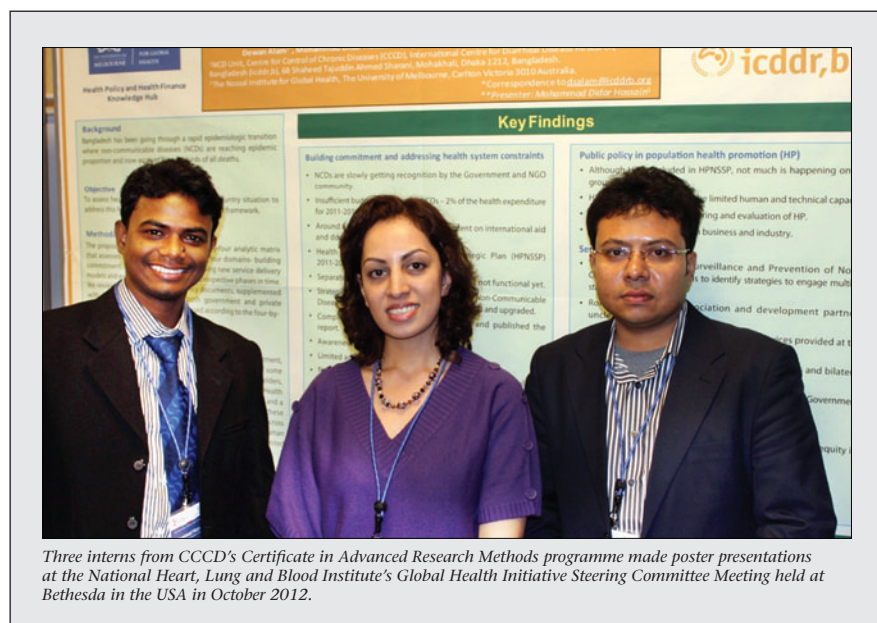
pressure  $\geq 140$  or diastolic blood pressure  $\geq 90$  mm Hg or both. Self reported hypertension, under medication, was also considered.

The study findings showed that among 1678 individuals, 287 (17.1%) were hypertensive and the prevalence was significantly higher among urban population than the rural ones (23.6% vs 10.8%;  $p < 0.001$ ). The prevalence of hypertension tended to be higher in females than males but failed to reach statistical significance (18.3 vs 15.6%,  $p = 0.109$ ).

As the researchers also looked for the awareness among people, they observed that only about a half of the hypertensive people were unaware of their health condition and the unawareness rate was higher among males than females (59% vs 45.%,  $p = 0.007$ ). They also found

that age, urban residence, non-manual work, low physical activity, extra salt intake, low consumption of fruits and vegetables, overweight, abdominal obesity and family history of hypertension/stroke/heart attack were significantly associated with hypertension. In the adjustment for the potential confounding variables, older age group, overweight, abdominal obesity, non-manual work, low physical activity were identified as independent predictors of hypertension.

These findings suggest that the prevalence of hypertension is high in Bangladesh but the burden is double in urban than rural population with half of the affected are unaware of their condition. Interventions to raise awareness, reduce abdominal obesity and promoting physical activity may reduce the burden of hypertension.



Three interns from CCCD's Certificate in Advanced Research Methods programme made poster presentations at the National Heart, Lung and Blood Institute's Global Health Initiative Steering Committee Meeting held at Bethesda in the USA in October 2012.

For further information or queries about CCCD and for feedback on this newsletter, please contact:

Centre for Control of Chronic Diseases, icddr,b  
GPO Box 128, Dhaka, Bangladesh  
Tel: +88 02 9840523-32, ext. 2539  
E-mail: cccdb@icddr.org  
Website: www.icddr.org/chronicdisease

Prof Louis Wilhelmus Niessen  
Principal Investigator and Director  
Centre for Control of Chronic Diseases  
niessen@icddr.org

Nazratun Nayeem Monalisa  
Dissemination Manager  
Centre for Control of Chronic Diseases  
monalisa@icddr.org