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Prevalence of Risk Factors for Non-communicable Diseases in a Rural Setting of Dhaka, Bangladesh

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Abstract: The rise of non-communicable diseases and their impact in low- and middle-income countries has gained increased attention in recent years.A cross-sectional survey was carried out among 369 villagers to assess the prevalenceof risk factors for non-communicable diseases at Dhamrai, Dhaka. About 252(68.3%) respondents had knowledge regarding HTN, 247(66.9%) about DM, 193(52.3%) about cancer and among them more than fifty percent respondents gave opinion that smoking as the cause of non communicable disease.Regarding awareness of risk factors of HTN and DM more than sixty percent respondents gave opinion on age advancement,near fifty percent on familialand significant strongassociations were found between NCDs and the risk factors. About 258(39.3%) of the rural participants got information from television.Finally, the need for health system reform to strengthen primary care at rural setting is highlighted as a major policy to reduce the toll of this rising epidemic.

Keywords: Prevalence; Risk factors; Non-communicable diseases.

1. Introduction

Noncommunicable disease (NCD) refers to those conditions which are chronic, evolve slowly, and progress relentlessly. The World Health Organization (WHO) defines NCDs as including chronic disease (principally cardiovascular disease, diabetes, cancer, and asthma/chronic respiratory disease), injuries, and mental health. On the basis of this burden of disease threshold and the availability of cost-effective interventions, they can be grouped as those that often occur together and that have similar health-system interventions. Noncommunicable diseases (NCDs) are becoming epidemic and global issue, as two out of three deaths in the world are related to NCDs, affecting all age groups, nationalities and socio-economic classes, now increasing in developing countries leading to increased morbidity and mortality, as well as to a high economic burden [1]. In recent years, non-communicable diseases (NCDs), such as cardiovascular diseases (CVD), diabetes, chronic obstructive pulmonary diseases (COPD) and cancers have become an emerging pandemic globally with disproportionately higher rates in developing countries [2]. Impact of NCDs continue to grow, accounting for 60% of all deaths worldwide, and 80% of these deaths occur in low and middle-income countries, where the toll is disproportionate during the prime productive years of youth and middle age [3].

The World Health Organization estimates that by 2020, NCDs will account for 80 percent of the global burden of disease, causing seven out of every 10 deaths in developing countries, about half of them premature deaths under the age of 70 [4-7]. Almost half of all deaths in Asia are now attributable to NCDs, accounting for 47% of global burden of disease. WHO estimates that the global NCD burden will increase by 17% in the next ten years, and in the African region by 27% [7]. Over 80% of cardiovascular and diabetes deaths, 90% of COPD deaths and two thirds of all cancer deaths occur in developing countries [8]. The transition from infectious diseases to NCDs in LMICs has been driven by a number of factors, often indicative of economic development: a move from traditional foods to processed foods contains high in fat, salt and sugar, a decrease in physical activity with sedentary lifestyles, and changed cultural norms such as increasing numbers of women using tobacco [9]. The impact of globalization and urbanization in low-and-middle-income countries (LMICs) has accelerated the growing burden of NCDs. However, Governments in LMICs are not keeping pace with ever expanding needs for policies, legislation, services and infrastructure to prevent NCDs and poor people are the worst sufferers [10]. NCDs are a barrier to development [11]. The socioeconomic impacts of NCDs are also affecting progress towards the Millennium Development Goals (MDGs) [12] with serious implications for poverty reduction and economic development.However, to the best of the authors' knowledge, virtually no study has been undertaken on people of Dhamrai to investigate the prevalence of

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NCDs risk factors. Keeping this in mind, the present baseline data from the community-based cross-sectional study was aimed to envisage that the outcome would informbetter decision-making among public health policy planners, health care personnel and for future extensive study.

2. Methodology

This descriptive cross sectional study was conducted in some selected rural areas of Bangladesh for a period of six months starting from July to December 2015 to estimate the prevalence of risk factors of Non-communicable diseases. The target population for this survey includes all men and women aged 18 years or older from the period of data collection. The person who was not willing to participate was excluded from the study. At first, the topic of the study has been conceptualized and then the objectives followed by the study area have been selected.Inthis survey, the ultimate sampling units were the household of ChotoChondrail, BoroChondrail, Sutipara villages of Dhamraiupazilla, Savar, near Dhakaand one individual residing within theselected household.A total of 369 respondents were enrolled for the study by convenient type of non probability sampling. Sample size was detected by using formula $n= Z^2pq/d^2$.Informed consent was taken by explaining the purpose of the study. Assurance had been given that the confidentiality concerning their information would be maintained strictly. Data collection was done by pre tested and preformed questionnaire sheet. The primary data has been collected by face to face interview and the secondary data through some secondary sources (Internet, Bangladesh Bureau of Statisticsand published sources). The collected data were checked, verified and then entered into the computer. Editing and coding of data wereprepared and analyzed by using SPSS-17. All analyzed data were presented in the form of percentages. The study protocol was approved by the department of Community Medicine of Dhaka Community Medical College. Permission was obtained from Civil Surgeon officeat Azimpurand local authority.

3. Results

Out of 369 respondents,168(45.5%) of the respondents aged between 19-40 years, 130(35.2%) aged between 41-60 years,42(11.4%) were less than 18 years of age and the rest 29(7.9%) were ≥61 years of age.More than fifty percentrespondents were female. Regarding educational level, 108(29.3%) had no formal experience of schooling, 2413(65.3%) had formal experience and only 20(5.4%) were graduate and above.According to the occupational status, 165(44.7%) were housewives, 84(22.8%)were cultivator/farmer,54(14.7%) were unemployed,40(10.8%) were service holder and26(7.0%)small businessman.Monthly family income of 168(45.5%) villagers were Taka 10,001 to 20,000/- with mean income was Taka 18524 ± 12386. Among others, 88(23.8%) and 87(23.6%) respondents earned Taka 5,000-10,000 and Taka >20000/- monthly respectively. (Table- 1)

Out of 369 respondents, 252(68.3%) respondents had knowledge about HTN, 247(66.9%) about DM, 193(52.3%) about cancer and among them more than fifty percent respondents provide opinion that smoking as the cause of non communicable disease. (Table- 2)

Table 3 explains the awareness regarding risk factors leading to common NCDs. As natural history of all NCDs is not yet clearly delineated due to their polygenic, multi-factorial inheritance, the assessment of respondents' awareness regarding their causation was restricted to medically established commonly known causes. About 222 (60.2%) rural respondents stated age advancement will lead to HTN compared to only 147 (39.8%) not aware. High salt intake will also lead to HTN was opined by 187 (50.7%) villagers. ConcerningDM, 190 (51.5%) participants told that age advancement will be the major cause of DM followed by familiar 173 (46.9%). Chi-square test was donetaking Non communicable disease (HTN, DM) as a dependent variable and risk factors as independent co-variables and significant strongassociations were found between NCDs and their risk factorsas shown in Table-3.

Regarding source of information 258(39.3%) of the respondents got information about non communicable diseases from television**,** than120 (18.3%) and 88(13.4%) by family, friends, neighbors, colleaguesand health workers respectively. (Table-4).

4. Discussion

The accelerating burden of NCDs in developing countries is now a major public health concern and a medical challenge. The objective of this study was to find out the prevalence of risk factors of Non-communicable diseases in a rural setting of Dhaka, Bangladesh. A total of 369 samples were observed.

Out of 369 respondents,168(45.5%) of the respondents aged between 19-40 years, 130(35.2%) aged between 41-60 years,42(11.4%) were less than 18 years of age and the rest 29(7.9%) were ≥61 years of age.Similar age distribution was reported by studies conducted in Korangi, to the Eastern part of Karachi port where the highest proportion of household members (41%) was aged 14 years and younger followed by those aged between 15–29 years (32%) [13]. In the current study more than fifty percentrural respondents were female. Regarding educational level, 108(29.3%) had no formal experience of schooling, 2413(65.3%) had formal experience and only 20(5.4%) were graduate and above.A study conducted atNairobi, in Kenyawhere 2,794 (53.8%) were men and the rest 2,396 (46.2%) were women atthe time of the survey. The highest level of educationfor nearly a quarter of the study population was lessthan primary school and for 42% of them it was primaryschool [14].

According to the occupational status, 165(44.7%) were housewives, 84(22.8%)were cultivator/farmer, 54(14.7%) were unemployed, 40(10.8%) were service holder and 26(7.0%)small businessman.Monthly family income of 168(45.5%) villagers were Taka 10,001 to 20,000/- with mean income Taka 18524 ± 12386. Out of 369 respondents, 252(68.3%) respondents had knowledge about HTN, 247(66.9%) about DM, 193(52.3%) about cancer

and among them more than fifty percent respondents gave opinion that smoking as the cause of non communicable disease like cancer.In additionto smoking, oral tobacco use and betel-nutchewing are highly prevalent in South Asia andare responsible for a large number of cases oforal cancer and deaths from this disease [15].

As natural history of all NCDs is not yet clearly delineated due to their polygenic, multi-factorial inheritance, the assessment of respondents' awareness regarding their causation was restricted to medically established commonly known causes. About 222(60.2%) rural respondents stated age advancement will lead to HTN compared to only 147(39.8%) not aware. High salt intake will also lead to HTN was opined by 187(50.7%) villagers. Whereas in Kerala, regarding hypertension, 106 (26.5%) women told that excessive salt intake will be the major cause of hypertension followed by lack of exercise (9.5%) [16]. Regarding DM, 190(51.5%) participants told that age advancement will be the major cause of DM followed by familiar 173(46.9%) and obesity 161(43.6%).Data from a population study in Mozambique found that just over 10% of people identified as havingdiabetes knew they had this condition [17]. Concerningthe source of information 258(39.3%) of the respondents got information about non communicable diseases from television**,** than120 (18.3%) and 88(13.4%) by family, friends, neighbors, colleaguesand health workers respectively. In China, television (35.8%) and doctors (27.0%) were the major expected sources of acquiring health knowledge. Therefore, various scientific television programs about health education are in great need to improve the chronic diseases knowledge [18].

5. Conclusion

Public health programming in Bangladesh has been characterized by a range of vertical disease-specific programs that include the national programs for immunization, nutrition, maternal child health and programs aimed at prevention and control of malaria, tuberculosis and HIV/AIDS. The national health system has paid little attention to controlling NCDs which represents a major weakness in public health planning sector.Our findings highlight the need for developing NCDs intervention programs in coordination with existing disease control programs, and for establishing active surveillance for effective planning, implementation, and evaluation.

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Table-1. Distribution of the rural people by socio-demographic characteristics (n=369)

≤Age (years)	Frequency	Percentage
≤18	42	11.4
19 - 40	168	45.5
41 - 60	130	35.2
≥61	29	7.9
Mean ± SD	39.89 ± 15.78	
Gender		
Male	162	43.9
Female	207	56.1
Educational status		
No formal schooling	108	29.3
Some schooling	241	65.3
Graduate and above	20	5.4
Occupation		
Cultivator/Farmer	84	22.8
Service holder	40	10.8
Housewife	165	44.7
Unemployed(student, jobless, retired, others)	54	14.7
Small businessman	26	7.0
Monthly Income		
≤5,000	26	7.0
5,001 - 10,000	88	23.8
10,001 – 20,000	168	45.5
≥20,001	87	23.6
Mean ± SD	18524 ± 12386	

Table-2. Distribution of respondents according to knowledge about non communicable disease (n=369)

Knowledge about Non communicable disease	Frequency	Percentage
Type of Non communicable disease		
• Diabetes mellitus	247	66.9
• Cardiovascular diseases	209	56.6
• Hypertension	252	68.3
• Arthritis	164	44.4

• Chronic respiratory disease	177	48.0
• Obesity	188	50.9
• Cancer	193	52.3
Causes of Non communicable disease		
• Smoking	186	50.4
• Alcohol	08	2.2
• Lack of physical exercise	08	2.2
• Unhealthy life style	05	1.4
• Infectious agent	05	1.4
• Malnutrition	06	1.6

** Multiple responses

Table-3. Associationbetween respondents awareness and the risk factors ofNon communicable diseases (HTN, DM) (n=369)

Non Communicable Disease	Risk factors	Aware		Not aware		P-value
		Frequency	%	Frequency	%	
HTN	Age advancement	222	60.2	147	39.8	X^2=151.8 **P=0.000**
	High salt intake	187	50.7	182	49.3	X^2=96.86 **P=0.000**
	Familial	168	45.5	201	54.5	X^2=147.01 **P=0.000**
DM	Age advancement	190	51.5	179	48.5	X^2=104.54 **P=0.000**
	Familial	173	46.9	196	53.1	X^2=168.86 **P=0.000**
	Obesity	161	43.6	208	56.4	X^2=115.58 **P=0.000**

** Multiple responses

Table-4. Distribution of respondents according to source of information about non communicable diseases (n=369)

Source of information	Frequency	Percentage
Television	258	39.3
Radio	70	10.7
Newspapers and magazines	51	7.8
Billboards	14	2.1
Brochures, posters or other printed materials	06	0.9
Health workers	88	13.4
Family, friends, neighbors and colleagues	120	18.3
Religious leaders	05	0.8
Teachers	12	1.8
Pharmacy	16	2.4
Telephone	02	0.3
Other	15	2.3

** Multiple responses