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Research article

Non communicable diseases: The silent killer immerged largely in the present time, a cross sectional study on risk factors in Dhaka city

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Abstract

Background

The risk factors of Non-communicable diseases (NCDs) are not routinely monitored, especially among populace reporting to hospitals to detect and also advise on preventive measures, a key strategy to reducing the impact of NCDs on the Health Care System and population.

Methods

A cross-sectional survey was carried out between the months of August and November, 2015 among a sample representative of the medical and surgical out-patients population to determine the prevalence of certain risk factors of non-communicable diseases (NCDs). Participants (n = 230) were selected by systematic random sampling. Standardized international protocols were used to measure the prevalence of smoking, alcohol consumption, physical inactivity, obesity, raised blood pressure, raised blood glucose and total cholesterol.

Results

The obesity level of the study population was 31.3% with 25% being overweight. Tobacco use among the respondents was 54.7%. Alcohol consumption was 3.48%, with 37.4% of the study population being physically inactive. Almost 38.2% and 70.9% of the participants consumed fruits and vegetables respectively, at least three days in a week. The prevalence of hypertension was 34.4% for men and 49.5% for women. The prevalence of raised glucose and total blood cholesterol level among the study population was 42.17% and 22.6% respectively. Almost 62% of the participants had a combination of three or more risk factors.

Conclusion

The prevalence of the significant risk factors in this study were physical inactivity (37.4%), alcohol consumption (64.8%), overweight (31.3%), obesity (25%) and raised blood pressure (34.4%). Hospitals should therefore include NCD risk factor monitoring as part of routine services.

Key words: Non-communicable disease, obesity, blood pressure, blood sugar, blood cholesterol, physical inactivity.

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1. Introduction

Non communicable or chronic diseases are diseases of long duration and generally slow progression. Around tens millions of people were killed in 2008, before the age of sixty [1]. The rapid rise of non-communicable diseases (NCDs) represents one of the major health challenges to global development. The dominance of these diseases are increasing day by day especially in developing countries [2]. These diseases constituted 43% of the global burden of disease in 1999. Based on current trends, by 2020 they will account for 73% of deaths and 60% of the disease burden in the developing countries [3]. The underlying cause of NCD epidemic is the increase in lifestyle related risk factors resulting from social and economic changes. In many countries the increasing impact of globalization has given momentum to this process [3]. Non-communicable diseases are chronic conditions and non infectious in nature, which is developed by longer period of time. These conditions cause dysfunction, or impairment in the quality of life, and they usually develop over relatively long periods and ultimately lead to death if not controlled [4]. Currently neighboring India is also experiencing an epidemic of NCDs attributed to lifestyle changes resulting from urbanization [5].

The four main types of non communicable diseases are cardiovascular diseases (like heart attacks and stroke), cancer, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes. WHO report identified unhealthy diet, physical inactivity, tobacco use, harmful use of alcohol, overweight, raised blood pressure, raised total cholesterol levels and raised blood glucose as the most prevalent NCD risk factors among the world population. Among the modifiable risk factors unhealthy diet, physical inactivity, alcohol and tobacco use are categorized into primary risk factors and overweight, raised blood pressure, raised total cholesterol levels and raised blood glucose are categorized as intermediate risk factors. Most population has been experiencing an increased prevalence of both primary and intermediate risk factors [6].

Only about 70 years back, the prime concern of physician was infectious diseases, which were the leading cause of death for centuries. By the dawn of the third millennium, the entire world is drifting towards the non communicable diseases (NCDs). By 2020, it is predicted that these diseases will be causing seven out of every 10 deaths in developing countries where, the transition imposes more constraints to deal with the double burden of infective and non-infective diseases in a poor environment characterized by ill health systems. Many of the non communicable diseases can be prevented by tackling associated risk factors. The development and implementation of NCDs prevention polices in the developing countries like Bangladesh, is a multidimensional challenge [7]. Non-communicable diseases have a considerable toll on individuals, societies and health systems. Located in South Asia, Bangladesh has a population of about 150 million and a per-capita health expenditure of US $ 64 will not be sufficient enough to combat with this condition [8]. NCDs are important cause of disease burden, morbidity and mortality. At least 25% of the deaths in primary and secondary government health facilities are caused by these diseases. Presently, Bangladesh does not have a community-based public health program for NCDs. Only hospital-based information, although

poor, is available. The major limitations which are being faced for initiation of surveillance on NCDs include lack of advocacy, lack of logistic and other facilities as well as difficulties in the generating resources for newer initiatives [9].

Globalization, unplanned urbanization and environmental and life style factors on a background of over population have been contributing significantly to increase burden of NCDs. It is estimated that by 2010, NCDs will be responsible for 59% of deaths, compared to 40% in 1990. Although the country is lacking a good surveillance system, the magnitude of NCDs is considered to be fairly high in Bangladesh. In 2000, top ten causes of death in Bangladesh included asthma/COPD, stroke, heart diseases, hypertension and diabetes [10]. Conventionally NCDs include cardiovascular disease, stroke, diabetes, cancer and chronic respiratory diseases. However, our national plan includes other commonly prevalent non-communicable diseases or conditions like mental illnesses, injuries and blindness because of the country's requirements to be addressed through synchronized public health measures within a common strategic framework. Surveillance, prevention and management of injuries, mental illnesses and blindness could be incorporated in to this platform for a cost effective outcome.

Bangladesh is within the early stages of the demographic transition that is advancing in future. The proportion of the population (65 years and above) will move from 4.5% in 2000 to 6.6% in 2025. Along with demographic transition, Bangladesh has also been going through a rapid epidemiologic transition in which NCD's accounts for two-thirds of all deaths. In 2004, NCD's accounted for 61%, with the remainder from communicable diseases and maternal and child health (MCH) issues. Of the total burden, CVD accounts for 13.4%, mental health 11.2%, cancer 3.9%, respiratory diseases 4.0%, diabetes 1.2%, and injuries 10.7% [11].

This study was undertaken to determine the prevalence of (a) behavioural risk factors (physical inactivity, alcohol consumption, tobacco use) and (b) biological risk factors (raised blood pressure, overweight, raised blood sugar, raised blood lipid levels) among new patients reporting to the surgical and medical OPD of different hospitals in Dhaka.

2. Materials and Methods

Study area and Study population

This study was carried out at 06 (six) hospitals in Bangladesh on around 230 Patients for about 02 months. These hospitals were established to provide tertiary health care for all, provide facilities to educate and train health professionals, conduct research and provide specialist outreach services.

Study centers:

Study center 1 Bangabandhu Sheikh Mujib Medical University Shahbagh Road, Dhaka

Study center 2 Dhaka Medical College & Hospital Secretariate Rd, Dhaka 1000

Study center 3 National Heart Foundation Hospital Mirpur Rd, Dhaka 1216

Study center 4 Shaheed Suhrawardy Medical College Sher- E- Bangla Nagar, Dhaka 1207

Study center 5 National Institute of Cancer Research and Hospital Mohakhali, Dhaka

Study center 6 BIRDEM Hospital, 122, Kazi Nazrul Islam Avenue, Shahbagh, Dhaka 1000.

The study population selected was composed of 230 new patients over a four- week period (21st May – 21st June, 2010) aged between 18–80 years. They were grouped into three (under 25 years: prior to fertility group; 25–44 years: fertility group and above 44 years: post fertility group), to allow estimation of key variables with high precision for both men and women, since there was not much differences in the 10-year groupings.

Study design and sampling procedure

This was a hospital based cross-sectional survey. Patients had their body weight, body height, waist, hip and blood pressure measured to check their body mass index, waist to hip ratio and raised blood pressure after completing the questionnaire. Questionnaire developed was based on the WHO Stepwise Approach.

Definition of risk factors

1. Obesity-Body Mass Index (BMI), which is the ratio of weight (in kilograms) and the square of the height (in metres), ≥ 30kg /m^2, was measured using a weighing scale and wall height measurements respectively.
    - Central Obesity: Waist/Hip ratio > 0.85 for women and 0.90 for men
    - Overweight : BMI between 25–29.9kg/m^2
    - Normal weight: BMI between 18.5–24.9kg/m^2
    - Underweight: BMI < 18.5 kg/m^2
2. Tobacco Intake - smoking, chewing, and ingestion of tobacco or tobacco-containing products
3. Alcohol Consumption - Consuming alcohol at least once a month.
4. Physical Inactivity - Spending less than half the day on one's feet or leading a sedentary lifestyle.
5. Physical Activity- Spending more than half the day on one's feet or getting involved in at least 30 minutes of regular moderate to vigorous activity at least 5 days in a week.
6. Diabetes (Elevated blood glucose)- Fasting blood glucose ≥6.1mmol/L.
7. Hypercholesterolemia-Total cholesterol >5.2mmol/L.
8. Raised triglyceride level - Triglyceride level >1.7 mmol/L.
9. Low High Density Lipoprotein (HDL) cholesterol- HDL<1.15.
10. Raised Low Density Lipoprotein (LDL) cholesterol-LDL>2.6mmol/L.
11. Hypertension (Elevated blood pressure)-Systolic blood pressure ≥140mmHg and/or diastolic blood pressure ≥90 mmHg(U.S Dept. of Health, JNC Report 2004).
12. Some education- those who had completed primary, junior and senior secondary schools
13. Highest education - completion of polytechnic or university (first, second or doctorate degree).
14. Single patients- comprises of divorced, never married and widowed.
15. Employed- working as a government or non-government employee
16. Unemployed- student, retiree or participants currently not working.

Ethical Clearance: Ethical clearance was obtained from the respective hospital authorities. Participants were given consent forms to fill and were seen privately in the consulting rooms. They were also informed that the procedure was for research purposes and would possibly be published.

3. Result and Discussion

The social and demographic characteristics are presented in Table 1. The sample was made up of 45.7% females with majority of the respondents reported to have had some level of education: 66.09% completed basic/secondary education and 27.39% completed tertiary education.

Table 1. Socio-demographic characteristics of the study population

Variable	Total (N=230)	N %
Sex		
Male	125	54.3
Female	105	45.7
Age groups (years)		
Under 25	31	13.5
25–44	82	35.7
45 and above	117	50.8
Level of education		
Primary/Secondary	152	66.09
Tertiary	63	27.39
No education	15	6.52
Marital status		
Single	64	27.83
Currently married	166	72.17
Main work status		
Employed	159	69.1
Unemployed	71	30.1

72.17 % of the population were currently married while almost 27.83% were single (divorced, widowed and never married).

Table 2 shows the prevalence of NCD risk factors in various hospitals. The significant risk factors in the study were tobacco use (54.7%) raised blood glucose (42.17%), raised blood pressure (41.3%) and physical inactivity (37.4). More people were overweight (31.3%). Majority of the obese respondents were above 44 years of age. The prevalence of raised blood glucose and raised total cholesterol were about to similar.

However, analysis to determine the associations between the risk factors shows that significant relationship was evident between raised blood pressure with the age groups, though providing a protective effect. However, no significant relationship was found between obesity with age. Significant association was also evident between alcohol consumption and sex of participants with males consuming more alcohol than females.

For the purpose of this study, individuals who spent more than half the day on their feet or involved in at least 30 minutes of regular moderate to vigorous activity at least 5 days in a week, were defined as physically active. No significant relationship was evident between physical inactivity and age or marital status.

Fasting plasma glucose ≥6.1 mmol/L was defined in this study as raised blood glucose or diabetes. In the study, the lipid prolife analyzed was made up of total cholesterol, triglycerides, HDL-cholesterol and LDL-cholesterol and sex of respondent with males having a prevalence of 24.8%, slightly greater than that of the female prevalence (20%).

In the study, hypertension was defined as respondents having a systolic blood pressure ≥ 140 mmHg and /or diastolic blood pressure ≥ 90 mmHg or using of blood pressure-lowering medications for hypertension.

Table 4 shows the prevalence of combined risk factors. Out of the 230 participants, 7 had a combination of tobacco, alcohol use and physical inactivity; 41 had a combination of overweight/obesity and raised blood pressure and 3 had a combination of raised blood glucose and raised total cholesterol. Ninety-one had a combination of at least three risk factors other than i, ii and iii.

Table 2. Shows the prevalence of NCD risk factors in various hospitals

	Prevalence %					
	Population		Male (N=125)		Female(N=105)	
	N	N%	N	N%	N	N%
Tobacco use	126	54.7	112	89.6	14	13.3
Alcohol consumption	8	3.48	8	6.4	0	0
Physical inactivity	86	37.4	56	44.8	30	28.6
Overweight	72	31.3	37	29.6	35	33.3
Raised blood pressure	95	41.3	43	34.4	52	49.5
Raised blood glucose	97	42.17	51	40.8	46	43.81
Raised total cholesterol	52	22.6	31	24.8	21	20

Table 3. Prevalence of raised blood pressure among study population

		Yes	No	Prevalence %
Sex of the patients				
	Male	43	82	34.4
	Female	52	53	49.5
Age groups				
	Under 25	9	22	29
	25 –44	23	59	28
	45 and above	63	54	53.8
Alcohol intake				
	Yes	6	2	75
	No	89	141	38.7
Frequency of fruit intake				
	Never	8	22	26.7
	1–2 days per week	29	61	32.2
	>3 days per week	42	68	38.2
Physically active				
	Yes	39	105	27.1
	No	53	33	61.6

Table 4. Prevalence of combined risk factors

	Total (230)	Prevalence (%)
(i) Behavioural measurements		
Tobacco+ Alcohol consumption+ Physical inactivity	7	3.04
(ii) Physical measurements		
Obesity/overweight+ Raised blood pressure	41	17.83
(iii) Biochemical measurements		
Raised blood glucose+ raised total cholesterol Combination of at least 3 risk factors other than i,ii and iii	3 91	1.30 39.57

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