

## Prevalence of Non-Communicable Diseases among Retired Military Personnel

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### Abstract

**Introduction:** Non-communicable diseases (NCDs) have become burning issues worldwide, especially among the elderly individuals. Bangladeshi elderly is also susceptible cohort to NCDs for its recent epidemiologic transition and the NCDs is casting as prominent risk for major mortality and morbidity related issues.

**Objectives:** To find out the prevalence of common NCDs and its risk factors among the Bangladeshi retired military personnel.

**Methods:** This cross-sectional study was conducted among the retired military personnel admitted in Combined Military Hospital (CMH), Savar from January 2019 to July 2019. A face-to-face interview was carried out among the respondents using a semi-structured questionnaire.

**Results:** Among 153 retired military personnel; most common NCDs were hypertension (80.4%), diabetes mellitus 66.7%, ischemic heart disease 37.3% and only 3.9 % had low back pain. Most of them accessed their health in CMH (66.7%), where 17.6% reported to Govt. hospital and only a minor portion (15.7%) to private hospital. Moreover, 70.6% of them were not willing to regular health check-up.

**Conclusions:** The most common NCDs were hypertension, diabetes mellitus and ischemic heart disease. This study concluded with a few intervention strategies and community-based health promotion programs to reduce the burden of NCDs among the retired military personnel.

**Key-words:** Non communicable diseases, Retired military personnel, Combined military hospital.

### Introduction

According to World Health Organization<sup>1</sup>, non-communicable diseases (NCDs), also known as chronic diseases, tend to be of long duration diseases and are the result of a combination of genetic, physiological, environmental and behavioral factors. NCDs account for 41 million yearly deaths, equivalent to 71% of all deaths globally and disproportionately affect people in low and middle-income countries (such as Bangladesh, where the present study was carried out), where more than three quarters of global

NCD deaths (i. e. 32million) occurred<sup>1</sup>. Bangladesh is in the midst of an epidemiologic transition where the burden of disease is shifting from a disease profile dominated by infectious diseases, under-nutrition and conditions of childbirth to one increasingly characterized by NCDs, which accounts for 59% of total deaths (886,000 deaths) yearly<sup>2-6</sup>.

Now-a-days, with the increasement of life expectancy across worldwide over the past few decades, the proportion of elderly individuals has significantly increased (including Bangladesh; average life expectancy of Bangladeshi people rises to 72.49 years)<sup>7,8</sup>. At present, the world accounts for approximately 900 million elderly people (aged 60+ years) with a poll of 12% of total global population and it was sought to be this number as more than double (to two billion) by the year 2050 and of these 80% of these individuals will be living in low and middle-income countries such as Bangladesh<sup>9</sup>. In Bangladesh<sup>10</sup>, about 7.7% of the total population are elderly, which accounts for 14 million population, which is estimated to increase to 17.2 million by 2025. Along with the increase of elderly population portion, several physical and mental health consequences are related to age-specific suffering also increased among the elderly people<sup>3,7-12</sup>.

The retirement age for Bangladeshi public servants<sup>13</sup>, fixed after the country's independence, was originally set to 57 years, although the current govt. allows public servants to work till the age of 59, and public servants having a freedom fighters' certificate to work till 61. After the retirement of military personnel, not maintaining the disciplined and healthy life as did during service was sought. This situation mediating reasons were suspected to not having sufficient income and/or depending on others (i.e. son, daughter, wife etc.), being fully unemployed, having lack of calorie-rich food access etc., and these factors are sought after for developing NCDs<sup>7,14-16</sup>.

Based on recent Bangladeshi press reports, retired military individuals are suspected of suffering NCDs (where these co-morbid military individuals are less likely to be helpful to the Govt.), although there is no national statistics or any study relating to this cohorts' NCDs in the country. The situation reflects as there is a large knowledge gap in the country, where increased information would be helpful in preventive approaches and is possible to keep the military personnel

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fit for the hazardous circumstances of the country. Therefore, the present study investigated the prevalence of common NCDs and its socio-demographic predictors among the retired military individuals attending the CMH, Savar.

### Materials and Methods

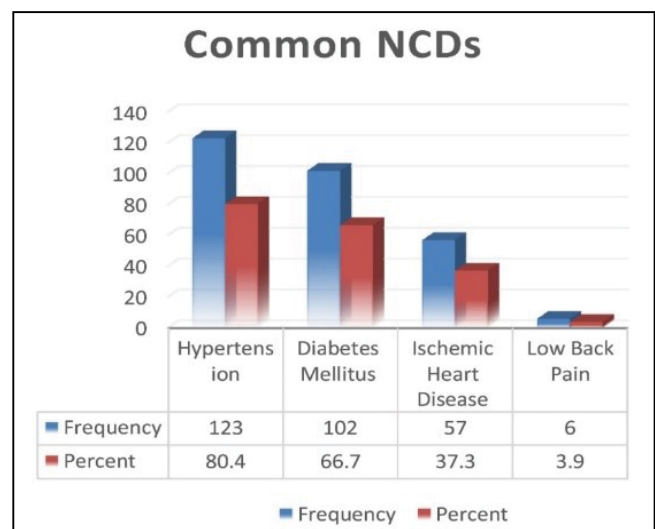
This cross-sectional study was conducted among 153 retired military personnel admitted in Combined Military Hospital (CMH) Savar from January 2019 to July 2019. A face-to-face interview was carried out among the respondents using a semi-structured questionnaire. Informed consent was obtained from every participant. Confidentiality of data and privacy of the participants was strictly maintained. A purposive convenience sampling technique was utilized and data were analyzed using 22.0 version of SPSS. Descriptive statistics including (i.e., frequency, percentage etc.) and inferential statistics (i.e., correlation analysis) were carried out to assess the relationship between variables and NCDs.  $p$ -value  $<0.05$  were regarded as significant for this study.

### Results

Socio-demographic characteristics of 153 retired military personnel presented in Table-I. Most of them belong to 76+ years age groups (45.1%), followed by 60-65 years (33.3%), 71-75 years (11.8%) and 66-70 years (9.8%). About 54.9% of the participants were from rural part of the country, most of them were unemployed (54.9%), only 39.2% of them used their morning time by jogging, 52.9% were smokers, and 62.7% belonged to nuclear family. Around 53% participants reported to have wife and children dependent on themselves, whereas 45.1% had only wife. Most of them got social supports from only family (82.4%) and the main sources of their income were themselves (62.7%). In consideration of socio-economic status, majority of them belonged to middle class family (31.4%), whereas 17.6% reported to be both lower and upper class. Prevalence of the common NCD showed in Figure-1; most of them were suffering from hypertension (80.4%), whereas 66.7% from diabetes mellitus, 37.3% from ischemic heart disease and only 3.9% from low back pain. Respondents' access to the health care facilities showed; most of them accessed their health in CMH (66.7%), where 17.6% reported to Govt. hospital and only a minor portion (15.7%) to private hospital. About 70.6% of them were not willing to go for regular health care assessment. Retired military personnel's hypertension status was significantly ( $p<0.05$ ) associated with socio-demographic factors like; socio-economic status, duration of suffering and regular health checkup status. Status of Diabetes Mellitus was significantly ( $p<0.05$ ) associated with socio-demographic factors like; type of permanent residence, duration of retired life, use of morning time, smoking status, family type, type of food intake, BMI, duration of suffering, type of hospital used and regular health checkup. Ischemic heart disease status was significantly ( $p<0.05$ ) associated with socio-demographic factors like; age group, present occupation, year of retired life, smoking status, dependents, financial dependency, food intake type, BMI, duration of sufferings and health care type (Table-II).

**Table-I:** Distribution of respondents by the socio-demographic variables (n=153)

Variables	Frequency	Percentage	
Age group	60-65 years	51	33.3
	66-70 years	15	9.8
	71-75 years	18	11.8
	76+ years	69	45.1
Permanent residence	Rural	69	45.1
	Urban	84	54.9
Educational qualification	SSC	90	58.8
	HSC	54	35.3
Present occupation	Unemployment	84	54.9
	Business	33	21.6
	Service	36	23.5
Year of retired life	More than 15 years	45	29.4
	10 to 15 years	36	23.5
	5 to 10 years	30	19.6
	Less than 5 years	39	25.5
Use of morning time	Sleeping	18	11.8
	Prayer	75	49.0
	Jogging	60	39.2
Smoking status	Yes	81	52.9
	No	72	47.1
Family members	Less than 5	30	19.6
	6 to 7	75	49.0
	More than 7	36	23.5
Family type	Nuclear	96	62.7
	Joint	54	35.3
Dependents	Wife and children	81	52.9
	Only wife	69	45.1
Social support	Only family	126	82.4
	Family, friends and relatives	27	17.6
Socio-economic status	Lower class	27	17.6
	Middle class	48	31.4
	Higher class	27	17.6
Financial Dependence	Son	57	37.3
	Self	96	62.7
Food intake type	High calorie	9	5.9
	Low calorie	144	94.1



**Figure-1:** Distribution of common NCDs (n =153)

**Table-II:** Association between socio-demographics and health information related variables with Hypertension, Diabetes Mellitus and Ischemic Heart Disease (n=153)

Variables		Hypertension			Diabetes Mellitus			Ischemic Heart Disease		
		Yes n(%)	No n(%)	Statistics	Yes n(%)	No n(%)	Statistics	Yes n(%)	No n(%)	Statistics
Age group years	60-65	39(76.5)	12(23.5)	$\chi^2 = 4.536$ df = 3 p > 0.05	39 (76.5)	12 (23.5)	$\chi^2 = 6.699$ df = 3 p > 0.05	27 (52.9)	24 (47.1)	$\chi^2 = 10.054$ df = 3 p < 0.05
	66-70	12(80)	3(20.0)		12 (80.0)	3 (20.0)		6 (40.0)	9 (60.0)	
	71-75	12(66.7)	6(33.3)		9 (50.0)	9 (50.0)		3 (16.7)	15 (83.3)	
	≥76	60(87.0)	9(13.0)		42 (60.9)	27 (39.1)		21 (30.4)	48 (69.6)	
Permanent residence	Rural	57 (82.6)	12 (17.4)	$\chi^2 = 0.392$ df = 1 p > 0.05	39 (56.5)	30 (43.5)	$\chi^2 = 5.821$ df = 1 p < 0.05	21 (30.4)	48 (69.6)	$\chi^2 = 2.501$ df = 1 p > 0.05
	Urban	66 (78.6)	18 (21.4)		63 (75.0)	21 (25.0)		36 (42.9)	48 (57.1)	
Education status	≤SSC	75 (83.3)	15 (16.7)	$\chi^2 = 2.526$ df = 1 p > 0.05	54 (60.0)	36 (40.0)	$\chi^2 = 2.204$ df = 1 p > 0.05	27 (30.0)	63 (70.0)	$\chi^2 = 3.079$ df = 1 p > 0.05
	≥HSC	39 (72.2)	15 (27.8)		39 (72.2)	15 (27.8)		24 (44.4)	30 (55.6)	
Present occupation	Unemployed	66 (78.6)	18 (21.4)	$\chi^2 = 0.417$ df = 2 p > 0.05	54 (64.3)	30 (35.7)	$\chi^2 = 0.760$ df = 2 p > 0.05	39 (46.4)	45 (53.6)	$\chi^2 = 8.397$ df = 2 p < 0.05
	Business	27 (81.8)	6 (18.2)		24 (72.7)	9 (27.3)		6 (18.2)	27 (81.8)	
	Service	30 (83.3)	6 (16.7)		24 (66.7)	12 (33.3)		12 (33.3)	24 (66.7)	
Year of retired life	< 5	27 (69.2)	12 (30.8)	$\chi^2 = 5.889$ df = 3 p > 0.05	18 (46.2)	21 (53.8)	$\chi^2 = 22.583$ df = 3 p < 0.001	18 (46.2)	21 (53.8)	$\chi^2 = 16.136$ df = 3 p < 0.001
	5 to 10	24 (80.0)	6 (20.0)		27 (90.0)	3 (10.0)		12 (40)	18 (60)	
	10 to 15	33 (91.7)	3 (8.3)		30 (83.3)	6 (16.7)		3 (8.3)	33 (91.7)	
	> 15	36 (80.0)	9 (20.0)		24 (53.3)	21 (46.7)		21 (46.7)	24 (53.3)	
Use of morning time	Sleeping	15 (83.3)	3 (16.7)	$\chi^2 = 0.112$ df = 2 p > 0.05	9 (50.0)	9 (50.0)	$\chi^2 = 49.590$ df = 2 p < 0.001	9 (50.0)	9 (50.0)	$\chi^2 = 2.844$ df = 2 p > 0.05
	Prayer	60 (80.0)	15 (20.0)		33 (44.0)	42 (56.0)		30 (40.0)	45 (60.0)	
	Jogging	48 (80.0)	12 (20.0)		60 (100)	0 (0.0)		18 (30.0)	42 (70.0)	
Smoking status	Yes	69 (85.2)	12 (14.8)	$\chi^2 = 2.509$ df = 1 p > 0.05	48 (59.3)	33 (40.7)	$\chi^2 = 4.250$ df = 1 p < 0.05	24 (29.6)	57 (70.4)	$\chi^2 = 4.281$ df = 1 p < 0.05
	No	54 (75.0)	18 (25.0)		54 (75.0)	18 (25.0)		33 (45.8)	39 (54.2)	
Family members	< 5	30 (83.3)	6 (16.7)	$\chi^2 = 0.818$ df = 2 p > 0.05	24 (80.0)	6 (20.0)	$\chi^2 = 5.008$ df = 2 p > 0.05	12 (33.3)	24 (66.7)	$\chi^2 = 2.282$ df = 2 p > 0.05
	6 to 7	57 (76.0)	18 (24.0)		45 (60.0)	30 (40.0)		33 (44.0)	42 (56.0)	
	> 7	24 (80.0)	6 (20.0)		24 (80.0)	6 (20.0)		9 (30.0)	21 (70.0)	
Family type	Nuclear	78 (81.3)	18 (18.8)	$\chi^2 = 0.260$ df = 1 p > 0.05	57 (59.4)	39 (40.6)	$\chi^2 = 9.116$ df = 1 p < 0.01	39 (40.6)	57 (59.4)	$\chi^2 = 0.780$ df = 1 p > 0.05
	Joint	42 (77.8)	12 (22.2)		45 (83.3)	9 (16.7)		18 (33.3)	36 (66.7)	
Dependents	Wife and children	57 (82.6)	12 (17.4)	$\chi^2 = 0.032$ df = 1 p > 0.05	57 (70.4)	24 (29.6)	$\chi^2 = 1.499$ df = 1 p > 0.05	33 (47.8)	36 (52.2)	$\chi^2 = 5.237$ df = 1 p < 0.05
	Only wife	66 (81.5)	15 (18.5)		42 (60.9)	27 (39.1)		24 (29.6)	57 (70.4)	
Social support	Family, friends and relatives	21 (77.8)	6 (22.2)	$\chi^2 = 0.142$ df = 1 p > 0.05	15 (55.6)	12 (44.4)	$\chi^2 = 1.821$ df = 1 p > 0.05	9 (33.3)	18 (66.7)	$\chi^2 = 0.216$ df = 1 p > 0.05
	Family	102 (81.0)	24 (19.0)		87 (69.0)	39 (31.0)		48 (38.1)	78 (61.9)	
Socio-economic class	Lower	24 (88.9)	3 (11.1)	$\chi^2 = 6.304$ df = 2 p < 0.05	18 (66.7)	9 (33.3)	$\chi^2 = 3.001$ df = 2 p > 0.05	12 (44.4)	15 (55.6)	$\chi^2 = 1.379$ df = 2 p > 0.05
	Middle	33 (68.8)	15 (31.3)		36 (75.0)	12 (44.4)		15 (31.3)	33 (68.8)	
	Higher	24 (88.9)	3 (11.1)		15 (55.6)	12 (44.4)		9 (33.3)	18 (66.7)	
Financial dependence	Son	45 (78.9)	12 (21.1)	$\chi^2 = 0.120$ df = 1 p > 0.05	39 (68.4)	18 (31.6)	$\chi^2 = 0.126$ df = 1 p > 0.05	27 (47.4)	30 (52.6)	$\chi^2 = 3.975$ df = 1 p < 0.05
	Self	78 (81.3)	18 (18.8)		63 (65.6)	33 (34.4)		30 (31.3)	66 (62.7)	
Food intake type	Low calorie	114 (79.2)	30 (19.6)	$\chi^2 = 2.332$ df = 1 p > 0.05	99 (68.8)	45 (31.3)	$\chi^2 = 4.781$ df = 1 p < 0.05	48 (33.3)	96 (66.7)	$\chi^2 = 16.105$ df = 1 p < 0.001
	High calorie	9 (100)	0 (0)		3 (33.3)	6 (66.7)		9 (100.0)	0 (0.0)	
Body Mass Index	Overweight	84 (80.0)	21 (20.0)	$\chi^2 = 0.033$ df = 1 p > 0.05	81 (77.1)	24 (22.9)	$\chi^2 = 16.529$ df = 1 p < 0.001	45 (42.9)	60 (57.1)	$\chi^2 = 4.494$ df = 1 p < 0.05
	Normal	39 (81.3)	9 (18.8)		21 (43.8)	27 (56.3)		12 (25.0)	36 (75.0)	
Sufferings duration years	> 15	36 (80.0)	9 (20.0)	$\chi^2 = 24.309$ df = 3 p < 0.001	27 (60.0)	18 (40.0)	$\chi^2 = 10.286$ df = 3 p < 0.05	21 (46.7)	24 (53.3)	$\chi^2 = 14.883$ df = 3 p < 0.01
	11 to 15	36 (85.7)	6 (14.3)		30 (71.4)	12 (28.6)		6 (14.3)	36 (85.7)	
	5 to 10	42 (93.3)	3 (6.7)		36 (80.0)	9 (20.0)		18 (40.0)	27 (60.0)	
	< 5	9 (42.9)	12 (57.1)		9 (42.9)	12 (57.1)		12 (57.1)	9 (42.9)	
Type of hospital used	Private	20 (83.3)	4 (16.7)	$\chi^2 = 0.249$ df = 2 p > 0.05	18 (75.0)	6 (25.0)	$\chi^2 = 7.456$ df = 2 p < 0.05	6 (25.0)	18 (75.0)	$\chi^2 = 6.207$ df = 2 p < 0.05
	Government	21 (77.8)	6 (22.2)		12 (44.4)	15 (55.6)		6 (22.2)	21 (77.8)	
	CMH	82 (80.4)	20 (19.6)		72 (70.6)	30 (29.4)		45 (44.1)	57 (55.9)	
Regular health check-up	No	81 (75.0)	27 (25.0)	$\chi^2 = 6.773$ df = 1 p < 0.01	66 (61.1)	42 (38.9)	$\chi^2 = 5.100$ df = 1 p < 0.05	42 (38.9)	66 (61.1)	$\chi^2 = 0.419$ df = 1 p > 0.05
	Yes	42 (93.3)	3 (6.7)		36 (80.0)	9 (20.0)		15 (33.3)	30 (66.7)	

## Discussion

NCDs disproportionately affect people in low and middle-income countries where more than three quarters of global NCD deaths (32million) occur. Globally, cardiovascular diseases account for most NCD deaths (17.9 million people annually), followed by cancers (9.0 million), respiratory diseases (3.9million) and diabetes (1.6 million)<sup>1</sup>, where Bangladeshi elderly died by 18.9% for stroke or cardio-vascular accident and followed by chronic obstructive

pulmonary disease (16.8%), cancer (7.7%) etc<sup>17</sup>. This study revealed the most sought after NCDs to be hypertension (80.4%), and followed by 66.7% diabetes mellitus, and 37.3% ischemic heart disease. Compared to previous Bangladeshi study conducted among elderly individuals showed lower level of prevalence rates i.e., 12.6% hypertension, 2.8% diabetes mellitus, 9.3% chronic obstructive pulmonary disease etc<sup>17</sup> and 38.7% hypertension, 6.9% chronic obstructive pulmonary disease, 2.4% heart disease<sup>7</sup>. However, a recent study from China showed the elderly were

suffering as 48.0% hypertension, 21.9% diabetes, 14.2% cataract (although we didn't get any report in our survey suffering from cataract), 11.2% coronary heart disease, 6.8% stroke, 2.6% cancer<sup>14</sup>.

Therefore, from this finding (as well as previous Bangladeshi findings) hypertension is considered the most vulnerable disease for Bangladeshi elderly people and it accounts for most of the elderly deaths. However, the detection, treatment and control of hypertension are considered to be inadequate in many high-income countries; in low-income countries, where even consciousness about hypertension is generally low, the situation is even worse<sup>5</sup>. A recent study in the Netherland revealed only one third of the individuals with hypertension were aware of their condition and among those about 60% were treated but only 42% had their blood pressure well controlled<sup>18</sup>. Another study in China reported only 31% hypertensive people were treated and only 20% were controlled<sup>19</sup>. In the United States, 65% of hypertensive individuals received treatment and nearly 50% were controlled<sup>20</sup>. Herein, we suggest to increase health education and promotion related program (along with clinical facilities) in the country for not only hypertension reduction but also other NCDs. Although the government has initiated many NCD-related policies or programs, they lacked proper planning, implementation and monitoring. As a result, Bangladesh over the years had little success in effectively addressing the growing burden of non-communicable diseases. It is imperative that future research will critically assess the effectiveness of national NCD policies by monitoring their implementation and level of population coverage<sup>6</sup>.

Moreover, this study showed a wide ranges of socio-demographics risk factors related to NCDs development. Globally, it was sought over 7.2 million deaths every year due to tobacco and it is projected to increase markedly over the coming years. Moreover, 4.1 million annual deaths have been attributed to excess salt/sodium intake (with having no proper dietary habit), more than half of the 3.3 million annual deaths attributable to alcohol use are from NCDs and 1.6 million deaths annually can be attributed to insufficient physical activity<sup>1</sup>. For reducing the major risk factors for noncommunicable diseases – tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol is the focus of WHO's work to prevent deaths from NCDs<sup>15-16</sup>. Another concerning issue found in this study is 70.6% of the military personnel don't go for regular health care assessment. But, regular health checkup can help to find out problems before it affects harmfully. By getting the right health services, screenings, and treatments, will help to increase the chances for living a longer, healthier life. Therefore, it is recommended to make available a cost-effective health care access for Bangladeshi individuals. The generalizability of findings in the present study are limited by the cross-sectional nature of the data, the small sample size, and the non-representative sample from CMH, Savar.

## Conclusion

The results of our study showed the most common health problems were hypertension, diabetes mellitus and ischemic heart disease among the retired military personnel who were admitted in Combined Military Hospital, Savar. A wide range of socio-demographic and health related variables are associated with these sufferings. Military personnel are reservist of the govt., but they are ought to join in the team anytime if the country requires. But this study doesn't support if they are capable to do as NCDs are prevalent to them. So, the clear picture having lost majority of man power of the government as any NCDs affected won't be capable to go forward on fire as well as other emergency circumstances when needed. Hence, intervention strategies and community-based health promotion programs to reduce the burden of NCDs among the older population are badly suggested.

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