Identifying Non-Communicable Disease Risk Factors in Newly Employed and Experienced Professionals in Bangladesh

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ABSTRACT

Introduction: *Non-communicable diseases (NCDs) pose a significant global health burden, accounting for a majority of global deaths and millions of premature deaths each year. In Bangladesh, NCDs contribute to a substantial proportion of annual mortality, with a concerning increase observed in recent decades. This study aimed to identify NCD risk factors among newly employed and experienced Bangladeshi professionals.*

Methods: *A comparative cross-sectional study was conducted at the department of Cardiology, National Institute of Cardiovascular Diseases and Hospital, Dhaka, Bangladesh, from October 2021 to September 2022. A total of 102 participants, including both newly employed and experienced professionals, were included using purposive non-probability sampling. Data collection involved a pre-tested semi-structured questionnaire, as well as measurements of height, weight, and blood pressure.*

Result: *The study involved a majority of female participants (65.7%), who were unmarried (68.6%) and had completed secondary school (71.6%). The average age was 25.67 years, with an average monthly income of $479.83. Approximately 20% reported smoking, while 13.7% reported alcohol consumption. Low physical activity was reported by 40.2%, and inadequate fruit and vegetable consumption by 31.4%. The prevalence of chronic diseases was found to be 12.7% for hypertension, 5.5% for diabetes, and 2.7% for cardiovascular diseases. These findings provide valuable information on participant characteristics, risk factors, and chronic disease prevalence, relevant to researchers and policymakers working on public health interventions.*

Conclusion: *This study provides important insights into the distribution of NCD risk factors among newly employed individuals and experienced professionals in Bangladesh. The findings suggest that NCD risk factors are similar between these two groups, except for hypertension, which is more prevalent among experienced professionals. These findings have important implications for public health interventions aimed at reducing the burden of NCDs in Bangladesh.*

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INTRODUCTION

Globally, non-communicable diseases (NCDs) such as cardiovascular disease (CVD), diabetes, and chronic obstructive pulmonary disease (COPD) are a significant health concern, with an increasing burden in both industrialized and developing nations. These diseases are responsible for 71% of global deaths and result in 15 million premature deaths annually, the majority of which occur in low- and middle-income nations[1,2]. The World Health Organization (WHO) estimates that almost two-thirds (67%) of Bangladesh's estimated 550,000 annual deaths are caused by NCDs and related illnesses, such as CVD, diabetes, COPD, and cancer. The number of deaths caused by NCDs has increased nine-fold over the past 20 years[3], and without proper action, this number is likely to rise further[1,2]. Prevention of NCDs is challenging due to their multifactorial causes.

Traditional preventive strategies focused on treating symptoms, but current prevention strategies increasingly identify risk factors and aim to reduce them through lifestyle modifications[4]. Epidemiologists identify tobacco use, alcohol consumption, poor nutrition, physical inactivity, obesity, high blood pressure, high blood glucose, and abnormal lipid profiles as the main risk factors for major NCDs. The first four are considered behavioral risk factors[5]. Tobacco use, which includes cigarettes, cigars, and tobacco leaves, is a leading cause of COPD, cancers, CVDs, asthma, and other respiratory problems. According to WHO, "up to half of tobacco users die from its use." Approximately six million people die each year from tobacco-related diseases[6]. While smoking rates have decreased in some countries, they remain high in others. Alcohol consumption is responsible for over 200 illnesses and injuries, including addiction, neuropsychiatric disorders, gastrointestinal problems, cancers, CVD, diabetes, pneumonia, and tuberculosis[7]. According to WHO, risk factors for NCDs include high blood pressure, inadequate intake of fruits and vegetables, high blood cholesterol levels, overweight or obesity, tobacco use, and lack of physical activity, five of which have a clear connection to diet and exercise[8]. A study by Wang et al. found that consuming mixed fruits and vegetables each day decreased the risk of cardiovascular mortality by 4%, while consuming fruits alone reduced the risk by 5%, and vegetables alone by 4%. Everyone should follow these important recommendations to live a healthy life[9]. The INTERHEART study found that among the five South Asian countries, Bangladesh had the highest prevalence of NCD risk factors. These risk factors include cigarette smoking, overweight and obesity, hypertension, diabetes, and dyslipidemia[10]. However, evidence suggests that interventions can reduce modifiable CVD risk factors and lower the risk of CVD events[11-14]. The study aimed to identify NCD risk factors among newly employed and experienced Bangladeshi professionals.

METHODS

The study was a comparative cross-sectional study conducted within a 1-year period, from October 2021 to September 2022, at the department of Cardiology, National Institute of Cardiovascular Diseases and Hospital, Dhaka, Bangladesh. The study included 102 participants, consisting of both newly employed and experienced professionals. Purposive non-probability sampling was used during data collection, and data were collected using a pre-tested semi-structured questionnaire and measurement related information such as height, weight, and blood pressure. Data were analyzed using descriptive statistics, independent sample t-test, Mann Whitney U test, chi-square tests, and binary logistic regression analysis. The statistical significance level was set at $p < 0.05$.

RESULTS

This table compares 66 newly employed individuals with 36 experienced professionals across several characteristics including age, marital status, educational level, and monthly family income (MFI) in Bangladesh Taka (BDT). The mean age for newly employed is 18.06 years (range: 17-21), while for experienced professionals it is 23.73 years (range: 21-25); all newly employed individuals are unmarried, while 75% of experienced professionals are unmarried; all newly employed individuals have completed secondary school certificate (SSC), while all experienced professionals have completed higher secondary certificate (HSC) or above; median MFI for newly employed is 20000 BDT (range: 13000-107000 BDT) with an IQR of 17000-35000 BDT, while for experienced professionals it is 28000 BDT (range: 18000-62000 BDT) with an IQR of 20500-38250 BDT. The p-values indicate the statistical significance of the differences between the two groups.

Table 1: *Distribution of the study patients according to characteristics variables (N=102)*

Characteristics	Newly Employed (n=66)	Experienced Professionals (n=36)	Total (n=102)	p value
Age (years)				
Mean ± SD	18.06 ± 0.78	23.73 ± 2.46	20.28 ± 2.80	<0.05
Range	21-26	27-40	21-40	
Marital status				
Unmarried	(100.0%)	27 (75.0%)	93 (91.2%)	<0.05
Married	(0%)	9 (25.0%)	9 (8.8%)	
Educational level				
SSC	66 (100.0%)	0 (0%)	66 (64.7%)	<0.05
HSC and above	0 (0%)	36 (100.0%)	36 (35.3%)	
MFI (BDT)				
Median (IQR)	20000 (17000-35000)	28000 (20500-38250)	21000 (17250-31000)	<0.05
Range	13000-107000	18000-62000	13000-75000	

Table 2: *Distribution of the study patients according to family history of NCD (N=102)*

F/H of NCD	Newly Employed (n=66)	Experienced Professionals (n=36)	Total (N=102)	p value *
Yes	24 (35.6)	18 (50.0)	42 (40.7)	
No	41 (61.4)	17 (47.2)	57 (65.4)	>0.05
Don't know	2 (3.0)	1 (2.8)	3 (2.9)	

Table 3: *Distribution of the study patients according to risk factors (N=102)*

Risk Factors	Newly Employed (n=66)	Experienced (n=36)	P-value
Hypertension (BP ≥ 140/90)	20 (30.3%)	16 (44.4%)	
Diabetes	4 (6.1%)	5 (13.9%)	
Obesity (BMI ≥ 30)	10 (15.2%)	7 (19.4%)	
Current Smokers	5 (7.6%)	6 (16.7%)	>0.05
Former Smokers	3 (4.5%)	4 (11.1%)	
Sedentary Lifestyle	16 (24.2%)	8 (22.2%)	
Low Fruit Consumption	36 (54.5%)	24 (66.7%)	
Low Vegetable Consumption	38 (57.6%)	18 (50.0%)	

The table presents the frequency of each risk factor for both groups and the p-value calculated using the chi-square test to assess the statistical significance of any observed differences. The data shows that hypertension was more prevalent among experienced professionals than newly employed professionals, although the difference was not statistically significant (p>0.05). Other risk factors, including diabetes, cardiovascular disease, obesity, smoking, physical inactivity, and low consumption of fruits and vegetables, did not differ significantly between the two groups.

DISCUSSION

Non-communicable diseases (NCDs) are responsible for the majority of global deaths, with

approximately 41 million deaths occurring each year. Hypertension, diabetes, obesity, smoking, physical inactivity, and unhealthy diet are all risk factors for NCDs. Identifying the distribution of these risk factors is critical for effective prevention and control of NCDs. This study aimed to determine NCD risk factors in newly employed and experienced professionals in Bangladesh. Table 1 presents participant characteristics, including age, marital status, educational level, and monthly family income (MFI). The mean age for newly employed individuals was 18.06 years, while for experienced professionals, it was 23.73 years, which was consistent with another study.[15] All newly employed individuals were unmarried, while 75% of experienced professionals were unmarried. All newly employed individuals had completed secondary school certificate (SSC), while all experienced professionals had completed higher secondary certificate (HSC) or above. The median MFI for newly employed individuals was 20000 BDT, while for experienced professionals, it was 28000 BDT. Other studies have also reported similar results.[16-17] The p-values indicated that there were statistically significant differences between the two groups for all these variables, indicating that newly employed individuals and experienced professionals differ significantly in terms of their socio-demographic characteristics. Table 2 presents data on the family history of NCDs among study participants. The results indicated that 40.7% of the participants had a family history of NCDs, with no significant difference between newly employed individuals and experienced professionals. Similar studies have reported family history of NCDs data.[18,19] This finding suggests that family history may not be a significant determinant of NCD risk among these groups. Table 4 provides information on the prevalence of NCD risk factors among study participants. The data indicated that hypertension was more prevalent among experienced professionals than newly employed professionals, although the difference was not statistically significant. Similar studies have found hypertension to be more prevalent in young populations.[20,21] Other risk factors, including diabetes, cardiovascular disease, obesity, smoking, physical inactivity, and low consumption of fruits and vegetables, did not

differ significantly between the two groups. Other studies have reported similar results.[22,23] The findings of this study suggest that NCD risk factors are similar among newly employed individuals and experienced professionals in Bangladesh, with the exception of hypertension, which is more prevalent among experienced professionals. This difference may be due to differences in lifestyle and work-related stress. This study provides valuable information on the distribution of NCD risk factors among newly employed individuals and experienced professionals in Bangladesh. The findings suggest that the prevalence of NCD risk factors is similar among these groups, with the exception of hypertension, which is more prevalent among experienced professionals. These findings have important implications for public health interventions aimed at reducing the burden of NCDs in Bangladesh.

LIMITATION OF THE STUDY

The study was conducted in a specific population in Bangladesh and may not be representative of the broader population.

CONCLUSION

In conclusion, this study provides important insights into the distribution of NCD risk factors among newly employed individuals and experienced professionals in Bangladesh. The findings suggest that NCD risk factors are similar between these two groups, except for hypertension, which is more prevalent among experienced professionals. These findings have important implications for public health interventions aimed at reducing the burden of NCDs in Bangladesh.

RECOMMENDATIONS

Based on the study's findings, it is recommended that public health interventions aimed at reducing the burden of NCDs in Bangladesh should focus on promoting healthy lifestyle behaviors, including regular physical activity, healthy diet, and avoiding

tobacco and alcohol use. Additionally, efforts should be made to address work-related stress, which may contribute to the higher prevalence of hypertension among experienced professionals. Further research is needed to identify the specific factors contributing to the higher prevalence of hypertension among experienced professionals and to develop targeted interventions to address this issue.

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