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Report- Socio-demographic Differentials of Selected Non-communicable Diseases' Risk Factors: Slums of Dhaka (North and South) and Gazipur City Corporations

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Summary of Key Findings and Implications

Globally, a total of 56 million people died from all causes in 2012; 38 million (68%) of these deaths were attributable to chronic diseases. Although the burden of common non-communicable diseases is increasing, the risk factors such as smoking, alcohol use, high blood pressure, diabetes, and overweight/obesity are highly preventable.

Using the database of the Health and Demographic Surveillance System of selected slums of Dhaka (North and South) and Gazipur City Corporations, 2,200 respondents (25-64 years) were selected randomly for this study. A total of 1,896 respondents were interviewed during February-March 2017 and data on non-communicable diseases' risk factors were collected using WHO STEPS-wise approach to Surveillance (STEPS).

The main findings of the study are reported below:

- Prevalence of smoking was high, and higher for male than female (65.4% vs 1.6%); however, smoking was almost nil for female. Smoking (male) decreased slightly (ns) with increase in age, while decreased significantly with increase in education and household asset.
- Consumption of smokeless tobacco was higher for female than male (41.8% vs 36.9%); smokeless tobacco consumption, irrespective of gender, increased significantly with increase in age, but decreased with increase in education and household asset.
- Alcohol consumption was low, but higher for male than female (4.0% vs 0.5%).
- Exercise level was low, but similar for male and female (4.4% vs 4.4%).
- Vigorous physical activity (work related) was higher for male than female (51.8% vs 21.2%), but moderate physical activity was similar (79.8% vs 79.3%). Vigorous and moderate physical activities, irrespective of gender, usually decreased significantly with increase in age, education and household asset, except moderate activity for education of female.
- High blood pressure was more prevalent among female than male (20.1% vs 10.7%). Prevalence of high blood pressure, irrespective of gender, usually increased significantly with increase in age; while for male, it increased with education, but for female, it decreased with education.
- Diabetes was more prevalent among female than male (7.6% vs 4.9%). Prevalence of diabetes, irrespective of gender, increased significantly with increase in age, while increased slightly (ns) with increase in education and household asset.

The study documented a high prevalence of non-communicable diseases' risk factors and that risk factors usually varied by socio-demographic characteristics. So, there is a need for a comprehensive and integrated risk factor intervention for this population to reduce the future burden of non-communicable diseases.

Introduction

The human, social and economic consequences of non-communicable diseases' (NCDs) risk factors are being experienced by all countries, but their impact is particularly severe in low- and middle-income countries. Globally, a total of 56 million people died from all causes in 2012; 38 million (68%) of these deaths were attributable to chronic diseases (WHO 2014). More than 40% of them (16 million) were premature deaths under age 70 years. Almost three-quarters of all non-communicable deaths (28 million) and the majority of premature deaths (82%) occurred in low- and middle-income countries. In fact, many developing countries are struggling with both old and new infectious disease epidemics and also had to deal with the emerging epidemic of NCDs.

The rise in NCDs is largely due to four behavioural risk factors: tobacco use, unhealthy diet, insufficient physical activity, and harmful use of alcohol (WHO 2011). Nearly 80% of the world's one billion smokers live in lower middle-income countries that account for 3.4 million deaths, and these are projected to double by 2030 (Giovino et al. 2012). Globalization and urbanization are making processed foods – high in refined starch, sugar, salt and unhealthy fats – cheaply available to consumers and encouraging sedentary lifestyles in these regions (Cecchini et al. 2010). So, there is a rise in overweight and obesity in the developing world (Swinburn et al. 2011). The World Economic Forum estimates that by 2030, the global cost for NCDs will reach $47 trillion dollars, confirming that their threat to both global health and the global economy is among our greatest twenty-first century challenges (Bloom et al. 2011).

Although the burden of common non-communicable diseases is increasing, the risk factors such as smoking, alcohol use, high blood pressure, and overweight/obesity are highly preventable[1]. It has been documented that at least 80% of heart diseases, stroke, and type 2 diabetes, and 40% of cancer could be avoided through healthy diet, regular physical activity and avoidance of tobacco use (WHO 2002); studies have also reported that overweight/obesity poses a major risk for chronic diseases.

Like many developing countries, Bangladesh is also going through a rapid demographic and epidemiological transition. Hospital records (DGH/WHO 2006) as well as data from the Health and Demographic Surveillance System of Matlab (Razzaque et al. 2009), Chakaria (Hanifi et al. 2016) and urban slum (Razzaque et al. 2017) areas of icddr,b reported that deaths due to non-communicable diseases are increasing. To anticipate an epidemic of NCDs, its risk factor data should be collected at regular intervals (Bonita et al. 2002). The WHO STEP-wise approach to Surveillance (STEPS) of NCD risk factors was developed as a part of the global surveillance strategy in response to the growing need for country-level trends in non-communicable diseases and for developing prevention strategies and monitoring the impact.

The NCD risk factor survey was designed to collect baseline information on the major risk factors and diseases for the slum population using the WHO STEPS-wise approach by taking into account the needs and resources available. The objective of the study is to examine the prevalence of major risk factors of chronic diseases (smoking, smokeless tobacco, physical activity related to work, high

[1]Among the modifiable risk factors such as unhealthy diet, physical inactivity, alcohol and tobacco use are categorized as primary risk factors; while overweight, raised blood pressure, raised total cholesterol levels and raised blood glucose are categorized as intermediate risk factors.

blood pressure and diabetes), and the distribution of these risk factors by socio-demographic variables.

Data and Methods

Study Population

The data for this study were collected from the selected slums of Dhaka (North and South) and Gazipur City Corporations, where icddr,b has been operating the Health and Demographic Surveillance System (HDSS) with support from GoB/donors since 2016. In the baseline population and socioeconomic census of 2015-16, 121,912 people were counted living in 31,577 households of the HDSS area.

These slums were mainly built on government lands (91%), and about 60% occupants were tenants. Eighty-two per cent households possessed one bedroom with mean dwelling area of 119 sq ft. About 95% households used pipe water for drinking, 30% households had sanitary latrine flush to sewerage/septic tank, while slightly over 50% households used gas from gas line for cooking; sharing of water sources (92%), latrine (90%) and cooking places (60%) were very common in these slums. Use of electricity as a source of light was universal. Most households had electric fan (96%), and mobile phone (85%). Sixty per cent households had television and *khat*.

Among adult (aged 15 or more years), 36.2% males and 42.3% females did not have any schooling. Among children (aged 6-14 years), 14.1% boys and 8.9% girls did not have any schooling. Among aged 8 years or more, 73.5% males were involved in income generating activities compared to 39.6% among females. During last month of the survey, mean household expenditure was Taka 11,981, while mean saving was Taka 527 and majority of the households (72%) were unable to save any money.

In these slums, 30% household heads in-migrated within 10 years, 24% household heads between 10-19 years, and 35% household heads 20 or years more ago; 8.6% household heads did not in-migrate (born in urban area). The majority of household heads migrated to the slum for work (62.4%), while 20% household heads migrated to join family. Fifty per cent household heads migrated from Dhaka division, while 20% migrated from Barisal division.

Methods

The survey was conducted using STEPS-wise approach for NCD surveillance. Using the database of the urban HDSS, 2,200 respondents aged 25-64 years (1,100 each, male and female) were selected randomly for this study; 1,896 respondents were interviewed successfully. Absentees were attempted to reach three times, if not found, were excluded from the study.

The Field Research Coordinator and three Field Research Assistants were responsible for assessing the day-to-day data quality. Data were collected by fifteen Field Workers who work for routine HDSS data collection. Each team consists of a Supervisor and five Field Workers. The Field Workers are females, and had at least a Bachelor degree, with a few exceptions. Both male and female respondents were interviewed by the female Field Workers.

For the Field Workers, the duration of training for the survey was seven days: five days in office (training on questionnaires, mock interview, and use of Tab), and two days for field practice. Field Workers were trained on the data collection instrument, data collection device, and on interviewing skills and administering the consent form. The training on data collection device was organized by the Computer Programmer.

The data were collected using portable Android-based devices (Tab), and data collection programs were developed accordingly. Some of the consistency checks were incorporated into the data collection program (range checks, consistency/logical checks); however, some logical checks were done at the office after loading/merging the data files. The computer programmer was responsible for providing technical support with respect to the concerns raised during fieldwork and for trouble-shooting any issues of the Tab.

For finding a household, the Field Workers also carried printouts of the household listing. Once a household was identified, the Field Workers entered the slum name, area name and household number into the Tab, and verified records with the printouts. Once the respondent was confirmed, the Field Workers explained the NCD study and got signed an informed consent form, if they agreed to provide information.

Each day a Field Worker completed 3-4 interviews in addition to her routine HDSS data collection. As many respondents work outside home, the Field Workers had to visit these households during lunch-time or in the evening or during a weekly holiday to collect the data. Data were collected during January-February 2017. About 2% samples were checked by the supervisor, and feedback was given to the respective Field Worker for improving the data quality.

Every week the Field Workers submitted their completed work (on memory card) to their supervisor. After receiving the memory card, the supervisor used to transfer the data to his/her laptop and performed basic checking of these data. The supervisor subsequently sent these data to the Field Research Coordinator/Computer Programmer through email (as an attachment) for further editing and updating the master database. To maintain security and confidentiality of the data, the data server was restricted by a security password and access was given only to a selected person.

Variables

Smoking: Respondents were asked whether they knew that smoking is harmful to health. They were asked whether they smoked daily, occasionally, ex-smoker and never smoked. We considered here daily and occasional smoker as a current smoker.

Smokeless tobacco: Respondents were asked whether they knew that smokeless tobacco is harmful to health. They were asked whether they consumed smokeless tobacco daily, occasionally, ex-consumer or never consumed. We considered here daily and occasional consumer as current smokeless tobacco consumer.

Alcohol consumption: Respondents were asked whether they knew that alcohol consumption is harmful to health. Alcohol consumption was measured by asking the respondents whether they

consumed alcohol daily, occasionally, ex-consumer or never consumed. We considered here daily and occasional alcohol consumer as a current consumer.

Physical exercise: Respondents were asked whether they do exercise. If yes, how many days they do exercise in a typical week was also asked.

Physical activity (work related): Physical activity was defined as any bodily movement that requires energy expenditure. Physical activity was categorized into vigorous and moderate activity. A vigorous-intensity activity was defined as any activity that causes a large increase in breathing or heart rate, if continued for at least 10 minutes every day (e.g. running, carrying or lifting heavy loads, digging or construction work). Moderate-intensity activity was defined as any activity that causes a small increase in breathing or heart rate, if continued for at least 10 minutes every day (brisk walking or carrying light loads).

High blood pressure: The respondents were asked whether they knew anything about blood pressure and the categories were 'knew nothing', 'something', and 'very familiar'. For identifying the prevalence of high blood pressure, respondents were asked whether health professional ever told that s/he had blood pressure. If yes, then asked whether s/he was taking any medicine to control blood pressure and also asked the reason for not taking and the source of the medicine.

Diabetes: The respondents were asked whether they knew anything about diabetes and the categories were 'knew nothing', 'something', and 'very familiar'. For identifying the prevalence of diabetes, respondents were asked whether health professional ever told that s/he had diabetes. If yes, then asked whether s/he was taking any medicine to control diabetes and also asked the reason for not taking and the source of the medicine.

Analyses

Both bivariate and multivariate analyses were carried out. Multivariate logistic regression was used to model the associations between the outcome variables and the socio-demographic factors.

The dependent variables were current smoker, use of smokeless tobacco, vigorous physical activity, moderate physical activity, reported high blood pressure, and reported diabetes. The followings were treated as dummies: current smoking (yes=1, no =0), consumption of smokeless tobacco (yes=1, no=0), vigorous physical activity (yes=1, no=0), moderate physical activity (yes=1, no=0), reported high blood pressure (yes=1, no=0) and reported diabetes (yes=1, no=0).

The independent variables were age, education, occupation, and household asset. Individuals were divided into 4 age groups (25-34, 35-44, 45-54, and 55-64 years). Level of education was collected on the basis of the number of years completed in any institution run under the national curriculum. In this analysis, education was categorized into 3 groups: none, 1-5 years, and 6 or more years of schooling. Occupation of the respondent was an open-ended question and later recoded. Male respondents employed in labourious work, for example, skilled and unskilled labour were classified into one group, those were engaged in government and non-government job or engaged in business were treated as another group and grouped into 4 categories

(labourer, rickshaw puller, service/business, and others). For females, housewives were one category and the grouped into 4 categories (labourer, service/business, house-wife and others).

Household economic status was measured in this study by constructing a wealth index using asset ownership as validated by Filmer and Pritchet (1988). Household asset index was based on the updated socio-economic survey 2015. This index was calculated using the number of consumer items (television, watch, etc.), dwelling characteristics (wall, roof and floor material), type of drinking water, and toilet facilities in the household. In this study, we categorized the asset index into quintiles of the 2016 population, with 1st quintile as the poorest and 5th quintile as the richest.

Limitations

Measurement of chronic disease risk factors (self-reported) is not always perfect. Moreover, while comparing results of different studies, one should consider the age group, place of residence, as well as concept and measurement used during the survey.

Results

Bivariate analyses

Table 1 shows the socio-demographic characteristics of the study population. The distribution of male and female did not vary significantly by age and household asset, but varied significantly by education category. About 43% males were illiterate compared to 55% for females. Among males, 46.2% were engaged in service/business, followed by labour (29.5%), rickshaw puller (16.1%) and other (8.2%), while 51.6% females were house-wives, followed by service/business (34.1%), other (8.6%) and labour (5.7%).

Two-third males were current smokers (65.4%), while it was 1.6% for females (Table 2); however, almost all respondents reported that smoking was harmful to health (97.5%). The prevalence of smoking (male) decreased slightly (ns) with increase in age, but decreased significantly with increase in education and household asset (Table 3). Smoking was highest for rickshaw puller followed by labour, service/business and lowest for 'other' occupation category.

Consumption of smokeless tobacco was 14.1% higher among females than males (41.8% vs 36.9%); however, over 95% respondents reported that smokeless tobacco consumption was harmful to health (Table 2). Smokeless tobacco consumption, irrespective of gender, increased significantly with increase in age, but decreased significantly with increase in education and household asset (Table 3). Among male, highest consumption of smokeless tobacco was for 'other' occupation category followed by rickshaw puller and labour, while lowest for service/business. For female, highest consumption of smokeless tobacco was for labour followed by 'other' and business/service category, while lowest among house-wife.

About 10% males smoked as well as consumed smokeless tobacco resulting in about 75% males who either smoked or consumed smokeless tobacco (Table 2). Alcohol consumption was low, 4% for male and almost nil for female (0.5%); however, almost all respondents reported that alcohol consumption was harmful to health (98.7%). The level of exercise was low and exactly the same for both male and female (4.5% vs 4.5%).

Slightly over 50% males and 1/5th females were involved in vigorous physical activities (work related), while about 4/5th males and females were involved in moderate physical activities (Table 2). Vigorous physical activities, irrespective of gender, decreased significantly with increase in age, education and household asset (Table 3). For male, rickshaw puller had highest physical activity followed by labour, service/business and lowest for 'other' occupation category. For female, labourer had height physical activity followed by service/business, house-wife and lowest for 'other' occupation. On the other hand, moderate physical activities, irrespective of gender, usually decreased significantly with increase in age, education and household asset; however, education differential was not significant for female. For male, rickshaw puller had height physical activity while all other occupation categories had almost similar physical activities. For female, service/business had height while all other occupation categories had almost similar physical activities.

High blood pressure was 86% higher for female than male (10.7% vs 20.2%). Forty-four per cent respondents reported that they were familiar with the term blood pressure (Table 2). Among those who had high blood pressure, 70.5% reported that they were taking medicine and 92.7% of them were getting medicine from pharmacy. High blood pressure, irrespective of gender, usually increased significantly with increase in age and household asset, while high blood pressure increased significantly with increase in education for male but the pattern was opposite for female (Table 3). For male, high blood pressure was height for 'other' occupation, followed by service/business while lowest for labour and rickshaw puller. For female, high blood pressure was height for 'other' occupation category followed by house-wife and lowest for labour and rickshaw puller.

The prevalence of diabetes was higher for female than male (7.6% vs 4.9%). Forty-three per cent respondents reported that they were familiar with the term diabetes (Table 2). Among those who had diabetes, 69.6% reported that they were taking medicine and 92.5% of them were getting medicine from pharmacy. Diabetes increased significantly, irrespective of gender, with increase in age, and household asset; pattern was opposite for male and female with education, but not significant for male (Table 3). For male, diabetes was height for 'other' occupation category followed by business/service category and lowest for rickshaw puller. For female, diabetes was height for 'other' occupation followed by house-wife and lowest for labour and rickshaw puller.

Multivariate analyses

After controlling for selected socio-demographic variables, multivariate results correspond mostly with the bivariate results. Smoking (male) usually decreased significantly with increase in age, education and household asset; smoking was significantly higher among rickshaw puller compared to service/business category. Consumption of smokeless tobacco, irrespective of gender, increased with increase in age but decreased with increase in education and household asset. For male, smokeless tobacco consumption was significantly higher among labourer and 'other' occupation categories than service/business, while for female, smokeless tobacco consumption was similar across different occupation categories.

Vigorous and moderate physical activities, irrespective of gender, usually increased significantly with increase in age, education and household asset, except education differential for male for vigorous activity and educational differential for female for moderate activity. For male, vigorous physical activity was significantly higher for rickshaw puller and labourer than service/business, while for female, it was significantly higher for labourer than service/business. For moderate physical activity, occupation categories for male did not vary, while for female, service/business had higher moderate activity than all other occupation category.

High blood pressure, irrespective of gender, increased significantly with increase in age, while for male it increased with increase in education; but for female, it decreased with increase in education. For both male and female, high blood pressure did not vary significantly by occupation category.

Prevalence of diabetes, irrespective of gender, increased significantly with increase in age, while it increased with increase in education and household asset, but the differences were not significant. For male, the difference did not vary by occupation, while for female, diabetes was significantly higher for house-wife than service/business category.

Discussion and Conclusion

Slightly over 65% males smoked in the slum areas, and it was less than 1.6% for females. Use of tobacco (males 76.2% and females 42.6%) was found to be at a higher level in these slums than that reported in the previous study (Ashraf et al. 2009; DGHS/WHO 2006, BSM/WHO/DGHS/MHFW 2011). The study also documented more tobacco use among the lower socioeconomic group than in the higher socioeconomic group and the findings correspond with other studies in Bangladesh (Ashraf et al. 2009; Choudhury et al. 2007). In fact, in poor families where scarce family resources are spent on tobacco products instead of on food, this can cause immediate harm to family members. It was estimated that if poor people did not smoke, 10.5 million fewer people would be malnourished in Bangladesh (Efroymson et al. 2001).

The causes of death are changing in Bangladesh, from communicable to non-communicable diseases; however, it was reported elsewhere that many of the deaths due to NCDs were because of cancers and respiratory and circulatory diseases caused by tobacco (de Beyer et al. 2001). If a woman smokes during or after pregnancy, it harms the baby (Mishra and Khurana 2008) and those in the lower socioeconomic group are ignorant about the risks of exposure to environmental tobacco (passive smoking). The findings of this study suggest that the slum area is now at the

latter stage of the smoking epidemic (Ezzati et al. 2004) and considerable mortality and morbidity is to be expected in coming decades, if the smoking epidemic model applies (Lopez et al. 1994).

The Government of Bangladesh has signed the WHO Convention on Tobacco Control, but such a control programme is not effective because of a lack of political will and ignorance of the vast majority of the people regarding adverse health effects of tobacco use, however, over 95% of our study population knew that tobacco use was harmful to health. In fact, tobacco consumption has a long tradition in Bangladeshi households (Cohen 1981) and tobacco products (cigarettes, *pan-zarda*) are quite often offered to visitors/friends. However, it is encouraging that tobacco use is low among the higher educated people and as the level of education is increasing in Bangladesh, tobacco use is expected to decline (Razzaque et al. 2007).

The study documented higher blood pressure levels among females than males; however, such high level of blood pressure among female could be due to their subsequent visit to health professional (for example, antenatal checkup). A similar blood pressure level was reported earlier in Bangladesh (Razzaque et al. 2011; Zaman and Rouf 1999, NCD 2010), India (Shing et al. 2000), Indonesia (Ng et al. 2006) and Vietnam (Minh et al. 2007). The association between socioeconomic status and high blood pressure could be due to higher prevalence of obesity/overweight (Razzaque et al. 2009) and higher salt and alcohol use among higher socioeconomic group (Colhoun et al. 1998); however, alcohol consumption was very low in our study population. As self-reported blood pressure is found to be at a much lower level (BSM/WHO/DGHS/MHFW 2011; Razzaque et al. 2011) and many of them were not using anti-hypertensive medicine, an awareness-building programme to check blood is highly recommended.

The study found that there is an increase in the prevalence of non-communicable diseases' risk factors, and these risk factors usually varied by socio-demographic characteristics. So, there is a need for a comprehensive and integrated risk factor intervention for this population to reduce the future burden of these diseases.

Table 1: Distribution of Respondents (per cent) by Socio-demographic Variables

Variables	Male (n=885)	Female (n=1101)
Age (yrs)		
25-34	36.5	42.1
35-44	31.9	29.4
45-54	19.3	17.5
55-64	12.3	11.0
Educations (yrs)		
None	42.8	55.0
1-5	30.8	31.0
6 or more	26.4	14.0
Occupation		
Labour	29.5	5.7
Rickshaw puller	16.1	-
Service/business	46.2	34.1
House-wife	-	51.6
Others	8.2	8.6
Household asset		
Lowest	21.0	23.2
Second	23.6	19.2
Middle	21.9	20.4
Fourth	20.4	19.2
Highest	13.1	18.0

Note: Distribution of male and female did not vary significantly by age and household Asset, but the distribution varied by education and occupation.

Table 2: Selected Non-communicable Diseases' Risk Factors by Sex

Risk factors	Male	Female	All	Harmful/ Important for health	Took medicine	Medicine from pharmacy
Currently smoking	65.4	1.6	30.3	97.5*	-	-
Smokeless tobacco use	36.9	41.8	39.6	96.5*	-	-
Either smoke or use smokeless tobacco	76.2	42.6	52.8	-	-	-
Drink alcohol	4.0	0.5	2.2	98.7*	-	-
Exercise	4.4	4.4	4.4	-	-	-
Vigorous physical activity (work)	51.7	21.2	34.7	-	-	-
Moderate physical activity (work)	79.8	79.3	77.7	-	-	-
High blood pressure	10.7	20.2	16.0	43.6^{+}	70.5	92.7
Diabetes	4.9	7.9	6.5	43.0^{+}	69.6	92.5

Note: *Harmful to health; $^{+}$Very familiar

Table 3: Non-communicable diseases' risk factors by socio-demographic characteristics, male and female

Variables	Currently Smoking	Smokeless tobacco	Vigorous physical activity (work related)	Moderate physical activity (work related)	High blood pressure	Diabetes
Male						
Age (years)						
25-34	67.4	26.5	52.0	80.6	5.5	1.2
35-44	68.9	38.2	59.7	82.7	7.8	3.2
45-54	60.7	51.2	50.3	79.8	15.6	8.1
55-64	57.7	42.3	31.7	69.3	26.0	15.4
Significance level	ns	p<0.01	p<0.01	p<0.01	p<0.01	p<0.01
Education (years)						
None	71.2	44.0	56.6	84.4	8.5	4.5
1-5	66.5	35.4	50.0	77.6	10.7	5.2
6 or more	54.5	26.6	45.9	75.1	14.2	5.2
Significance level	p<0.01	p<0.01	p<0.05	p<0.01	p<0.08	ns
Occupation						
Labour	66.9	41.9	61.1	79.2	8.3	3.8
Rickshaw puller	81.2	42.9	83.1	88.0	8.4	2.1
Service/business	60.5	30.1	38.5	77.7	12.2	5.9
Others	57.3	45.6	32.3	77.9	14.7	8.8
Significance level	p<0.01	p<0.01	p<0.01	ns	ns	ns
Asset- Household						
Lowest	74.7	41.6	60.3	83.9	10.3	2.9
Second	73.6	43.1	62.4	87.3	7.1	2.0
Middle	64.0	35.4	49.2	83.1	5.8	5.3
Fourth	59.4	30.4	44.3	72.9	14.6	5.7
Highest	51.9	33.1	39.1	68.4	17.3	9.8
Significance level	p<0.01	p<0.05	p<0.01	p<0.01	p<0.01	p<0.01
Female						
Age (years)						
25-34	-	26.7	22.7	82.2	10.9	2.8
35-44	-	48.6	25.6	81.8	21.8	5.8
45-54	-	54.2	17.9	75.8	33.7	15.3
55-64	-	62.0	8.3	65.3	31.4	19.0
Significance		p<0.01	p<0.01	p<0.01	p<0.01	p<0.01
Education (years)						
None	-	53.5	22.9	79.5	24.2	9.8
1-5	-	29.9	21.5	78.8	16.6	4.4
6 or more	-	23.6	14.2	79.6	13.0	6.2
Significance level	-	p<0.01	p<0.05	ns	p<0.01	p<0.01
Occupation						
Labour	-	53.2	50.0	71.0	11.3	3.2
Service/business	-	41.9	31.8	86.8	17.3	3.9
House-wife	-	38.4	13.1	76.7	22.4	9.1
Others	-	52.1	5.2	69.8	24.0	15.6
Significance level	-	p<0.05	p<0.01	p<0.01	p<0.10	p<0.01
Asset- Household						
Lowest	-	48.7	27.0	88.5	17.7	4.4
Second	-	48.8	25.3	81.7	15.9	6.6
Middle	-	45.8	21.7	82.0	21.7	9.2
Fourth	-	32.3	16.4	70.8	21.5	9.5
Highest	-	33.5	15.9	72.7	24.9	8.4
Significance level	-	p<0.01	p<0.01	p<0.01	ns	ns

Table 4: Odds ratios (logistic regression) of non-communicable diseases' risk factors by socio-demographic characteristics, male and female

Variables	Currently Smoking	Smokeless tobacco	Vigorous physical activity (work related)	Moderate physical activity (work related)	High blood pressure	Diabetes
Male						
Age (years)						
25-34	1.00	1.00	1.00	1.00	1.00	1.00
35-44	0.98	1.59**	1.33	1.07	1.55	2.78
45-54	0.64*	2.71**	0.89	0.87	3.69**	7.48**
55-54	0.71	2.18**	0.57*	0.58*	6.40**	14.62**
Education (years)						
None	1.00	1.00	1.00	1.00	1.00	1.00
1-5	0.85	0.80	0.92	0.69	1.42	1.29
6 or more	0.53**	0.63*	0.96	0.63*	2.24**	1.40
Occupation						
Service/business	1.00	1.00	1.00	1.00	1.00	1.00
Labour	1.07	1.49*	2.31**	0.88	0.82	0.79
Rickshaw puller	1.89**	1.39	6.78**	1.40	1.13	0.66
Others	0.92	1.74*	0.87	1.07	0.89	0.92
Asset- Household						
Lowest	1.00	1.00	1.00	1.00	1.00	1.00
Second	1.02	1.01	1.14	1.44	0.59	0.60
Middle	0.65*	0.75	0.66	0.99	0.46	1.73
Fourth	0.60*	0.55**	0.64*	0.59*	0.99	1.29
Highest	0.43**	0.66	0.63	0.49*	1.25	2.50
Female						
Age (years)						
25-34	-	1.00	1.00	1.00	1.00	1.00
35-44	-	2.25**	1.01	1.02	2.09**	2.11*
45-54	-	2.47**	0.65	0.69	3.83**	5.62**
55-64	-	3.58**	0.32**	0.47**	3.26**	6.28**
Education (years)						
None	-	1.00	1.00	1.00	1.00	1.00
1-5	-	0.52**	0.79	0.81	0.87	0.74
6 or more	-	0.50**	0.57*	0.99	0.79	1.22
Occupation						
Service/business	-	1.00	1.00	1.00	1.00	1.00
Labour	-	1.13	2.29**	0.38**	0.47	0.59
House-wife	-	0.91	0.36**	0.59**	1.21	2.13*
Others	-	0.93	0.19**	0.48**	0.93	2.08
Asset- Household						
Lowest	-	1.00	1.00	1.00	1.00	1.00
Second	-	1.01	0.94	0.56*	0.90	1.64
Middle	-	0.91	0.87	0.61	1.30	2.16
Fourth	-	0.50**	0.71	0.33**	1.32	2.06
Highest	-	0.59*	0.80	0.39**	1.69	1.84

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