



Bangladesh NCD Risk Factor Survey 2010

Non communicable diseases (NCDs) such as ischemic heart disease, stroke, diabetes mellitus, chronic respiratory diseases and cancers have already appeared as important public health problems in Bangladesh. They are linked to a few common risk factors that are amenable to interventions. A risk factor approach for prevention of NCDs is proved to be feasible and cost effective. Surveillance of these risk factors is, therefore, warranted.

A national survey of NCD risk factors was carried out in Bangladesh from November 2009 to April 2010 by using WHO STEPwise Surveillance (STEPS) approach with an objective of determining the prevalence of risk factors in adults aged 25 years or older.

It was conducted by the Bangladesh Society of Medicine under guidance of the Directorate General of Health Services with technical assistance from WHO. The survey used a multi-stage geographically clustered sample design to produce representative data for Bangladesh. Data were collected from 200 *mahallah* (urban area) and 200 *mauza* (rural area) from 62 districts of Bangladesh using digital technologies. Targeted households (11 200) were marked as either male (5 600) or female (5 600) households and one person aged 25 years or older per household was randomly selected. A total of 9 275 (4 312 men and 4 963 women) non-institutionalized adults out of eligible 9 947 subjects from 10 991 households participated in the survey. The response rate was 93.2%. The sampling frame was updated by Bangladesh Bureau of Statistics in 2009. The WHO STEPS questionnaire was used with minor adaptations. Socio-demographic and behavioral risk factor information were collected in Step 1. Height, weight, waist circumference and blood pressure were measured in Step 2.

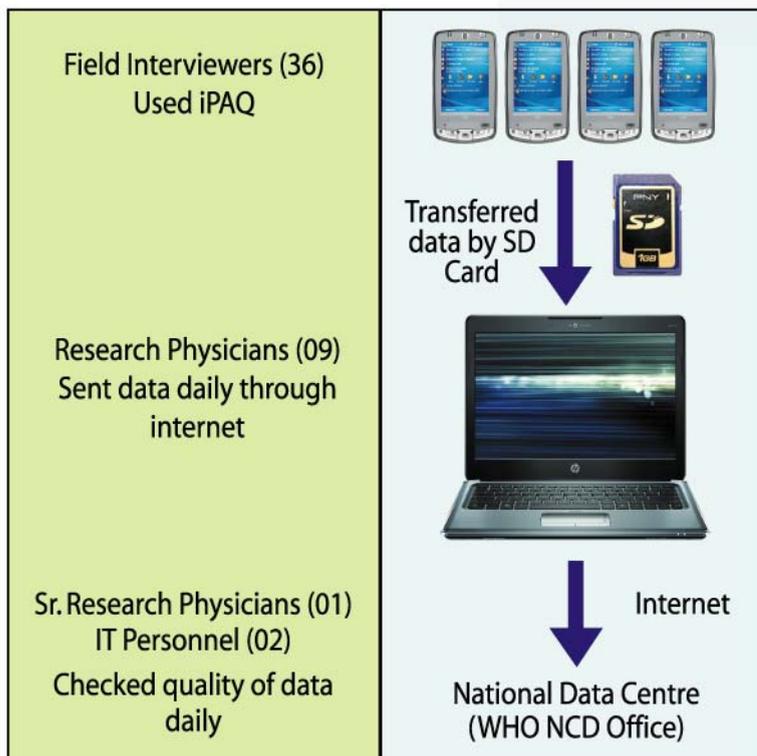


Figure 1: Flowchart of digital data collection

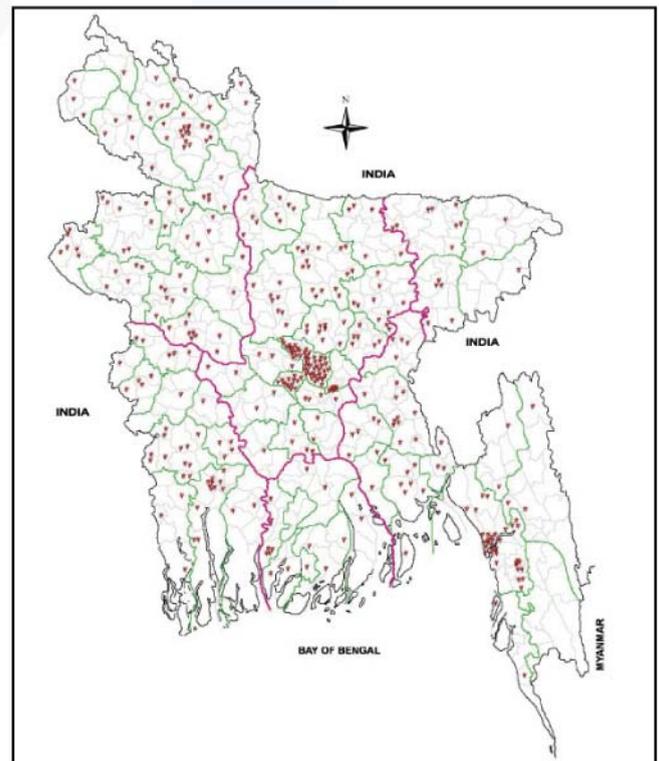


Figure 2: Study locations





Results for adults aged 25 years or over (incl. 95% CI)

Both Sexes
(n = 9 275)

Men
(n = 4 312)

Women
(n = 4 963)

Age and Education

Mean (standard deviation) years of age	42.4 (13.5)	45.5 (14.5)	39.7 (12.0)
Median (interquartile range) years of schooling	3.0 (0-8)	5.0 (0-9)	3.0 (0-7)
Tobacco Use			
Percentage who currently smoke tobacco	26.2 (25.3-27.1)	54.8 (53.4-56.3)	1.3 (1.0-1.6)
Percentage who currently smoke tobacco daily among total population	25.4 (24.5-26.3)	53.3 (51.8-54.8)	1.1 (0.9-1.5)
Average age of smoking initiation among daily smokers	18.4 (18.2-18.7)	18.3 (18.1-18.6)	23.5 (20.1-23.9)
Percentage who currently use smokeless tobacco	31.7 (30.7-32.6)	29.4 (28.1-30.8)	33.6 (32.3-35.0)
Current tobacco user (in any form)	51.0 (50.0-52.0)	70.0 (68.7-71.4)	34.4 (33.1-35.8)
Exposure to second hand smoke among non smokers at home	36.3 (34.9-37.8)	22.2 (20.1-24.4)	42.0 (40.2-43.8)
Exposure to second hand smoke among non smokers at workplace	21.3 (20.3-22.5)	29.2 (26.9-31.7)	18.2 (17.0-19.4)
Fruit and Vegetable Consumption (in a typical week)			
Mean number of days of fruit consumption in a typical week	1.8 (1.8-1.9)	1.7 (1.6-1.7)	1.9 (1.9-2.0)
Mean number of days of vegetables consumption in a typical week	6.1 (6.1-6.1)	5.7 (5.7-5.8)	6.4 (6.4-6.4)
Inadequate fruit and/or vegetables (<5 servings* on an average per day)	95.7 (95.3-96.1)	97.6 (97.1-98.0)	94.1 (93.4-94.8)
Physical Activity			
Percentage with low levels of activity (defined as < 600 metabolic equivalent-minutes per week#)	27.0 (25.9-28.1)	10.5 (9.5-11.5)	41.3 (39.3-43.1)
Percentage with moderate levels of activity (defined as 600 to 2 999 metabolic equivalent-minutes per week)	20.2 (19.3-21.1)	14.5 (13.5-15.8)	25.0 (23.6-26.4)
Percentage with high levels of activity (defined as ≥ 3 000 metabolic equivalent-minutes per week)	52.8 (51.4-54.3)	74.9 (72.3-77.5)	33.7 (32.1-35.4)

* One standard serving size equals to 80 gm. Servings was measured by showing the pictorial show card or measuring cups
1 metabolic equivalent is defined as the energy cost of sitting quietly and is equivalent to a caloric consumption of 1 Kcal/Kg/hour

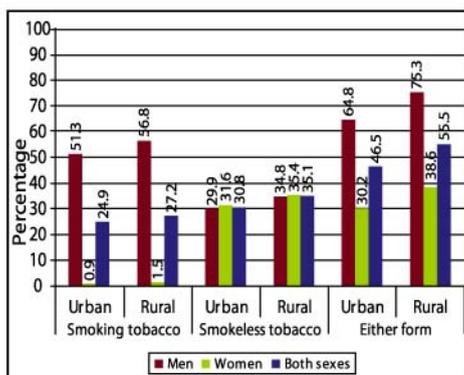


Figure 3: Tobacco use in any form

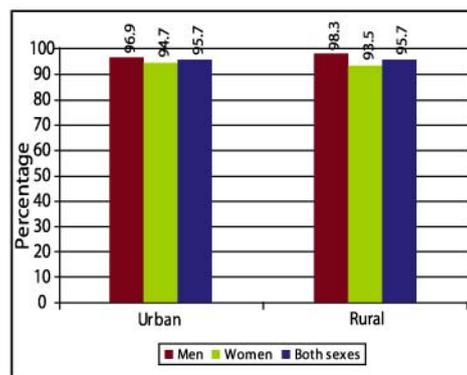


Figure 4: Inadequate intake of fruit and/or vegetables (< 5 servings a day)

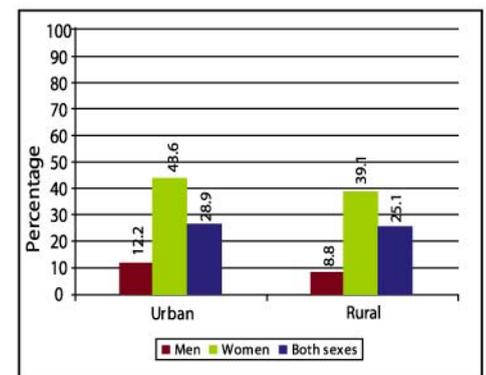


Figure 5: Low physical activity (< 600 metabolic equivalent-minutes/week)

 Results for adults aged 25 years or over (incl. 95% CI)	Both Sexes (n = 9 275)	Men (n = 4 312)	Women (n = 4 963)
Alcohol Consumption			
Percentage who are lifetime abstainers	94.4 (92.4-96.4)	91.0 (90.0-91.8)	99.8 (99.6-99.9)
Percentage who consumed any amount of alcohol in the past 30 days (current drinkers)	0.9 (0.8-1.2)	1.5 (1.1-1.9)	0.1 (0.1-0.3)
Percentage who engage in binge drinking * on any day among current drinkers	66.7 (55.9-75.9)	66.7 (55.5-76.2)	66.7 (26.1-91.9)
Obesity			
Mean body mass index -BMI (kg/m ²)	21.5 (21.4-21.6)	21.0 (20.8-21.1)	22.0 (21.8-22.1)
Percentage who are overweight (BMI ≥ 25 kg/m ²)	17.6 (16.9-18.4)	13.0 (12.0-14.0)	21.6 (20.5-22.8)
Mean waist circumference (cm)	76.6 (76.4-76.8)	77.7 (77.4-78.0)	75.7 (75.3-76.0)
Percentage who have increased waist circumference (men ≥ 94 cm, women ≥ 80 cm)	21.7 (20.9-22.6)	8.0 (7.2-8.8)	33.7 (32.4-35.0)
High Blood Pressure			
Percentage who never measured blood pressure	32.9 (31.9-33.8)	44.5 (43.0-45.9)	22.8 (21.7-24.0)
Mean systolic blood pressure-SBP (mmHg), including those currently on medication	120 (119.4-120.1)	121 (120.7-121.8)	119 (118.0-119.0)
Mean diastolic blood pressure-DBP (mmHg), including those currently on medication	76 (76.1-76.6)	78 (77.2-78.8)	75 (75.0-75.7)
Prevalence of self reported (documented) high blood pressure	12.5 (11.8-13.2)	10.9 (9.9-11.9)	13.9 (12.9-14.9)
Percentage with raised BP (BP ≥ 140/ 90 mmHg or currently on medication for raised BP)	17.9 (17.0-18.8)	18.5 (17.2-19.8)	17.3 (16.2-18.5)
Diabetes Mellitus			
Percentage who never measured blood glucose	83.0 (82.2-83.7)	83.0 (81.9-84.1)	82.9 (81.8-83.9)
Prevalence of self reported (documented) diabetes	3.9 (3.5-4.4)	4.3 (3.7-5.0)	3.6 (3.1-4.2)

* Men who had 5 or more / women who had 4 or more standard drinks (net alcohol content of a standard drink is approximately 10 gm of alcohol)

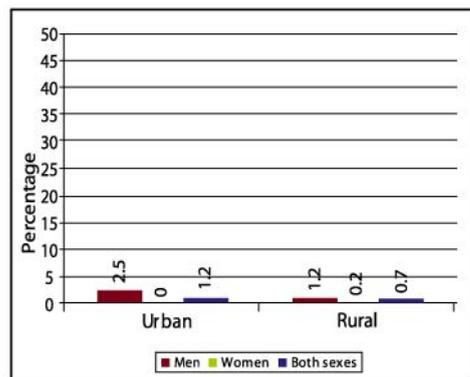


Figure 6: Intake of any amount of alcoholic drink within past 30 days (current drinker)

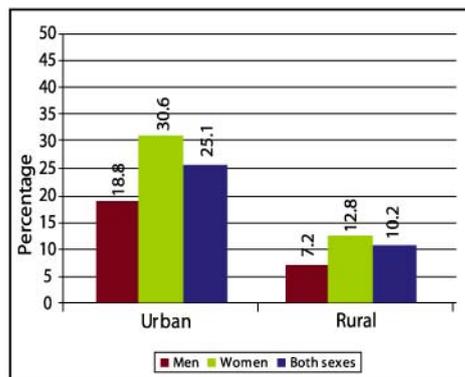


Figure 7: Overweight as measured by body mass index (BMI ≥ 25 kg/m²)

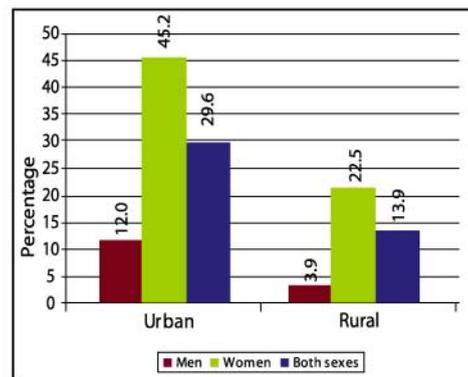


Figure 8: Increased waist circumferences (men ≥ 94 cm, women ≥ 80 cm)



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Results for adults aged 25 years or over (incl. 95% CI)	Both Sexes (n = 9 275)	Men (n = 4 312)	Women (n = 4 963)
Clustering of Risk Factors			
<ul style="list-style-type: none"> ● current tobacco use ● less than 5 servings of fruit & vegetables per day ● low level of physical activity (<600 MET per week) ● diabetes mellitus (self reported) ● Hypertension ($\geq 140/90$ mmHg or currently on medication for hypertension) ● overweight (BMI ≥ 25 kg/m²) 			
Percentage with at least one risk factor	98.7 (96.6-99.9)	99.6 (96.7-99.9)	97.9 (95.1-99.9)
Percentage with two of the above risk factors	77.4 (75.7-79.2)	82.9 (80.2-85.6)	72.6 (70.3-75.1)
Percentage with three or more of the above risk factors	28.3 (27.2-29.4)	24.7 (23.2-26.2)	31.5 (30.0-33.1)

POLICY RECOMMENDATIONS

This first ever nationally representative survey provides essential information on key indicators of NCD risk factors and creates an opportunity for policy makers, programme managers, and researchers to adopt appropriate interventions. Inadequate intake of fruit and vegetables, use of tobacco, low level of physical activity (specially in women), binge drinking among drinkers, obesity (specially abdominal), high blood pressure and diabetes mellitus are fairly common in Bangladeshi adults. Almost all adults (98.7%) have at least one risk factor and substantial proportion of people have two or more risk factors. Based on these findings, the specific recommendations are:

1. Population based approach using primary health care system for NCD prevention is warranted. Mass awareness through campaigns and school curricula are necessary.
2. Tobacco consumption is high even after five years of having a Tobacco Control Act. Adequate enforcement of the Act is necessary. Necessary amendment of the Act is also required to close all the loop holes in the tobacco control programme.
3. Strategies to promote accessibility and availability of fruit and vegetables round the year for all people should be formulated and implemented.
4. Appropriate measures should be undertaken, with emphasis on leisure time physical activity, to promote empowering environment for physical activity.
5. A large proportion of people do not measure blood pressure or blood glucose and hence large proportion of hypertension and diabetes remain undetected. Primary health care system should be reoriented towards early detection and treatment of these common ailments.
6. Because there is hardly any nationally representative data on NCD risk factors, national surveys on health should consider inclusion of NCD risk factors.

For additional information, please contact:

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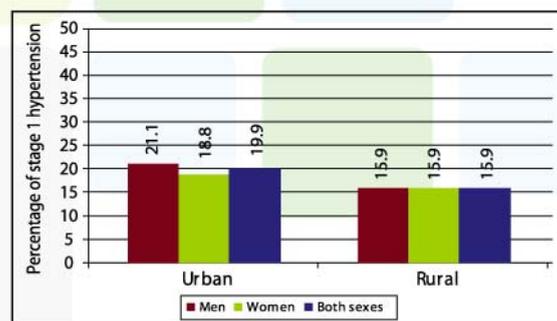


Figure 9: Hypertension (BP $\geq 140/90$ mmHg or medication)

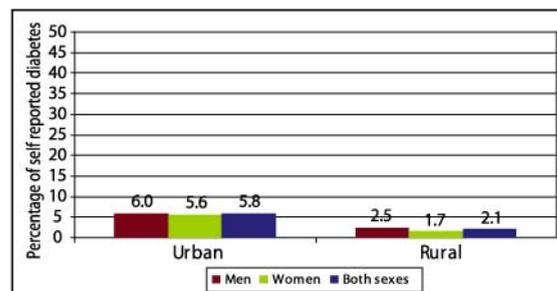


Figure 10: Self reported (documented) diabetes mellitus

Text box 1 : Number of people (in million) with selected risk factors among the adult population aged 25 year or above*			
Risk Factors	Both sexes	Men	Women
Current smoking	18.9	18.5	0.4
Smokeless tobacco use	21.2	9.9	11.3
Tobacco user (any form)	35.1	23.6	11.5
Low vegetable/fruit intake ^a	64.5	32.9	31.6
Low physical activity ^b	17.4	3.5	13.9
Obesity ^c	11.6	4.4	7.3
Abdominal obesity ^d	14.0	2.7	11.3
Hypertension ^e	12.0	6.2	5.8
Diabetes mellitus (documented)	2.7	1.4	1.2

^a < 5 serving/day, ^b < 600 MET per week, ^c BMI > 25 kg/m², ^d Waist girth: men ≥ 94 cm, women ≥ 80 cm, ^e BP $\geq 149/90$ mmHg

* Based on projected 2008 population