Report on the status of major health risk factors for noncommunicable diseases: WHO African Region, 2015

World Health Organization
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Contents

Foreword

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The World Health Organization (WHO) Global Status Report on Noncommunicable Diseases 2010 projects that noncommunicable diseases (NCDs) will be responsible for over 44 million deaths during the next decade, representing an increase of about 15% since 2010. Most of these deaths will occur in the WHO regions of Africa, South-East Asia and the Eastern Mediterranean. In the African Region alone, NCDs will cause around 3.9 million deaths by 2020.

Most NCD related deaths are attributable to cardiovascular disease, diabetes, cancers, and chronic respiratory diseases, resulting from eight behavioural and physiological risk factors: tobacco use, harmful use of alcohol, consumption of unhealthy diet, physical inactivity, overweight and obesity, high blood pressure, raised blood glucose, and raised total cholesterol.

Since the adoption by the United Nations in 2011 of the Political Declaration on the High-Level Meeting of the General Assembly on the Prevention and Control of NCDs and following the publication of WHO's Noncommunicable Diseases Global Monitoring Framework, and Global Action Plan for the Control and Prevention of Noncommunicable Diseases 2013–2020, Member States of the African Region are accelerating efforts to contain the growing pandemic of NCDs and their related risk factors and social determinants across the Region. Based on this global action plan, many countries have developed, or are preparing, national intersectoral action plans on NCD prevention and control.

National intersectoral action plans on NCDs require robust data systems to inform evidence-based policy decisions and legislations. Health information systems in most countries of the African Region are not yet able to give reliable data on the magnitude of NCDs and their risk factors.

This report is based mainly on the findings of STEPwise surveys conducted since 2003, which provide prevalence data on the above risk factors for NCDs in implementing countries. Supplementary information was provided from the global school-based student health survey (GSHS) – a collaborative effort of the United States Centers for Disease Control and Prevention (CDC), and WHO.

This report demonstrates that the key risk factors for NCDs are prevalent in many countries of the Region. Hypertension, for example, has the highest prevalence worldwide in some settings. The data derived from these surveys require that countries intensify their efforts towards the prevention and control of this pandemic.

Most countries have conducted at least one STEPwise survey as a baseline from which to monitor the performance of future national NCD programmes. Member States must therefore invest in conducting STEPwise and global school-based health surveys once every 3–5 years in order to obtain accurate data on trends in the NCD pandemic in this Region.

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Abbreviations and acronyms

BMI	body mass index
BP	blood pressure
CDC	United States Centers for Disease Control and Prevention
DPAS	The Global Strategy on Diet, Physical Activity and Health (WHO)
DBP	diastolic blood pressure
FAO	Food and Agriculture Organization of the United Nations
FBG	fasting blood glucose
FCTC	The Framework Convention on Tobacco Control (WHO)
GPAQ	The global physical activity questionnaire
GSHS	The global school-based student health survey
HMIS	Health Management Information System
METS	metabolic equivalents
SBP	systolic blood pressure
STEPs	The STEPwise approach to noncommunicable disease risk factors surveillance
NCD	noncommunicable disease
WC	waist circumference
WHO	World Health Organization

Tables

Executive summary

In 2002, the World Health Organization (WHO) developed the STEPwise approach to noncommunicable disease risk factor surveillance (STEPS) – a tool to collect, analyse and disseminate population-based information on the key risk factors for noncommunicable diseases (NCDs). In addition, another tool, the global school-based student health survey (GSHS), was developed through collaborative efforts between WHO and the United States Centers for Disease Control and Prevention (CDC), to collect data on key risk factors for NCDs from schoolchildren and students. These tools provide key data for estimating the burden of NCDs and associated risk factors among the WHO regions. Furthermore, such data are critical for programme policy development, monitoring and evaluation of national programmes.

Since 2003, 33 countries in the WHO African Region have conducted STEPwise surveys and 19 countries the GSHS. Most of the STEPwise surveys were from nationally representative samples. This report is based on the published factsheets of these STEPwise and GSHS surveys.

Of 31 STEPwise surveys, the median prevalence of daily tobacco use among adults ranged from 5% to 26% (12% across the Region). The five countries with the highest prevalence of tobacco use were Sierra Leone (26%), Lesotho (25%), Seychelles (22%), and Botswana and Madagascar (20% each).

The median percentage of cigarette smoking among students in these countries was about 7%, ranging from 3% in Benin to 17% in Seychelles. In most countries, boys were shown more likely to smoke cigarettes than girls, with a median prevalence of 11% for boys and 4% for girls.

In 29 countries, the prevalence of alcohol abstinence for both sexes during the 12 months preceding the survey ranged from 13% in Seychelles to over 99% in Niger, followed by Algeria, also with 99%, with a median of 63%. This corresponds with earlier estimates that two thirds of adults in this Region do not drink alcohol. However, the prevalence of current alcohol drinking among adults ranged from as low as 0.3% in Niger to as high as 87% in Seychelles, with a median of 21%.

Among current alcohol drinkers, the prevalence of heavy episodic drinking among males ranged from almost 1% in Gambia to as high as 69% in Chad, with a median of 31%. Similarly, the prevalence of heavy episodic drinking among females was lowest in Gambia (0.3%) and highest in Chad (66%), with a median of 13%.

For alcohol use among schoolchildren, the prevalence of alcohol use among students was as low as 3% in Senegal and as high as 62% in Seychelles, with a median of 16%. This worrying situation places these children at risk of alcohol-related problems, such as alcohol dependency and abuse, as early as during their university or college life.

In all of the countries surveyed, most adults did not consume the recommended combined five servings of fruits and vegetables per day. These adults reported eating fruits only 2.8 days per week, with an average of only 1 serving per day. However, consumption of vegetables was more popular, with a median number of 4 days per week that vegetables are consumed. There was no significant difference between males and females in fruit and vegetable consumption patterns.

Overall, the prevalence of physical inactivity – less than 600 metabolic equivalent (MET) minutes per week – was as low as 6.5% in Mozambique and as high as 51% in Mauritania, with a median of 22% in 30 STEPwise surveys across the Region. For both males and females, the five countries with the highest prevalence of physical inactivity were Mauritania (51%), Cameroon (44%), Democratic Republic of the Congo (44%), Côte d'Ivoire (42%), and Algeria (41%).

Of the 14 countries with data on physical activity, the median percentage of schoolchildren who reported spending three or more hours on sedentary activities was 32%, ranging from 18% in Benin to a maximum of 55% in Seychelles. In some countries the rate of physical inactivity was similar or slightly higher in girls, than boys, with a median prevalence of 32% and 31% respectively.

Data from 31 STEPwise surveys indicated that the prevalence of overweight ranged from 12% in Madagascar to 60% in Seychelles, with a median of 35%, showing that more than one third of adults in half of the countries surveyed are overweight. Adult females are more likely to be overweight than their male counterparts, with a median prevalence of 42%, compared with a median prevalence of 22% for males.

Obesity followed similar patterns to overweight, with a median prevalence of 11%, ranging from 2% in Madagascar to 25% in Seychelles. After Seychelles, the countries with the highest obesity rates included Swaziland (24%), Liberia (22%), Mauritania (Nouakchott, 21%) and Lesotho (20%). Females were three times more likely to be obese than males, with a median prevalence of 15% and 5% respectively.

Hypertension is a major problem in the WHO African Region. In 31 STEPwise surveys, prevalence ranged from 17% to 40%, with a median of 31%. Overall, adult males are likely to be slightly more hypertensive than adult females; the rates among men ranged from 18% to 44%, with a median of 30%, while in females the median was 29%. Athough the distribution of the mean diastolic blood pressure was similar across both sexes, adult males tended to have higher mean systolic blood pressure than females.

The prevalence of pre-diabetes or impaired fasting blood glucose (5.6–< 6.1 mmol/L) ranged from 1% to 26%, with a median of 4%. For diabetes or raised fasting blood glucose (≥ 6.1 mmol/L), the prevalence ranged from 3% in Togo and Benin to 23% in Niger, with a median of 8% across the Region. There was no significant disparity between males and females in the prevalence of pre-diabetes and diabetes.

Of 16 STEPwise surveys that tested participants for total cholesterol, the prevalence of raised total cholesterol ranged from as low as 5% in Lesotho to as high as almost 60% in Seychelles, with a median of 14%. Females were more likely to have a higher prevalence of total cholesterol than males, with a median of 17% and 12% respectively.

These surveys indicate that most adults have at least one of the five major risk factors for NCDs: current daily smoker; eating less than five servings of fruits and vegetables per day; a low level of physical activity; being overweight; and having raised blood pressure. In half of the countries with STEPs data, at least one quarter of adults were observed to have at least three of these five combined risk factors. Most of the adults were likely to be older (aged 45–64) or female.

In conclusion, most countries in the WHO African Region have conducted at least one STEPwise survey, which is considered a robust baseline to monitor future national programme performance. For this reason, it is important that Member States invest in conducting STEPwise and GSHS surveys once every three to five years in order to obtain accurate data of trends on the NCD pandemic.

1. Introduction

1.1 Background

The burden of noncommunicable diseases (NCDs) in the WHO African Region is gradually increasing and is predicted to overtake the burden of mortality and morbidity from communicable diseases by the year 2030 *(1)*. The World Health Organization (WHO) projects that globally, deaths from NCDs will reach 44 million by 2020, representing an increase of 15% from the 2010 estimate. WHO estimates that about 4 million NCD-related deaths will occur in the African Region by 2020.

The leading NCDs of this Region are: cardiovascular diseases, diabetes mellitus type 2, chronic obstructive lung disease, and cancer. The four key risk factors for these NCDs are: tobacco use, harmful use of alcohol, unhealthy diet and physical inactivity. The four intermediate risk factors are: obesity, high blood pressure, raised blood sugar and high cholesterol.

One of the key global objectives for combatting NCDs is to promote effective interventions to prevent and control these risk factors for NCDs *(2)*. To this end, WHO adopted the Framework Convention on Tobacco Control (FCTC), a strategy for the reduction of harmful use of alcohol, and the Global Strategy on Diet, Physical Activity and Health (DPAS).

Planning and implementing the above strategies and resolutions for the primary prevention of NCDs, particularly key risk factors, require regular surveillance data for monitoring and evaluation of each programme area. The current national health management information systems (HMIS) are too weak to generate these NCDs-related data. Therefore, WHO developed a tool known as the STEPwise survey, to collect population-based information regarding key risk factors for NCDs. Another tool – the global school-based student health survey (GSHS) – was developed through collaboration between CDC and WHO to collect data on key risk factors among schoolchildren and students.

1.2 STEPwise surveys

The STEPwise survey is a tool designed to collect surveillance information for measuring a set of NCD behavioural indicators. As the name "STEPwise" indicates, this tool is a sequential process that starts with information gathering on risk factors through structured interviews, followed by physical measurements, and then by collection of blood samples for biochemical analysis. Table 1.2a describes the STEPwise survey components and modules.

Each step has three levels of data collection – core, expanded, and optional modules – which countries prioritize and select depending on the availability of resources. Generally, WHO recommends that the core modules of all STEPs are implemented. However, for countries that are resource-constrained, the core and expanded modules for STEPs 1 and 2 are recommended (Table 1.2b).

The main objective of STEPs is to generate standardized data across all WHO regions, while being sufficiently flexible to be adapted in a variety of country situations and settings. It is a multi-stage population-based cluster survey, which uses a nationally representative sample. As of December 2015, more than 40 STEPwise surveys have been conducted in countries of the WHO African Region, with data from 33 countries being available for inclusion in this report. Of the available STEPS data, 25 countries are nationally representative, while 11 conducted the survey in selected cities or in limited geographical areas.

TABLE 1.2a
STEPwise survey implementation, by country and by year

			STEPs		
			❶	❷	❸
Country	**Year**	**Sample (N/S)**	(interview)	(measurement)	(biomarker)
Algeria	2003	N	●	●	●
Benin	2008	N	●	●	●
	2007	S	●	●	●
Botswana	2007	N	●	●	—
Cameroon	2003	N	●	●	●
Cabo Verde	2007	N	●	●	●
Central African Republic*	2010	S	●	●	●
Chad*	2008	S	●	●	●
Congo*	2004	S	●	●	●
Côte d'Ivoire	2005	N	●	●	—
Democratic Republic of the Congo*	2005	S	●	●	—
Eritrea	2004	N	●	●	—
	2011	N	●	●	●
Ethiopia*	2006	S	●	●	—
	2003	S	●	●	—
Gabon	2009	N	●	●	—
Gambia	2010	N	●	●	—
Guinea*	2009	S	●	●	●
Lesotho	2012	N	●	●	●
Liberia	2011	N	●	●	●
Madagascar*	2005	S	●	●	—
Malawi	2009	N	●	●	●
Mauritania*	2006	S	●	●	●
Mauritius	2004	N	●	●	●
Mozambique	2005	N	●	●	●
Niger	2007	N	●	●	●
Nigeria*	2003	S	●	●	—
Sao Tome and Principe	2008	N	●	●	●
Seychelles	2004	N	●	●	●
Sierra Leone	2009	N	●	●	—
Swaziland	2007	N	●	●	●
United Republic of Tanzania (Mainland)	2012	N	●	●	●
United Republic of Tanzania (Zanzibar)	2011	N	●	●	●
Togo	2010	N	●	●	●
Zambia*	2008	S	●	●	●
Zimbabwe*	2005	S	●	●	●

N: national sample; S: subnational sample; * survey conducted by another institution.

TABLE 1.2b
Components of the STEPwise survey

STEP	Core	Expanded	Optional
STEP 1 Behavioural (interview)	• Basic demographic information – including age, sex, literacy, and highest level of education • Tobacco use • Alcohol consumption • Fruits and vegetables • Physical activity	• Expanded demographic information, including years at school, ethnicity, marital status, employment status, and household income • Smokeless tobacco use • Past 7 days drinking • Oil and fat consumption • History of blood pressure • Treatment of raised blood pressure • History of diabetes • Treatment of diabetes	• Mental health • Intentional and unintentional injury and violence • Oral health • Sexual behaviour • Objective measure of physical activity behaviour
STEP 2 Physical measurements	• Weight and height • Waist circumference • Blood pressure	• Hip circumference	• Skin fold thickness • Assessment of physical fitness
STEP 3 Biochemical measurements	• Fasting blood sugar • Total cholesterol	• HDL-cholesterol • Fasting triglycerides	• Oral glucose tolerance test • Urine examination • Salivary cotinine

HDL: high-density lipoprotein.

1.3 Global school-based student health survey

In 2001, WHO, with technical assistance from CDC, developed the global school based student health survey (GSHS) to collect systematic information from schoolchildren and students and support the implementation of school health programmes. This tool was designed to complement other WHO surveillance systems, such as the STEPwise approach to NCD risk factor surveillance.

The GSHS collects information mainly from students aged 13–15 years, through a self-administered questionnaire comprising 10 modules subdivided into core, expanded, and country-specific questions. The modules are: alcohol use; dietary behaviours; drug use; hygiene; mental health; physical activity; protective factors; sexual behaviours; tobacco use; and violence and unintentional injury.

The survey is based on a two-stage sample design. During the first stage, schools are selected with probability proportional to the school size in terms of number of target students. The second stage involves the random selection of eligible classes in order to give all students in the selected school equal chance of selection.

Since 2003, a total of 19 countries of the WHO African Region have conducted the GSHS, of which 16 have published a preliminary or final report of their data (Table 1.3). The report uses selected GSHS data from these countries, which complements the STEPwise analysis on key risk factors for NCDs.

TABLE 1.3
GSHS countries, by year and selected modules

Country	Year	Alcohol use	Deitary behaviours	Physical activity	Tobacco use
Algeria	2011	●	●	●	●
Benin	2009	●	●	●	●
Botswana	2005	●	●	●	●
Ghana	2007	●	●	●	—
Kenya	2003	●	●	●	●
Malawi	2009	●	●	—	●
Mauritania	2010	●	—	●	●
Mauritius	2007	●	—	●	●
Namibia	2004	●	—	●	●
Senegal	2005	●	●	●	●
Seychelles	2007	●	●	●	●
Swaziland	2003	●	●	—	—
United Republic of Tanzania	2006	●	●	●	●
Uganda	2003	●	●	●	●
Zambia	2004	●	●	●	—
Zimbabwe	2003	●	—	●	●

1.4 Purpose of the report

The purpose of this report is to provide an update on the situation of common risk factors for NCDs in countries of the WHO African Region. The specific objectives are to provide information on:

- the prevalence of current tobacco smoking, by sex and by country, average age of tobacco use debut, average number of cigarettes smoked per day, and level of second-hand smoking among adults and schoolchildren;
- the prevalence of alcohol abstinence, current alcohol drinking, and heavy episodic drinking, by sex and by country;
- the level of consumption of fruits and vegetables by sex and by country;
- the level of physical inactivity among adults and schoolchildren;
- the prevalence of overweight and obesity by sex and by country;
- the prevalence of raised blood pressure by sex and by country, and access to treatment for participants with known raised blood pressure;
- the prevalence of raised fasting blood sugar (pre-diabetes and diabetes) by sex and country;
- the prevalence of raised blood cholesterol (total); and
- the prevalence of combined risk factors by sex and by country.

1.5 Components of the report and data sources

This report has 10 sections: an introduction; eight sections for each of the eight NCD risk factors; and a concluding section with conclusions and recommendations for the way forward.

The report is primarily based on data from WHO STEPs surveys and the global school-based student health surveys. It assesses the magnitude of each risk factor in the WHO African Region through the analysis of comparable STEPwise survey data, supplemented by GSHS data where applicable.

Other data sources and citations from estimates and projections are used to describe specific issues.

2. Tobacco use

2.1 Introduction

The use of tobacco is a leading cause of cancer, heart disease, and chronic lung disease. This modifiable risk behaviour not only affects users, but also, through passive exposure to tobacco smoke, it also puts non-users at risk of ill-health and death. The global burden of tobacco is immense, causing over 70% of lung cancer, 40% of chronic lung diseases, and 10% cardiovascular diseases *(3)*.

Tobacco use causes one in 10 adult deaths worldwide, making it one of the most lethal global public health problems *(4)*. Almost one billion tobacco users exist worldwide, of whom almost 80% live in low- and middle-income countries, where the tobacco burden is the highest.

Under the auspices of WHO, the FCTC – the first public health treaty – was opened for signature in June 2003. As of December 2015, 43 Member States in the WHO African Region have ratified or acceded this treaty. The FCTC consists of a set of evidence based strategies and measures that are legally binding for all signatories of the treaty.

Implementation of the FCTC requires substantial data across all involved sectors, from health to legislation and law reinforcement, and to trade. The establishment and institutionalization of effective surveillance systems are thus the gateway to the proper implementation of strategies and interventions of the FCTC. Tools for monitoring the magnitude of tobacco use among all WHO regions include the STEPwise and GSHS surveys, which provide nationally representative data on the use of tobacco products across population groups. This section of the report provides information on key tobacco related indicators.

2.2 Prevalence of tobacco smoking

The STEPwise survey asks participants whether they are current users of tobacco products, such as cigarettes, cigars, or pipes. Establishing the prevalence of the use of tobacco products is important because three or more data points are needed for trend analysis. For the GSHS, students are asked whether they smoke cigarettes, how frequently they smoke, and when they started smoking. Both tools ask about exposure to second-hand smoking.

Of the 33 surveys conducted, the prevalence of current tobacco use among adults was as low as 5% in Niger and as high as 26% in Sierra Leone, with a median prevalence of 12%. Adult males tend to smoke tobacco 10 times more than female adults, with a median prevalence for males of 23% (9% to 49%), compared with 2% (0.2% to 11%) for females (Table 2.2). The highest prevalence for males was observed in Lesotho, where almost 50% of males was a current tobacco user.

Among current tobacco smokers, the prevalence of daily smoking for adults ranged from 2% in Ghana to 23% in Sierra Leone, with a median of 9%. The rate of male daily smokers was 17 times higher than with females, with a median of 17% for males compared with 1% for females.

TABLE 2.2
Prevalence (%) of current tobacco smoking and daily tobacco smoking, by sex and by country

	Percentage who currently smoke tobacco			Percentage who currently smoke tobacco daily		
Country	Both sexes	Female	Male	Both sexes	Female	Male
Algeria	15.1	0.4	37.6	12.8	0.4	31.9
Benin	8.8	1.7	15.8	7.7	1.2	14.0
Botswana	19.7	7.8	32.8	16.2	5.9	27.6
Cameroon	6.3	1.5	12.7	4.7	2.0	9.7
Cabo Verde	9.9	4.0	15.9	8.1	3.2	13.0
Central African Republic*	14.1	5.5	22.8	11	3.9	18.3
Chad*	11.2	1.2	20.2	9.7	0.9	17.5
Comoros	12.9	2.0	23.8	10.9	1.2	20.6
Congo*	11.1	1.7	20.4	8.2	0.9	15.5
Côte d'Ivoire	14.4	7.3	23.7	10.2	3.7	18.6
Democratic Republic of the Congo*	6.4	1.4	14.1	4.4	0.6	10.2
Eritrea	7.8	0.5	15.3	6.9	0.5	13.5
Ethiopia*	ND	ND	ND	4.6	0.2	11.0
Gabon	12.1	4.6	19.7	8.6	2.2	15.0
Gambia	15.6	1.0	31.3	14.5	0.7	29.4
Ghana	ND	ND	ND	2.0	0.3	5.5
Guinea*	12.8	2.0	23.2	11.3	1.4	21.0
Lesotho	24.5	0.7	48.7	20.4	0.5	40.6
Liberia	9.9	2.8	17.2	7.5	1.3	13.9
Madagascar*	19.6	6.3	33.0	17.6	5.6	29.9
Malawi	14.1	2.9	25.9	12.4	2.4	22.8
Mauritania*	18.9	5.7	34.2	17.8	4.8	32.7
Mauritius	18.0	5.1	35.9	ND	ND	ND
Mozambique	18.7	6.4	36.0	16.7	5.7	32.1
Niger	4.6	0.2	8.7	3.9	0.1	7.4
Nigeria*	9.3	1.1	18.7	ND	ND	ND
Sao Tome and Principe	5.5	1.7	9.7	3.5	0.8	6.5
Seychelles	22.2	5.8	38.5	17.3	3.9	30.8
Sierra Leone	25.8	10.5	43.1	22.5	7.5	39.5
Swaziland	7.1	2.2	12.9	5.9	1.5	11.1
United Republic of Tanzania (Mainland)	14.1	2.9	26.0	11.8	2.0	22.2
United Republic of Tanzania (Zanzibar)	7.3	0.7	14.6	6.4	0.5	12.7
Togo	6.8	1.8	12.4	4.8	1.0	9.1
Zambia*	6.5	1.3	17.0	5.0	1.1	12.9
Zimbabwe*	11.8	5.0	33.4	ND	ND	ND

ND: data not determined or not available; * not nationally representative sample.
Source: WHO STEPs data.

2.3 Tobacco smoking debut

A high rate of tobacco smoking, at an early age with a low cessation rate, is an important predictor of a high tobacco-related mortality rate at population level. A key strategy of national tobacco control programmes therefore is to promote interventions that delay the debut of tobacco use as much as possible.

The participants of the STEPwise survey were asked the age when they first started smoking daily. The overall response to this question showed that the median age for tobacco smoking debut was 21 years for both sexes, ranging from as low as 18 years in Mauritania, to as high as 26 years in Mozambique (Table 2.3). Male smokers tend to start smoking two years earlier than female smokers, with median ages of 21 years and 23 years respectively.

The lowest median for female smoking debut was reported in Côte d'Ivoire and Guinea at 18 years, which was also the lowest median age of smoking debut for males (Algeria and Mauritania). The highest median age of smoking debut for females was 32 years (Botswana), while for males it was 24 years (Mozambique).

Repeat STEPwise surveys are needed in order to assess whether tobacco smoking debut decreases, increases, or remains unchanged over time.

TABLE 2.3
Average age of tobacco smoking debut (years), by sex and by country

Country	Average age of tobacco smoking debut (years)		
	Both sexes	Female	Male
Algeria	19.0	ND	18.0
Benin	23.0	ND	23.0
Botswana	24.0	32.0	22.0
Cameroon	22.0	25.0	21.0
Cabo Verde	19.5	21.0	19.1
Central African Republic*	22.1	25.9	21.3
Chad*	22.0	25.0	22.0
Comoros	18.5	ND	18.6
Congo*	21.0	ND	20.0
Côte d'Ivoire	20.0	18.0	20.0
Democratic Republic of the Congo*	23.0	ND	22.0
Eritrea	20.0	ND	20.0
Ethiopia*	22.0	ND	22.0
Gabon	20.0	ND	20.0
Gambia	19.8	ND	19.7
Ghana	21.8	22.5	21.7
Guinea*	19.0	18.0	19.0
Lesotho	20.7	ND	20.6
Liberia	21.0	ND	21.0
Madagascar*	20.0	22.0	19.0
Malawi	22.0	25.0	22.0
Mali	20.5	ND	19.5
Mauritania*	18.0	ND	18.0
Mozambique	26.0	30.0	24.0
Niger	21.0	ND	21.0
Sao Tome and Principe	20.0	ND	19.0
Seychelles	19.0	ND	19.0
Sierra Leone	21.0	23.0	21.0
Swaziland	ND	ND	ND
United Republic of Tanzania (Mainland)	21.9	22.4	21.8
United Republic of Tanzania (Zanzibar)	22.1	ND	22.0
Togo	25.0	ND	23.0
Zambia*	22.0	21.0	22.0

ND: data not determined or not available; * not nationally representative sample.

Source: WHO STEPs data.

2.4 Use of manufactured cigarettes

Tobacco leaves are available in either smoked or smokeless form, such as for chewing or sniffing. Smokeless tobacco is as dangerous and addictive as smoked tobacco. However, most tobacco users in the Region use manufactured cigarettes, thus making it a priority target for national tobacco control efforts.

Of the participants who used tobacco products, the percentage who used manufactured cigarettes ranged from as low as 46% in Malawi – indicative of widespread use of other forms of tobacco – to as high as 100% in Ethiopia and Ghana, with a median of 87% among countries with STEPwise survey data (Table 2.4).

TABLE 2.4
Percentage of manufactured cigarette users and average number of manufactured cigarette per day, by sex and by country

	Percentage smoking manufactured cigarettes			Mean number of manufactured cigarettes smoked per day		
Country	Both sexes	Female	Male	Both sexes	Female	Male
Algeria	84.5	ND	84.7	15.5	ND	15.5
Benin	80.7	ND	86.5	5.2	ND	5.4
Botswana	52.4	22.2	59.6	7.1	5.2	7.2
Cameroon	86.1	62.8	91.4	8.7	6.8	9.0
Cabo Verde	89.0	71.1	93.5	9.5	5.6	10.4
Central African Republic*	77.0	46.0	83.7	6.6	4.4	7.0
Chad*	68.1	37.5	69.5	11.4	10.4	11.4
Comoros	96.2	97.7	96.1	9.0	8.4	9.0
Congo*	88.8	ND	89.5	3.4	ND	3.5
Côte d'Ivoire	87.6	86.0	88.0	5.7	3.4	6.3
Democratic Republic of the Congo*	89.4	ND	89.7	7.4	ND	7.6
Eritrea	88.1	ND	88.9	9.5	ND	9.3
Ethiopia*	100.0	ND	100.0	7.7	ND	7.8
Gabon	95.7	ND	97.1	9.5	ND	9.8
Gambia	91.5	ND	92.1	9.9	ND	9.9
Ghana	100.0	100.0	100.0	8.5	3.6	9.0
Guinea*	97.4	93.7	97.6	10.0	6.8	10.2
Lesotho	41.8	ND	41.1	1.8	ND	1.8
Liberia	91.8	ND	91.9	5.7	ND	5.9
Madagascar*	77.2	82.7	76.2	9.0	7.4	9.3
Malawi	46.4	14.6	49.9	2.8	1.5	3.0
Mali	78.4	ND	86.8	10.2	ND	10.2
Mauritania*	58.5	59.7	58.3	2.1	ND	2.1
Mozambique	56.3	40.4	60.3	6.4	ND	6.7
Niger	86.7	ND	86.6	7.7	ND	7.7
Sao Tome and Principe	95.6	ND	95.1	8.0	ND	8.4
Seychelles	99.3	ND	99.2	10.2	ND	10.5
Sierra Leone	92.4	95.7	91.7	7.2	5.6	7.6
Swaziland	55.4	ND	54.0	ND	ND	ND
United Republic of Tanzania (Mainland)	79.8	64.8	81.2	5.1	6.7	4.9
United Republic of Tanzania (Zanzibar)	94.7	ND	98.2	5.5	ND	5.8
Togo	75.1	ND	82.7	5.3	ND	5.8
Zambia*	68.4	42.9	72.8	8.2	6.8	8.4

ND: data not determined or not available; * not nationally representative sample.

Source: WHO STEPs data.

2.5 Tobacco use among schoolchildren

Tobacco use kills over a long period of time, and its use in early adolescence is thus likely to result in premature death while the user is still at productive age. Tobacco use among youth must therefore be halted and reversed if national tobacco control programmes are to be successful.

For the GSHS, students aged 13–15 years from a nationally representative sample of high schools were asked whether they had smoked cigarettes on one or more days during the 30 days preceding the survey. Students were also asked whether they had used any other form of tobacco on one or more days during a 30-day period preceding the survey.

Table 2.5 describes the responses to these two questions among students in 13 countries of the Region. The median percentage of cigarette smoking among students in these countries was about 7%, ranging from 3% in Benin to 17% in Seychelles. In most countries, boys were more likely to smoke cigarettes than girls, with a median prevalence of 11% for boys and 4% for girls. Mauritania was the only country in which the prevalence of cigarette smoking was the same among boys and girls (17%).

In most of the countries surveyed, other forms of tobacco were more common than cigarettes among students. The median percentage of students who reported using other forms of tobacco was 9%, ranging from 5% in United Republic of Tanzania to 91% in Mauritania.

TABLE 2.5
Prevalence (%) of tobacco smoking among students (aged 13–15 years) in 13 countries

		Percentage of students who smoked cigarettes on one or more days during the past 30 days			Percentage of students who used any other form of tobacco on one or more days during the past 30 days		
Country	**Survey year**	Boys	Girls	Total	Boys	Girls	Total
Algeria	2011	18.0	1.4	9.2	81.6	ND	82.1
Benin	2009	3.3	1.6	2.8	ND	ND	ND
Botswana	2005	10.7	3.8	7.0	14.0	9.4	11.6
Kenya	2003	17.3	10.7	13.9	14.7	11.6	13.1
Malawi	2009	5.9	3.8	4.9	ND	ND	ND
Mauritania	2010	17.2	16.8	17.3	90.6	92.0	91.4
Mauritius	2007	23.1	8.5	15.4	8.1	2.7	5.3
Namibia	2004	18.2	14.2	16.1	33.5	30.1	31.8
Senegal	2005	9.1	2.7	6.5	9.5	3.0	6.8
Seychelles	2007	24.1	10.8	17.2	14.4	3.9	9.2
United Republic of Tanzania	2006	5.3	2.0	3.8	6.9	2.1	4.7
Uganda	2003	6.2	2.6	4.3	7.1	3.9	5.5
Zimbabwe	2003	9.6	2.2	5.8	10.5	5.2	7.9

ND: data not determined or not available.
Source: GSHS.

2.6 Conclusion

Of the 28 countries with nationally representative data, 16 (57%) had an overall prevalence of current daily tobacco use exceeding 10%. Clearly tobacco use is a major public health problem, particularly in Lesotho and Sierra Leone where more than one in three adult males smokes cigarettes on a daily basis.

The problem is not confined to the adult males. Equally alarming is the prevalence of tobacco use among students aged 13–15 years: one in four boys in Seychelles reported smoking cigarettes, and over 90% of girls reported using other forms of tobacco during one or more days within the 30 days preceding the survey.

Although available data on tobacco use in the Region are limited, there was sufficient evidence to show that the tobacco epidemic is spreading silently in many countries. Implementation of the FCTC – the only comprehensive tool against tobacco use – must therefore be scaled up.

The new generation of STEPs surveys and GSHS will provide additional data, such as smoking cessation, policy issues, and knowledge about the risk of tobacco use.

3. Alcohol consumption

3.1 Introduction

Alcohol affects every organ of the body, leading to a range of chronic health disorders, particularly liver disease, which is the primary cause of death among alcohol users *(5)*. The harmful use of alcohol is a global public health problem that results in 2.5 million deaths each year *(6)*. It also compromises individual and societal welfare and development. An intoxicated person puts others at risk in many situations including road traffic accidents and violent behaviour towards family members and co-workers. The harmful use of alcohol impacts society profoundly.

Based on the global strategy to reduce the harmful use of alcohol *(7)*, the WHO Regional Office for Africa developed a set of evidence-based policies and interventions, which the Regional Committee adopted during Regional Committee 60 in 2010. Implementation and reinforcement of the strategy should significantly reduce alcohol-related morbidity and mortality across the Region.

Implementation of both global and regional strategies, as well as other alcohol-related tools, requires robust data in order to plan, monitor, and evaluate all efforts against the harmful use of alcohol. This section of the report reviews some of the alcohol consumption indicators that are monitored through the STEPs and GSHS surveys.

For standardization purposes, one standard alcohol drink is defined as a regular beer bottle (285 ml), a single measure of spirits (30 ml), a medium-sized glass of wine (120 ml) or one measure of aperitif (60 ml). The net alcohol content of a standard drink is approximately 10 grams of ethanol, which may vary from country to country. Therefore, this measurement is subject to adaptation in countries, especially where consumption of traditionally-brewed alcoholic drinks is common.

In STEPs, survey participants were asked about alcohol abstinence and current drinking patterns, such as binge or heavy drinking. Specific indicators included the percentage who were current or lifetime abstainers, the percentage of current alcohol drinkers (past 30 days), and the percentage who engaged in heavy episodic drinking (five or more drinks for men, and four or more for women).

In the GSHS, students were asked a set of questions ranging from seeing alcohol advertisements and alcohol use to alcohol-related trouble with family or friends or school absenteeism.

This report presents and discusses the following indicators: the prevalence of current alcohol drinking (one or more drinks in the past 30 days); the prevalence of two or more drinks per day among current drinkers; the prevalence of lifetime drunkenness on one or more occasions; and the prevalence of lifetime alcohol related-trouble on one or more occasions.

3.2 Alcohol abstinence

Promotion of alcohol abstention is an important strategy to prevent and control the harmful use of alcohol, particularly among youth and former alcohol users. Alcohol abstinence is measured as either for a lifetime, or for a limited time period, for example 12 months. Depending on the version of the STEPs survey protocol that countries used, participants were asked whether they had ever consumed an alcoholic drink or whether they had consumed an alcoholic drink within the past 12 months preceding the survey. Most of the countries responded to the last question.

Of the 34 countries surveyed, the prevalence of alcohol abstinence for both sexes during the 12 months preceding the survey ranged from 13% in Seychelles to over 99% in Niger, followed by Algeria, with a median of 63% – almost 10% less than the global rate of 54% *(8)*. As expected, women (75%) were more likely to abstain from alcohol than men (51%) (Table 3.1). The lowest rate for female abstainers was observed in Cameroon (17%), while Niger and Algeria had the highest female alcohol abstainers (about 100%). The lowest and highest rates of alcohol abstinence in adult males were in Seychelles (8%) and Niger (99%).

TABLE 3.2
Percentage of current alcohol abstainers, by sex and by country

	Percentage who abstain from drinking alcohol		
Country	Both sexes	Female	Male
Algeria	99.0	99.9	97.6
Benin	40.2	49.9	30.7
Botswana	72.6	85.6	57.5
Cameroon	14.5	16.5	11.8
Cabo Verde	46.9	71.3	22.2
Central African Republic*	56.6	66.5	46.7
Chad*	79.0	85.0	73.6
Comoros	98.7	99.7	97.8
Congo*	40.1	49.2	31.1
Côte d'Ivoire	66.0	75.6	53.5
Democratic Republic of the Congo*	58.4	67.2	44.8
Eritrea	63.8	68.1	59.4
Ethiopia*	38.4	43.5	31.0
Gabon	56.2	61.8	50.6
Gambia	98.6	99.4	97.7
Ghana	55.8	63.0	41.7
Guinea*	94.5	97.8	91.2
Lesotho	59.3	77.5	40.9
Liberia	63.2	75.2	50.8
Madagascar*	68.3	82.6	53.6
Malawi	68.1	87.8	47.4
Mali	96.9	99.5	93.0
Mauritania*	ND	ND	ND
Mozambique	54.8	65.6	39.6
Niger	99.5	100.0	99.1
Nigeria*	68.7	81.2	54.3
Sao Tome and Principe	13.3	16.8	9.4
Seychelles	12.7	17.6	7.8
Sierra Leone	68.1	75.7	59.4
Swaziland	85.1	94.1	74.6
United Republic of Tanzania (Mainland)	62.4	70.1	54.4
Togo	33.3	37.9	28.1
Zambia*	74.2	83.0	56.6
Zanzibar	90.8	96.8	84.2

ND: data not determined or not available; * not nationally representative sample.

Source: WHO STEPs data.

3.3 Alcohol abstinence

A current alcohol drinker is a person who reported having at least one standard drink within a 30-day period. The prevalence of current alcohol drinking is a useful indicator for national disease prevention and health promotion programmes, particularly when multiple data points are available for trend analysis.

Among 28 countries that have data, the prevalence of current alcohol drinking among adults ranged from as low as 0.3% in Niger to as high as 87% in Seychelles, followed by Sao Tome and Principe with 85% (Table 3.3). At least one in five adults was a current alcohol drinker in half of these countries, representing a median of 24%.

As in the alcohol drinking abstinence rate, women were less likely to be current drinkers than their male counterparts. The prevalence of current alcohol drinking among women ranged from 0% in Niger to 82% in Seychelles, with a median of 13%. On the other hand, for males, the prevalence ranged from 0.6% in Niger to as high as 92% in Seychelles, with a median of 34%.

TABLE 3.3
Percentage of current alcohol drinkers, by sex and by country

	Percentage of current alcohol drinkers		
Country	Both sexes	Female	Male
Algeria	ND	ND	ND
Benin	48.8	36.9	60.6
Botswana	18.7	8.8	30.3
Cameroon	ND	ND	ND
Cabo Verde	40.3	16.1	64.7
Central African Republic*	31.5	22.9	40.1
Chad*	17.0	10.6	22.6
Comoros	0.7	0.1	1.4
Congo*	ND	ND	ND
Côte d'Ivoire	34.0	24.4	46.5
Democratic Republic of the Congo*	ND	ND	ND
Eritrea	26.2	22.3	30.2
Ethiopia*	45.7	37.9	56.9
Gabon	30.6	24.2	37.1
Gambia	1.0	0.4	1.5
Ghana	30.9	23.1	46.3
Guinea*	1.8	1.0	2.5
Lesotho	30.7	14.4	47.3
Liberia	6.9	6.3	7.6
Madagascar*	31.7	17.4	46.4
Malawi	10.5	6.0	15.3
Mali	3.1	0.5	7.0
Mauritania*	ND	ND	ND
Mozambique	45.2	34.4	60.4
Niger	0.3	0.0	0.6
Sao Tome and Principe	84.5	80.5	89
Seychelles	87.3	82.4	92.2
Sierra Leone	10.2	9.1	11.6
Swaziland	11.8	4.6	20.1
United Republic of Tanzania (Mainland)	29.3	20.9	38.3
United Republic of Tanzania (Zanzibar)	1.7	0.4	3.1
Togo	4.1	4.8	3.3
Zambia*	20.8	12.0	38.3

ND: data not determined or not available; * not nationally representative sample.
Source: WHO STEPs data.

3.4 Heavy episodic drinking

Heavy episodic alcohol drinking – or binge drinking – is defined as the consumption of five or more standard alcoholic drinks for men and four or more for women on a single occasion within a 30-day period. There is a strong association between binge drinking and increased risk of alcohol-related problems *(9)*. It is important, therefore, to monitor the magnitude of binge drinking among the population in order to develop or evaluate public health measures towards the reduction of harmful use of alcohol.

Of the 31 countries with STEPs data, the prevalence of heavy episodic drinking among male drinkers ranged from almost 1% in Gambia to as high as 69% in Chad, with a median of 31%. Similarly, the prevalence of heavy episodic drinking among female drinkers was lowest in Comoros (0.04%) and highest in Chad (66%), with a median of 13% (Table 3.4).

After Chad, countries where heavy episodic alcohol drinking was a major concern included Botswana, Gabon, Swaziland and Zambia. After Gambia, countries where binge drinking was less frequent among male alcohol drinkers included Comoros, Guinea (Conakry), Congo and Cameroon.

Generally, male drinkers were more likely to become heavy drinkers than their female counterparts. The exceptions were Botswana, Chad and Zambia, where the difference was not significant.

TABLE 3.4
Percentage of adult males and females engaged in heavy episodic alcohol drinking, by sex and by country

	Percentage who engage in heavy episodic drinking		
Country	Both sexes	Female	Male
Algeria	**	**	**
Benin	ND	12.9	33.1
Botswana	ND	51.8	54.1
Cameroon	ND	4.4	9.0
Cabo Verde	ND	12.0	44.1
Central African Republic*	ND	20.3	36.3
Chad*	ND	65.8	69.4
Comoros	ND	0.04	1.0
Congo*	ND	7.1	6.8
Côte d'Ivoire	ND	16.5	31.6
Democratic Republic of the Congo*	ND	15.4	26.6
Eritrea	ND	3.8	15.6
Ethiopia*	ND	2.6	18.2
Gabon	ND	39.9	54.2
Gambia	ND	0.3	0.8
Ghana	29.8	19.7	40.0
Guinea*	ND	0.5	2.0
Lesotho	ND	9.4	34.5
Liberia	ND	9.7	23.0
Madagascar*	ND	30.1	37.4
Malawi	ND	2.3	19.0
Mozambique	ND	35.1	44.8
Niger	ND	**	**
Sao Tome and Principe	ND	21.0	29.9
Seychelles	ND	ND	ND
Sierra Leone	ND	5.2	14.3
Swaziland	ND	ND	50.5
United Republic of Tanzania (Mainland)	ND	13.4	27.4
United Republic of Tanzania (Zanzibar)	ND	0.3	1.7
Togo	ND	21.7	35.7
Zambia*	ND	45.3	48.5

ND: data not determined or not available; * not nationally representative sample; ** fewer than 50 respondents.
Source: WHO STEPs data.

3.5 Alcohol use among schoolchildren

Early debut of alcohol use is an important predictor of related adverse lifetime consequences. There is strong evidence that adults who reported using alcohol aged 14 years or younger have a six-fold probability of developing alcohol dependency and abuse than those who start using alcohol at 21 years or older *(10)*. It is therefore critical to monitor the level of this behavioural risk factor among schoolchildren, and use this information to promote healthy lifestyles in the school environment.

A total of 13 countries in the Region have conducted the GSHS to monitor behavioural risk factors among students aged 13–15 years. Table 3.5 shows the prevalence of alcohol use, drunkenness, and alcohol-related trouble among students.

TABLE 3.5
Percentage of students (aged 13–15 years) in 13 countries who reported drinking alcohol on one or more days in the past 30 days, percentage who got drunk one or more times in their lifetime, and percentage who experienced alcohol-related trouble on one or more occasions in their lifetime

Country	Percentage who reported alcohol use in one or more times in past 30 days (95% CI)		Among current drinkers, percentage who got drunk one or more times in lifetime (95% CI)		Percentage who reported alcohol trouble one or more times in lifetime (95% CI)	
Benin	16.4	(12.7–20.8)	13.2	(9.8–17.5)	9.3	(6.9–12.4)
Botswana	20.6	(17.8–23.6)	20.9	(18.7–23.3)	16.6	(14.4–19.2)
Ghana	28.1	(25.1–31.2)	32.7	(29.6–36.1)	34.6	(31.6–37.8)
Kenya	14.6	(12.0–17.8)	19.7	(16.5–23.4)	27.8	(24.5–31.3)
Malawi	3.9	(1.9–8.1)	3.2	(1.4–7.0)	ND	ND
Mauritius	17.9	(13.5–23.4)	17.4	(12.3–24.1)	7.4	(5.7–9.5)
Namibia	32.8	(29.6–36.2)	31.8	(29.4–34.3)	30	(27.4–32.7)
Senegal	3.2	(2.0–5.0)	4.8	(3.5–6.7)	5.3	(3.9–7.3)
Seychelles	61.6	(60.6–62.6)	53.1	(51.9–54.3)	21	(19.9–22.1)
Swaziland	16	(14.1–18.2)	18.6	(16.9–20.6)	16.9	(15.7–18.2)
Uganda	12.8	(10.3–15.8)	15.2	(12.8–17.9)	21.0	(18.4–23.9)
Zambia	42.3	(37.1–47.7)	42.8	(38.2–47.4)	47.3	(43.9–50.7)
Harare, Zimbabwe	15.4	(13.5–17.6)	16.5	(14.2–19.2)	13.0	(10.4–16.1)

ND: data not determined or not available.
Source: GSHS.

The prevalence of alcohol use among students was as low as 3% in Senegal and as high as 62% in Seychelles, with a median of 16%. This is a very serious situation with more than half of schoolchildren aged 13–15 years in Seychelles being alcohol users.

Besides Seychelles, other countries with a major concern of alcohol use among schoolchildren were Zambia (42%), Namibia (33%), Ghana (28%) and Botswana (21%). These children are at risk of having alcohol-related problems such as alcohol dependency and abuse, as early as during their university or college life.

Among those who drink alcohol, the percentage who reported ever becoming drunk on one or more occasion ranged from 3% in Malawi to 53% in Seychelles, with a median of 19%. In addition to Seychelles, other student drinkers who were more likely to get drunk were from Zambia (43%), Ghana (33%), Namibia (32%) and Botswana (21%).

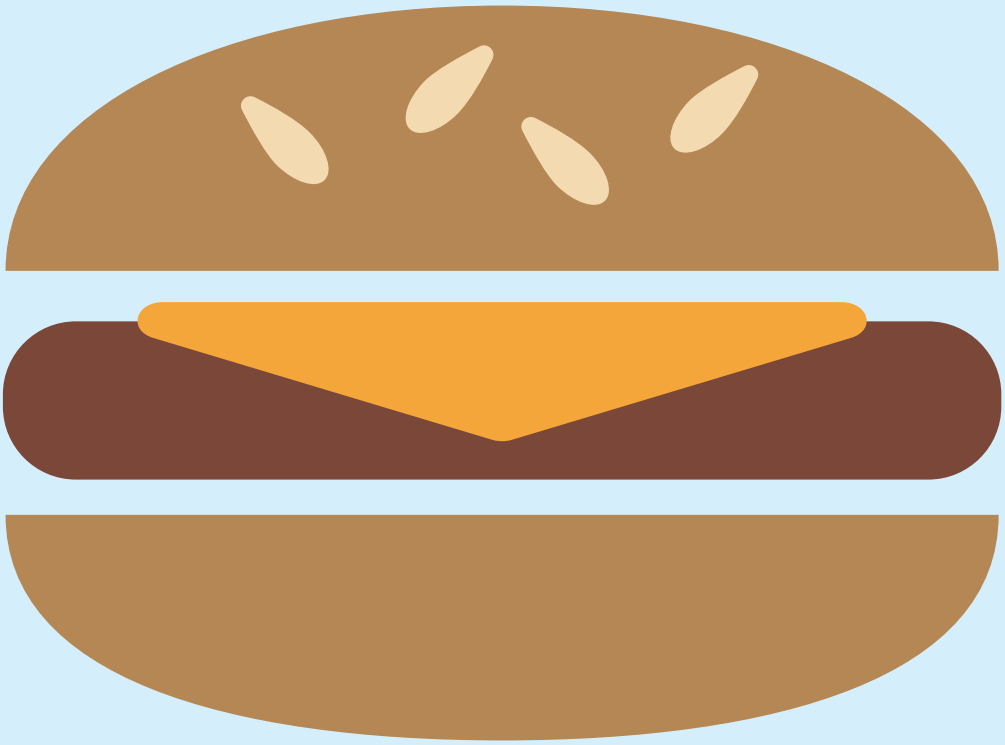
The proportion of students who reported having alcohol-related troubles, such as problems with family and friends, school absenteeism, and violence, one or more times, ranged from 5% in Senegal to as high as 47% in Zambia, with a median of 19%. In at least half of the countries surveyed, one in five student drinkers reported getting into trouble because of alcohol use.

3.6 Conclusion

Most adults in the WHO African Region do not drink alcohol. However, among those who drink, the prevalence of heavy episodic drinking is extremely high. For example in Chad, the prevalence of current alcohol drinking is 17%, but the prevalence of binge drinking is almost 70% for men and over 65% for women.

The high prevalence of alcohol use among students is another concern across the Region. For example, in Seychelles almost two in three students drink alcohol. High rates of alcohol use are observed also in other countries among students aged 13–15 years, which is likely the result of advertising and marketing strategies of the alcohol industry.

The development and reinforcement of strict alcohol laws are thus warranted across the Region. The influence of the alcohol industry is growing, and countries must develop a common strategy to mitigate such interferences.



4. Unhealthy diet

4.1 Introduction

An unhealthy diet is one of the major modifiable risk factors for NCD morbidity and mortality, including cardiovascular disease, type 2 diabetes, and cancer. Consumption of fruits and vegetables is one of the elements of a healthy diet. Globally, insufficient intake of fruits and vegetables accounts for about 14% of deaths from gastrointestinal cancer and about 10% of deaths from ischaemic heart disease and stroke *(3)*. Although the consequences of consuming unhealthy diets are greatest in other WHO regions, the African Region, with both malnutrition and consumption of unhealthy diets, experiences a double burden.

WHO and the Food and Agriculture Organization of the United Nations (FAO) recommend that individuals consume a minimum of 400 grams of fruit and vegetables per day (excluding potatoes and other starchy tubers) for the prevention of chronic diseases such as heart disease, cancer, diabetes and obesity, as well as for the prevention and alleviation of several micronutrient deficiencies, especially in less developed countries. In 2003, WHO and FAO launched a joint initiative, known as PROVAF, to promote the consumption of fruit and vegetables for health worldwide.

In order to monitor the consumption patterns of fruits and vegetables among the population, STEPwise survey participants were asked the number of days they consumed fruits and vegetables in a typical week and the number of servings per day (Text Box 4.1).

TABLE 4.1
STEPs core questions on diet (consumption of fruits and vegetables)

Core question on diet
The next questions ask about the fruits and vegetables that you usually eat. I have a nutrition card here that shows you some examples of local fruits and vegetables. Each picture represents the size of a serving. As you answer these questions please think of a typical week in the last year.

Question	Response	Code
❶ In a typical week, on how many days do you **eat fruit**? (USE SHOWCARD)	• Number of days __–__ • Don't know ☐ • If zero '0' days go to D3	D1
❷ How many **servings** of fruit do you eat on **one** of those days? (USE SHOWCARD)	• Number of servings • Don't know ☐	D2
❸ In a typical week, on how many days do you **eat vegetables**? (USE SHOWCARD)	• Number of days __–__ • Don't know ☐ • If zero '0' days go to D5	D3
❹ How many **servings** of vegetables do you eat on **one** of those days? (USE SHOWCARD)	• Number of servings • Don't know ☐	D4

4.2 Consumption of fruits

Patterns of fruit consumption vary within each country and across countries (Table 4.2). Among the 33 countries that conducted STEPs surveys, the average number of days per week where fruits were reportedly consumed ranged from 1 day in Ethiopia and Botswana to 4.5 days in Seychelles, with a median of 2.8 days. The five countries with the highest consumption rate of fruits – i.e. the number of days fruits were consumed in a week – were Seychelles, Sao Tome and Principe, Comoros, Sierra Leone, and Swaziland. The five countries with the lowest consumption rate of fruits were Ethiopia, Botswana, Lesotho, Niger and Malawi.

The overall consumption pattern of fruits was similar among males and females with 2.8 days per week as the median for both sexes. For females, the minimum number of days where fruits were eaten was reported from Botswana (0.8 days), while in Seychelles the rate was 4.8 days per week.

The average fruit serving per day ranged from as low as 0.3 in Botswana to as high as 2.1 in Benin and Madagascar, with a median of 1 serving per day. There was no clear difference between males and females in the reported number of fruit servings per day (1 serving for each).

TABLE 4.2
Number of days and servings of fruits consumed by adults in one week and on one day respectively, by sex and by country

	Mean number of days of fruit consumed on average per week			Mean number of servings of fruit consumed on average per day		
Country	Both sexes	Female	Male	Both sexes	Female	Male
Algeria	2.5	2.4	2.5	0.7	0.7	0.8
Benin	2.9	2.9	2.9	2.1	2.0	2.2
Botswana	1.0	0.8	1.1	0.3	0.2	0.3
Cameroon	2.8	2.8	2.8	ND	ND	ND
Cabo Verde	3.3	3.3	3.2	1.4	1.2	1.5
Central African Republic*	3.2	3.2	3.2	1.4	1.5	1.4
Chad*	3.0	3.2	2.9	1.3	1.5	1.2
Comoros	3.5	3.3	3.6	1.8	1.5	2.1
Congo*	2.8	2.7	2.8	ND	ND	ND
Côte d'Ivoire	2.3	2.2	2.3	0.9	0.8	0.9
Democratic Republic of the Congo*	2.5	2.6	2.4	1.0	1.0	1.1
Eritrea	2.4	2.1	2.6	0.8	0.7	0.9
Ethiopia*	1.0	0.9	1.1	1.2	1.3	1.2
Gabon	2.9	2.9	2.8	1.0	1.1	1.0
Gambia	3.3	3.4	3.3	1.0	1.0	1.0
Ghana	1.3	1.2	1.4	ND	ND	ND
Guinea*	3.3	3.4	3.2	1.6	1.7	1.6
Lesotho	1.6	1.7	1.5	0.5	0.5	0.5
Liberia	2.3	2.3	2.2	0.7	0.7	0.7
Madagascar*	2.9	2.8	3	2.1	1.9	2.2
Malawi	2.0	2.0	2.0	0.5	0.5	0.5
Mali	3.4	3.4	3.5	1.6	1.5	1.9
Mauritania*	2.3	2.2	2.4	0.7	0.6	0.7
Mozambique	2.7	2.7	2.7	1.1	1.1	1.1
Niger	1.6	1.4	1.8	0.5	0.4	0.6
Sao Tome and Principe	3.9	3.9	4.0	1.2	1.2	1.3
Seychelles	4.5	4.8	4.2	1.4	1.5	1.2
Sierra Leone	3.4	3.5	3.3	1.5	1.5	1.5
Swaziland	3.3	3.2	3.3	1.1	1.1	1.0
United Republic of Tanzania (Mainland)	2.5	2.8	2.2	0.7	0.8	0.6
United Republic of Tanzania (Zanzibar)	3.9	3.7	4.1	1.1	1.0	1.1
Togo	2.2	2.1	2.3	0.9	0.8	0.1
Zambia*	3.2	3.3	3.0	0.7	0.7	0.7

ND: data not determined or not available; * not nationally representative sample.

Source: WHO STEPs data.

4.3 Consumption of vegetables

Across the Region, vegetables were consumed far more than fruits. The average number of days where vegetables were consumed in a typical week ranged from 1.6 days in Ethiopia to 6.8 days in Zambia, with a median of 4.2 days per week. This was almost double that of fruits. As in fruit consumption, there was no disparity by sex (Table 4.3).

The five countries with the highest rate of vegetable consumption in terms of number of days per week were Zambia, Seychelles, Malawi, Sao Tome and Principe and Central African Republic. The five countries with the least number of days of vegetable consumption were Ethiopia, Niger, Eritrea, Comoros and Gabon.

As in fruit consumption, the patterns of vegetable consumption among males and females was similar within countries. The number of vegetable servings consumed per day ranged from 0.5 servings in Niger, to 3.8 in Madagascar, with a median of 1.5 servings in a typical day. Consumption of vegetables was higher than of fruits, vegetables forming an important part of the meals in Africa and costing less than fruits.

TABLE 4.3
Number of days and servings of vegetables consumed by adults in one week and on one day respectively, by sex and by country

	Mean number of days vegetables consumed			Mean number of servings of vegetables consumed on average per day		
Country	Both sexes	Female	Male	Both sexes	Female	Male
Algeria	5.0	5.0	5.0	2.0	2.0	2.0
Benin	4.2	4.2	4.2	1.6	1.6	1.6
Botswana	3.4	3.5	3.3	1.0	1.0	0.9
Cameroon	3.2	3.2	3.3	ND	ND	ND
Cabo Verde	3.7	3.8	3.6	1.4	1.4	1.4
Central African Republic*	5.2	5.3	5.1	3.3	3.6	2.9
Chad*	4.2	4.2	4.1	1.6	1.8	1.5
Comoros	2.7	2.8	2.7	0.9	0.9	0.9
Congo*	3.6	3.8	3.5	ND	ND	ND
Côte d'Ivoire	3.7	3.7	3.6	1.8	1.8	1.8
Democratic Republic of the Congo*	3.9	3.9	3.7	1.7	1.6	1.8
Eritrea	2.5	2.5	2.5	0.7	0.7	0.7
Ethiopia*	1.6	1.6	1.5	1.4	1.5	1.4
Gabon	2.7	2.7	2.7	0.8	0.8	0.8
Gambia	5.0	5.1	4.9	1.4	1.5	1.4
Ghana	1.6	1.5	1.7	ND	ND	ND
Guinea*	3.4	3.5	3.3	1.4	1.5	1.4
Lesotho	5.0	5.4	4.7	2.1	2.2	1.9
Liberia	3.5	3.6	3.4	1.0	1.0	1.0
Madagascar*	5.0	4.8	5.1	3.8	3.4	4.2
Malawi	5.6	5.7	5.5	1.6	1.7	1.6
Mali	5.1	5.3	4.6	2.7	2.8	2.4
Mauritania*	5.1	5.0	5.1	2.0	1.9	2.1
Mozambique	4.2	4.4	3.9	1.1	1.2	1.1
Niger	2.1	2.0	2.2	0.5	0.5	0.6
Sao Tome and Principe	5.4	5.6	5.2	1.7	1.8	1.7
Seychelles	5.8	6.0	5.6	1.9	2.0	1.8
Sierra Leone	4.2	4.3	4.2	1.2	1.3	1.2
Swaziland	4.9	5.0	4.8	1.6	1.8	1.4
United Republic of Tanzania (Mainland)	4.5	4.7	4.3	1.0	1.0	1.0
United Republic of Tanzania (Zanzibar)	2.8	2.9	2.7	0.7	0.7	0.6
Togo	4.8	4.8	4.9	1.1	1.1	1.2
Zambia*	6.8	6.8	6.6	1.9	1.9	1.9

ND: data not determined or not available; * not nationally representative sample.

Source: WHO STEPs data.

4.4 Combined servings of friuts and vegetables

WHO recommends a consumption of 400 grams of fruits and vegetables – or at least five combined servings of fruits and vegetables – per day. The STEPs survey assessed the average number of servings of fruits and vegetables eaten by adults daily. Table 4.4 shows the proportion who reported eating less than five combined servings of fruits and vegetables per day.

TABLE 4.4
Percentage of adults who ate less than five combined servings of fruits and vegetables on average per day, by sex and by country

	Percentage of adults who ate less than 5 combined servings of fruit and/or vegetables on average per day		
Country	Both sexes	Female	Male
Algeria	87.1	87.9	86.0
Benin	78.5	80.5	76.6
Botswana	96.6	96.2	96.9
Cabo Verde	86.1	88.0	84.1
Central African Republic*	66.1	61.5	70.8
Chad*	84.8	80.3	88.5
Comoros	85.7	88.7	82.6
Côte d'Ivoire	83.5	83.8	83.1
Democratic Republic of the Congo*	87.9	88.4	87.1
Eritrea	98.1	98.5	97.6
Ethiopia*	98.9	98.7	99.2
Gabon	93.4	93.0	93.8
Gambia	93.0	93.3	92.6
Ghana	86.0	87.3	83.4
Guinea*	79.3	77.3	81.2
Lesotho	92.7	92.2	93.2
Liberia	96.1	95.5	96.7
Madagascar*	62.0	65.8	58.1
Malawi	97.5	97.1	98.0
Mali	ND	**	**
Mauritania*	94.8	95.2	94.4
Mozambique	62.0	65.8	58.1
Niger	96.4	98.0	94.9
Sao Tome and Principe	83.3	83.2	83.4
Seychelles	78.8	74.5	83.1
Sierra Leone	90.9	91.0	90.9
Swaziland	87.4	85.6	89.6
United Republic of Tanzania (Mainland)	97.2	97.1	97.3
United Republic of Tanzania (Zanzibar)	97.9	98.1	97.6
Togo	94.9	96.1	93.5
Zambia*	97.0	96.5	97.9

ND: data not determined or not available; * not nationally representative sample; ** fewer than 50 respondents.
Source: WHO STEPs data.

Among 30 countries with STEPs data across the Region, the percentage of adults who reported eating less than five combined servings of fruits and vegetables on an average day ranged from 62% in Madagascar to as high as 99% in Ethiopia. In half of the countries, almost 9 in 10 adults were shown not to eat the recommended daily servings of fruits and vegetables. In Madagascar – which has the lowest probability of not eating five combined servings – two thirds of adults failed to eat the recommended number of daily servings.

There was no significant difference between the sexes in consumption patterns of fruits and vegetable servings. The lowest rate (62%) among female adults who ate less than five combined servings of fruits and vegetables was observed in Central African Republic, while the highest rate (99%) was found in Ethiopia. Males showed a similar pattern in terms of percentage, with Madagascar having the lowest rate (58%).

The five countries with adults who consumed less than five combined servings of fruits and vegetables per day were Ethiopia, Eritrea, Malawi, United Republic of Tanzania (Mainland), and Zambia.

4.5 Conclusion

Generally, in countries where STEPs surveys were conducted, most adults eat fruits on 2.8 days per week only, with only one serving per day. However, consumption of vegetables is much more popular with a median number of 4 days per week. There is no significant difference in patterns of fruit and vegetable consumption among males and females.

Most adults in the countries surveyed do not consume the WHO-recommended combined five servings of fruits and vegetables per day.

5. Physical inactivity

5.1 Introduction

Physical inactivity is the fourth leading risk factor for NCD morbidity and mortality worldwide *(3)*. Regular physical activity promotes psychological well-being, healthy muscles and bones, and reduces blood pressure among people with hypertension. Numerous studies have shown that physically active people live longer and are less likely to suffer from diabetes, heart diseases and cancer.

Monitoring the level of exposure to physical inactivity is important for policy-makers and public health programme planners. Therefore, WHO uses the STEPs survey tool to gather population-level information on physical activity.

STEPwise surveys measure exposure to physical inactivity through the reported cumulative intensity of activities across three daily domains: work; transport to and from places; and recreation or leisure time. Participants were asked how many minutes of physical activity (moderate and vigorous-intensity) they do and for how many days per week, as well as the type of physical activity.

WHO recommends that adults engage in at least 150 minutes of moderate-intensity or 60 minutes of vigorous-intensity physical activity per week. Moderate-intensity physical activities include brisk walking, doing household chores, and dancing. Activities such as running, carrying heavy loads, swimming, and cycling qualify as vigorous-intensity physical activities *(11)*.

Metabolic equivalents (METs) are commonly used to express the intensity of physical activity, and are also used to analyse STEPs data. MET is the ratio of a person's working metabolic rate relative to the resting metabolic rate *(12)*. One MET is defined as the energy cost of sitting quietly which is equivalent to a caloric consumption of 1 kcal/kg/hour. For the analysis of STEPs data, it is assumed that a person's caloric consumption is four times higher than when sitting quietly, and eight times higher when being vigorously active. Therefore, when calculating a person's overall energy expenditure using STEPs data, four METs are assigned to the time spent in moderate physical activity, and eight METs to the time spent in vigorous physical activity.

STEPwise surveys classify physical activity as high, moderate, or inactive. High physical activity occurs when (i) a person engages in vigorous-intensity activity at least three days per week, thus achieving a minimum of at least 1500 MET-minutes per week; or (ii) a person carries out any combination of walking, moderate- or vigorous-intensity activity for seven or more days, achieving a minimum of at least 3000 MET-minutes per week. Moderate physical activity occurs when a person, not meeting the criteria for high physical activity, meets any of the following criteria: (i) three or more days of vigorous-intensity activity for at least 20 minutes per day; (ii) five or more days of moderate-intensity activity, or walking for at least 30 minutes per day; (iii) five or more days of any combination of walking, moderate- or vigorous-intensity activity, achieving a minimum of at least 600 MET-minutes per week.

A person whose physical activity does not meet any of the above criteria is classified as low or inactive (*12*).

5.2 Time spent in physical activity

Time spent in physical activity is an important factor in determining the level of inactivity of individuals or population groups. The total number of minutes or hours and the frequency of physical activity in a given week are used to classify the level of physical inactivity.

Among 32 countries with STEPs data, the average time spent in physical activity (moderate or high intensity) ranged from 21 minutes per day in Mauritania to 386 minutes per day in Mozambique, with a median of 116 minutes on a typical day.

Adult males spent more time in physical activity than their female counterparts, with a median of 149 and 90 minutes per day respectively. For males the median time spent in physical activity ranged from 26 minutes in Mauritania to 416 minutes in Benin. For women the median time ranged from 21 minutes in Mauritania to as high as 394 minutes in Mozambique.

The five countries with the lowest median time per day for physical activity were: Mauritania (21 minutes), Cameroon (34 minutes), Côte d'Ivoire (50 minutes), Eritrea (58 minutes) and Algeria (60 minutes). The five countries with the highest median time per day for physical activities were: Mozambique (386 minutes), Benin (360 minutes), United Republic of Tanzania (Mainland) (330 minutes), Malawi (261 minutes) and Sierra Leone (249 minutes).

The median time spent in physical activity on a typical day, applied to the frequency of physical activity per week, determines whether a person is physically active or not.

TABLE 5.2
Median time spent in physical activity per day (minutes), by sex and by country

	Median time spent in physical activity per day (minutes)		
Country	Both sexes	Female	Male
Algeria	60.0	51.4	90.0
Benin	360.0	300.0	415.7
Botswana	75.0	55.7	120.0
Cameroon	34.3	30.0	57.9
Cabo Verde	162.9	120.0	243.4
Central African Republic*	128.6	105.0	151.4
Chad*	63.6	51.4	106.9
Comoros	171.4	120.0	259.3
Côte d'Ivoire	50.0	42.9	55.0
Democratic Republic of the Congo*	80.0	62.6	102.9
Eritrea	58.0	30.0	120.0
Ethiopia*	77.1	65.0	102.9
Gabon	68.6	45.0	120.0
Gambia	150.0	128.6	180.0
Ghana	245.4	208.8	318.0
Guinea*	150.0	90.0	214.3
Lesotho	218.6	180.0	300.0
Liberia	87.9	75.0	111.4
Madagascar*	102.9	90.0	120.0
Malawi	261.4	231.4	300.0
Mali	17.1	10.7	30.0
Mauritania*	21.4	21.4	25.7
Mozambique	385.7	394.3	374.3
Niger	132.9	113.6	162.9
Sao Tome and Principe	210.0	132.9	330.0
Seychelles	72.9	77.1	71.4
Sierra Leone	248.6	214.9	300.0
Swaziland	102.9	81.4	145.7
United Republic of Tanzania (Mainland)	330.0	287.1	370.0
United Republic of Tanzania (Zanzibar)	188.6	107.1	248.6
Togo	244.3	205.7	278.6
Zambia*	90.0	81.4	100.0

* not nationally representative sample.
Source: WHO STEPs data.

5.3 Prevalence of physical inactivity

People who do less than 600 MET-minutes of activity per week are considered to be physically inactive. The prevalence of physical inactivity in countries with STEPs data was as low as 6.5% in Mozambique and as high as 51% in Mauritania, with a median of 24% in 32 STEPwise surveys across the Region (Table 5.3).

For both sexes, the five countries with the highest prevalence of physical inactivity were: Mali (59%), Mauritania (51%), Cameroon (44%), Democratic Republic of the Congo (44%) and Côte d'Ivoire (42%).

In most countries, adult females tended to be physically more inactive than their male counterparts, with a median prevalence of 30% and 20% respectively. Mali and Mauritania had the highest prevalence of physical inactivity for adult females at 66% and 53% respectively. Mozambique had the lowest prevalence for physical inactivity of adult females (6%), followed by United Republic of Tanzania (Mainland) (8%), Benin (11%), Lesotho (12%) and Malawi (13%).

Among adult males, the prevalence of physical inactivity was as low as 6% in Benin and Malawi, followed by Mozambique and United Republic of Tanzania (Mainland/Zanzibar) with 7% each. The highest prevalence was in Mauritania (48%), followed by Côte d'Ivoire (38%), Democratic Republic of the Congo (36%), Cameroon (34%), and Algeria (33%).

TABLE 5.3
Prevalence (%) of physical inactivity, by sex and by country

	Percentage of adults who are physically inactive**		
Country	Both sexes	Female	Male
Algeria	40.7	45.8	32.5
Benin	8.3	10.5	6.2
Botswana	34.7	41.7	26.7
Cameroon	44.3	50.6	33.8
Cabo Verde	19.4	26.7	12.1
Central African Republic*	24.7	29.0	20.4
Chad*	34.9	42.0	28.8
Comoros	20.1	30.0	10.3
Côte d'Ivoire	41.9	45.1	37.8
Democratic Republic of the Congo*	44.1	49.1	36.3
Eritrea	40.6	53.4	25.7
Ethiopia*	26.0	32.1	17.2
Gabon	32.6	43.3	21.9
Gambia	22.6	26.5	18.3
Ghana	85.7	89.4	78.1
Guinea*	14.2	19.3	9.2
Lesotho	11.1	11.8	10.4
Liberia	33.2	36.6	29.8
Madagascar*	22.2	25.9	18.2
Malawi	9.5	12.6	6.3
Mali	59.0	66.2	48.6
Mauritania*	50.7	53.0	47.6
Mozambique	6.5	6.4	6.7
Niger	28.2	31.5	25.1
Sao Tome and Principe	17.6	24.1	10.3
Seychelles	21.4	20.1	22.8
Sierra Leone	16.4	18.9	13.8
Swaziland	33.1	38.9	26.2
United Republic of Tanzania (Mainland)	7.5	7.8	7.2
United Republic of Tanzania (Zanzibar)	17.6	26.8	7.4
Togo	13.0	15.3	10.5
Zambia*	17.2	16.6	18.9

* not nationally representative sample; ** < 600 MET-minutes per week.

Source: WHO STEPs data.

5.4 Physical inactivity among schoolchildren

Physical inactivity among adolescents is a growing concern in many countries in the Region. In response, WHO and CDC have developed a module on physical activity as part of the GSHS to monitor the patterns in physical activity among students aged 13–15 years. WHO recommends that children and young people aged 5–17 years engage in at least 60 minutes of moderate- to vigorous-intensity physical activity per day.

The GSHS reviewed the level of sedentary life by asking the number of hours students spent sitting and watching television, or playing computer games, or talking with friends, or doing other sedentary activities. It also assessed the percentage of students who spent at least 60 minutes per day on physical activity during the previous 7 days, as recommended by WHO for children aged 5–17 years.

Of the 14 countries with data on the above indicators, the median percentage of students who reported spending three hours or more during sedentary activities was 32%, ranging from 18% in Benin to a maximum of 55% in Seychelles. In some countries the median physical inactivity prevalence was similar or slightly higher among girls (32%) than boys (31%).

TABLE 5.4
Percentage of students (aged 13–15 years) who spent three or more hours sitting watching television, or talking, or just sitting, and percentage who were physically active, in 14 countries

	Percentage of students who spent three hours per day during a typical day sitting and watching television, playing computer games, talking with friends, or doing other sedentary activities			Percentage of students who were physically active for a total of at least 60 minutes per day on all seven days during the past seven days		
Country	Boys	Girls	Total	Boys	Girls	Total
Algeria	30.0	26.1	27.9	31.5	11.0	20.7
Benin	19.6	15.4	18.1	32.9	25.4	30.2
Botswana	35.3	33.7	34.5	13.0	10.4	11.7
Ghana	28.1	26.6	27.4	13.8	12.6	13.1
Kenya	40.0	35.9	37.8	14.2	10.1	12.0
Mauritania	39.2	39.6	39.2	21.5	10.9	16.3
Mauritius	32.8	33.4	33.1	21.5	9.6	15.2
Namibia	29.6	31.8	31.0	10.2	9.7	9.9
Senegal	28.6	20.6	25.3	15.4	6.2	11.8
Seychelles	52.7	56.2	54.7	24.1	13.9	18.8
United Republic of Tanzania	26.4	29.3	27.7	30.6	20.0	25.4
Uganda	26.7	27.7	27.5	16.1	14.4	15.3
Zambia	33.1	32.7	32.6	9.7	10.2	9.8
Zimbabwe	42.8	44.7	43.8	16.1	12.9	14.4

Source: GSHS.

After Seychelles, the countries with the highest physical inactivity prevalence among schoolchildren were Zimbabwe (44%), Mauritania (39%), Kenya (38%) and Botswana (35%). Benin (18%), Senegal (25%), Ghana (27%) and Uganda and United Republic of Tanzania (18% each) had the lowest rates. The rate for girls and boys followed similar country patterns.

The rates among students who engaged in physical activity for at least one hour per day during the past seven days ranged from as low as 10% in Namibia and Zambia to as high as 30% in Benin, with a median of 15%. Boys were more physically active than girls, with 16% of boys doing at least 60 minutes of physical activity per day compared with 11% for girls.

5.5 Conclusion

Physical inactivity is associated with a wide range of health outcomes, ranging from ischaemic heart disease to stroke and certain cancers, making it the fourth leading cause of mortality worldwide. In response, WHO developed DPAS and the global recommendations on physical activity for health *(11)*.

Data from STEPwise surveys in 32 countries/cities of the WHO African Region show that physical inactivity is widespread. In one country more than 50% of the adult participants engage in less than the amount of physical activity recommended by WHO. Member States of this Region should implement the global recommendations on physical activity for health *(11)*.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6. Overweight and obesity

6.1 Introduction

Overweight and obesity are major risk factors for a number of health outcomes, notably morbidity and mortality related to NCDs and conditions. Besides causing direct biological anomalies to the body, overweight and obesity may also generate stigmatization and discrimination towards obese and overweight people.

Sub-Saharan Africa is the only WHO region with the double burden of malnutrition and obesity. Although the immediate factors associated with the growing rise of overweight and obesity in sub-Saharan Africa are caloric intake, physical inactivity, and are genetic in nature, other underlying but intermediate and distant causes include occupation, cultural perceptions of weight, globalization, and urbanization *(13)*.

WHO defines overweight and obesity as an accumulation of excessive body fat, which negatively impacts on the health of individuals. These conditions are measured and classified through the body mass index (BMI) (i.e. the ratio of the weight [kg] to the square of the height [m^2]). Overweight is classified as those who have a BMI between 25 and 30 kg/m^2; obesity as having a BMI of 30 kg/m^2 or more.

Besides BMI, waist circumference is measured to provide additional information on overweight and obesity. New evidence shows that waist circumference, which measures total body mass rather than body fat distribution, is a more effective indicator of ill health than BMI. Furthermore, waist circumference indicates abdominal fat, which is a more effective indicator of NCDs.

Numerous studies show that the global adult prevalence of overweight and obesity is significantly higher in women than in men. This difference is widely recognized to be due to genetic and biological factors that predispose women to store fat for reproductive and lactating reasons. However, other factors such as diet, physical activity, cultural beliefs, and urbanization, contribute to determining gender differences in obesity.

6.2 Mean body mass index and waist circumference

Body mass index and waist circumference are two indicators used in STEPs surveys to measure levels of overweight and obesity among adults aged 25–64 years. Although imperfect, BMI is the most widely used tool for this measurement. However, abdominal fat – particularly visceral fat – is more correlated with NCDs than BMI, waist size or waist/hip ratio, and is therefore a more appropriate indicator of NCD risk factors.

6.2.1 Mean body mass index

STEPs survey data from 34 countries in the Region revealed that the average BMI among female adults ranged from as low as 22 kg/m^2 in Madagascar, Eritrea, and Niger to as high as 28 kg/m^2 in Swaziland, Seychelles, and Lesotho, with a median of 25 kg/m^2 across the Region (Table 6.2).

Among male adults, the median for BMI was 23 kg/m^2, ranging from 21 kg/m^2 in Democratic Republic of the Congo, Eritrea, and Madagascar, to 26 kg/m2 in Liberia, Seychelles and Swaziland.

This finding affirms the belief that adult females have a higher BMI than their male counterparts, who tend to be relatively less overweight or obese.

6.2.2 mean waist circumference

Studies show that women have more fat mass than men. Such difference in fat distribution is primarily attributable to the effect of sex hormones. Furthermore, women who have given birth have less lower-body fat and greater waist circumference *(14)*.

According to WHO recommendations, a WC exceeding 80 cm for females and 94 cm for males is associated with an increased risk of metabolic disorders, while cut-offs above 88 cm for females and 102 cm for males are associated with substantially increased risk of these conditions.

Among 33 STEPwise surveys, the average WC ranged from 74.3 cm in Gabon to 96.7 cm in Chad, with a median of 82.7 cm for adult females; for males, it ranged from 71.5 cm in Gabon to 90.8 cm in Chad, with a median of 80.6 cm. In more than 80% of the countries surveyed, the mean WC for females was above the threshold of 80 cm. Only in Chad was the mean WC for males above the 90 cm threshold (Table 6.2).

TABLE 6.2
Mean waist circumference and mean body mass index, by sex and by country

	Mean waist circumference (cm)		Mean body mass index (kg/m²)	
Country	Female	Male	Female	Male
Algeria	85.7	85.3	26.1	24.0
Benin	83.2	79.8	24.5	22.8
Botswana	88.4	82.5	26.3	22.2
Cameroon	82.7	81.4	26.0	23.7
Cabo Verde	84.6	83.5	25.0	23.6
Central African Republic*	81.4	77.4	23.1	21.5
Chad*	96.7	90.8	25.6	23.4
Comoros	88.4	82.3	26.2	23.5
Congo*	85.3	81.6	24.6	22.0
Côte d'Ivoire	81.5	79.7	24.3	23.1
Democratic Republic of the Congo*	78.3	76.3	22.8	20.8
Eritrea	75.2	79.1	21.7	21.0
Ethiopia*	87.9	86.9	24.1	22.3
Gabon	74.3	71.5	26.3	23.8
Gambia	76.1	72.2	25.1	23.6
Ghana	94.3	86.4	28.4	25.1
Guinea*	81.8	78.7	23.0	21.5
Lesotho	86.5	79.9	27.7	23.2
Liberia	80.4	73.3	27.3	25.4
Madagascar*	76.5	76.8	21.6	21.3
Malawi	78.6	77.3	23.5	22.4
Mali	87.6	82.1	25.4	22.6
Mauritania*	89.6	81.9	27.2	23.6
Mozambique	76.8	76.8	23.5	21.7
Niger	82.5	80.4	22.1	21.2
Sao Tome and Principe	82.4	ND	25.3	23.8
Seychelles	90.3	89.1	28.3	25.6
Sierra Leone	81.7	ND	23.7	22.4
Swaziland	82.4	81.2	28.4	24.8
United Republic of Tanzania (Mainland)	84.9	80.6	24.3	21.6
United Republic of Tanzania (Zanzibar)	87.0	82.0	25.2	23.4
Togo	80.7	77.7	23.5	22.0
Zambia*	85.8	82.4	25.6	22.4
Zimbabwe*	ND	ND	25.1	21.7

ND: data not determined or not available; * not nationally representative sample.

Source: WHO STEPs data.

6.3 Prevalence of overweight

The prevalence of overweight ranged from 12% in Madagascar to 60% in Ghana and Seychelles, with a median of 35%, indicating that more than one third of adults in half of the countries surveyed are overweight. Besides Ghana and Seychelles, the other countries with the highest overweight prevalence in the Region were Swaziland (53%), Liberia (50%), and Algeria (47%) (Table 6.3). Besides Madagascar, the countries with the lowest overweight prevalence were Niger (13%), Eritrea (15%), Guinea (18%, in Conakry only), and Democratic Republic of the Congo (19%).

Adult females were more likely to be overweight than males, with a median prevalence of 42% and 22% respectively. The overweight prevalence for females ranged from as low as 15% in Madagascar to as high as 68% in Seychelles. Besides Seychelles, the five countries with the highest prevalence of overweight among adult females included Swaziland (65%), Mauritania (59%), Lesotho (58%), and Liberia (57%). Meanwhile, after Madagascar, countries with the lowest female overweight prevalence included Niger (17%), Eritrea (18%), Democratic Republic of the Congo (19%) and Guinea (18%).

Among adult males, the highest prevalence of overweight was observed in Seychelles (52%) and the lowest in Niger and Madagascar (9% each). Besides Seychelles, Ghana (45%), Liberia (43%), Swaziland (38%) and Gambia (34%) constituted the five countries with the highest overweight prevalence among adult males (Table 6.3). Besides Niger and Madagascar, other countries with the lowest overweight prevalence among adult males included Eritrea (11%), Guinea (11%), and Democratic Republic of the Congo (12%).

TABLE 6.3
Prevalence (%) of overweight, by sex and by country

Country	Percentage of adults who are overweight**		
	Both sexes	Female	Male
Algeria	46.7	53.6	36.3
Benin	29.8	38.1	21.7
Botswana	38.6	53.4	22.1
Cameroon	42.8	50.5	31.4
Cabo Verde	36.9	42.6	31.3
Central African Republic*	20.7	28.0	13.8
Chad*	36.3	43.7	29.9
Comoros	39.4	52.4	27.6
Congo*	27.3	37.1	18.0
Côte d'Ivoire	30.5	36.0	23.7
Democratic Republic of the Congo*	19.1	24.1	11.6
Eritrea	14.5	17.9	11.2
Ethiopia*	30.6	37.6	20.6
Gabon	41.5	51.0	32.8
Gambia	39.5	45.3	33.7
Ghana	60.2	67.9	45.4
Guinea*	18.2	25.8	11.4
Lesotho	41.5	58.2	24.8
Liberia	49.9	57.0	43.0
Madagascar*	12.3	15.4	9.4
Malawi	21.9	28.1	16.1
Mali	34.6	44.4	20.7
Mauritania*	46.6	59.4	31.8
Mauritius	28.2	28.3	28.0
Mozambique	21.2	27.1	13.5
Niger	12.7	16.9	9.1
Nigeria*	41.7	ND	ND
Sao Tome and Principe	35.0	41.6	28.0
Seychelles	60.1	68.3	52.0
Sierra Leone	22.4	28.7	16.2
Swaziland	52.9	65.4	38.2
United Republic of Tanzania (Mainland)	26.0	37.1	15.1
United Republic of Tanzania (Zanzibar)	36.6	42.6	30.5
Togo	21.5	28.5	14.3
Zambia*	39.6	49.0	20.9
Zimbabwe*	21.3	23.9	14.4

ND: data not determined or not available; * not nationally representative sample; ** BMI ≥ 25 kg/m^2.

Source: WHO STEPs data.

TABLE 6.4
Prevalence (%) of obesity, by sex and by country

	Percentage of adults who are obese**		
Country	Both sexes	Female	Male
Algeria	16.6	21.6	8.9
Benin	9.4	14.4	4.4
Botswana	15.6	24.6	5.6
Cameroon	15.9	21.4	7.6
Cabo Verde	10.5	14.6	6.5
Central African Republic*	7.2	11.6	3.0
Chad*	13.7	19.9	8.4
Comoros	13.5	22.4	5.5
Congo*	8.6	15.0	2.5
Côte d'Ivoire	8.5	11.2	5.1
Democratic Republic of the Congo*	5.8	7.9	2.8
Eritrea	3.4	4.9	2.0
Ethiopia*	7.1	10.6	2.0
Gabon	15.9	24.5	7.9
Gambia	12.1	16.5	7.9
Ghana	26.9	34.9	11.6
Guinea*	5.1	8.8	1.8
Lesotho	19.9	31.9	7.9
Liberia	22.0	28.7	15.4
Madagascar*	2.2	3.1	1.5
Malawi	4.6	7.3	2.0
Mali	13.4	19.2	5.2
Mauritania*	20.9	31.5	8.6
Mauritius	11.1	17.9	5.9
Mozambique	7.5	10.8	3.2
Niger	3.2	5.1	1.7
Nigeria*	21.7	ND	ND
Sao Tome and Principe	11.7	16.5	6.6
Seychelles	25.1	35.2	15.0
Sierra Leone	7.8	10.8	4.8
Swaziland	24.3	33.5	13.6
United Republic of Tanzania (Mainland)	8.7	15.0	2.5
United Republic of Tanzania (Zanzibar)	14.3	20.9	7.7
Togo	6.2	9.8	2.3
Zambia*	14.4	19.0	5.2
Zimbabwe*	11.7	19.4	3.9

ND: data not determined or not available; * not nationally representative sample; ** BMI ≥ 30 kg/m^2.

Source: WHO STEPs data.

6.4 Prevalence of obesity

Rates of obesity prevalence followed similar trends to those of overweight, with a range of 2% (Madagascar) to 27% (Ghana), and a median of 12%. Table 6.4 shows the prevalence of obesity in 36 countries. After Ghana, the countries with the highest obesity prevalence were Seychelles (25%), Swaziland (24%), Liberia (22%), and Mauritania (21%). After Madagascar, countries with the lowest obesity rates were Niger and Eritrea, with 3% each, and Malawi and Guinea (Conakry) with 5% each.

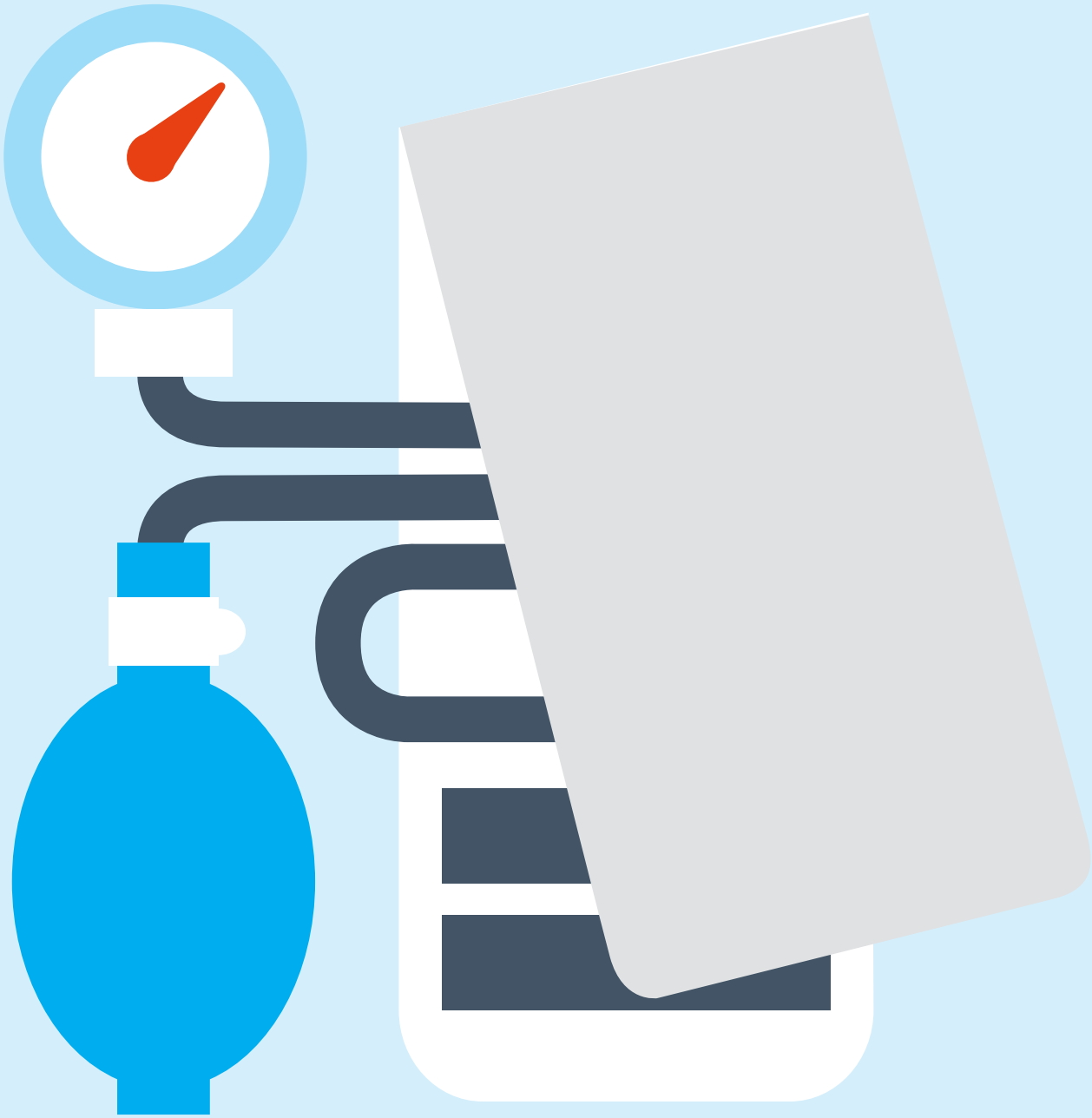
Adult females were more than three times as likely to be obese than adult males, with a median prevalence of 17% and 5% respectively. Among adult females, the prevalence of obesity was as low as 3% in Madagascar and as high as 35% in Ghana and Seychelles. After Ghana and Seychelles, the highest obesity rates among adult females were in Swaziland (34%), Lesotho and Mauritania (32% each). The highest male obesity prevalence was observed in Ghana (12%), while the lowest was in Madagascar (2%). After Ghana, other countries with high adult male obesity were Liberia and Seychelles (15% each), Swaziland (14%) and Algeria (9%).

6.5 Conclusion

Although many countries in the WHO African Region are still combatting childhood malnutrition, about one third of adults is likely to be overweight, and more than one tenth is likely to be obese. The five countries with the highest adult overweight and obesity prevalence rates are Ghana, Seychelles, Swaziland, Liberia and Mauritania.

Rates of overweight and obesity are disproportionately higher among females than males. The prevalence of overweight among adult females is double that of males, and adult females are seven times more likely to be obese than adult males.

Although these rates are lower than those observed in developed countries, it is nevertheless time to confront this growing public health problem decisively. Member States must implement fully the WHO-recommended strategies and interventions as highlighted in DPAS.



7. Hypertension

7.1 Introduction

High or raised blood pressure, also known as hypertension, is defined as systolic blood pressure of 140 mmHg or higher, and diastolic blood pressure of 90 mmHg or higher. Hypertension is a leading public health burden worldwide, with approximately 45% of deaths attributable to heart disease and more than 50% of deaths attributable to stroke *(15)*. Hypertension is also associated with renal disease and eclampsia in pregnancy. Hypertension disproportionately affects populations in low- and middle income countries where health systems are weak.

As hypertension rarely shows symptoms in its early stages, many people with elevated blood pressure are undiagnosed. Those who are diagnosed may not have access to treatment and may be unable to successfully control their illness over the long term.

There are various risk factors associated with hypertension. These include modifiable factors such as dietary intake of sodium, alcohol consumption, physical inactivity, and obesity, as well as non-modifiable factors such as age, sex, and genetic susceptibility.

Salt reduction initiatives can contribute significantly to the prevention and control of high blood pressure. However, vertical programmes focusing on hypertension control alone are not cost-effective. Therefore, integrated NCD programmes implemented through a primary health-care and community-based approach are affordable, sustainable ways for countries to tackle hypertension.

As part of the global action plan to reduce NCD-related premature deaths, the World Health Assembly – among other voluntary targets – set a 25% relative reduction in the prevalence of raised blood pressure. This action plan outlines key interventions for addressing hypertension, which include integrating primary health-care programmes, providing basic diagnosis and medicines, and reducing risk factors, such as dietary salt consumption, smoking and physical inactivity, in the population *(16)*.

STEPwise surveys use a digital automatic blood pressure machine to determine raised blood pressure among populations. Three blood pressure measurements are taken, and during data analysis the mean of the second and third readings is used to represent the blood pressure level of each participant *(17)*.

7.2 Mean diastolic and systolic blood pressure

Among 34 countries that included blood pressure measurements in their STEPwise surveys, the mean diastolic blood pressure ranged from 71.9 mmHg in Mali to 83.4 mmHg in Seychelles, with a median of 79.8 mmHg. As Table 2 shows, besides Seychelles, other countries with the highest mean diastolic blood pressure included Congo (83.3 mmHg), Ghana (83.1 mmHg), Madagascar (82.9 mmHg), and Zimbabwe (82.8 mmHg). Following Mali, countries with the lowest mean blood pressure were Democratic Republic of the Congo (74.4 mmHg), Cameroon (74.5 mmHg), Togo (75 mmHg) and Gabon (75.3 mmHg).

The mean systolic blood pressure of adults ranged from as low as 116.3 mmHg in Mali to as high as 134.6 mmHg in Sao Tome and Principe, with a median of 128.3 mmHg across the Region. Other countries with the highest mean systolic blood pressure included Niger (133.7 mmHg), Mozambique (133.4 mmHg), Cabo Verde (133.4 mmHg), and Ghana (133.2 mmHg). Besides Mali, other countries with the lowest mean systolic blood pressure included Eritrea (118.8 mmHg), Democratic Republic of the Congo (119 mmHg), Togo (120.1 mmHg) and Cameroon (122.1 mmHg).

There was no significant difference in the mean diastolic blood pressure between males and females. The median across countries was 79.8 mmHg for both sexes, with a few exceptions such as Lesotho, where females had a higher average, and Seychelles, where males had a higher mean diastolic blood pressure. However, the mean systolic blood pressure was systematically higher among males in all countries, with the exception of Algeria, where it was higher among females. The mean systolic blood pressure ranged from 115.6 mmHg to 136.6 mmHg for females with a median of 127.4 mmHg, while the mean systolic blood pressure for males was as low as 116.8 mmHg and as high as 136.7 mmHg, with a median of 129.8 mmHg. Mali was the notable exception for both mean diastolic and systolic blood pressures, showing the lowest levels among the 34 countries.

TABLE 7.2
Mean diastolic and systolic blood pressure, by sex and by country

	Mean diastolic blood pressure (mmHg)**			Mean systolic blood pressure (mmHg)**		
Country	Both sexes	Female	Male	Both sexes	Female	Male
Algeria	79.3	79.7	78.8	128.4	128.8	127.7
Benin	79.2	79.2	79.2	128.9	127.5	130.3
Botswana	81.9	83.4	80.1	129.8	129.0	129.8
Cameroon	74.5	74.0	75.2	122.1	119.7	125.7
Cabo Verde	79.8	79.7	79.8	133.3	129.6	137.0
Central African Republic*	82.1	81.3	83.0	128.1	127.5	128.7
Chad*	75.7	75.9	75.6	123.1	119.3	125.9
Comoros	78.3	79.1	77.5	127.2	125.7	128.6
Congo*	83.3	82.8	83.8	127.7	125.8	129.5
Côte d'Ivoire	76.9	75.9	78.2	128.0	124.5	132.4
Democratic Republic of the Congo*	74.4	73.7	75.6	119.3	117.2	122.5
Eritrea	77.0	76.4	77.7	118.8	116.4	121.2
Ethiopia*	80.0	79.4	80.9	126.7	125.3	128.8
Gabon	75.3	73.9	76.6	122.8	119.6	126.0
Gambia	80.0	80.0	79.9	129.9	129.3	130.5
Ghana	83.1	83.3	82.6	133.2	136.6	131.4
Guinea*	77.8	79.1	76.5	129.9	128.8	130.9
Lesotho	82.6	84.5	80.5	126.1	126.2	126.1
Liberia	79.7	79.9	79.5	128.7	127.8	129.7
Madagascar*	82.9	82.9	82.9	128.3	127.2	129.4
Malawi	79.1	79.1	79.1	132.8	130.3	135.8
Mali	71.9	71.1	72.4	116.3	115.6	116.8
Mauritania*	76.9	77.1	76.5	125.2	123.9	127.2
Mozambique	79.9	80.0	80.0	133.4	131.5	136.0
Niger	81.3	80.3	82.3	133.7	130.7	136.4
Sao Tome and Principe	82.2	82.6	81.8	134.6	132.7	136.7
Seychelles	83.4	81.3	85.5	127.8	124.4	131.1
Sierra Leone	80.3	80.6	80.0	130.8	129.0	132.7
Swaziland	80.8	81.1	80.4	125.8	124.9	126.8
United Republic of Tanzania (Mainland)	80.3	80.8	79.7	128.6	126.3	131.1
United Republic of Tanzania (Zanzibar)	78.0	77.9	78.2	131.3	128.0	135.0
Togo	75.0	74.9	75.1	120.1	117.9	122.6
Zambia*	81.9	81.9	82.0	132.5	131.2	135.1
Zimbabwe*	82.8	83.9	81.7	132.2	133.2	131.1

* not nationally representative sample; ** including those currently on medication.

Source: WHO STEPs data.

TABLE 7.3
Prevalence (%) of hypertension, by sex and by country

	Percentage of adults with hypertension**		
Country	Both sexes	Female	Male
Algeria	29.3	31.7	25.6
Benin	28.7	28.7	28.7
Botswana	33.1	37.0	28.8
Cameroon	17.3	15.5	19.9
Cabo Verde	38.7	33.5	43.8
Central African Republic*	34.5	23.3	36.8
Chad*	27.6	27.6	27.7
Comoros	25.4	26.5	24.2
Congo*	33.3	32.5	34.1
Côte d'Ivoire	25.9	20.7	32.5
Democratic Republic of the Congo*	17.1	15.3	19.9
Eritrea	16.6	15.6	17.6
Ethiopia*	30.9	30.2	32.0
Gabon	20.3	18.4	22.2
Gambia	26.3	26.1	26.4
Ghana	36.7	37.8	41.4
Guinea*	28.1	28.0	28.3
Lesotho	31.0	35.6	26.3
Liberia	30.7	31.0	30.3
Madagascar*	35.8	35.4	36.3
Malawi	32.9	29.2	37.2
Mali	15.9	18.7	11.9
Mauritania*	22.4	23.8	20.6
Mauritius	28.5	26.9	30.6
Mozambique	34.9	33.0	37.5
Niger	36.3	30.4	41.7
Nigeria*	34.8	48.6	51.4
Sao Tome and Principe	38.6	36.3	41.1
Seychelles	39.6	35.6	43.6
Sierra Leone	34.8	33.1	36.6
Swaziland	36.0	34.7	37.6
United Republic of Tanzania (Mainland)	26.0	26.5	25.4
United Republic of Tanzania (Zanzibar)	33.0	29.4	37.0
Togo	19.0	17.7	20.6
Zambia*	33.3	31.7	36.6
Zimbabwe*	26.1	29.0	23.2

* not nationally representative sample; ** systolic ≥ 140 and/or diastolic ≥ 90 mmHg or currently on medication for hypertension.

Source: WHO STEPs data.

7.3 Prevalence of hypertension

WHO estimates that 46% of adults in the Region are hypertensive, recording the highest rate worldwide *(1)*. Table 7.3 reaffirms that hypertension is a major problem, with the percentage of adults who are hypertensive ranging from 16% to 40% with a median of 31% in 36 STEPwise surveys conducted in the Region. The five countries with the highest prevalence of hypertension were Seychelles (40%), Cabo Verde (39%), Sao Tome and Principe (39%), Ghana (37%) and Niger (36%). Meanwhile, the five countries with the lowest prevalence of raised blood pressure were Mali (16%), Eritrea (17%), Democratic Republic of the Congo (Kinshasa, 17%), Cameroon (17%) and Togo (19%).

Overall, adult males were likely to be more hypertensive than adult females, with the exception of Botswana, Lesotho, and Mali, where females had significantly higher rates of hypertension (Table 7.3). The prevalence of hypertension among adult females ranged from as low as 15% to as high as 37%, with a median of 29%, while the rates among men ranged from 12% to 44%, with a median of 30%.

7.4 Conclusion

In half of the countries of the WHO African Region, at least one in three adults is hypertensive. Although the distribution of the mean diastolic blood pressure is similar across males and females, adult males tend to have a higher mean systolic blood pressure than adult females. As most hypertensive individuals are not aware of their condition, access to community-based blood pressure screening services should be improved at all levels.

8. Raised fasting blood glucose

8.1 Introduction

Raised fasting blood glucose, also known as hyperglycaemia, is a risk factor of diabetes – a chronic metabolic disease that affects all key organs of the body. Globally, the World Health Organization estimates that 10% of adults aged 25 years and older have diabetes. The prevalence of diabetes is increasing at an alarming rate of about 4% annually, making it the fastest growing chronic disease in the world *(18)*.

Type 2 diabetes, which is caused by resistance to insulin, occurs mainly among adults, and accounts for 90% to 95% of all cases of diabetes. Primary prevention of diabetes includes promotion of healthy lifestyle, screening and early detection.

There are several available diagnostic tests for diabetes; however, the test of choice is the fasting blood glucose (FBG) test which is used to measure blood sugar in the STEPwise survey. Participants selected for Steps 1 and 2 of the survey consented to fast for at least eight hours before being tested for their level of blood glucose using portable electronic analysers (Accutrend or CardioChek) through test strips.

Since capillary blood samples were used in the STEPwise surveys, the following cut-offs were used to report the results: lower than 5.6 mmol/L – normal; between 5.6 mmol/L and 6.1 mmol/L – impaired FBG or pre-diabetes; and 6.1 mmol/L and above – raised FBG or diabetes.

This section discusses the distribution of the mean FBG, impaired FBG and raised FBG.

8.2 Mean fasting blood glucose

A total of 23 countries included measurements of fasting blood sugar in their STEPwise survey. The distribution of the mean FBG, which was as low as 3.4 mmol/L, to as high as 5.6 mmol/L, with a median of 4.5 mmol/L (Table 8.2).

All countries had a mean FBG below the impaired threshold level of 5.6 mmol/L, with the exception of Seychelles. The countries with the highest mean FBG were Seychelles (5.6 mmol/L), Niger, Chad, and Central African Republic (5.5 mmol/L each), and Liberia, and Cabo Verde (5.4 mmol/L each). Meanwhile, the countries with the lowest mean FBG were Swaziland (3.4 mmol/L), Sao Tome and Principe (3.6 mmol/L), Mozambique (3.7 mmol/L), Benin (3.8 mmol/L), and Comoros and Togo (3.9 mmol/L each).

There was no significant difference in the mean FBG distribution among adult males and females. For females, the range was from 3.6 mmol/L to 5.6 mmol/L, with a median of 4.5 mmol/L. The distribution was similar among adult males.

TABLE 8.2
Mean fasting blood glucose, by sex and by country

Country	Mean fasting blood glucose [mmol/L]**		
	Both sexes	Female	Male
Algeria	4.9	4.9	4.9
Benin	3.8	3.7	3.9
Botswana	ND	ND	ND
Cameroon	4.9	4.9	4.8
Cabo Verde	5.4	5.3	5.5
Central African Republic*	5.5	5.5	5.4
Chad*	5.5	ND	ND
Comoros	3.9	3.8	3.9
Congo*	4.5	4.4	4.6
Ghana	ND	ND	ND
Guinea*	4.1	4.1	4.1
Lesotho	4.4	4.6	4.3
Liberia	5.4	5.4	5.4
Madagascar*	ND	ND	ND
Malawi	4.3	4.2	4.3
Mali	ND	ND	ND
Mauritania*	4.9	4.9	5.0
Mauritius	ND	ND	ND
Mozambique	3.7	3.6	3.8
Niger	5.5	5.6	5.4
Sao Tome and Principe	3.6	3.6	3.6
Seychelles	5.6	5.4	5.8
Swaziland	3.4	4.3	4.2
United Republic of Tanzania (Mainland)	4.8	4.9	4.8
United Republic of Tanzania (Zanzibar)	4.4	4.4	4.4
Togo	3.9	3.9	4.0
Zambia*	4.4	4.4	4.4
Zimbabwe*	5.3	5.3	5.3

ND: data not determined or not available; * not nationally representative sample; ** excluding those currently on medication for raised blood glucose.

Source: WHO STEPs data.

8.3 Impaired and raised fasting blood glucose

Impaired FBG is a strong predictor of diabetes. People with impaired FBG have a 20% to 30% chance of developing diabetes within 5–7 years *(19)*. For this reason, it is known as "pre-diabetes" and since some degree of insulin resistance can cause complications of diabetes, it is thus important to know the prevalence. Survey participants with raised FBG were classified as having type 2 diabetes, a leading cause of premature death worldwide.

Table 8.3 shows the prevalence of impaired and raised FBG in 22 surveys carried out in 21 countries. The prevalence of impaired FBG was lowest in Niger (1%) and highest in Cabo Verde (26%), with a median of 4% across countries. After Cabo Verde, countries with the highest rate of impaired FBG included Central African Republic (20%), Liberia (15%), Seychelles, United Republic of Tanzania (Mainland) and Cameroon (11% each). Meanwhile, the five countries with the lowest impaired FBG were: Niger, Togo, Benin, Comoros and Zambia, with an average of 2%.

TABLE 8.3
Prevalence (%) of pre-diabetes and type 2 diabetes, by sex and by country

	Percentage of adults with impaired fasting glycaemia**			Percentage of adults with raised blood glucose***		
Country	Both sexes	Female	Male	Both sexes	Female	Male
Algeria	10.0	10.3	9.5	14.7	15.2	14.0
Benin	1.9	1.7	2.1	3.0	2.5	3.6
Cameroon	10.6	12.6	7.9	13.9	12.9	15.2
Cabo Verde	25.6	25.6	25.6	12.7	10.2	ND
Central African Republic*	19.6	21.0	18.2	ND	ND	ND
Comoros	1.9	1.3	2.6	ND	ND	ND
Congo*	3.6	2.6	5.0	20.8	21.4	20.0
Ghana	ND	ND	ND	3.5	3.3	3.9
Guinea*	3.5	3.6	1.9	3.5	3.6	3.4
Lesotho	4.0	5.0	2.9	6.3	6.6	ND
Liberia	14.9	15.7	14.0	19.2	19.3	19.0
Malawi	4.2	2.7	5.7	5.6	4.7	6.5
Mauritania*	3.5	2.8	4.4	6.2	6.4	5.9
Mozambique	3.0	2.8	3.2	3.8	3.1	4.9
Niger	0.9	1.2	0.6	22.5	23.2	21.8
Sao Tome and Principe	6.5	6.8	6.2	4.0	4.0	3.9
Seychelles	11.2	9.1	13.4	9.5	9.2	9.7
Swaziland	3.7	4.5	2.2	14.5	13.5	16.2
United Republic of Tanzania (Mainland)	10.6	10.0	11.3	9.1	10.0	8.0
United Republic of Tanzania (Zanzibar)	3.3	2.8	2.3	3.8	3.7	3.7
Togo	1.7	1.2	2.4	2.6	1.8	3.5
Zambia*	2.2	1.7	3.3	4.6	5.0	3.8

ND: data not determined or not available; * not nationally representative sample; ** 5.6 mmol/L–< 6.1 mmol/L; *** ≥ 6.1 mmol/L.
Source: WHO STEPs data.

There was no significant difference in the prevalence of impaired FBG among males and females. Female prevalence ranged from 1% to 26%, with a median of 4%, while the male prevalence ranged from 1% to 23%, also with a median of 4%.

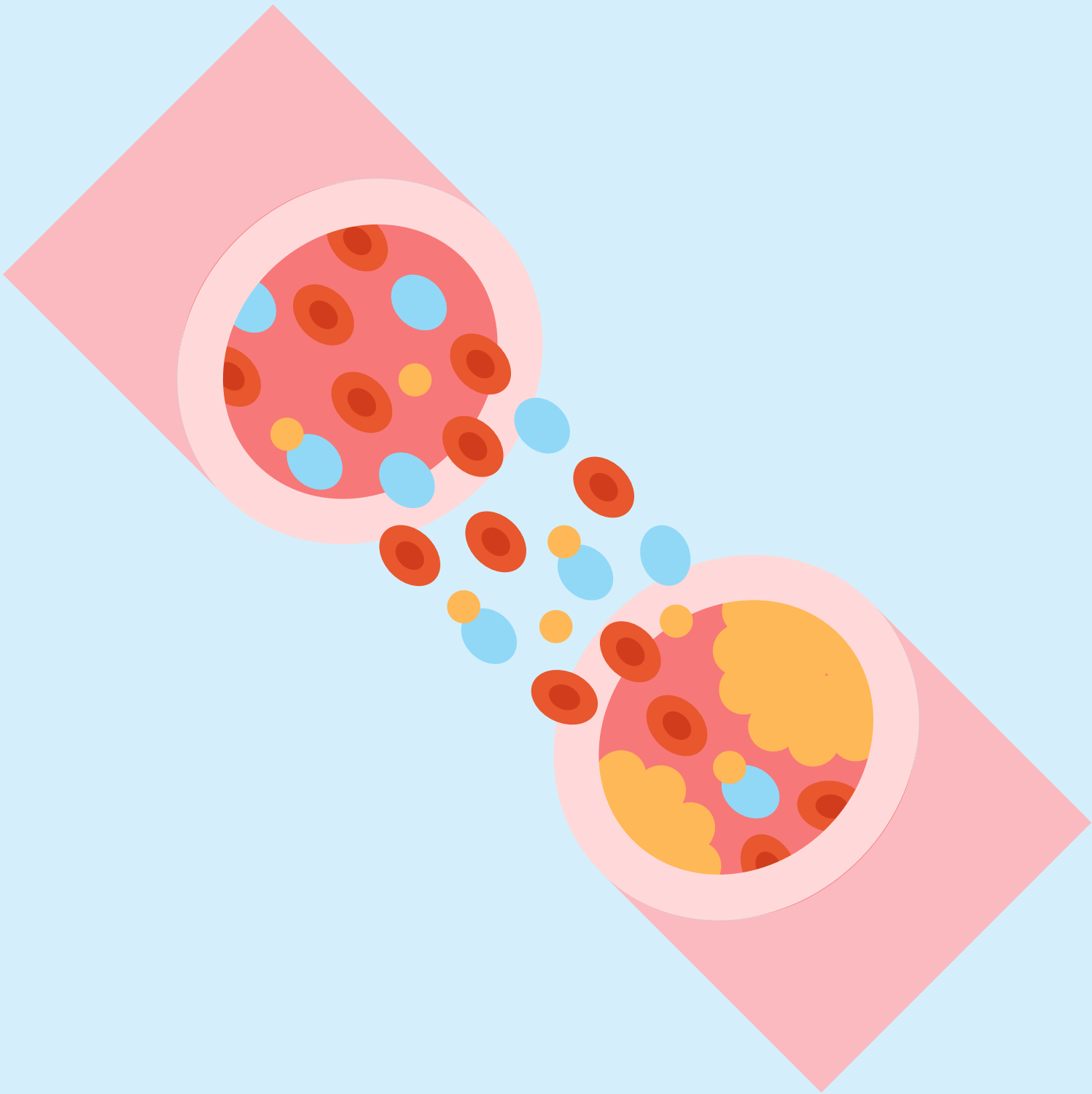
For raised FBG, the prevalence ranged from 3% in both Togo and Benin, to 23% in Niger, with a median of 8% across the Region. Other countries with the highest prevalence included Congo (21%), Liberia (19%), and Algeria and Swaziland (15% each). Following Togo, the countries with the lowest prevalence of raised FBG were Guinea, Mozambique, and United Republic of Tanzania (Zanzibar) (4% each).

As in impaired FBG, there was no significant disparity between males and females for raised FBG across countries. Among females, the raised FBG ranged from 2% to 23%, with a median of 7%; for males it ranged from as low as 3% to as high as 22%, also with a median of 7%.

8.4 Conclusion

WHO estimates the prevalence of diabetes in lower- middle-income countries to be around 10%, in contrast to 7% in high-income countries (20). In the WHO African Region, this estimate is about 8%. However, of 18 countries with data on raised FBG, 50% have a diabetes prevalence above both the regional average and that of high-income countries, while 40% have a prevalence above that of lower- middle-income countries.

These data clearly indicate that diabetes is an emerging public health problem across the Region. Data are needed from countries not yet surveyed in order to design, implement, monitor and evaluate appropriate public health interventions.



9. Raised blood cholesterol

9.1 Introduction

Raised blood cholesterol increases the risks of heart disease and stroke. Globally, a third of ischaemic heart disease is attributable to high levels of cholesterol *(21)*. In the WHO African Region, almost one quarter of adults is estimated to have high blood cholesterol. This is the lowest rate among all WHO regions.

Although the human body needs cholesterol to function properly, too much causes coronary heart disease (heart attack). There are four types of cholesterol: (i) low-density lipoprotein (LDL) – or "bad cholesterol", (ii) high-density lipoprotein (HDL) – or "good cholesterol", (iii) triglycerides, and (iv) intermediate-density lipoproteins. The common screening tests used to monitor the body lipids in STEPs are: total cholesterol (normal value being 5.0 mmol/L or less), HDL (normal value being 1.03 mmol/L or more for men, and 1.29 mmol/L or more for women) and triglycerides (normal value being 2 mmol/L or less). However, given resource limitations, very few countries have carried out all three tests. Since most of the countries that conducted STEPs have carried out tests for total cholesterol, these values only are considered in this section.

As part of the STEPwise survey, 17 countries in the Region included total cholesterol testing. This section discusses the distribution of mean total cholesterol and the prevalence of raised blood cholesterol.

9.2 Mean total cholesterol

Total cholesterol concentration is proven to have a strong predictive value for mortality from coronary heart disease. Death due to ischaemic heart disease in the upper quintile of mean total cholesterol distribution is much higher than that in the lowest quintile *(22)*.

Table 9.2 shows the distribution of the mean total cholesterol among 17 STEPwise surveys conducted in 16 countries of the Region. The median average of total cholesterol ranged from 3.4 mmol/L in Lesotho and Swaziland to 4.70 mmol/L in Algeria and United Republic of Tanzania (Zanzibar), with a median of 4.40 mmol/L. There was no significant difference in the distribution of total cholesterol between males and females.

TABLE 9.2
Mean total cholesterol, by sex and by country

	Mean total blood cholesterol [mmol/L]		
Country	Both sexes	Female	Male
Algeria	4.70	4.80	4.70
Benin	3.80	3.90	3.80
Cabo Verde	4.20	4.30	4.20
Comoros	4.58	4.67	4.48
Guinea*	4.22	4.29	4.15
Lesotho	3.40	3.60	3.20
Malawi	4.36	4.41	4.32
Mauritania*	4.40	4.50	4.30
Mozambique	4.30	4.30	4.40
Sao Tome and Principe	4.00	4.00	3.90
Seychelles	5.40	5.40	5.40
Swaziland	3.40	3.40	3.40
United Republic of Tanzania (Mainland)	4.60	4.70	4.40
United Republic of Tanzania (Zanzibar)	4.70	4.80	4.60
Togo	4.40	4.40	4.30
Zambia*	4.60	4.70	4.50
Zimbabwe*	4.30	4.30	4.30

* not nationally representative sample.

Source: WHO STEPs data.

9.3 Prevalence of raised total cholesterol

The prevalence of raised total cholesterol varied according to the income level of a country. In low-income countries, around 25% of adults had raised total cholesterol, while in lower-middle-income countries the rate was around 30% of the population for both sexes *(20)*. Meanwhile, in high-income countries, over 50% of adults had raised total cholesterol — more than twice the level of low-income countries.

Of the 19 STEPwise surveys conducted in the Region, the prevalence of raised total cholesterol ranged from as low as 5% in Lesotho to as high as almost 60% in Seychelles, with a median of 15% (Table 9.3). After Seychelles, countries with the highest rates included Algeria (45%), United Republic of Tanzania (Mainland) and Comoros (26% each), followed by United Republic of Tanzania (Zanzibar) (25%). The countries with the lowest prevalence of raised total cholesterol included Lesotho (5%), Swaziland (6%), Sao Tome and Principe, and Benin (8% each) and Malawi (9%).

Females were more likely to have a higher prevalence of total cholesterol than males, with a median of 20% and 14% respectively. More than 50% of adult males and females in Seychelles have raised blood cholesterol, while females in Lesotho have twice the rate of males – 6% and 3% respectively.

TABLE 9.3
Prevalence (%) of raised total cholesterol, by sex and by country

	Percentage of adults with raised total cholesterol**		
Country	Both sexes	Female	Male
Algeria	45.4	46.5	43.7
Benin	7.9	9.7	6.0
Cabo Verde	13.0	16.9	9.2
Comoros	25.9	30.2	20.5
Ghana	16.7	19.6	10.7
Guinea*	9.8	13.4	6.3
Lesotho	4.6	6.2	3.0
Malawi	8.7	11.0	6.3
Mauritania*	24.4	26.6	21.7
Mauritius	ND	28.5	34.6
Mozambique	12.7	12.2	13.7
Sao Tome and Principe	7.5	9.3	5.5
Seychelles	59.7	59.3	60.1
Swaziland	5.8	7.4	3.8
United Republic of Tanzania (Mainland)	26.0	33.9	17.0
United Republic of Tanzania (Zanzibar)	24.5	30.0	18.2
Togo	14.2	16.3	11.1
Zambia*	23.8	26.5	18.5
Zimbabwe*	20.8	21.3	20.2

ND: data not determined or not available; * not nationally representative sample; ** ≥ 5.0 mmol/L.
Source: WHO STEPs data.

9.4 Conclusion

Although the prevalence of raised blood cholesterol in most countries with data in the WHO African Region is below that of typical low-income countries, few countries have that of high-income countries. These countries include Algeria and Seychelles.

More surveys are needed in order to understand the burden of high blood cholesterol in the Region. As countries roll out the global NCD action plan *(16)* and its monitoring framework *(23)* an increasing number is likely to implement the STEPwise survey in the future.

10. Combined health risk factors

10.1 Introduction

The total or absolute risk of developing NCDs is far more important than focusing on individual risk factors when designing public health measures. For example, measuring one individual risk factor is less likely to provide an adequate estimate of the total risk for cardiovascular disease. For effective primary prevention of NCDs, it is therefore important to know what proportion of the population has the combined risk factors.

In the STEPwise survey, the presence of three or more of the following NCD risk factors were considered: (i) current daily smokers, (ii) less than five servings of daily consumption of fruits and/or vegetables, (iii) low level of physical activity, (iv) overweight, and (v) raised blood pressure.

This section discusses the proportion of adults with none of the above risk factors and those with three or more risk factors, by age group and sex.

10.2 Proportion of adults with none of the combined risk factors

The median percentage of adults with none of the above five key risk factors for NCDs was 2% – ranging from 0.3% in Chad to 13% in Madagascar (Table 10.2). Other countries whose adults had none of the above risk factors included Central African Republic (12%), Benin (11%), Guinea (8%), and Sao Tome and Principe, and Comoros (6% each).

Overall, no significant difference between males and females was apparent. However, in about half of the countries males seemed to have none of the five key risk factors, while females had none of these risk factors in six of the countries.

TABLE 10.2
Percentage of adults with none of the combined key risk factors, by sex and by country

Country	Percentage of adults with none of the combined key risk factors**		
	Both sexes	Female	Male
Algeria	2.1	1.4	3.3
Benin	11.0	10.1	11.9
Botswana	1.2	0.5	1.9
Cabo Verde	5.0	4.4	5.6
Central African Republic*	12.2	12.8	11.7
Chad*	0.3	0.0	0.5
Comoros	5.9	3.4	8.1
Côte d'Ivoire	4.9	4.6	5.3
Democratic Republic of the Congo*	5.3	4.5	6.7
Eritrea	0.8	0.3	1.4
Ethiopia*	0.3	0.3	0.3
Gabon	1.2	1.0	1.4
Gambia	2.1	1.6	2.7
Ghana	0.7	0.3	1.4
Guinea*	7.9	8.7	7.3
Lesotho	2.2	2.0	2.5
Liberia	1.1	1.3	1.0
Madagascar*	12.8	11.4	14.2
Malawi	1.0	1.6	0.3
Mali	4.0	3.4	5.0
Mozambique	2.4	3.1	1.5
Niger	0.9	0.3	1.5
Sao Tome and Principe	6.4	6.1	6.7
Seychelles	4.2	4.4	3.9
Sierra Leone	1.4	1.7	1.1
Swaziland	1.9	2.0	1.8
United Republic of Tanzania (Mainland)	0.8	1.0	0.6
United Republic of Tanzania (Zanzibar)	0.6	0.5	0.8
Togo	2.4	2.2	2.6
Zambia*	1.0	1.0	0.9

* not nationally representative sample; ** (i) current daily smokers; (ii) < 5 servings of fruits and vegetables per day; (iii) low level of activity (< 600 MET-minutes); (iv) overweight or obese (BMI ≥ 25 kg/m2); (v) raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg).

Source: WHO STEPs data.

TABLE 10.3
Percentage of adults with at least three combined risk factors, by country, by sex and by age group

Country	Percentage of adults aged 25–44 years with at least three of the risk factors**			Percentage of adults aged 45–64 years with at least three of the risk factors**			Percentage of adults aged 25–64 years with at least three of the risk factors**		
	Both sexes	Female	Male	Both sexes	Female	Male	Both sexes	Female	Male
Algeria	28.6	29.3	27.5	48.2	52.3	42.7	35.8	37.2	33.6
Benin	9.5	9.5	9.5	21.8	26.4	16.7	14.9	17.5	12.4
Botswana	25.7	32.0	18.6	50.4	61.8	35.2	34.5	43.2	24.1
Cabo Verde	19.6	19.8	19.3	41.8	45.2	37.5	24.8	26.6	23.1
Central African Republic*	12.3	11.3	13.1	29.4	30.4	28.2	17.7	18.1	17.3
Chad*	22.8	22.9	22.7	37.3	50.0	29.2	27.8	31.7	25.0
Comoros	18.5	24.3	13.3	32.3	39.4	25.7	23.0	29.3	17.3
Côte d'Ivoire	24.5	25.4	23.4	44.3	42.9	45.7	30.1	30.0	30.2
Democratic Republic of the Congo*	19.9	21.9	16.4	34.0	36.4	31.1	24.1	25.8	21.4
Eritrea	13.5	10.0	17.6	26.1	31.8	20.1	19.4	19.8	18.8
Ethiopia*	17.2	19.2	14.8	34.2	35.4	32.1	ND	ND	ND
Gabon	30.0	31.7	28.4	50.0	53.5	46.4	36.4	38.8	34.1
Gambia	20.7	18.4	22.8	39.8	42.0	37.6	25.8	24.8	26.8
Ghana	ND	ND	ND	ND	ND	ND	56.0	59.2	49.4
Guinea*	15.4	12.7	17.8	35.2	40.6	30.1	21.6	21.6	21.7
Lesotho	22.1	22.4	21.7	41.6	42.2	40.6	26.7	28.2	25.2
Liberia	28.7	31.0	26.7	43.2	45.5	40.7	33.5	36.1	31.0
Madagascar*	12.1	12.5	11.7	17.7	17.5	17.8	13.8	14.0	13.6
Malawi	13.0	10.7	15.3	23.7	24.7	22.6	16.5	15.5	17.6
Mali	31.4	35.7	25.6	48.9	52.7	42.3	37.7	42.2	31.0
Mozambique	14.0	11.7	17.0	28.6	30.2	26.7	19.0	17.9	20.5
Niger	17.5	17.4	17.5	26.8	34.8	21.8	21.4	24.0	19.5
Sao Tome and Principe	15.6	17.7	13.3	36.1	43.6	27.7	22.1	26.1	17.7
Seychelles	29.9	21.8	38.0	52.1	47.8	56.5	38.8	32.2	45.4
Sierra Leone	22.7	18.6	27.2	37.2	33.6	39.9	27.0	22.6	31.5
Swaziland	30.4	35.8	23.7	47.8	53.2	41.1	35.5	40.9	28.8
United Republic of Tanzania (Mainland)	12.2	14.4	9.9	28.0	28.6	27.4	16.6	18.2	14.9
United Republic of Tanzania (Zanzibar)	18.9	22.1	15.3	38.1	47.5	30.5	24.2	28.4	20.1
Togo	13.1	14.1	11.9	23.7	25.6	21.5	16.1	17.6	14.5
Zambia*	16.6	16.8	15.9	46.8	46.6	47.4	23.7	23.8	23.4

ND: data not determined or not available; * not nationally representative sample; ** (i) current daily smokers; (ii) < 5 servings of fruits & vegetables per day; (iii) low level of activity (< 600 MET-minutes); (iv) overweight or obese (BMI ≥ 25 kg/m^2); (v) raised BP (SBP ≥ 140 and/or DBP ≥ 90 mmHg).

Source: WHO STEPs data.

10.3 Proportion of adults with three or more combined risk factors

Among 30 surveys conducted in 29 countries, the proportion of adults with three or more combined risk factors for NCDs ranged from as low as 14% in Madagascar to as high as 56% in Ghana, with a median of 24% (Table 10.3). After Ghana, top countries with the highest adult rate of three or more combined risk factors for NCDs included Seychelles (39%), Mali (38%), Gabon and Algeria (36% each). Following Madagascar, the lowest rates of combined risk factors were observed in Benin (15%), Togo (16%), Malawi, and United Republic of Tanzania (Mainland) with 17% each.

Overall, there was a slight disparity between the sexes with regard to the presence of three or more risk factors, the median percentage for adult females being 26% compared with 23% for adult males. However, more than two thirds of the countries had three or more combined risk factors in females than in males. Countries with the highest female to male ratio for three or more combined risk factors included Botswana (1:75), Comoros (1:69), Sao Tome and Principe (1:47), Swaziland (1:42) and United Republic of Tanzania (Zanzibar) (1:41). Meanwhile, there were five countries where males had higher percentages for the presence of three or more combined risk factors: Seychelles, with a female to male ratio of 0:71, Sierra Leone (0:72), Mozambique (0:87), Malawi (0:88) and Gambia (0:93).

The presence of three or more combined risk factors for NCDs increased with age, as younger adults (aged 25–44 years) were likely to have less of these compared with older adults (aged 45–64 years). For younger adults, the percentage with at least three risk factors ranged from 10% in Benin to 19% in Cabo Verde and 30% in Gabon, Seychelles, and Swaziland, with a median of 19%, while for older adults it ranged from 18% in Madagascar to as high as 52% in Seychelles, with a median of 37%.

10.4 Conclusion

Most adults in the WHO African Region have at least one of the five major risk factors for NCDs: (i) current daily smoker; (ii) consuming less than five servings of fruits and vegetables per day; (iii) low levels of physical activity; (iv) being overweight; or (v) having raised blood pressure. People with at least three of these risk factors are more likely to develop NCDs over the course of their lives than those who have fewer or no risk factors.

In half of the countries with STEPs data, at least one quarter of adults were observed to have at least three of above five combined risk factors. Most of these adults are likely to be older (aged 45–64 years) or female.

The availability of data on the level of combined risk factors for NCDs among the population is very important for making policy decisions for the prevention and control of NCDs. It is also critical for programme planning, monitoring and evaluation.

11. Conclusions and recommendations

Since the adoption by the United Nations General Assembly in 2011 of the Political Declaration of the High-Level Meeting on the Control and Prevention of NCDs[1] and subsequent development of the 2013–2020 global NCD action plan *(16)* and its monitoring framework *(23)*, the Member States of the WHO African Region are stepping up their efforts to contain the growing pandemic of NCDs and their related risk factors and social determinants. Based on the global action plan, many countries have developed, or are in the process of preparing, national intersectoral action plans on NCD prevention and control. Such action plans require data in order to make appropriate policy decisions. WHO data collection tools – notably the STEPwise survey – play an important role in this, particularly since the passive surveillance system for NCDs is not yet fully functional in most countries. Member States of the Region need to invest in conducting regular STEPwise surveys – complemented by periodic GSHS – to generate the information essential for policy development, planning, monitoring and evaluation.

As data from STEPs and GSHS show, key risk factors for NCDs are surprisingly prevalent in many countries of the African Region. The prevalence of hypertension, for example – is the highest worldwide in some settings. The data from these surveys justify the need for countries to intensify their efforts towards the prevention and control of this pandemic. Cost-effective strategies and interventions for primary prevention of NCDs are available, but commitment to fund and implement them is not as expected at the national level.

Most countries in the Region have carried out at least one STEPwise survey, which is considered as a baseline to monitor future national programme performance. For this reason, it is important that Member States invest in conducting STEPwise and GSHS surveys every 3–5 years in order to obtain meaningful trend data that will indicate the direction of the NCD pandemic in the Region.

1 http://www.who.int/nmh/events/un_ncd_summit2011/political_declaration_en.pdf

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