المعهد الوطني الفلسطيني للصحة العامة
The Palestinian National Institute of Public Health

وزارة الصحة الفلسطينية
Palestinian Ministry Of Health

World Health Organization
occupied Palestinian territory

Occupied Palestinian territory National Stepwise Survey (STEPS) for Noncommunicable Disease Risk Factors 2022

January 2024

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Acronyms

BMI	Body Mass Index
CI	Confidence Interval
CVD	Cardiovascular Diseases
EMRO	Eastern Mediterranean Regional Office
EA	Enumeration Areas
HDL	High-Density Lipoprotein
LMIC	Low- and Middle-Income Countries
NCD	Non-Communicable Disease
ODK	Open Data Kit
PCBS	Palestinian Central Bureau of Statistics
PPS	Probability Proportionate to Size
PSU	Primary Sampling Unit
STEPS	STEPwise Approach to Surveillance
TG	Triglycerides
WHO	World Health Organization

Acknowledgements

The Palestinian Ministry of Health thanks the World Health Organization for supporting the implementation of the STEPS survey 2022. The survey was made possible through funding from the Palestinian National Institute of Public Health and World Health Organization/Eastern Mediterranean Regional Office.

For further information on the STEPS survey 2022, please contact Salwa Massad, WHO oPt at (massads@who.int, salwamassad@gmail.com)

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Executive Summary

Non-communicable diseases are on the rise and contribute significantly to premature death and reduced healthy life expectancy. Non-communicable diseases are the major causes of mortality and morbidity in Palestinians and were responsible for 68.5% of all deaths in 2020. Cardiovascular diseases, diabetes mellitus, cancer, and cerebrovascular diseases were the top four leading causes of death: 24.7%, 14.6%, 14.1%, and 11.7%, respectively. Between 2010 and 2020, there was a marked increase in the incidence of cancer from 53.7 per 100,000 population to 115.8 per 100,000 population respectively. The top three reported cancers in 2021 were breast, colorectal, and lung (1).

In accordance with the World Health Organization (WHO) recommendations for a robust periodic surveillance system for NCDs and associated risk factors, we conducted the second STEPs survey; the first one was conducted in 2010/2011. This survey responds to the need for comprehensive, updated prevalence of NCD risk factors in order to develop appropriate interventions for effective prevention and control of NCDs before they overwhelm the country's health services and scarce resources. The study was conducted by the Palestinian National Institute of Public Health (PNIPH) in partnership with the Ministry of Health and with WHO. Data collection took place between August and October 2022.

The target population consisted of all Palestinian individuals aged 18 to 69 years living in the West Bank and Gaza (excluding Jerusalem inside the wall (J1)) for at least 12 months, and who live in the house at least 80% of the time. We used a three-stage stratified cluster sampling to select a random sample of 5775 adults from 525 enumeration areas: 3135 from the West Bank and 2640 from the Gaza Strip. The Palestinian Central Bureau of Statistics (PCBS) provided the sampling framework for selection of the study sample and provided the weights to control for the study design.

This study used the WHO STEPwise approach for the surveillance of NCD risk factors. The core questions from the first survey were retained but, in this round, the following modules were added to the STEPS survey as risk factors for NCDs: alcohol consumption, sleeping patterns, and mental health. Data analysis was conducted using Epi Info. All data on the prevalence of NCDs and risk factors for NCDs were weighted to provide estimates at the population level, adjusting for study design, non-response, and age and sex distribution of the

population. The response rate was 95%. The sample size was 5503: 2962 in the West Bank and 2541in Gaza.

The prevalence of risk factors for NCDs was high in oPt with 33.5% of the Palestinian population smoked tobacco: 12.1% of women and 55.1% of men. In the west Bank, 66.6% of men smoked tobacco, alarmingly the highest prevalence in the world. Almost 72.4% of adults were exposed to secondhand smoke at home. Alcohol use was low at 1.0% in men and 0.2% in women.

Regarding diet, 84.3% ate less than the WHO recommended five servings of fruit and/or vegetables on average per day, and 26.5% always or often add salt to their food before eating. Furthermore, obesity and insufficient physical inactivity (<150 minutes of moderate-intensity activity per week or equivalent) were high among Palestinians. Around 31.6% of adults were obese (≥ 30 kg/m2): 24.7% of men and 38.8% of women, while 21.1% had insufficient physical activity, and 78.4% (76.4-80.3) did not engage in vigorous activity. Women were less physically active than men: 25.1% (22.1%-28.1%) of women had insufficient physical activity compared to 17.0% (14.7%-19.4%) of men.

Around 12.3% of the Palestinian population aged 18-69 years had raised blood pressure (SBP ≥160 and/or DBP ≥100 mmHg) or were currently on medication for raised blood pressure. Some 17.3% had raised fasting blood glucose (≥126 mg/dl) or were currently on medication for raised blood glucose: 18.7% in the West Bank and 14.7% in Gaza had a 10-year CVD risk ≥20% or had an existing CVD.

As to mental health, some 52.9% (95% CI: 52.8%-53.0%) of the population suffered from psychological distress (WHO-5 well-being index ≤ 50). Psychological distress was higher in Gaza than in the West Bank: 58.7% (95% CI: 58.5%-58.8%) vs. 48.0% (95% CI: 47.9%-48.1%) respectively.

The results highlight the urgent need for interventions to address behavioral changes, including reduction of the alarmingly high rate of smoking, improvement of dietary habits, increased physical activity, the optimization of management of hypertension, diabetes, and cardiovascular diseases, and address the high prevalence of psychosocial distress among Palestinian population, especially in Gaza.

Introduction

Non-communicable diseases

Non-communicable diseases (NCDs), namely cancer, cardiovascular diabetes (CVD), and hypertension, are a growing global concern (2). The increasing burden of NCDs is overwhelming health systems and resulting in high costs to governments and individuals (3). The WHO estimates that about 38 million deaths are attributable to NCDs worldwide annually, where about three-quarters of deaths are among those in low- and middle-income countries (LMICs), and this estimate is forecast to grow (4). The health care system in LMICs will become heavily aggravated, disrupted economically, and the quality of life may deteriorate (5). There needs to be a strategy to prevent and control these diseases before they overburden and stretch the health care system beyond its capacity (6).

NCD risk factors

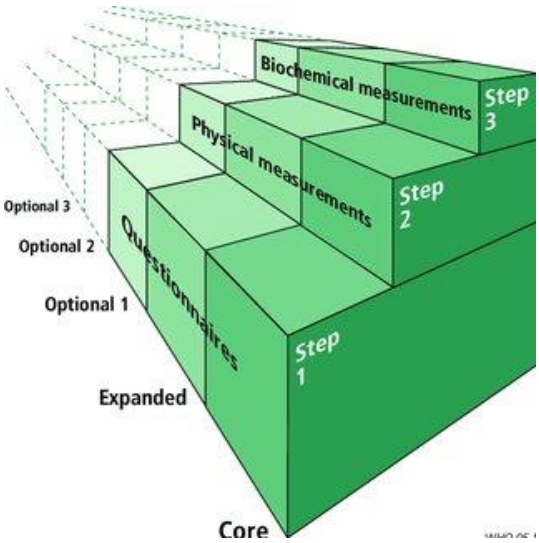
Preventing or minimizing the development of NCDs begins by reducing risk. Reducing exposure to the risks associated can lessen or prevent development of NCDs. The majority of NCDs tend to develop with age. While some risk factors are biologically inherent and acquired genetically, others, including lifestyle choices, can reduce the risk of developing NCDs (6).

Obesity is a key risk factor for NCDs, mainly type 2 diabetes, CVD, osteoarthritis, and some types of cancer. Across the Middle Eastern region, the prevalence of obesity ranks among the highest in the world. Overweight and obesity among adults ranged from 50% to 80%, with higher prevalence among women. By 2023, the Middle East will most likely experience one of the highest relative increases in the burden of diabetes in the world (7). Monitoring the prevalence and distribution of these risk factors is essential to forecasting the burden of disease and identifying the appropriate targets in preventing and controlling NCDs (2).

WHO STEPwise survey approach

The WHO has developed the STEPwise approach survey as a surveillance system designed to measure NCDs risk factor prevalence using population-based surveys. Findings from this

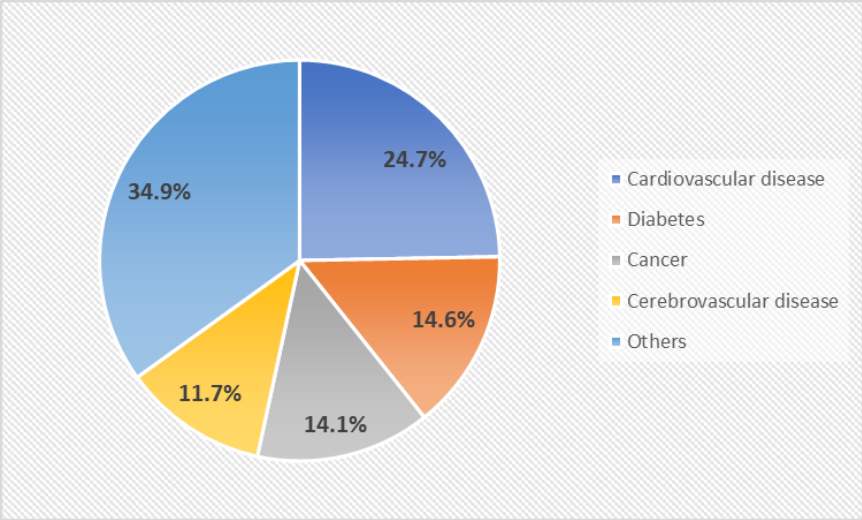
approach identify major risk factors for targeting in order to reduce mortality and morbidity due to NCDs. The survey is adaptable to many different settings and consists of core, extended, and optional modules. It consists of three different parts: study questionnaire, physical measurements (anthropometric measures, blood pressure, and heart rate), and biochemical measurements (blood glucose and lipids) (8).



Rationale

In line with neighboring countries, in the occupied Palestinian territory (oPt) there is a rising burden of NCDs (9) as a product of a nutritional and epidemiological transition arising from exposure to the western diet, increasing ease of access to unhealthy foods, and other lifestyle changes. This adds to the burden on the oPt healthcare system which is fragmented, fragile and dependent on external donors for financial assistance. In 2020, NCDs were the top four leading causes of death among Palestinians (responsible for 65.1% of total deaths) (Figure 1).

Figure 1: Top leading causes of death, oPt, 2020



Based on previous assessments, smoking is highly prevalent and the water pipe is becoming more popular across all age groups and among both men and women. Data from the Global Youth Tobacco Survey 2014 among adolescents (13–15 years old) reported that the prevalence of water pipe tobacco smoking in the West Bank was 32.7%. In 2014, based on a study of 1891 college students in five Palestinian colleges, 30.0% of participants were current tobacco smokers and 33.4% reported ever smoking *shisha* (water pipe) (10).

Overweight and obesity, another risk factor for NCDs, is escalating at an alarming rate worldwide and affecting children and adults globally. Based on a systematic review of published studies reporting overweight and obesity in oPt up to 2016, the pooled prevalence of obesity and overweight were 6% and 15% in children; 18% and 30% in adults; and 49% and 40% in people with NCDs (11). Based on a cross-sectional study of 2400 school children aged 15–18 years in government schools in the West Bank and Gaza Strip in 2013, 23.6% of students were overweight or obese.

All the studies show an alarming rate of smoking and overweight and obesity, yet there is no national updated data on the burden of NCDs in oPt. NCDs profiling is urgently needed to provide evidence for planning and evaluating health promotion activities and prevention interventions targeting NCDs as the last STEPwise Survey was conducted 12 years ago.

Objectives

The overall objective of the study was to examine the prevalence of NCDs risk factors among Palestinian adults 18-69 years in the West Bank and Gaza.

Specific objectives:

1- To measure the prevalence of risk factors for NCDs
   a. Behavioral risk factors
      - Tobacco use
      - Alcohol consumption
      - Dietary intake (fruit and vegetable consumption, salt, and sugar intake)
      - Physical activity levels.
   b. Raised blood pressure, overweight and obesity, impaired and raised blood glucose, raised total cholesterol, and low HDL (High Density Lipoprotein).
2- To examine 10-year cardiovascular risk among adults aged 40-69 years.
3- To examine sex, age, and regional variation in prevalence of risk factors for NCDs.
4- To examine mental health and well-being.
5- To examine sleeping patterns.

Methods

Study population

The West Bank, including East Jerusalem, and Gaza are part of the Palestinian territory occupied by Israel since 1967. The legislative and physical division of oPt, in terms of both the separation of the Gaza Strip from the West Bank and the isolation of East Jerusalem from the remainder of the West Bank, presents major difficulties for the cohesiveness of the health system (

Figure *2*). Gaza has been under an Israeli blockade for more than 16 years. Jerusalem is annexed into zone J1 and zone J2; J1 refers to the territory of East Jerusalem (the 70 km^2 annexed into the Jerusalem municipality) and J2 refers to the surrounding suburban areas that link Jerusalem to the rest of the West Bank.

In mid-2023, the estimated population of oPt was 5.48 million: 3.25 million in the West Bank and 2.23 in Gaza. The Palestinian population is young; 37% of the population are below the age of 15 years, and only 4% are 65 years and above (12). Around 34% of Palestinian people (1.8 million) are food insecure, of whom 76% live in Gaza (13).

Figure 2: Map of oPt (Source: World Atlas)

Target population

The target population consists of all Palestinian individuals aged 18 to 69 years who have been living in oPt for at least 12 months, excluding Jerusalem J1.
Inclusion criteria: Palestinian 18-69 years of age living in oPt for the previous 12 months from the data collection date, lived in the house for at least 80% of the time, and agreed to participate in the study.
Exclusion criteria: Palestinians outside the age range of 18-69 years, mentally disabled or challenged, and unable to give informed consent.

Study design

A cross-sectional, population-based household survey of the adult Palestinian population living in West Bank and the Gaza Strip. The standardized World Health Organization STEPwise approach to the surveillance questionnaire was adopted and used to obtain information about demographic risk factors, behavioral risk factors, physical measurements, and biochemical measurements. The adaptation of the STEPs tool was done in close collaboration with Dr Heba Fouad/ regional surveillance officer-WHO EMRO, and from WHO headquarters, technical officers Dr Stefan Savin and Dr Patricia RARAU.

Sampling

The sampling frame consisted of enumeration areas (EAs) from the Population, Housing and Establishment Census 2017 with an average enumeration area size of around 150 households. These units were used as primary sampling units (PSUs). The Palestinian Central Bureau of Statistics (PCBS) provided the sampling framework and selected the three-stage stratified cluster systematic random sample:
First Stage*:* The selection of the Primary Sampling Units (PSUs); the enumeration areas (EAs) in the region. The selection of the PSUs was based on Probability Proportional to Size (PPS). A total of 525 EAs were selected from oPt; 240 EAs in Gaza and 285 EAs in the West Bank).
Second Stage*:* The selection of the Secondary Sampling Units (SSUs), which are the households (HHs). Eleven households were selected from each enumeration area based on

blind maps provided by PCBS for each randomly selected enumeration area. Each map had a randomly selected starting point for the random walk (area sampling).

***Third Stage**:* The random selection of the Third Sampling Units (TSUs), which was one randomly selected adult aged 18-69 years from the eligible adults of each household.

Sample strata

For the purposes of this survey, two levels of stratification were applied: by governorate (16 governorates) and type of locality (urban/rural/refugee camp).

Sample size

1- West Bank:

The sample size was determined by two major factors: variability of the population and the precision required in the results, in addition to the availability of resources needed for the implementation of the survey.

The equation used to estimate sample size is:

$$n = \frac{z^2 * \mathrm{p}(1-\mathrm{p})}{e^2 * \mathrm{a}} * Deff * D$$

Where:

n = the required sample size, (number of individuals)

z = the value in the normal distribution that gives level of confidence 95% (z = 1.96)

p = the prevalence of the most important indicator in the study (p = 0.5)

a (anticipated response rate) = 0.70

Deff (Design effect that describes the loss of sampling efficiency due to using a complex sample design), which is supposed to be = 1.5

e = margin of error at 95% confidence (e = 0.05)

D (Domain): in this study, we have 6 levels for analysis and publication:

1. The regional level (West Bank)
2. The gender level (male, female)
3. The age-group level (18-43 years, 44-69 years).

Substitution in the formula gives:

$$n = \frac{(1.96)^2 * 0.5(1-0.5)}{(0.05)^2 * 0.7} * 1.5 * 4$$

The estimated sample size for the West Bank was 3135.

2- Gaza Strip:

Substitution in the formula gives:

$$n = \frac{(1.96)^2 * 0.5(1-0.5)}{(0.05)^2 * 0.9} * 1.5 * 4$$

The estimated sample size for Gaza Strip was 2640.

Data collection

Data collection was carried out between August and October 2022. The eSTEPS application was used in which data were collected using tablets through an Open Data Kit (ODK). There were 43 data collection teams (28 in the West Bank and 15 in Gaza). Each team consisted of a driver, one nurse, and an interviewer. Due to cultural sensitivities, only females were recruited for data collection.

Interviewers were responsible for the selection of the random household within each EA using PCBS maps, selecting a participant from all eligible members within a selected household using the Android Device, obtaining informed consent, conducting the interview, and completing tracking sheets for the field work. Nurses were responsible for taking the anthropometric measurements, explaining the fasting instructions, taking the vital signs, carrying out the blood test during the next visit to the house, and filling out the paper form for test results for study participants. Teams were mobilized into corresponding clusters six days a week under the supervision of field supervisors and field managers.

Height and weight were measured using SECA stadiometers 213 and SECA 803. The waist and hip circumferences were measured using a Body Mass Index (BMI) girth measuring tape. Blood pressure and heart rate were measured using OMRON M6 comfort, with three

readings taken three minutes apart. CardioChek PA professional analyzer (REF 1708) was used to measure blood glucose and blood lipids.

Interviewers uploaded all data on the Android device to the server on a daily basis. Monitoring and data cleaning were conducted on a daily basis for all uploaded completed questionnaires to check time, response rate, work progress, and duplicates. Technical support and troubleshooting were provided on daily basis in addition to timely review of tracking sheets.

Data collection presented several challenges. Firstly, it coincided with the COVID-19 pandemic. To mitigate infection risks, we implemented safety measures including full vaccination and testing of all field workers, and mandatory mask-wearing for both data collectors and interviewees. Secondly, security concerns arose in both the West Bank and Gaza. In Gaza, a sudden escalation necessitated delaying data collection after the Israeli war on August 5th, the day before data collection was scheduled to begin, necessitated a delay. The West Bank also experienced security challenges during the data collection period, with deadly raids occurring in the north and south. Thirdly, logistical hurdles emerged due to restricted access to areas within the seam zone, requiring special permits for data collection.

Human subject protection

Ethical approval was obtained from both the Helsinki Ethics Review Committee/Gaza Strip and WHO EMRO Ethics Review Committee. Informed oral consent was obtained from every survey participant following a description of the study given prior to conducting the interview. Participants were given the right to skip any question they did not want to answer or to skip any test. To protect confidentiality, all interviews were conducted in privacy. The names of all participants were deleted prior to analysis and replaced by a unique ID number to match the STEP 1 and STEP 2 data with STEP 3 data and to merge the data from day 1 and day 2.

The study has a favorite risk-to-benefit ratio. The blood test has minimal risk. All participants, interviewers, and nurses were given N95 masks to protect themselves against COVID-19 infection during interviews. In coordination with the Ministry of Health, all interviewers and nurses took a rapid test for COVID-19 on the first day of training. All participants were given the results of their blood tests, BMI, and vital signs values, and

advised to follow up with their doctors if needed. Participants were also given a list of centers that provide psychosocial counseling and their contact information. All participants were given the phone number of the PNIPH in case they had a question or concern.

Data analysis

Descriptive statistics were used to describe the study sample and to estimate the prevalence of risk factors for NCDs: frequency, percentage, mean and medians. Also, 95% confidence intervals around the means and rates were presented and used as a measure of precision on the estimated population parameters, and to examine significant differences or associations between variables based on confidence intervals overlap.

Sampling weights were developed to account for the study design, non-response, and the distribution of the target population by age and sex. Clusters chosen from large units were given more weight than clusters chosen from small units. This weighting is necessary both statistically and logistically to make the sample "self-weighting". Data were analyzed using Epi Info version 3.5.4.

For the outcome variables, all cut-off points for behavioral risk factors, physical and biochemical measurements were based on WHO recommendations as follows:
Heavy episodic drinking: six or more drinks on any occasion in the previous 30 days.
Moderate intensity activities: activities that make one breathe harder than normal.
Vigorous intensity activities: activities that make one breathe much harder than normal.
Insufficient physical activity: defined as < 150 minutes of moderate-intensity activity per week or equivalent.
Overweight: Body Mass Index (BMI) ≥ 25 kg/m2
Obesity: BMI ≥ 30 kg/m2
Central obesity: waist-to-hip ratio (WHR) ≥ 0.90 in men and ≥ 0.85 in women
Raised blood pressure (BP): Two cut-off points were used for raised blood pressure: systolic BP (SBP) ≥ 140 and/or diastolic BP (DBP) ≥ 90 mmHg, and SBP ≥ 160 and/or DBP ≥ 100 mmHg.
Impaired fasting glycaemia: plasma glucose value ≥110 mg/dL and <126 mg/dL.
Raised fasting blood glucose: plasma glucose value ≥ 126 mg/dL.

Raised total cholesterol: total cholesterol value ≥ 190 mg/dL, or currently on medication for raised cholesterol.
Low High-Density Lipoprotein (HDL): HDL <40 mg/dl for men and <50 mg/dl for women.
10-year cardiovascular disease (CVD) risk: defined according to age, sex, blood pressure, smoking status (current smokers or those who quit smoking less than one year before the assessment), total cholesterol, and diabetes (previously diagnosed or a fasting plasma glucose concentration >126 mg/dL).
Mental health: measured using WHO-5 well-being scale. The WHO-5 consists of five statements which are rated by participants according to the scale below in relation to the previous two weeks: all of the time = 5, most of the time = 4, more than half of the time = 3, less than half of the time = 2, some of the time = 1, at no time = 0. The total score, ranging from 0 to 25, is multiplied by 4 to give the final score, with 0 representing the worst imaginable well-being and 100 representing the best imaginable well-being. A score of ≤50 indicates poor wellbeing (psychological distress) (14).

Pilot study

Following the five-day training for data collectors, 86 households were selected for the pilot study. Each team was responsible for collecting data from two households outside the randomly selected EAs. Following the pilot study, the questionnaire was reviewed and finalized. Before the data collection, a one-day refresher training was given for all data collectors.

Results

Demographic characteristics

The total sample size was 5503: 2962 from the West Bank and 2541 from Gaza. The mean annual income for the study sample was 12,613.6 ILS (5,158 USD), with significant variability by region: 18,652.0 ILS in the West Bank and 5,647.4 ILS in Gaza. Only 9.1% of women were employed or self-employed (

Table *1*) and 90.8% were in unpaid jobs. Most women in unpaid jobs were homemakers (86%), while almost half of men in the unpaid jobs were nonpaid (41.9%), and 24.5% were unemployed and able to work.

Table 1: Demographic characteristics of the study sample by sex

	Men (N=1701)	**Women (N=3802)**	**Both Sexes (N=5503)**
	N (%) unless otherwise indicated		
Age group			
18-29	534 (31.4)	946 (24.9)	1480 (26.9)
30-44	519 (30.5)	1243 (32.7)	1762 (32.0)
45-59	441 (25.9)	1067 (28.1)	1508 (27.4)
60-69	207 (12.2)	546 (14.4)	753 (13.7)
Number of years of education (mean (SD))	11.6 (3.7)	11.1 (4.0)	11.3 (3.9)
Marital status			
- Never married	430 (25.3)	598 (15.7)	1028 (18.7)
- Signed marital contract but marriage not consummated	15 (0.9)	41 (1.1)	56 (1.0)
- Currently married	1225 (72.0)	2727 (71.7)	3952 (71.8)
- Separated	3 (0.2)	36 (0.9)	39 (0.7)
- Divorced	15 (0.9)	76 (2.0)	91 (1.7)
- Widowed	13 (0.8)	324 (8.5)	337 (6.1)
Employment status			
-Government employee	181 (10.6)	106 (2.8)	287 (5.2)
-Government employee refrained ¥	67 (3.9)	6 (0.2)	73 (1.3)
-Non-government employee	134 (7.9)	141 (3.7)	275 (5.0)
-Laborer	7 (0.4)	18 (0.5)	25 (0.5)
-Self-employed	200 (11.8)	78 (2.1)	278 (5.1)
-Unpaid*	1111 (65.4)	3453 (90.8)	4564 (83.0)

¥ Refrained is a term that refers to Gaza employees who belong to the Fatah political party and who are paid by the Ministry of Health in the West Bank as they refuse to work with the Hamas government in Gaza.
*Unpaid: unpaid job, homemaker, student, retired or unemployed.

STEP 1: Behavioral measurements

Tobacco use/e-cigarette and vaping device use

Tobacco use

Around 33.5% of adults 18-69 years smoked tobacco: 55.1% of men and 12.1% of women (Table *2*), with most tobacco smokers smoking daily (75.9%). As shown in Figure *3*, there was significant variability in tobacco smoking by region: 37.7% in the West Bank compared to 28.6% in Gaza. Men started smoking at a younger age than women: 17.6 (95% CI:17.1-18.0) vs. 24.4 (95% CI: 23.1- 25.8) years respectively.

Among current tobacco smokers, 63.9% (95% CI: 62.9%- 64.8%) smoked manufactured cigarettes (71.8% of men and 28.5% of women); 7.9% (95% CI: 7.4%- 8.4%) smoked hand-rolled cigarettes (8.9% of men, 3.0% of women); and 35.0% (95% CI: 34.0%- 36.0%) smoked shisha (26.0% of men, 75.8% of women). Hand-rolled cigarette smoking was not as common in Gaza as in the West Bank, and in Gaza mostly women smoked shisha (

Figure 4: Average number of manufactured cigarettes smoked per day by sex and region

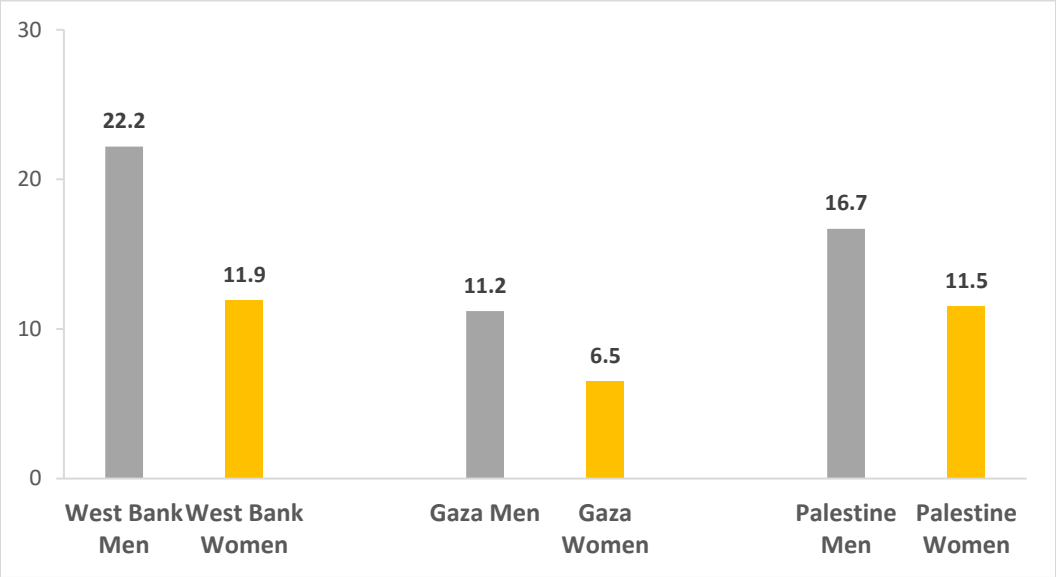


Figure 5*). The average number of manufactured cigarettes smoked per day was 16.3 (95% CI: 15.3-17.3): 21.1 (95% CI: 19.6-22.5) cigarettes in the West Bank and 11.1 (95% CI: 10.2-12.0) cigarettes in Gaza (*

). Shisha smoking was more common in the West Bank than in Gaza (Figure 5). In both the West Bank and Gaza, shisha smoking was more common among those below 45 years (Figure *6*).

In the West Bank, the average number of both manufactured cigarettes and hand rolled cigarettes smoked per day by men daily smokers was 37.3 (95% CI:30.3-44.3) cigarettes. Average monthly expenditure on manufactured cigarettes was 967.2 ILS (95% CI: 320.0-1604.3): 1061.7 ILS (95% CI: 350.6-1772.8) in the West Bank and 205.7 ILS (95% CI:119.8-291.5) in Gaza.

E-cigarette and vaping device use

Only a small proportion of adults smoked electronic cigarettes (vape) and heated cigarettes (IQOS): 1.7% and 1.4% respectively. Vaping was more common among men in the West Bank than in men in Gaza. In Gaza, adults did not smoke heated cigarettes (Figure *7*).

Table 2: Percentage of current tobacco smokers by age group and sex

Age Group (years)	Men	Women	Both Sexes
		% (95% CI)	
18-29	52.6 (47.5-57.7)	11.3 (8.7-13.9)	32.2 (29.0-35.4)
30-44	58.4 (53.1-63.7)	14.9 (11.7-18.1)	36.3 (33.0-39.5)
45-59	56.2 51.3-61.2	9.9 (7.4-12.3)	32.9 (29.6-36.2)
60-69	50.9 (43.1-58.8)	9.5 (6.6-12.4)	30.1 (25.1-35.1)
Total :18-69	**55.1 (52.0-58.1)**	**12.1 (10.2-14.0)**	**33.5 (31.5-35.6)**

Figure 3: Tobacco smoking among adults 18-69 years by sex and region

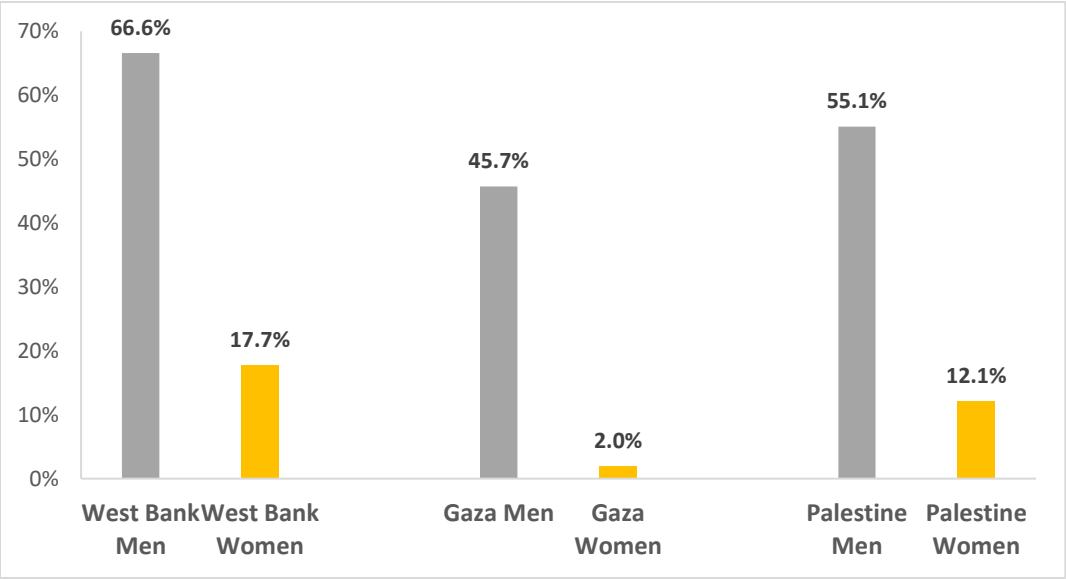


Figure 4: Average number of manufactured cigarettes smoked per day by sex and region

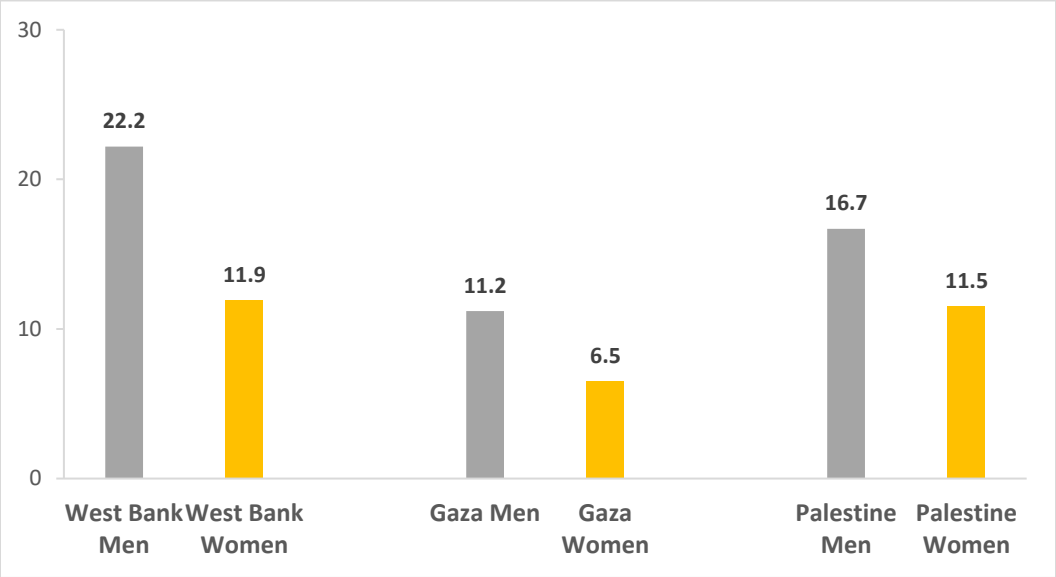


Figure 5: Type of tobacco smoking in Palestinian adults 18-69 years by sex and region

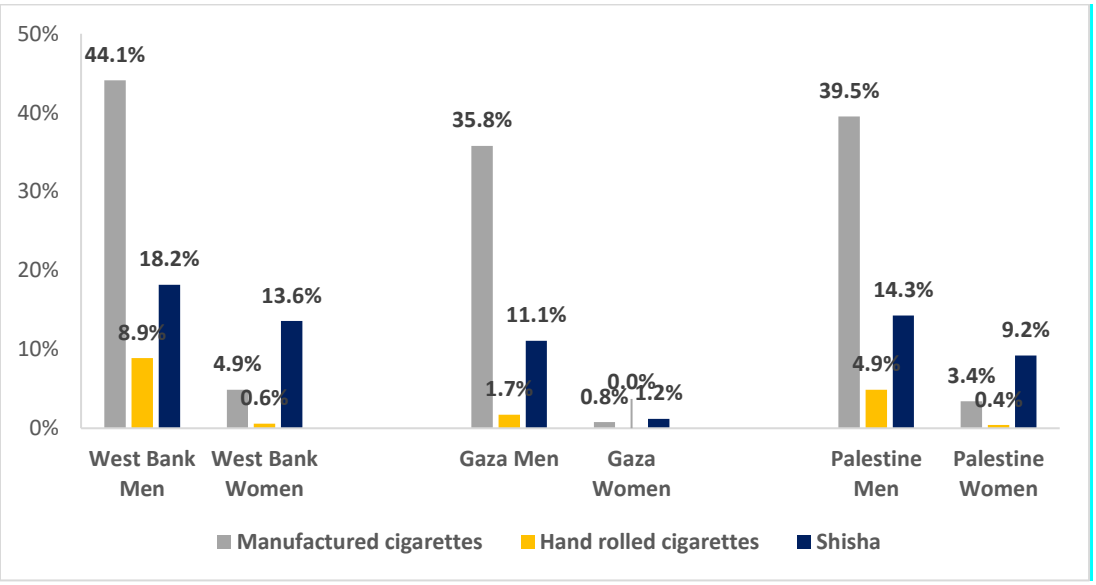


Figure 6: Shisha smoking among adults 18-69 years by age group, sex and region

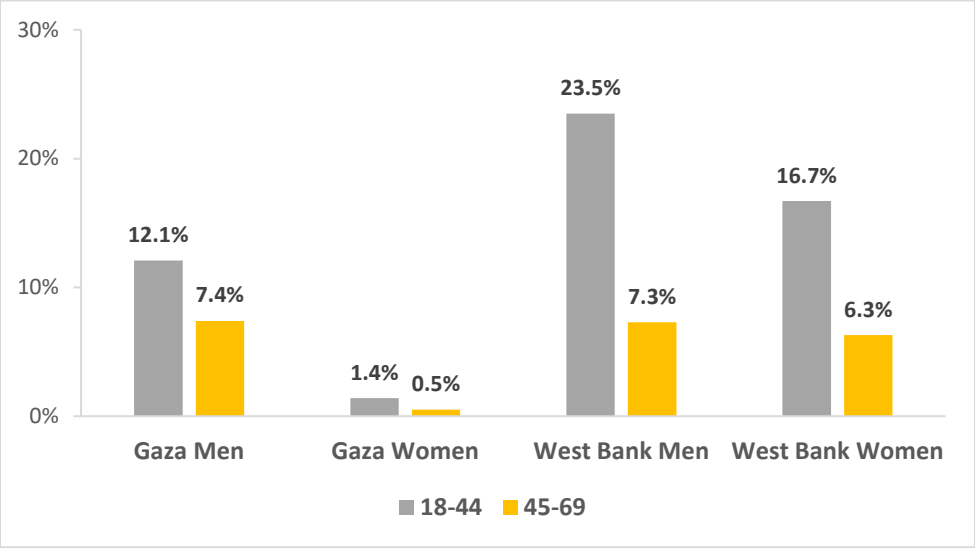
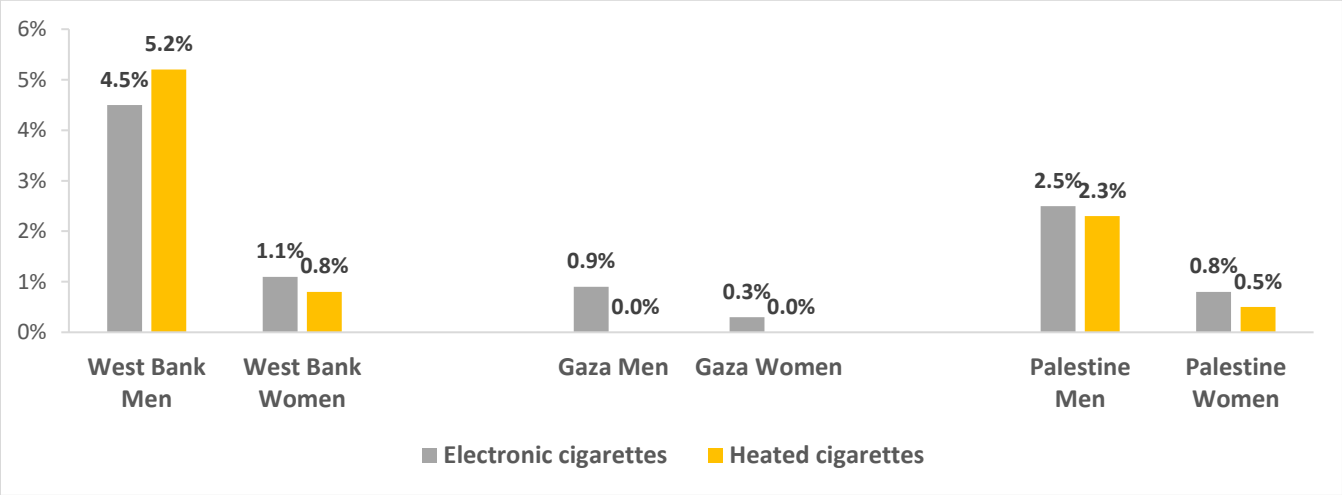


Figure 7**:** Electronic and heated cigarette smoking among adults 18-69 years by sex and region

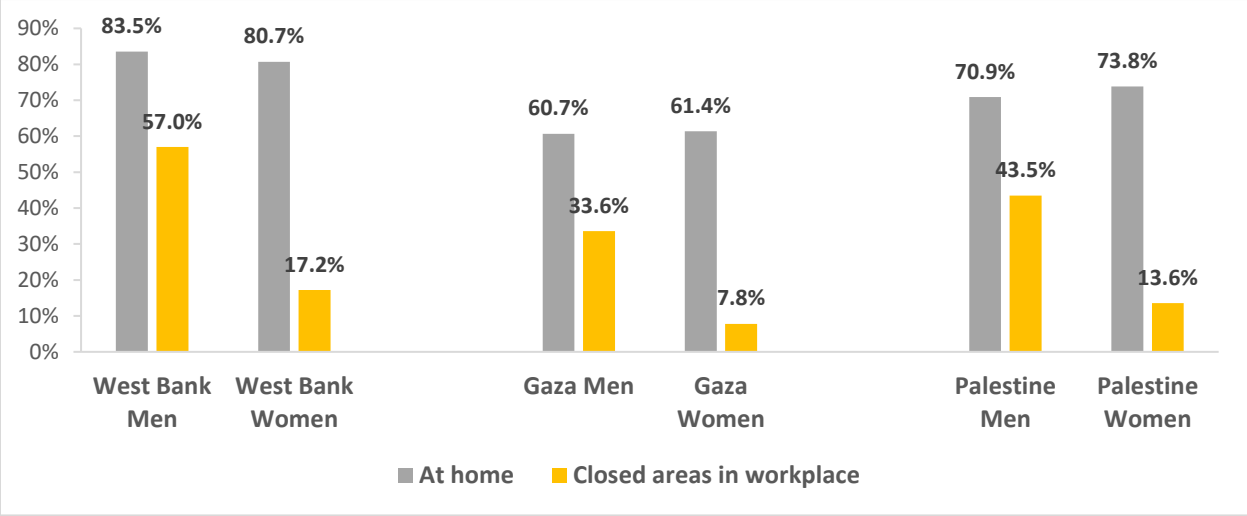


Exposure to secondhand smoking

Almost 72.4% (95% CI: 70.1-74.6) of adults were exposed to secondhand smoking at home and 28.8% (95% CI: 25.9-31.7) were exposed to secondhand smoking in the workplace. There was

significant variability by region and sex: exposure to secondhand smoking was higher in the West Bank than in Gaza, and higher among men than women (Figure *8*).

Figure 8: Exposure to secondhand smoking at home and in the workplace by sex and region

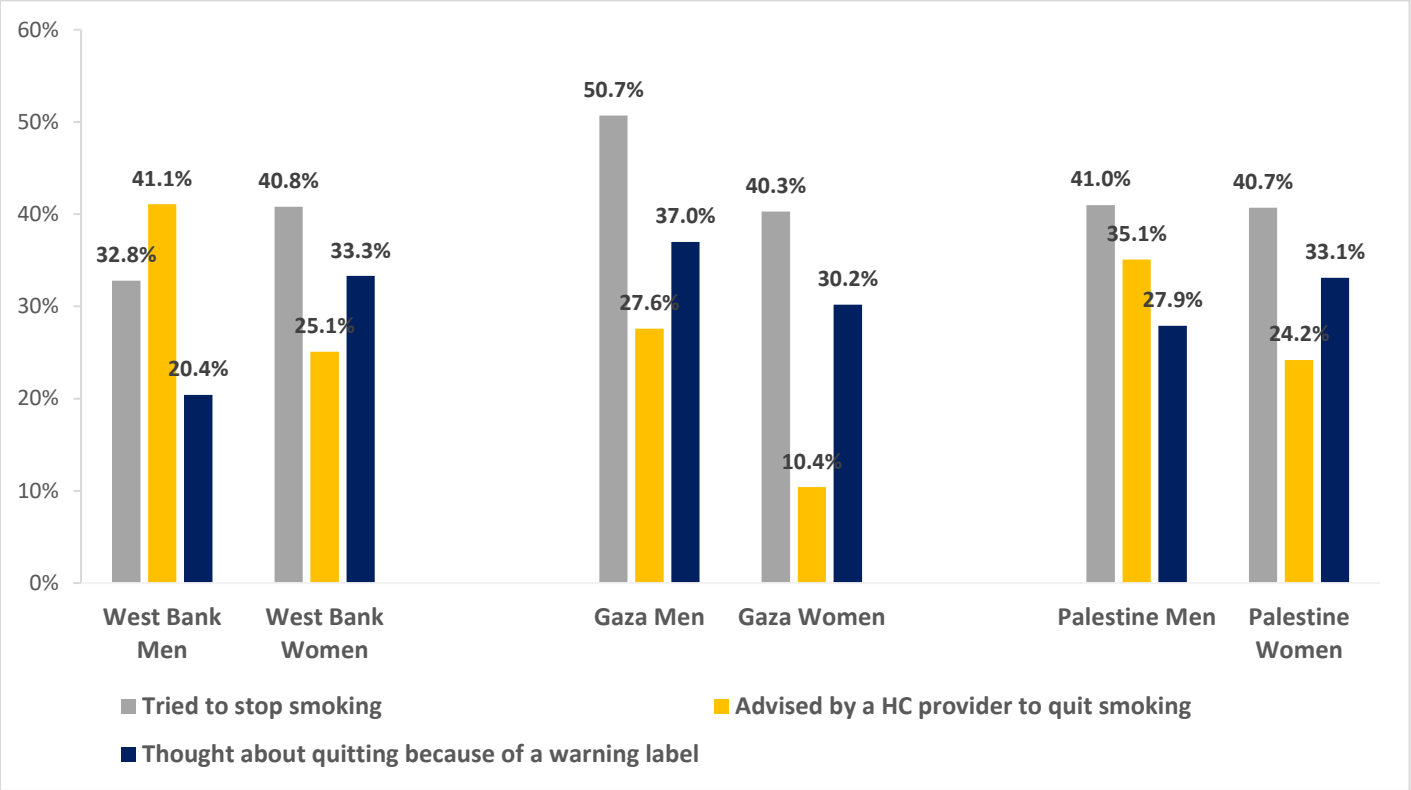


Giving up smoking

As shown in

Figure *9*, 40.9% (95% CI: 37.3%-44.6%) of adults tried to stop smoking in the 12 months prior to the survey. Only 32.9% (95% CI: 29.0%-36.7%) of current smokers were advised by a health care provider to stop smoking, while 28.8% (95% CI: 25.0%-32.7%) of current smokers considered quitting because of a warning label: 27.9% (95% CI: 23.9%-32.0%) of men and 33.0% (95% CI: 24.8%-41.4%) of women. However, only 21.6% (95% CI: 19.5%-23.7%) of smokers and non-smokers had noticed anti-cigarette smoking information on the television or radio.

Figure 9: Attempts to quit smoking among current smokers by sex and region

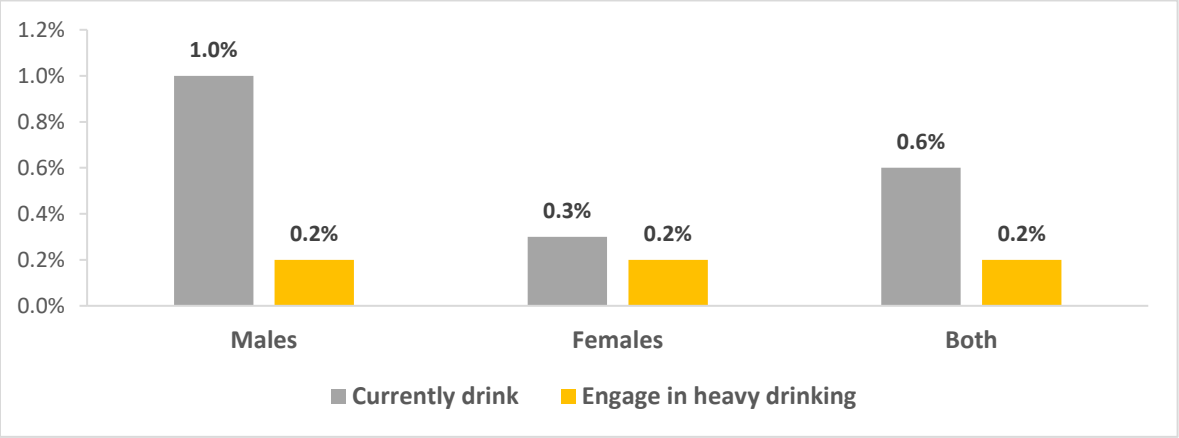


Alcohol consumption

Alcohol drinking was low in oPt (0.6% (95% CI: 0.0- 1.3%)), especially among women (0.3%, (95% CI: 0.0- 0.6%)). Only 0.2% (95% CI: 0.0-0.4%) of adults engaged in heavy drinking (6 or more drinks on any occasion in the previous 30 days) (

Figure *10*). None of the adults in Gaza were drinking alcohol at the time of the survey.

Figure 10: Alcohol consumption in oPt by sex



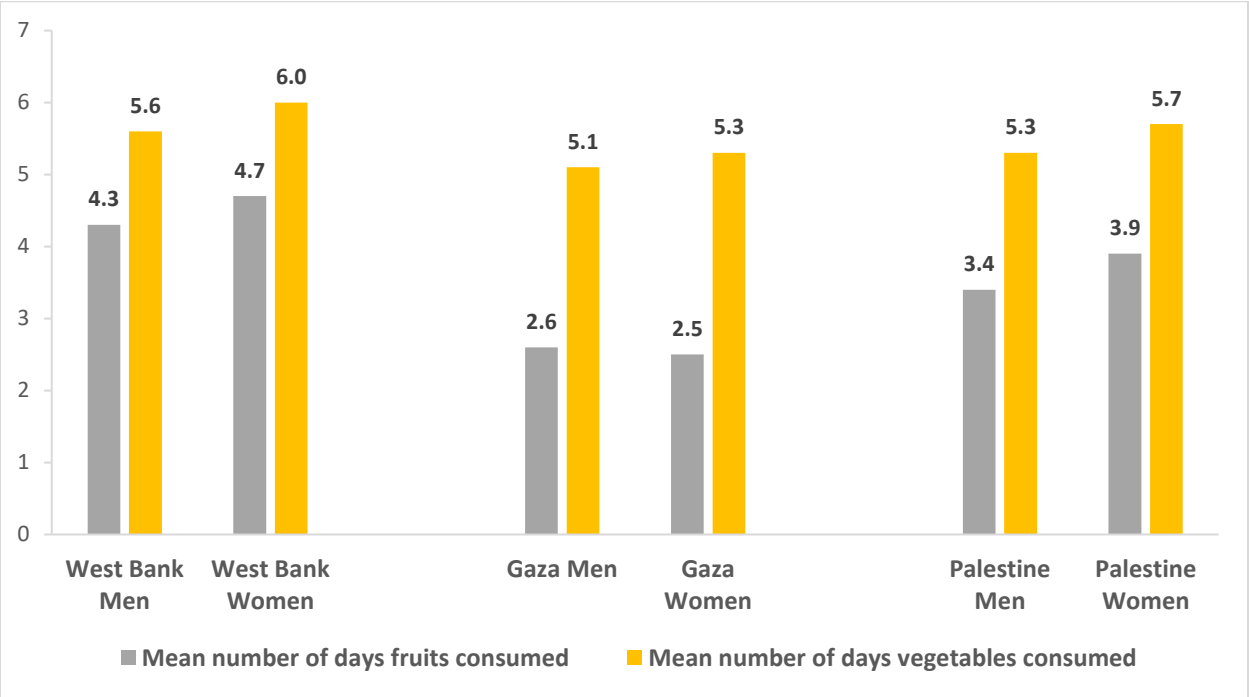
Diet

Intake of fruit and vegetables

The mean number of days that fruit and vegetables were consumed in a typical week was higher in the West Bank than in Gaza, and higher among women compared to men (

Figure *11*). The average number of fruits consumed in a typical week in oPt was 3.6 (95% CI: 3.5- 3.7), and the mean number of servings of fruit consumed on an average day was 1.2 (95% CI: 1.1-1.3). The mean number of days vegetables were consumed in a typical week was 5.5 (95% CI: 5.4- 5.6): 5.8 (95% CI: 5.7-5.9) in the West Bank and 5.2 (95% CI: 5.0-5.4) days in Gaza. The mean number of servings of vegetables consumed on average per day was 1.7 (95% CI: 1.6-1.8). The percentage of adults who ate less than five servings of fruit and/or vegetables on average per day (per WHO recommendations) was 84.3% (95% CI: 82.3- 86.3): 82.0% (95% CI: 79.6-84.4) in the West Bank and 87.0% (95% CI: 83.7-90.4) in Gaza.

Figure 11: Mean number of days fruit and vegetables were consumed in a typical week by sex and region



Daily salt intake

Around 26.5% (95% CI: 23.1%-30.0%) always or often add salt or salty sauce to their food before eating or as they are eating: 23.4% (95% CI: 19.0%-27.7%) of men and 29.7% (95% CI: 26.4%-33.0%) of women. Salt intake was higher in the West Bank than in Gaza: 33.3% (95% CI: 29.4%-37.2%) vs 18.4% (95% CI: 12.3%-24.5%) respectively. Furthermore, about 34.2% (95% CI: 32.0-36.5) always/often eat processed food high in salt, with insignificant differences by sex or region (

Figure *12*). However, there was a significant decrease in the consumption of processed food high in salt with age (

Figure *13*).

Figure 12: Salt intake by sex and region

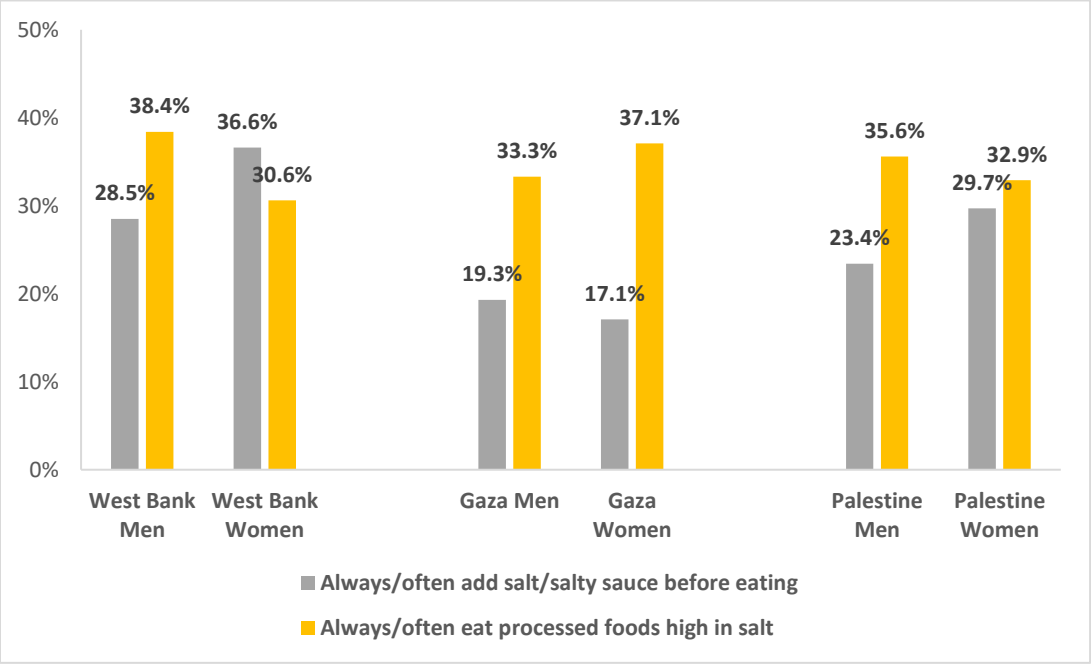
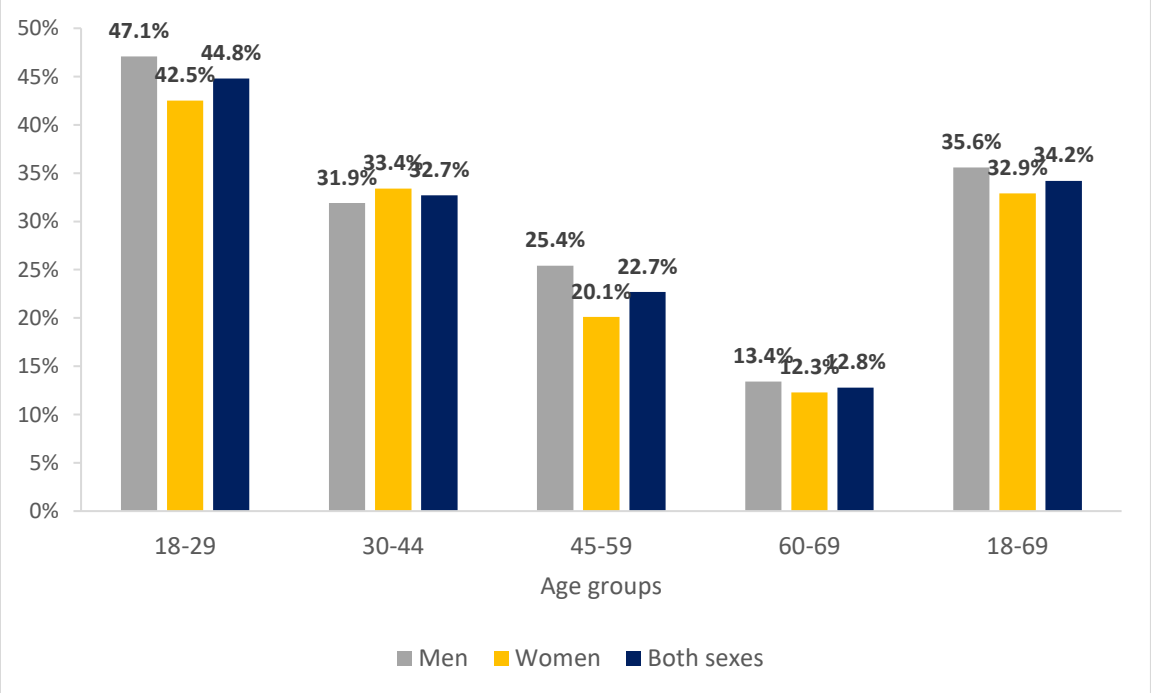


Figure 13: Salt intake by sex and age group



Physical activity

Some 21.1% (95% CI: 18.9%- 23.2%) had insufficient physical activity (< 150 minutes of moderate-intensity activity per week, or equivalent), and 78.4% (95% CI: 76.4-80.3) did not engage in vigorous activity (Figure *14*). Women were less physically active than men: 25.1% (95% CI: 22.1%-28.1%) of women had insufficient physical activity compared to 17.0% (95% CI: 14.7%-19.4%) of men. While there was no difference in physical activity by region, there was significant variability by age group and the proportion of adults with insufficient physical activity increased with age (

Figure *15*).

Figure 14: Physical activity by sex and region

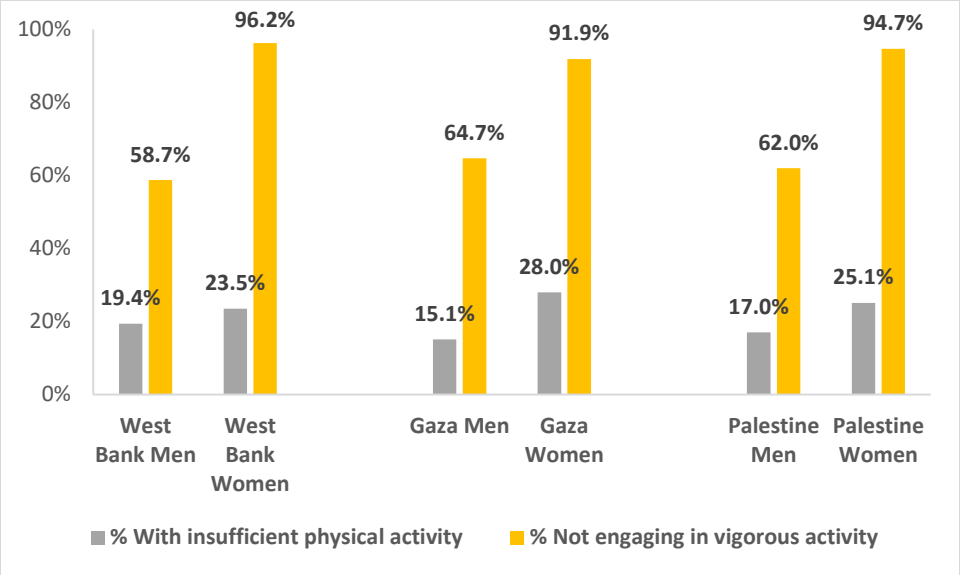
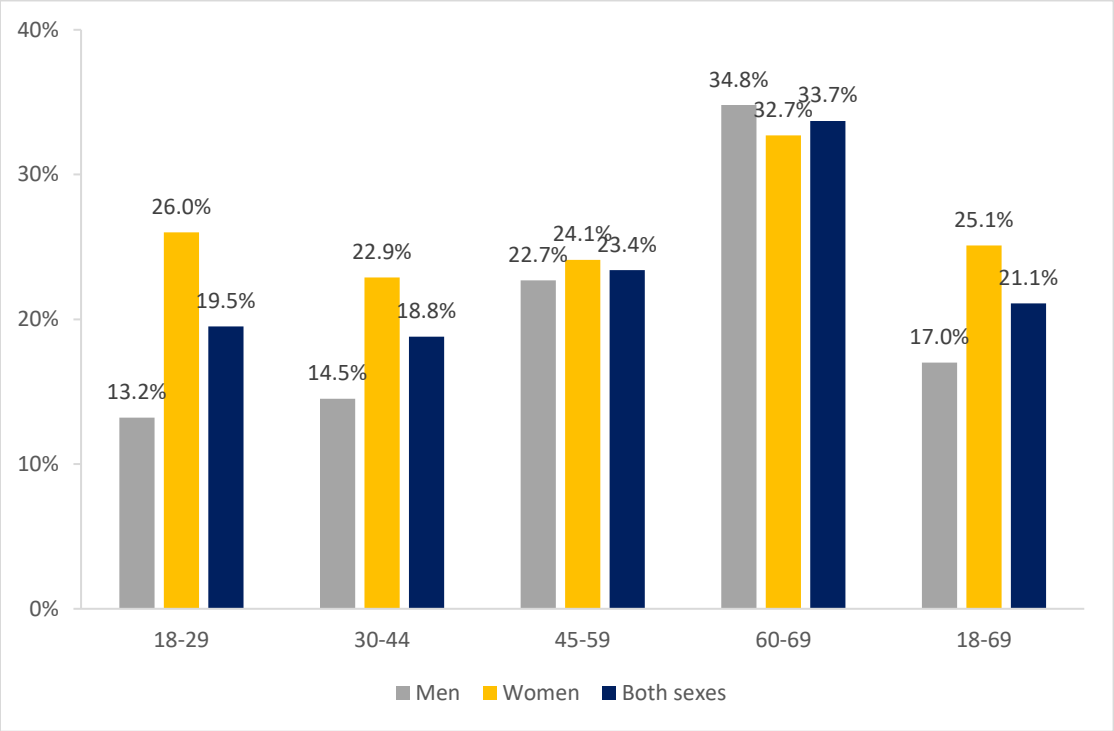


Figure 15: Insufficient physical activity by sex and age group



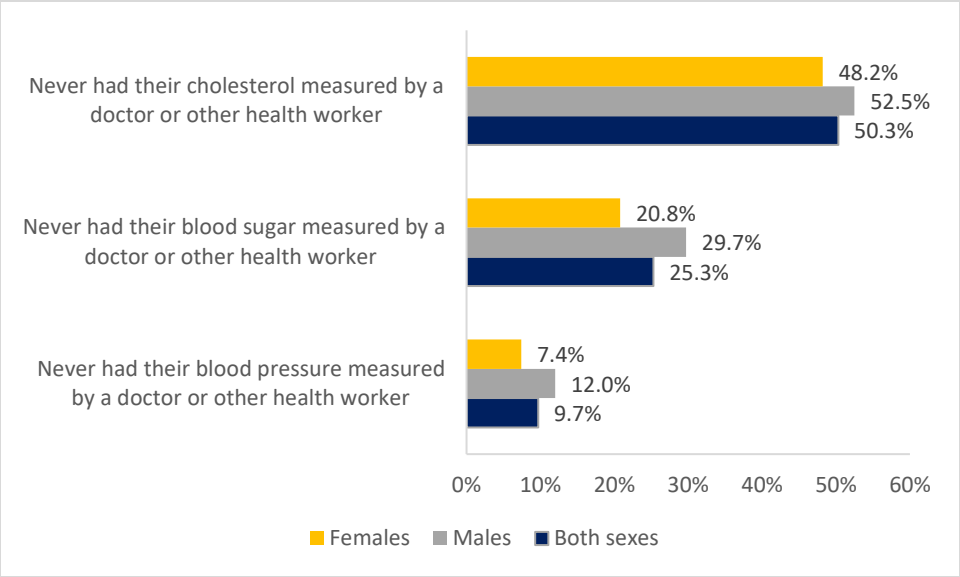
On an average day, Palestinian adults spent 214.6 minutes (95% CI: 201.4-227.9) in sedentary activities. This was higher for men than women: 236.2 minutes (95% CI: 219.7-252.7) vs. 193.2 minutes (95% CI: 181.5-205.0) respectively. The number of minutes spent in sedentary activity on average per day was much higher in Gaza compared to the West Bank: 276.5 minutes (95% CI: 252.1-301.0) vs. 163.2 minutes (95% CI: 152.7, 173.7) respectively.

History of non-communicable diseases

Among Palestinian adults aged 18-69 years, 5.0% (95% CI: 5.0%-5.1%) had cardiovascular disease (heart attack or chest pain from heart disease (angina) or a stroke), and 0.7% (95% CI: 0.67-0.71) had cancer. Based on 77.0% of adults 18-69 years, (23.0% had never had their blood pressure measured by a physician or a health care provider), 20.4% (95% CI: 20.3%-20.5%) had hypertension. Based on 55.1% of adults 18-69 years, (44.9% had never had their blood sugar measured by a physician or a health care provider), 17.3% (95% CI: 17.2%-17.4%) had diabetes.

Among Palestinian adults aged 40-69 years, 9.7%, 25.3%, and 50.3% had never had their blood pressure, blood sugar, and blood cholesterol measured by a doctor or other health provider (Figure 16).

Figure 16: Percentage of adults aged 40-69 years who ever had their blood pressure, blood sugar, and cholesterol measured by a health worker or a doctor, by sex.



There were variations in NCDs by region and sex: they were more prevalent in the West Bank than in Gaza, and among men compared to women, except for hypertension which was more prevalent among women in both the West Bank and Gaza (Table 3). There was also significant variability in reported NCDs by age group (Figure 17). Among both men and women, there was a significant increase in the prevalence of NCDs after the age of 44 years.

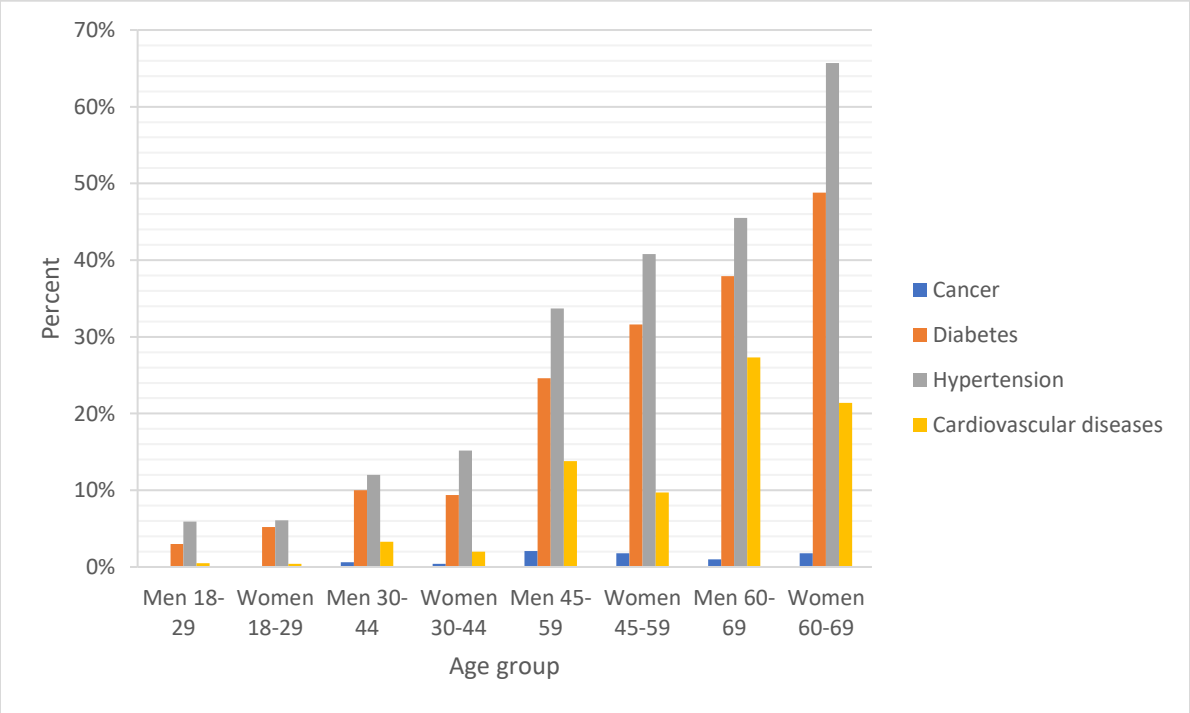
Table 3: Reported non-communicable diseases among adults 18-69 years♦ by sex and region.

NCD	**West Bank**			**Gaza**		
	Men	**Women**	**Both sexes**	**Men**	**Women**	**Both sexes**
	% (95% CI)			% (95% CI)		
Hypertension ¥	19.8	22.9	21.8	18.2	19.3	18.7

	(19.6-20.0)	(22.7-23.1)	(21.6-21.9)	(18.12-18.4)	(19.1-19.6)	(18.6-18.9)
Diabetes€	21.0 (20.7-21.2)	19.3 (19.2-19.5)	19.9 (19.7-20.0)	15.1 (14.9-15.3)	13.3 (13.1-13.5)	14.2 (14.0-14.3)
Cardiovascular disease	7.5 (7.5-7.8)	5.2 (5.2-5.3)	6.2 (6.2-6.3)	4.5 (4.4-4.5)	2.4 (2.3-2.4)	3.6 (3.6-3.7)
Cancer	0.78 (0.74-0.82)	0.59 (0.56-0.62)	0.67 (0.64-0.69)	0.69 (0.65-0.72)	0.76 (0.71-0.8)	0.71 (0.69-0.74)

♦Adjusted for study design, population structure, and non-response.
¥ Based on 77.0% of the sample (23% had never had their blood pressure measured by a physician or a health care provider).
€ Based on 55.1% of the sample (44.9% had never had their blood sugar measured by a physician or a health care provider).

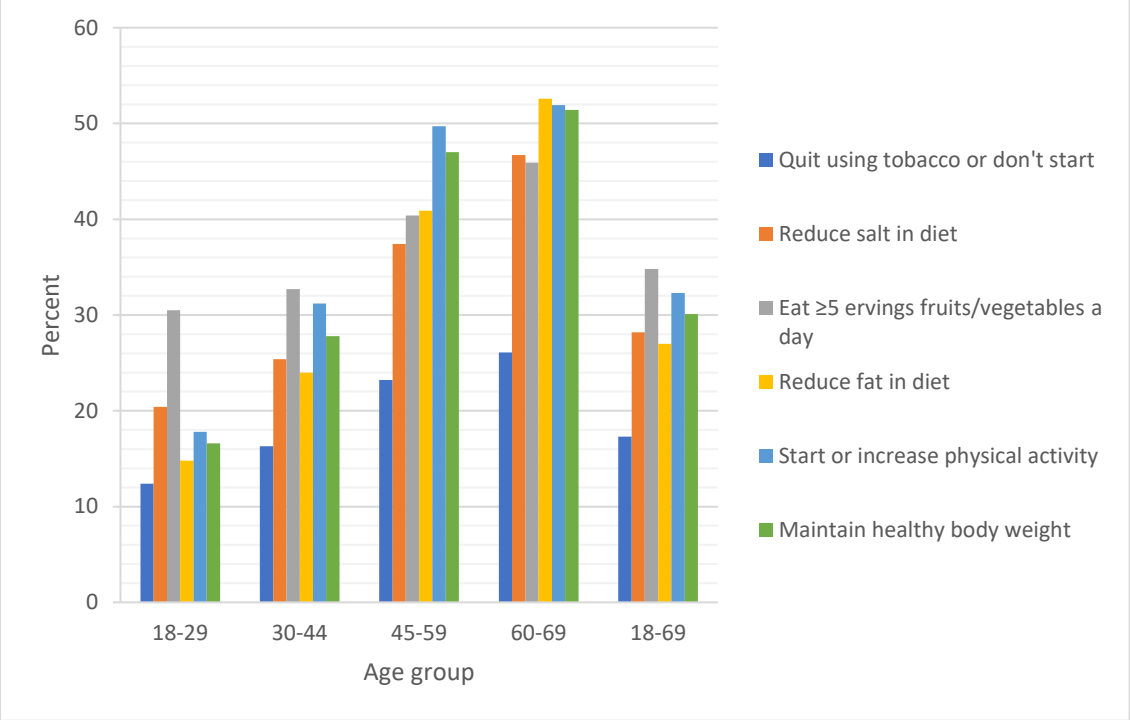
Figure 17 History of non-communicable diseases by sex and age group



Lifestyle advice

As shown in Figure *18*, lifestyle advice mainly targeted older adults (45 years and above), including smoking. Only 12% adults aged 18-29 and 16% of adults aged 30-44 were advised to give up using tobacco or not to start using tobacco versus 23% of the 45-59 age group and 26% of those aged 60-69.

Figure 18: Lifestyle advice from a doctor or other health worker during the previous three years by age group



Cervical cancer screening

Only 9.6% (95% CI: 7.6%-11.6%) of women aged 30-49 had ever had a screening test for cervical cancer (pap smear): 12.5% in the West Bank and 4.3% in Gaza.

Mental health

Based on WHO-5 well-being index, in the two weeks prior to the survey, only around a third of adults aged 18-69 years felt happy, calm and relaxed, and that daily life was filled with interesting things (Figure *19*). Some 52.9% (95% CI: 52.8%-53.0%) of the population suffered from psychological distress (WHO-5 well-being index ≤ 50). Psychological distress was higher in Gaza than in the West Bank: 58.7% (95% CI: 58.5%-58.8%) vs. 48.0% (95% CI: 47.9%-48.1%) respectively (

Figure *20*).

Figure 19: Psychological distress among Palestinian adults 18-69 years

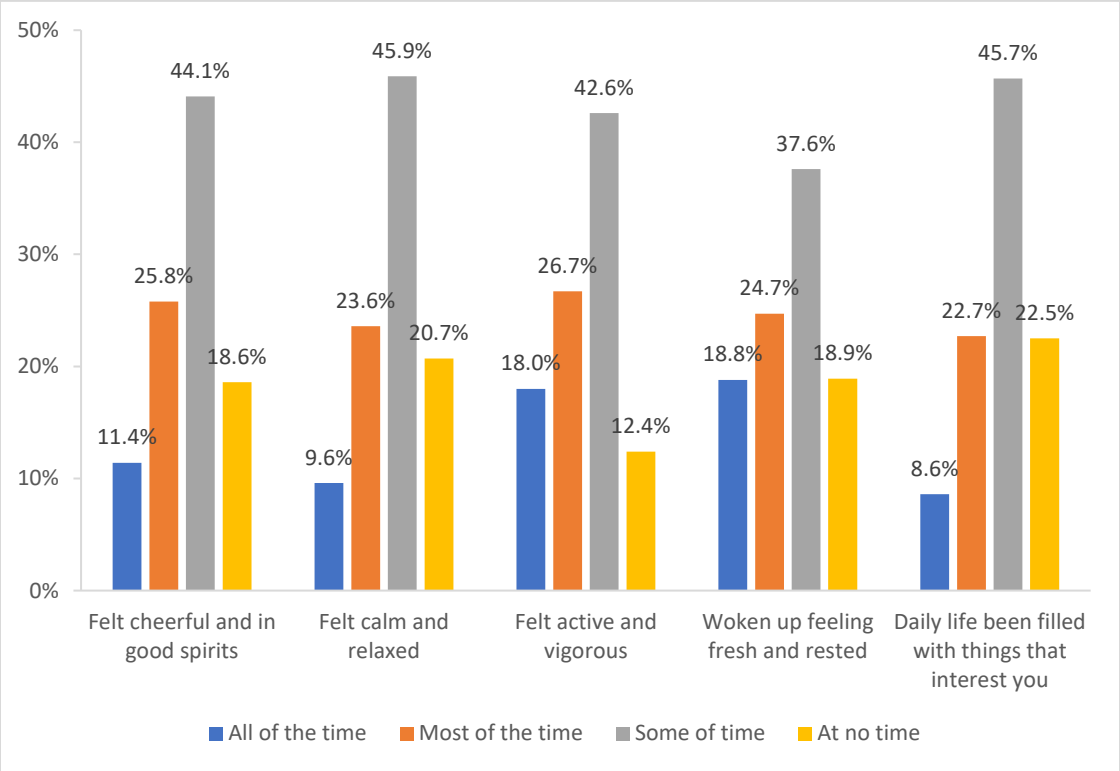
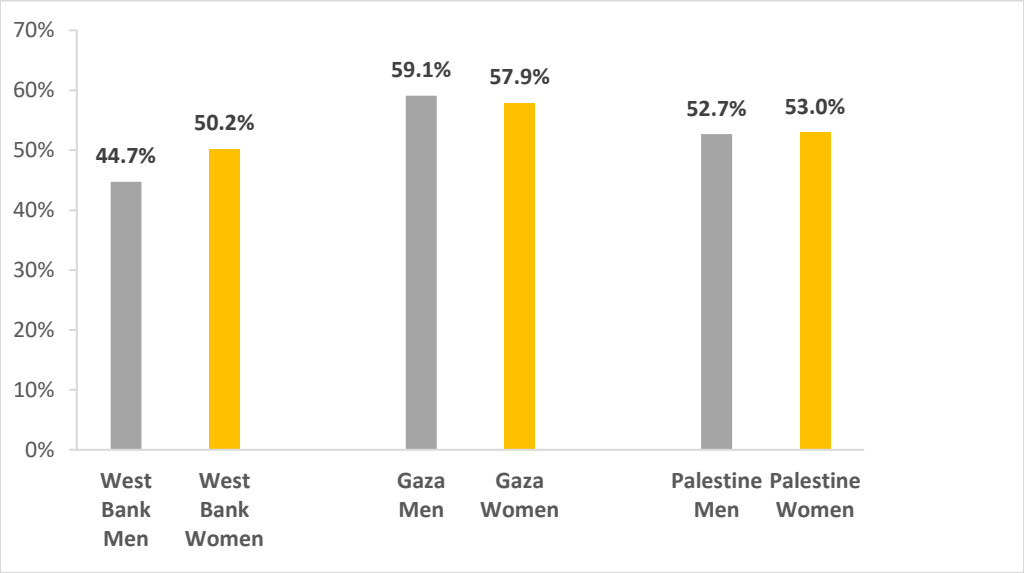


Figure 20: Psychological distress among Palestinian adults 18-69 years by sex and region



STEP 2: Physical Measurements

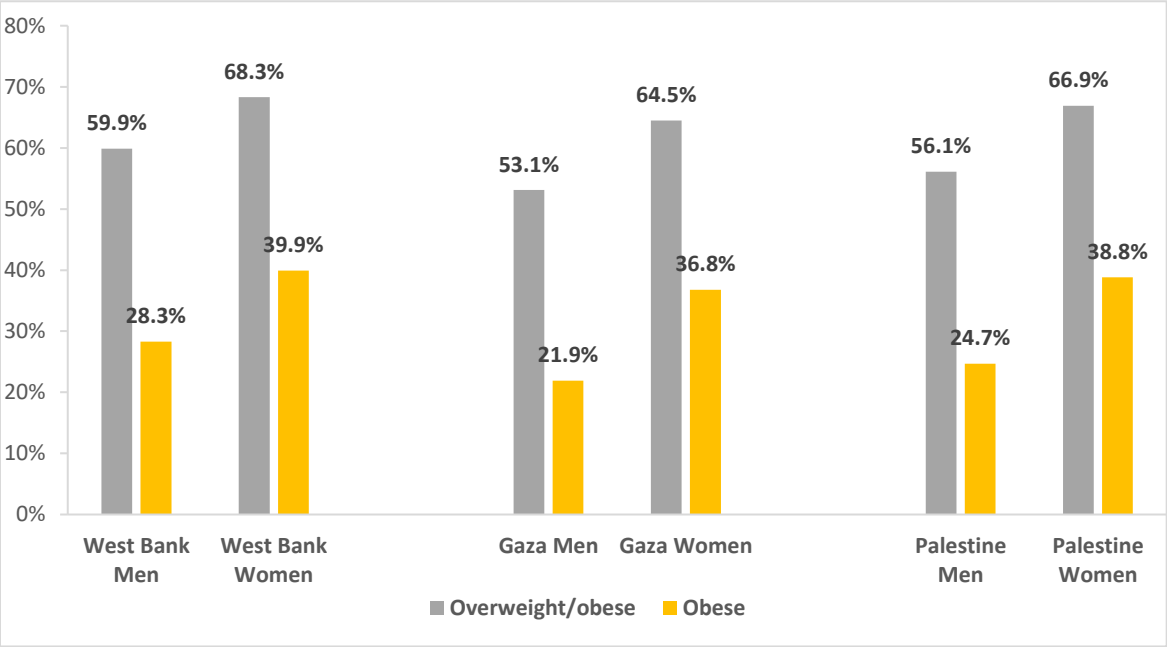
Height, weight, body mass index, and waist-hip ratio

Mean height for men was 173.3 cm (95% CI: 172.9-173.8) and for women it was 159.0 cm (95% CI: 158.8-159.3). Only 4.3% of men and 2.8% of women were underweight (<18.5 kg/m^2). About 61.4% (95% CI: 59.5-63.3) of adults aged 18-69 were overweight and obese (≥ 25 kg/m^2), 56.1% (95% CI: 53.4-58.9) of men and 66.9% (95% CI: 64.8-69.0) of women. In both the West Bank and Gaza, overweight and obesity were higher among women compared to men (

Figure *21*).

Around 31.6% (95% CI: 29.8-33.4) of adults were obese (≥ 30 kg/m2): 24.7% (95% CI: 22.1-27.3) of men and 38.8% (95% CI: 36.8-40.8) of women. The prevalence of obesity was higher in the West Bank compared to Gaza: 35.1% (95% CI: 32.5-37.6) vs. 27.6% (95% CI: 25.0-30.1) respectively. However, central obesity (waist-to-hip ratio (WHR) ≥ 0.90 in men and WHR ≥ 0.85 in women) was more prevalent in men than in women: 58.8% vs 45.6% respectively.

Figure 21: Prevalence of overweight and obesity among adults 18-69 years by sex and region



Blood pressure: treatment and control

Around 20.5% (95% CI: 19.1%-21.8%) of adults had SBP ≥140 and/or DBP ≥ 90 mmHg or were currently on medication for raised blood pressure. About 12.3% (95% CI: 11.2%-13.3%) of adults had SBP ≥160 and/or DBP ≥ 100 mmHg or were currently on medication for raised blood pressure (Figure 22). As shown in Figure 23, there was significant variability in blood pressure by age and region. The prevalence of raised blood pressure (SBP ≥160 and/or DBP ≥ 100 mmHg) was higher in the West Bank compared to Gaza: 22.5% (95% CI: 20.4-24.6) vs. 18.0% (95% CI: 16.3-19.7) respectively. In both the West Bank and Gaza, and among both men and women, there was a more than 10-fold increase in the prevalence of raised blood pressure in the age groups 18-44 years and 45-69 years.

As shown in Figure *24*, almost half of the previously diagnosed with raised blood pressure were not on medication, with a higher percentage among men compared to women: 57.6% vs 38.5%, respectively. Among both men and women, lack of treatment occurs mainly among younger individuals.

Figure 22: Percentage of adults 18-69 years with raised blood pressure or currently on medication for raised blood pressure by sex and region

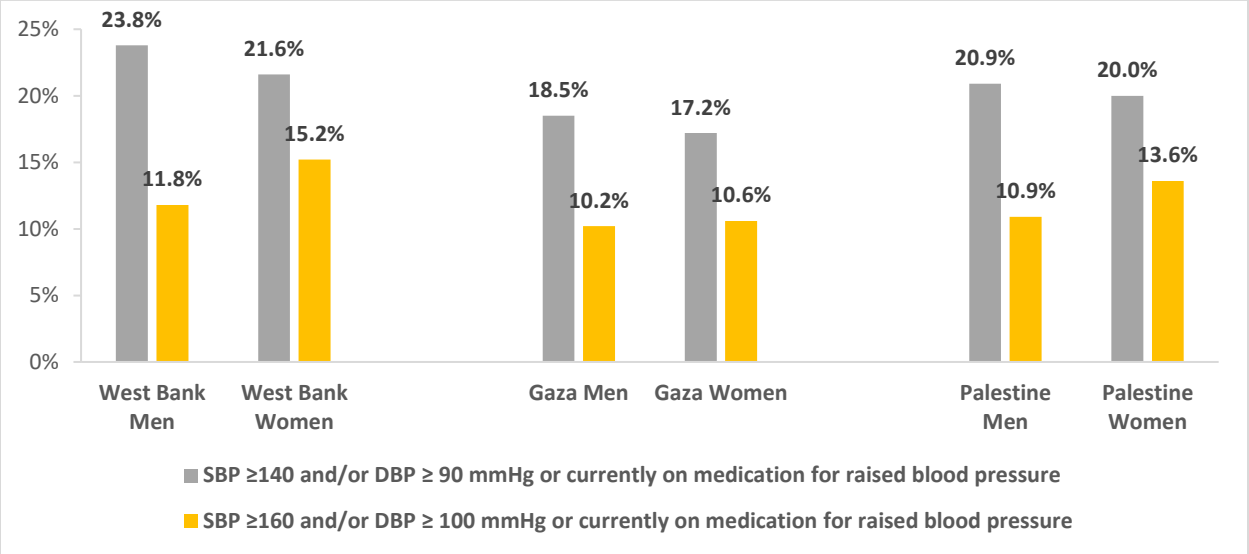


Figure 23: Raised blood pressure (SBP ≥160 and/or DBP ≥ 100 mmHg or currently on medication for raised blood pressure) among adults 18-69 years by age, sex, and region

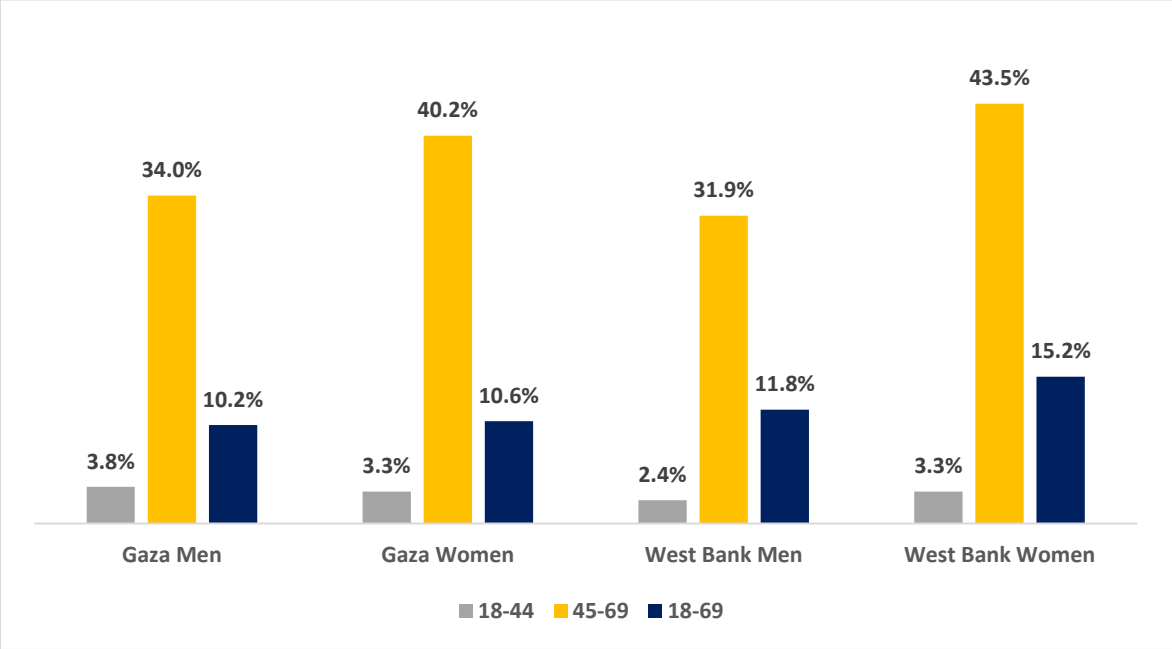
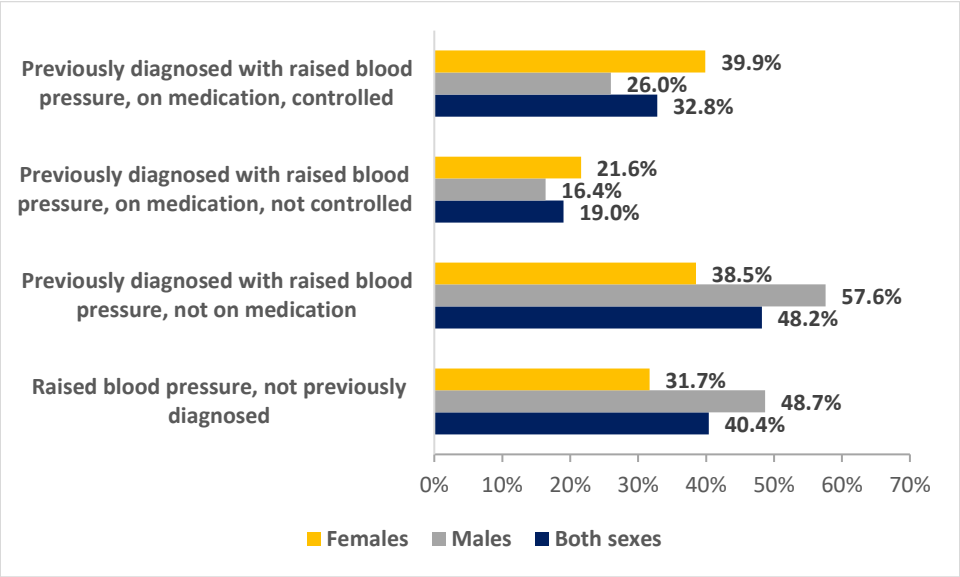
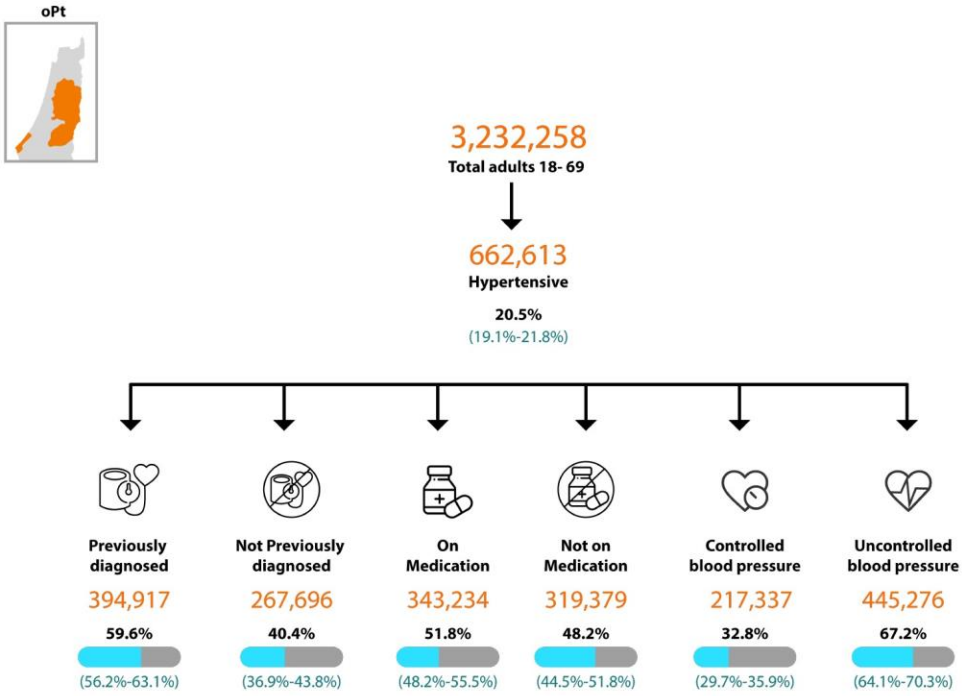


Figure 24: Raised blood pressure diagnosis, treatment and control among those with raised blood pressure (SBP ≥ 140 and/or DBP ≥ 90 mmHg) or on medication for raised blood pressure



As shown in Figure *25*, 40.4% of adults with raised blood pressure were not previously diagnosed. Around 50% of hypertensive adults were not on medication, 43.5% in the West Banka and 55.2% in Gaza. Only 32.8% (95% CI: 29.7-35.9) of adults with previously diagnosed high blood pressure/hypertension were controlled and on medication: 26.0% (95% CI: 21.1-31.0) of men and 39.9% (95% CI: 36.5-43.2) of women.

Figure 25: Blood pressure control among adults 18-69 years previously diagnosed with raised blood pressure or had raised blood pressure, by sex and region



West Bank

1,984,903
Total adults 18- 69

446,603
Hypertensive

22.5%
(20.4%-24.6%)

Previously diagnosed	Not Previously diagnosed	On Medication	Not on Medication	Controlled blood pressure	Uncontrolled blood pressure
282,253	164,350	252,331	194,272	164,797	281,806
63.2%	36.8%	56.5%	43.5%	36.9%	63.1%
(58.8%-67.6%)	(32.4%-41.2%)	(51.5%-61.5%)	(38.5%-48.5%)	(32.7%-41.1%)	(58.9%-67.3%)

Gaza

1,247,355
Total adults 18- 69

224,524
Hypertensive

18.0%
(16.3%-19.7%)

Previously diagnosed	Not Previously diagnosed	On Medication	Not on Medication	Controlled blood pressure	Uncontrolled blood pressure
122,141	102,383	100,587	123,937	60,172	164,352
54.4%	45.6%	44.8%	55.2%	26.8%	73.2%
(48.5%-60.3%)	(39.7%-51.5%)	(39.3%-50.4%)	(49.6%-60.7%)	(22.3%-31.3%)	(68.7%-77.7%)

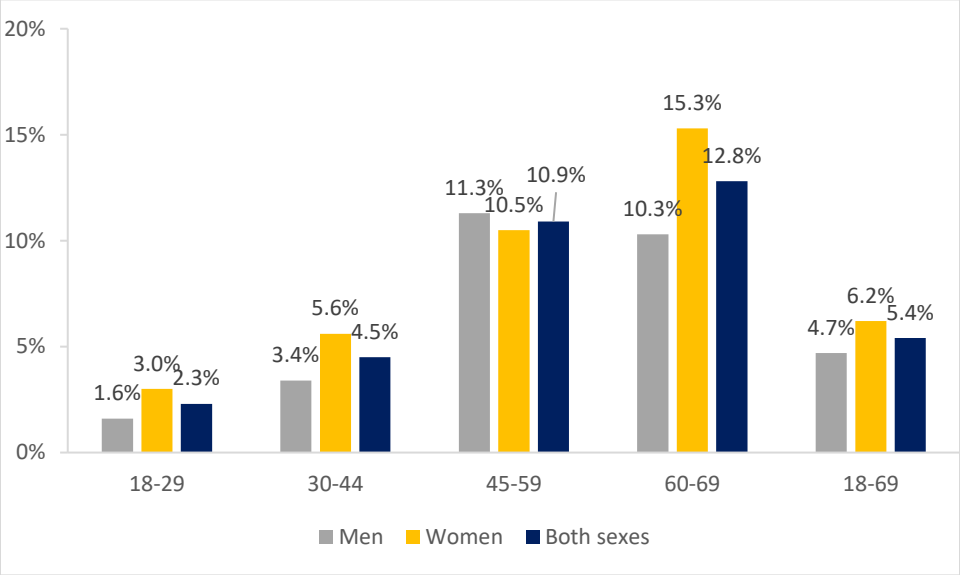
STEP 3: Biochemical Measurements

Blood glucose levels

Impaired blood glucose

Around 5.4% (4.7-6.2%) of adults had impaired fasting glycemia: 4.7% of men and 6.2% of women. It increased significantly after the age of 44 (Figure 26). Impaired blood glucose was higher in the West Bank compared to Gaza: 7.1% (95% CI: 6.0-8.2) vs. 3.5% (95% CI: 2.6-4.5) respectively.

Figure 26: Impaired fasting glycemia among adults 18-69 years by sex and age group



Raised blood glucose

Around 7.6% (95% CI: 6.8-8.5) had raised blood glucose (≥ 126 mg/dl) or were currently on medication for raised blood glucose. As shown in

Figure *27*, there was no difference in raised blood glucose between men and women: 7.0% (95% CI: 5.7-8.3) vs. 8.3% (95% CI: 7.3-9.3) respectively. Raised fasting blood sugar was more prevalent in the West Bank compared to Gaza: 10.0% (95% CI: 8.7-11.3) vs. 4.9% (95% CI: 3.8-5.9) respectively (Figure 28).

Figure 27: Percentage with raised fasting blood glucose (≥ 126 mg/dl) or currently on medication for raised blood glucose) by sex and age group

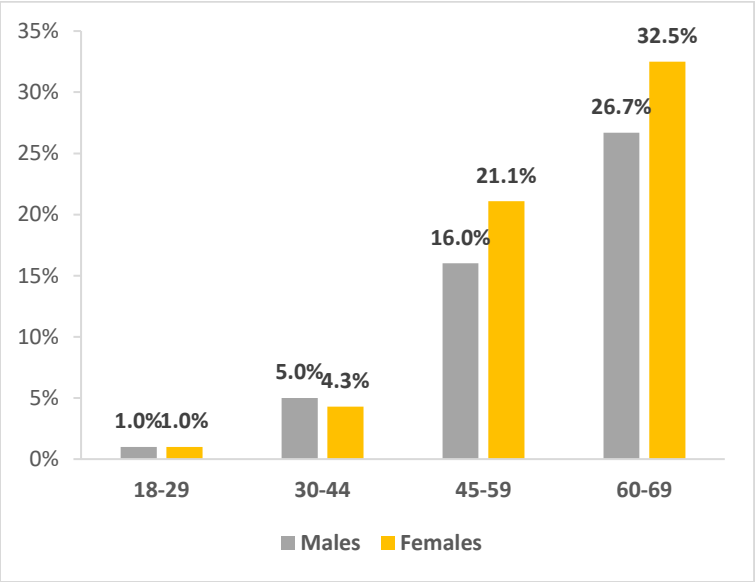
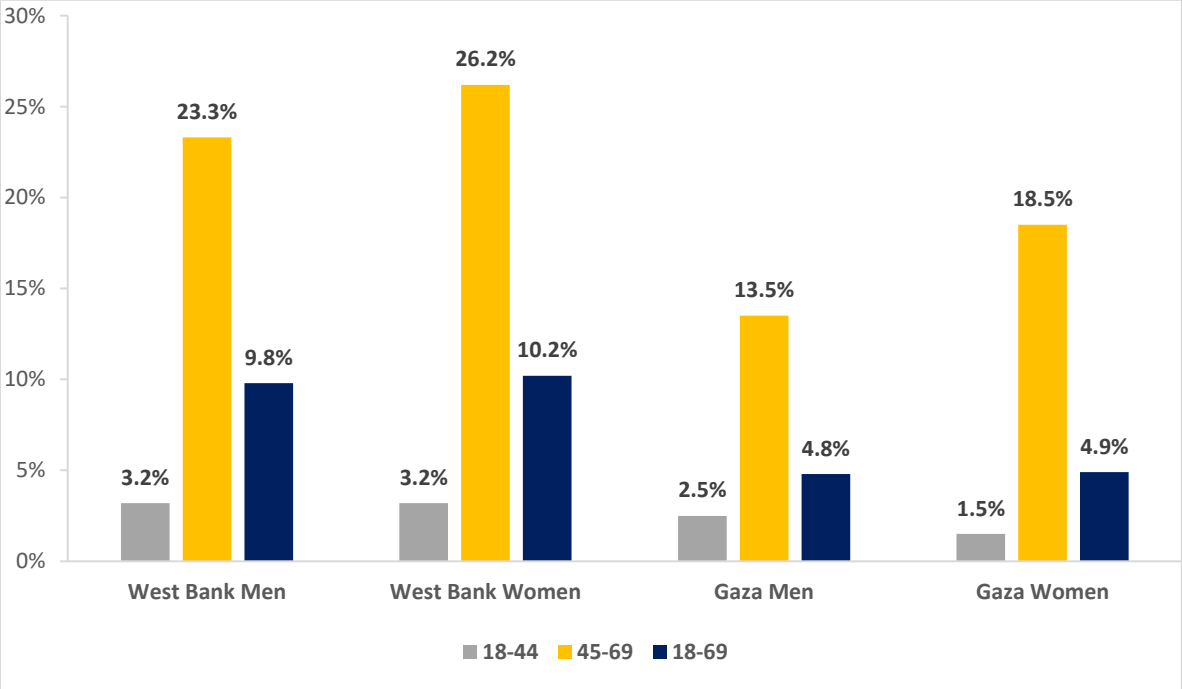
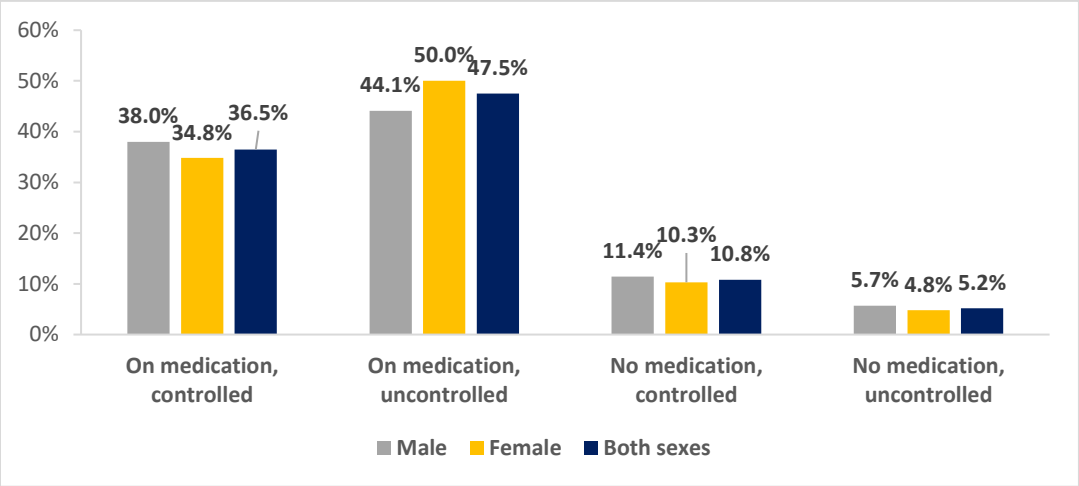


Figure 28: Raised fasting blood glucose/currently on medication for raised blood glucose by sex, age group, and region



As shown in Figure 29, only half of the patients with diabetes had controlled blood glucose.

Figure 29: Blood glucose control in patients 40-69 years with diabetes by sex



Blood cholesterol levels

Some 23.0% (95% CI: 21.2-24.8) of adults aged 18-69 years had raised total cholesterol (≥ 190 mg/dl) or were on medication for raised cholesterol: 17.0% (95% CI: 14.5-19.6) of men and 29.0% (95% CI: 27.0-30.9) of women. There was also significant variability in raised cholesterol by age group (Figure 30). The prevalence of raised cholesterol was higher in the West Bank compared to Gaza (Figure 31): 28.0% (95% CI: 25.5-30.5) vs. 17.2% (95% CI: 15.0-19.3) respectively.

Figure 30: Percentage with raised total cholesterol (≥ 190 mg/dl) or were on medication for raised cholesterol in oPt by sex and age group

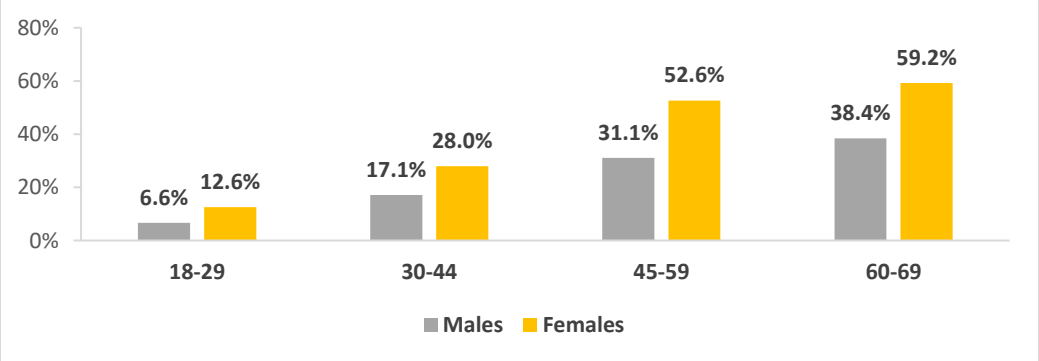
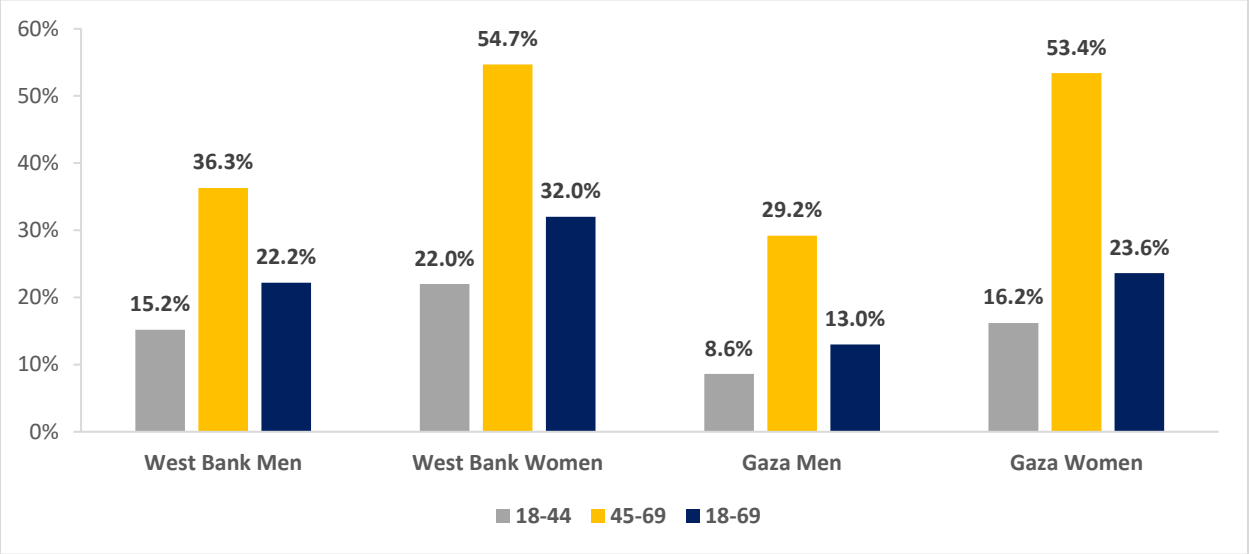


Figure 31: Percentage of adults 18-69 years with raised total cholesterol (≥ 190 mg/dl) or on medication for raised cholesterol by sex, age group, and region.



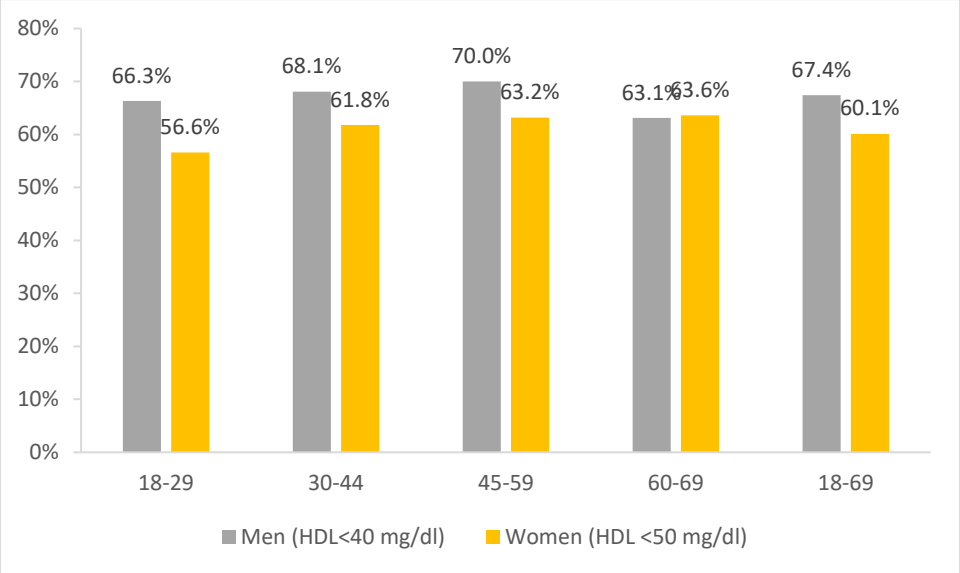
The mean level of high-density lipoprotein (HDL) cholesterol was 42.7 mg/dL, with a higher level found in women (48.1 mg/dL) than in men (37.3 mg/dL) (

Table *4*). Across all age groups, more than 50% of adults had a low level of HDL (Figure *32*). There were no differences in the proportion with low HDL between the West Bank and Gaza. Among men: 65.5 mg/dL (95% CI: 60.4, 70.6) vs 68.9 mg/dL (95% CI: 65.0, 72.8), respectively, and among women 57.7 mg/dL (95% CI: 55.0, 60.4) vs. 64.4 mg/dL (95% CI: 60.7, 68.1) respectively.

Table 4: Mean high-density lipoprotein (HDL) among adults 18-69 years by sex and age group

Age Group (years)	Men		Women		Both Sexes	
	Mean	95% CI	Mean	95% CI	Mean	95% CI
18-29	37.4	36.5-38.4	49.0	48.1-49.9	43.1	42.3-43.9
30-44	37.5	36.6-38.5	47.8	46.9-48.7	42.7	42.0-43.5
45-59	36.4	35.5-37.3	46.9	46.1-47.7	41.7	40.8-42.5
60-69	38.0	36.5-39.6	47.5	46.2-48.8	42.8	41.7-43.9
18-69	**37.3**	**36.7-37.9**	**48.1**	**47.5-48.7**	**42.7**	**42.2-43.2**

Figure 32**:** Low high-density lipoprotein (HDL) level among adults 18-69 years by sex and age group



Triglycerides

The overall mean fasting triglycerides (TG) level was 119.9 mg/dl (95% CI:116.7-123.2), with an almost equal level for men and women: 120.0 mg/dl for men vs.119.9 mg/dl for women. As shown in

Table 5: Percentage of adults 18-69 years with raised triglycerides by sex and age group

Percentage of respondents with fasting triglycerides ≥ 1.7 mmol/L or ≥ 150 mg/dl						
Age Group (years)	Men		Women		Both Sexes	
	%	95% CI	%	95% CI	%	95% CI
18-29	10.5	7.1-13.8	11.5	9.2-13.9	11.0	8.8-13.1
30-44	30.3	25.7-35.0	24.8	21.9-27.7	27.5	24.9-30.1
45-59	32.9	27.6-38.2	43.5	39.9-47.1	38.2	35.1-41.4
60-69	39.8	31.5-48.1	43.5	38.5-48.5	41.6	36.7-46.6
18-69	**23.3**	**20.5-26.2**	**24.5**	**22.7-26.3**	**23.9**	**22.2-25.7**

, the proportion with raised TG in the 30-44 years age group is more than double the proportion among the 18-29 years age group. Furthermore, more than one third of adults aged 45 years and above have raised TG. There were no regional differences in the proportion of adults with raised TG between the West Bank and Gaza: 74.1 mg/dl (95% CI: 71.5, 76.6) vs. 78.4 mg/dl (95% CI: 76.0, 80.8) respectively.

Table 5: Percentage of adults 18-69 years with raised triglycerides by sex and age group

Percentage of respondents with fasting triglycerides ≥ 1.7 mmol/L or ≥ 150 mg/dl						
Age Group (years)	Men		Women		Both Sexes	
	%	95% CI	%	95% CI	%	95% CI
18-29	10.5	7.1-13.8	11.5	9.2-13.9	11.0	8.8-13.1
30-44	30.3	25.7-35.0	24.8	21.9-27.7	27.5	24.9-30.1
45-59	32.9	27.6-38.2	43.5	39.9-47.1	38.2	35.1-41.4
60-69	39.8	31.5-48.1	43.5	38.5-48.5	41.6	36.7-46.6
18-69	**23.3**	**20.5-26.2**	**24.5**	**22.7-26.3**	**23.9**	**22.2-25.7**

Cardiovascular disease risk (CVD)

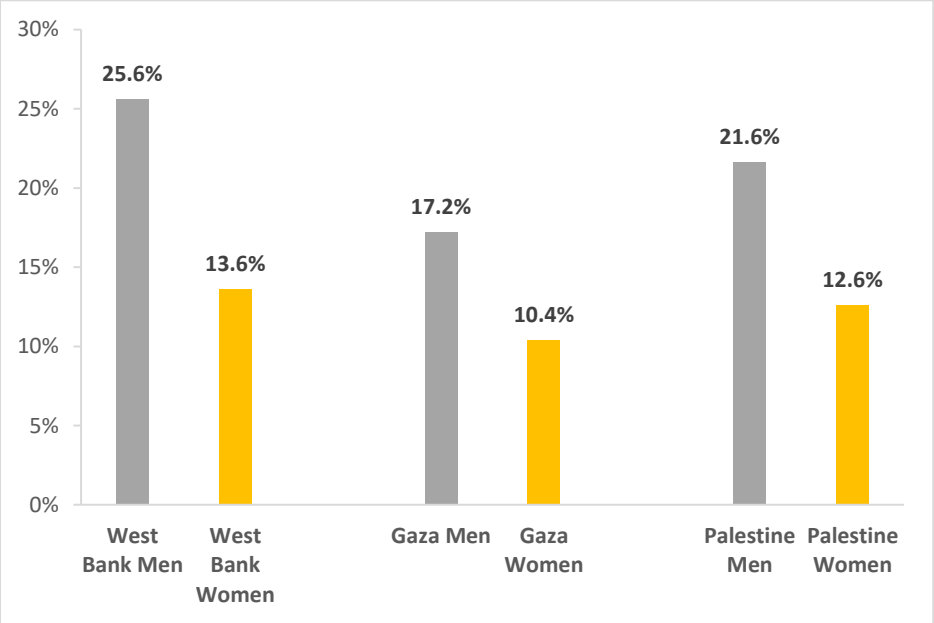
Around 17.1% (95% CI: 15.3-19.2) of Palestinian adults between the age of 40-69 years had a 10-year CVD risk ≥ 20% or had an existing CVD. Per WHO, a 10-year CVD risk is defined according to age, sex, blood pressure, smoking status (current smokers or those who quit smoking less than one year before the assessment), total cholesterol, and diabetes (previously diagnosed or a fasting plasma glucose concentration >126 mg/dl)). As shown in

Table *6*, a 10-year CVD risk was significantly higher among men than in women, and in older age groups compared to younger ones. As shown in Figure 33, while the CVD risk was higher in the West Bank compared to Gaza, the difference was not statistically significant: 18.7% (95% CI: 16.2-21.5) vs. 14.7% (95% CI: 12.2-17.5) respectively.

Table 6: Percentage of adults 40-69 years with a 10-year CVD risk or with existing CVD by sex and age group

Percentage of respondents with a 10-year CVD risk ≥20% or with existing CVD						
Age Group (years)	Men		Women		Both Sexes	
	%	95% CI	%	95% CI	%	95% CI
40-54	10.0	7.1-13.9	5.0	3.6-6.9	7.5	5.8-9.7
55-69	43.9	38.1-49.8	26.3	23.1-29.7	34.9	31.5-38.4
40-69	**21.6**	**18.5-25.1**	**12.6**	**11.0-14.5**	**17.1**	**15.3-19.2**

Figure 33: Percentage of adults 40-69 years with a 10-year CVD risk ≥20% or with existing CVD by sex and region



As shown in

Table *7*, only 65.0% of eligible persons (defined as aged 40-69 years with a 10-year CVD risk ≥20%, including those with existing CVD) received drug therapy and counseling to prevent heart attacks and strokes (received advice from a doctor or other health worker to quit using tobacco or not start, reduce salt in diet, eat at least five servings of fruit and/or

vegetables per day, reduce fat in diet, start or do more physical activity, maintain a healthy body weight or lose weight).

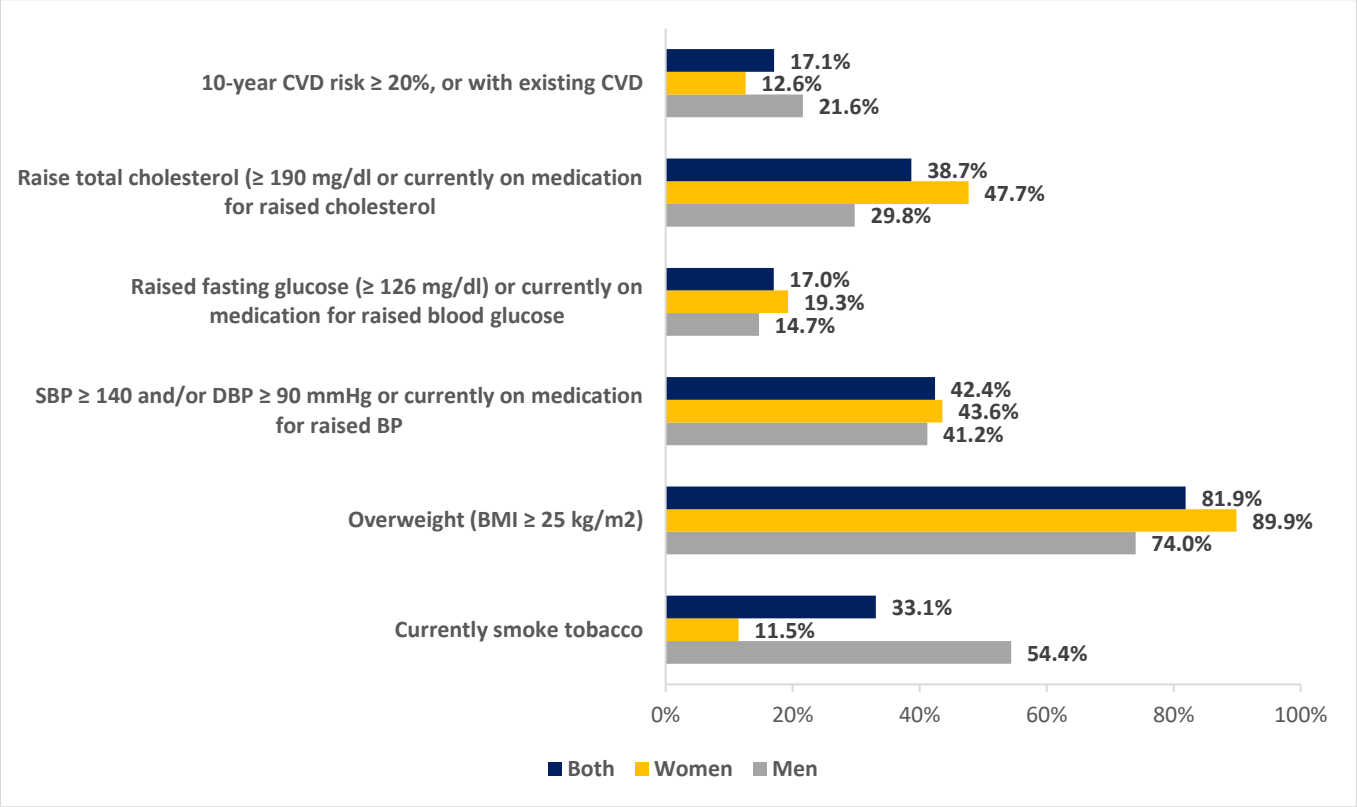
Table 7: Percentage of adults 40-69 years with a 10-year CVD risk ≥20%, including those with existing CVD receiving drug therapy and counseling, by sex and age group

Percentage of eligible persons receiving drug therapy and counseling to prevent heart attacks and strokes						
Age Group (years)	**Men**		**Women**		**Both Sexes**	
	%	95% CI	%	95% CI	%	95% CI
40-54	50.1	33.3-66.8	65.3	49.5-78.3	55.0	41.9-67.4
55-69	67.9	58.5-76.1	70.9	64.5-76.5	69.0	62.6-74.8
40-69	**62.5**	**53.8-70.4**	**69.5**	**63.5-74.8**	**65.0**	**58.9-70.7**

Except for smoking, the risk factors for NCDs were higher among women compared to men, yet the 10-year CVD risk was higher among men (

Figure *34*).

Figure 34: Risk factors for NCDs and percentage of adults 40-69 years with a 10-year CVD risk ≥20% or with existing CVD by sex



Summary of combined risk factors

As shown in

Table *8*, only 2.6% of adults aged 18-69 did not have any of the following risk factors for NCDs: current daily smoking, less than five servings of fruit and/or vegetables per day, insufficient physical activity, overweight or obesity, and raised BP or on medication for raised BP. In comparison, more than half (58.0%) of adults 45-69 years had 3-5 risk factors for NCDs: 61.2% of men and 54.9% of women.

Table 8: Combined risk factors for CVD among adults aged 18-69 years by sex and age group

Summary of Combined Risk Factors						
	Men					
Age Group (years)	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
18-44	2.4	1.4-3.4	67.4	64.2-70.5	30.2	26.9-33.5
45-69	0.9	0.2-1.7	37.8	33.5-42.2	61.2	56.8-65.7
18-69	2.1	1.3-2.8	59.7	56.9-62.6	38.2	35.2-41.2

Summary of Combined Risk Factors						
	Women					
Age Group (years)	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
18-44	4.1	3.0-5.2	76.9	74.5-79.4	18.9	16.6-21.3
45-69	0.6	0.1-1.0	44.5	41.3-47.7	54.9	51.7-58.1
18-69	3.2	2.4-4.0	68.0	65.8-70.2	28.9	26.7-31.0

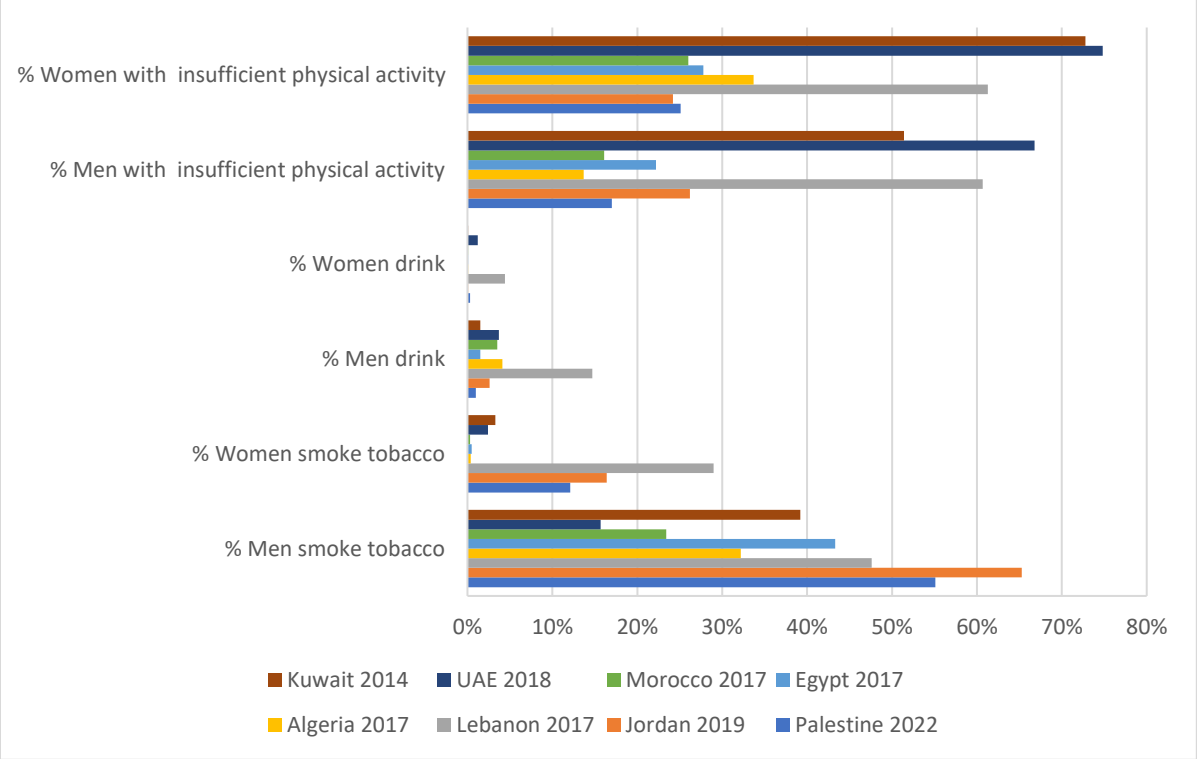
Summary of Combined Risk Factors						
	Both Sexes					
Age Group (years)	% with 0 risk factors	95% CI	% with 1-2 risk factors	95% CI	% with 3-5 risk factors	95% CI
18-44	3.3	2.5-4.0	72.0	69.9-74.0	24.8	22.7-26.9
45-69	0.8	0.3-1.2	41.2	38.3-44.1	58.0	55.0-61.0
18-69	2.6	2.0-3.2	63.8	61.8-65.7	33.6	31.7-35.6

Discussion

Based on the STEPS survey 2022, the prevalence of risk factors for NCDs is high among Palestinian adults aged 18-69 years. Two out of three adults aged 18-69 were overweight and obese. More than half of adults above the age of 44 years had 3-5 CVD risk factors. Furthermore, one in six adults 40-69 years had ≥20% risk of developing CVD or had an existing CVD. This striking fact raises serious health concerns about future trends of NCD in oPt and should be considered seriously by policy makers in prioritizing future health plans.

Based on available data from previous STEPS surveys in different countries in the region, the prevalence of smoking by men was one of the highest in the region, while insufficient physical activity and drinking were among the lowest (Figure 35). The prevalence of smoking among men in the West Bank was the highest in the region (66.6%). However, the results should be interpreted with caution as some of the results from other countries are based on STEPS surveys conducted back in 2014 and 2017.

Figure 35: Behavioral risk factors among countries in the region* by sex



*The year is the date of the STEPS survey.

In comparison with countries in the region (15), the prevalence of overweight and obesity and cholesterol is average, while the prevalence of raised blood sugar and raised blood pressure is low (Figure 37, Figure *37*). The prevalence of three or more risk factors for NCDs was average for the region.

Figure 36: Prevalence of raised blood sugar, raised blood pressure, and overweight and obesity in the region by sex

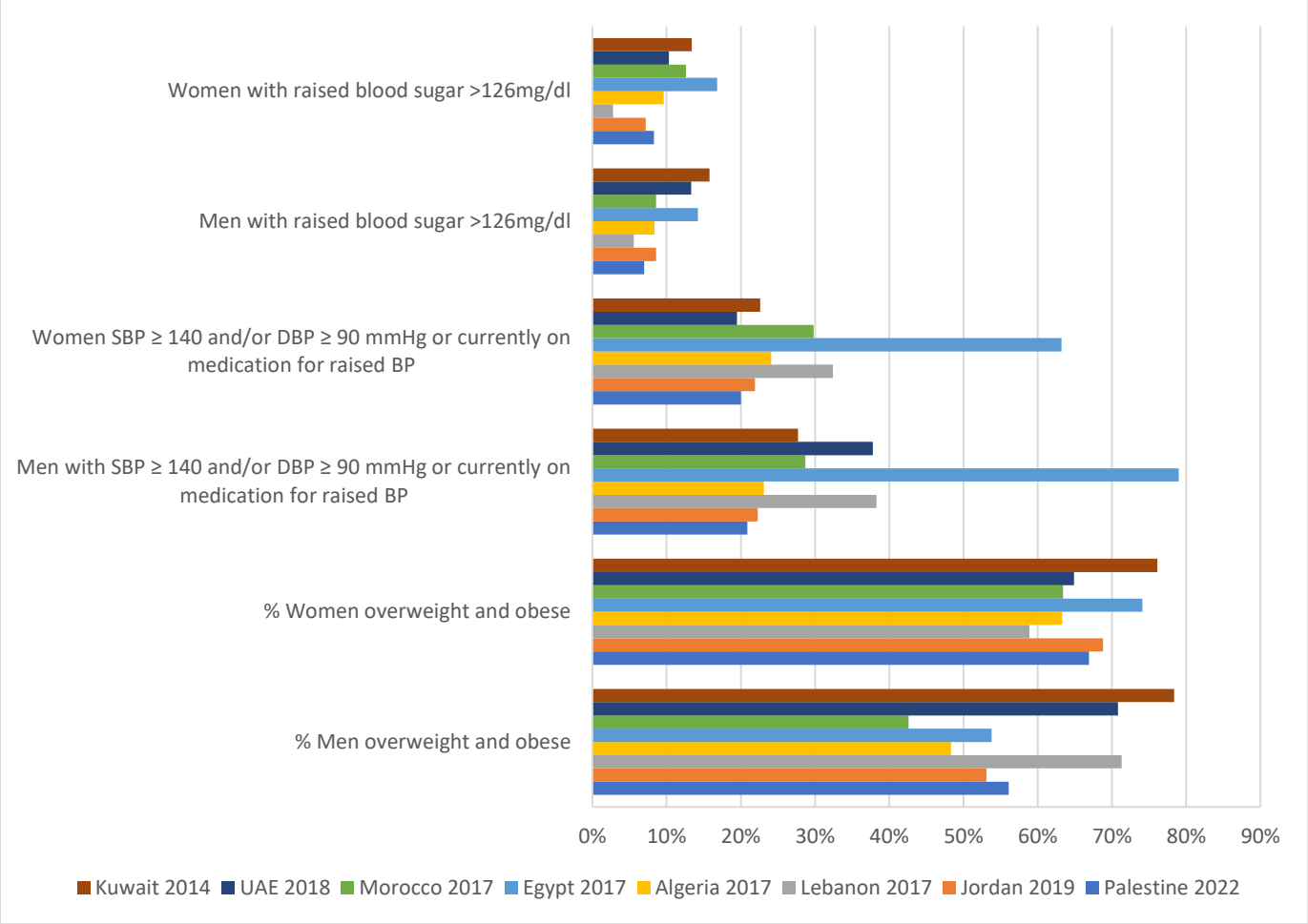
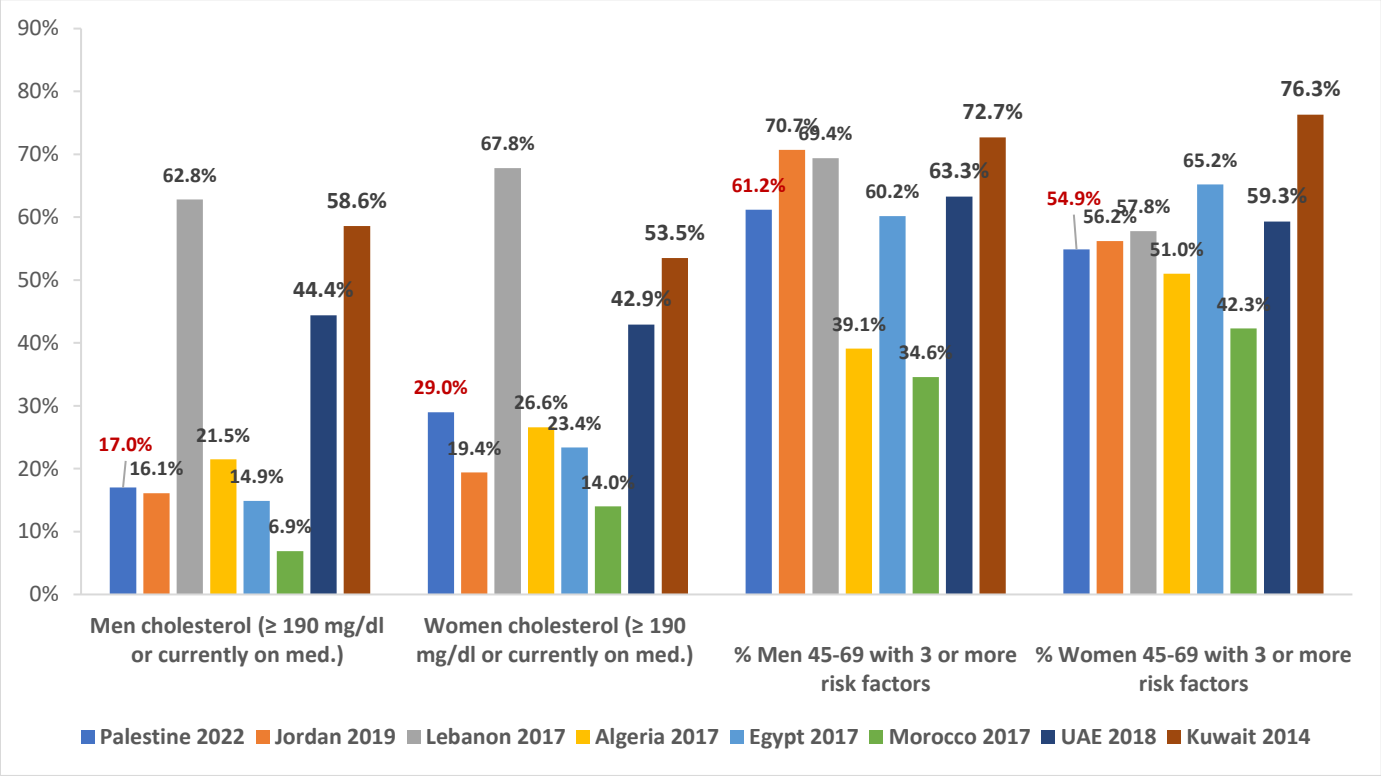


Figure 37: Prevalence of raised cholesterol and having three or more risk factors for NCDs in the region by sex



Based on the STEPS data, management of NCDs is poor. A high proportion of adults aged 40-69 years had never had their blood pressure, blood sugar and blood lipids measured. There was poor control of blood sugar among patients with diabetes, and poor control of blood pressure among patients with hypertension. Only 65% of patients with 10-year CVD risk ≥20% or with CVD received drug therapy and counseling to prevent heart attacks and strokes. In oPt, while UNRWA has a screening program for all people aged 40 and above, the Ministry of Health has no screening program for NCDs.

This study is the second national STEPs survey conducted twelve years after the first survey in 2010-2011. Not all indicators could be compared due to the differences in methodologies, such as the different age groups (age group for the STEPS 2010/2011 was 15-64 years), and different kits used for blood tests. Yet, compared to 2010-2011, the percentage of current tobacco smokers had increased by 170% from 20.2% to 33.5% (16).

Recommendations

The heavy burden of NCDs and their risk factors among Palestinian adults aged 18-69 years requires dedicated efforts to tackle them effectively by all relevant stakeholders from different sectors. It is vital to implement WHO NCDs best buys to curb the rising prevalence of NCDs and evade the serious implications of CVD on public health. Among the policy recommendations:

1. Establish a national screening program for NCDs at the Ministry of Health.
2. Implement WHO best buys to control tobacco smoking:
   2.1 Enforce laws against smoking.
   2.2 Raise awareness of the risk of secondhand smoking, especially for children and pregnant women.
   2.3 Increase taxes on locally manufactured cigarettes.
   2.4 Develop graphic warning images on cigarette packs.
   2.5 Establish “Quit Smoking Clinics” at the primary health care level to support smokers who want to quit.
3. Strengthen management of NCDs through early detection and treatment. The burden of type 2 diabetes, CHD and stroke would be moderated with even small reductions in obesity levels (7).
4. Provide lifestyle advice for all, starting at schools.
5. Promote physical activity, especially in schools and colleges. Potential interventions include the design of new roads and retrofitting existing roads to accommodate cycling and walking.
6. Promote healthy eating by subsidizing the high cost of fruit and vegetables.

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