حكومة دبي
GOVERNMENT OF DUBAI

هيئة الصحة بدبي
DUBAI HEALTH AUTHORITY

Dubai Household Health Survey

2023 - 2024

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Opening Remarks

In a world where health challenges continue to evolve, the importance of accurate data and reliable information is a fundamental pillar for effective planning and informed decision-making. In this context, the Dubai Household Health Survey 2024, conducted by the Dubai Health Authority, stands not as a collection of numbers and statistics, but as a clear, evidence-based reflection of our population's health landscape and a strategic instrument for shaping a more conscious and sustainable future.

We have ensured that this survey is both comprehensive and integrated, enabling it to serve decision-makers, researchers, and professionals across the health sector. It also represents a proactive and preventive step towards enhancing the health and well-being of Dubai's population.

Dr. Alawi AlSheikh-Ali

Director General

The Dubai Household Health Survey 2024 comes as an essential step in sustaining the achievements that Dubai's health sector has realised over the past decades. These accomplishments motivate us to continue aligning and coordinating health policies, advancing them further, and promoting healthier lifestyles and behaviours to ensure a better quality of life for all members of the community.

We extend our sincere appreciation to everyone who contributed to the implementation and success of this survey. Its completion would not have been possible without their active participation.

Fatema Abbas

Chief Executive Officer

Strategy and Corporate Development Sector

We extend our sincere thanks and deep appreciation to all our internal and external partners, the volunteers, and all participating residents of the Emirate of Dubai, whose contributions were instrumental in the success of the Dubai Household Health Survey 2024.

We also express our special gratitude to the Dubai Household Health Survey team, the Dubai Data and Statistics Establishment, Alleanza Laboratories, and Unilabs for their valuable cooperation and commitment throughout the implementation of this project.

Khaled Al Jallaf

Head of the Household Health Survey Team

Dubai Health Authority

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List of Abbreviations

NCDs	Non-Communicable Diseases
WHO	World Health Organization
DHA	Dubai Health Authority
DDSE	Dubai Data and Statistics Establishment
BMI	Body Mass Index
CVD	Cardio-Vascular Diseases
DM	Diabetes Mellitus
DHHS	Dubai Household Health Survey
CHOL	Cholesterol
TRI	Triglycerides
HDL	High-Density Lipoprotein
LDL	Low-Density Lipoprotein
WC	Waist Circumferences
SD	Standard Deviation
OOP	Out-Of-Pocket
PHQ-9	Patient Health Questionnaire-9
SBP	Systolic Blood Pressure
DBP	Diastolic Blood Pressure
AED	Arab Emirates Dirham (Official Currency of UAE)
HbA1C	Glycosylated Hemoglobin
PSU	Primary Sampling Unit
UAE	United Arab Emirates

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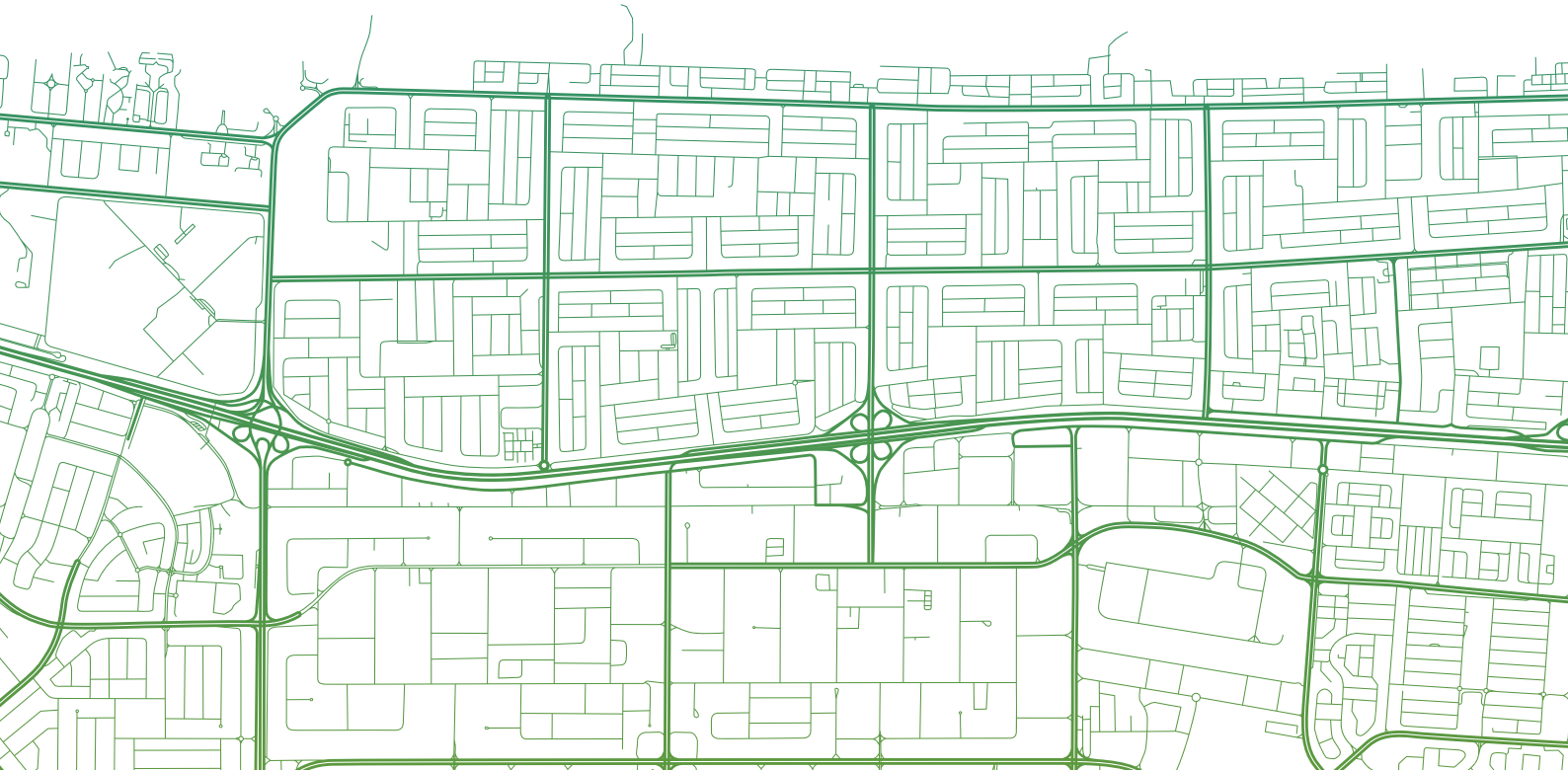
Executive Summary

The Dubai Household Health Survey (DHHS), 2023 is the largest and most comprehensive survey of health and healthcare issues ever carried out in the Emirate of Dubai. The survey is the fourth one of the DHHS series conducted., It provides a statistically accurate and representative picture of key health and healthcare variables across all sectors of the Dubai population. Surveyors randomly selected around 2,520 households across the Emirate of Dubai and visited them personally to obtain detailed information on subjects such as household health expenditure, health services utilization, behavioural risk factors, and lifestyle diseases.

The Dubai Household Health Survey 2023 was carried out during the period of 10th of September to 6th of November, 2023. It covered different parts of the emirate of Dubai (selected clusters in selected geographical areas, including Hatta district). The design and methodology of the survey were adapted from those used in the World Bank's Living Standards Measurement Surveys (LSMS) and the World Health Organization's World Health Surveys (WHS).



Key Results

Characteristics of the respondents:

The total sample size summed up to 2,520 families, with 9,795 individuals. This included 3,986 Emiratis and 5,809 non-Emiratis. The mean age of the surveyed population is 33.4 years. This mean is relatively similar for both males (34.3 years) and females (31.4 years). The percentage of male respondents was 52.27% compared to 47.73% females. The distribution of participants by nationality was 59.3% non-Emirati and 40.7% Emirati. As per the marital status, 33.90% were single, while 59.3% were currently married. The percentage of those currently married is higher among Emiratis (68.5%) as compared to non-Emiratis (43.0%). In addition, almost one-third of the surveyed respondents have university or post-graduate degrees (34%). This percentage was almost equal between males and females (34.8% of females compared to 33.4% of males). Regarding the employment status, the data showed that 69.8% of the participants were actively enrolled in work (currently employed), while 8.2% were currently not working at the time of conducting this survey.

Risk factors and healthy behaviours:

Among the behavioural risk factors surveyed, smoking status showed that 25.7% of the respondents are current tobacco smokers (31% of males and 11% of females). Only 3.5% are ex-smokers, while 70.9% have never smoked tobacco. Among the smokers, the mean age when they started smoking is 24 years. Survey results revealed that 8.4% are current users of smokeless tobacco and e-cigarettes, while 3.8% smoke Shisha.

In regard to fruit and vegetable intake, almost one-fifth (21.7%) of the respondents have sufficient intake of fruit and vegetables. Females consume more fruits and vegetables than males do in Dubai (27.9% versus 19.5%). In addition, non-Emiratis consume slightly more fruits and vegetables than Emirati adults (21.9% versus 19.7%).

The results also showed the physical activity performance by the respondents where 36.9% of respondents have sufficient physical activity which varies between males (38%) and females (33.8%). A slightly higher percentage of Emirati adults (39%) perform sufficient physical activities than non-Emiratis (36.7%).

Self-reported morbidity and treatment coverage:

The most prevalent chronic conditions reported by the respondents are hypertension (8.9%) and diabetes (7.3%). The treatment coverage rates for hypertension and diabetes are 84.9% and 93.1%, respectively. Arthritis is reported by 1.3% of the population, with 71% of them receiving treatment for their condition. While asthma is reported by 4.8%, with 69.6% of the cases receiving recent treatment, angina is reported by 4.4% of the participants and stroke by 6.4%. The coverage rates for stroke was the highest among all the self-reported conditions, with 97.5% having received treatment for it, while angina's treatment coverage was 51.3%. Finally, road traffic accidents were encountered by 1.2% of the participants and it was similar among Emiratis and non-Emiratis. More than half of them (57%) reported receiving treatment coverage for these accidents.

Reported health status and disability rating:

The general health rating of the respondents revealed that half of them reported having excellent health (52.1%), very good (41.7%) and good health (5.4%). Less than 1% of the respondents reported having poor and fair health. The weighted general health index score is 89% and it is higher in males (89.5%) than females (87.6%). In addition, the data also revealed the disability score, with only 0.6% of the Dubai population reporting any disability. This percentage was higher among Emiratis (2.8%) as compared to non-Emiratis (0.4%).

Anthropometrics and chronic conditions:

In regards to the anthropometric measurements, almost 4 in 10 adults (40.1%) were overweight, and one-fifth of adults were obese (21.9%). In addition, around one-fifth of children aged 5-17 years (20.1%) were overweight, while 16.9% were obese.

Chronic conditions:

- **Diabetes mellitus:** The percentage of respondents with raised blood glucose is 12.9% and the percentage with prediabetes is 16.1%. Among diabetics, 7.3% already had a previous diagnosis of Diabetes, while 5.6% are unaware of their condition (till they have been tested as part of the survey).

- **Blood pressure:** Approximately 37% of respondents have raised blood pressure. Only 8.9% of those who were classified as having high blood pressure had a previous diagnosis of their condition, while the remaining 28% were newly diagnosed during the survey.

- **Lipid profile:** The mean total Cholesterol is 195.9 mg/dl. Raised serum cholesterol is observed in 43% of respondents. The mean HDL is 42.9 mg/dl, and the mean LDL is 115.6 mg/dl. The mean total Triglycerides is 216.5 mg/dl.

Cancer diagnosis and screening:

Less than one percent (0.66%) of total respondents reported having a cancer diagnosis. Among those who reported having cancer, females reported higher prevalence (1.56%) compared to males (0.34%), and Emiratis reported higher prevalence (1.02%) than non-Emiratis (0.57%). Out of those who reported having cancer diagnosed, Breast Cancer was the highest among all and the leading form of cancer among females (39.8%, out of all reported cancers). This was followed by prostate cancer as one of the highest prevalence cancers among males (21.3%), blood cancer (8.7%), and the least prevalent was colon cancer (1.2%).

In addition, only 0.6% of total respondents have had at least one kind of screening test done. Out of this, the highest was among the elderly age groups of 60+ (6.8%). Screening rates were higher in females (1.32%) compared to males (0.34%), and in Emiratis (1.0%) as compared to non-Emiratis (0.57%). Screening rates were also higher among those with university education (1.19%) compared to only 0.12% in participants with no formal education. As for the type of screening tests, the highest rate of screening tests reported by the respondents was mammography (41.4%), followed by prostate cancer screening test (23.5%), and then the Pap Smear test (21.4%).

COVID-19-related morbidity and mortality and long COVID-19:

About three out of ten (28.2%) of the adult participants that represent the Dubai population answered that they had been diagnosed with COVID-19 at least once. Among those who reported they had COVID-19, the highest proportion was in the age group of 60+ years (44.4%), and in females at 41% versus 23.5% in males. The proportion was also higher among Emirati nationals at 70.6% as compared to 25.2% in non-Emiratis. Among those who reported having COVID-19, the majority (73%) had mild symptoms, while only 0.3% said they were admitted to the ICU and needed critical care. Less than 1 percent (0.7%) of the adults surveyed reported having any long-term COVID-19 symptoms, while 23.5% of them mentioned they still have long-term COVID- symptoms at the time of the survey interview. Joint or muscle pain was the most reported long COVID-19 symptoms (44%), followed by neurological symptoms (30.7%), and then bronchial asthma (18.4%). Finally, only 1% of the adult population reported that they had one family member who had died from COVID-19.

Healthcare utilization and expenditure:

The average visit rate of an individual to an outpatient clinic or a health centre or a private clinic over three months was 1.7 visits and the annual inpatient admission rate was 1.2 visits. Out-of-pocket (OOP) spending on pharmaceuticals and medical equipment was the highest and accounted for 48% of the total OOP spend, followed by outpatient services constituting 40%, while inpatient services accounted for the remaining 12% of the total OOP expenditure.

The average OOP spend on outpatient visits in the last three months before the survey was 190 AED. The average OOP spend on an inpatient admission in the past year was 3278 AED. In addition, the estimated average spend on an inpatient admission in a year by females was reported to be four times higher than males (5345 AED versus 1275 AED). The average OOP spend on pharmaceuticals and medical goods by an individual in the last month before the survey was 509 AED.

Chapter

1

Introduction

1.1 Geography of the Emirate of Dubai

Dubai is one of the largest and most populous cities in the United Arab Emirates (UAE). It is one of seven emirates that make up the UAE, and it is the second largest by area. Dubai is a global city and a major business hub of the Middle East. Situated along the Arabian Gulf coast of the UAE and approximately 16 meters (52 feet) above sea level, Dubai borders Abu Dhabi to the south, Sharjah to the northeast, and the Sultanate of Oman to the southeast. The Arabian Gulf borders the western coast of the emirate. Dubai spans an area of 1,588 square miles (4,114 km^2), reflecting a significant expansion from its original designation of 1,500 square miles (3,900 km^2) through land reclamation from the sea.

1.2 Dubai Population Characteristics

Dubai had an estimated population of 3,549,900 by the end of 2022. This makes it the most populous emirate in the UAE. Dubai's ratio of males to females is skewed, with approximately 70% of the population being males due to its unique chrematistic business environment. Further, the young productive age group of 25-44 years is the largest demographic group, constituting 58.4% of the population. Based on the personal characteristics of Dubai's population, the survey sample was selected to ensure that the results are correct and with high degree of accuracy.

1.3 The Importance of the Health Survey

Health surveys are an important means of providing high quality data about health indicators in various aspects related to socio-demographic and health variables for families and individuals. The results of the health surveys are utilized for planning, development, decision-making and comparison with the best practices globally. Health surveys are of great importance to provide up-to-date, timely and relevant information on health-related indicators and WHO indicators, framework programmatic indicators, and socio-demographic stratifiers.

Specifically, the survey collected information on demographic characteristics, health insurance, household assets and durable goods, wealth, expenditure, recent household deaths, health status, chronic conditions, and service utilization. Another critical objective of the survey is to provide estimates of behavioural indicators for adults aged 18 and older, including behavioural risk factors, and the prevalence of obesity, hypertension, HDL, LDL, cholesterol, and diabetes mellitus. Health surveys aim to create a set of quality indicators and strategic reports, which contribute to capacity building and performance improvement of the health system. Recent global trends and successful health organizations are extensively investing in health surveys' outcomes as a scientific method.

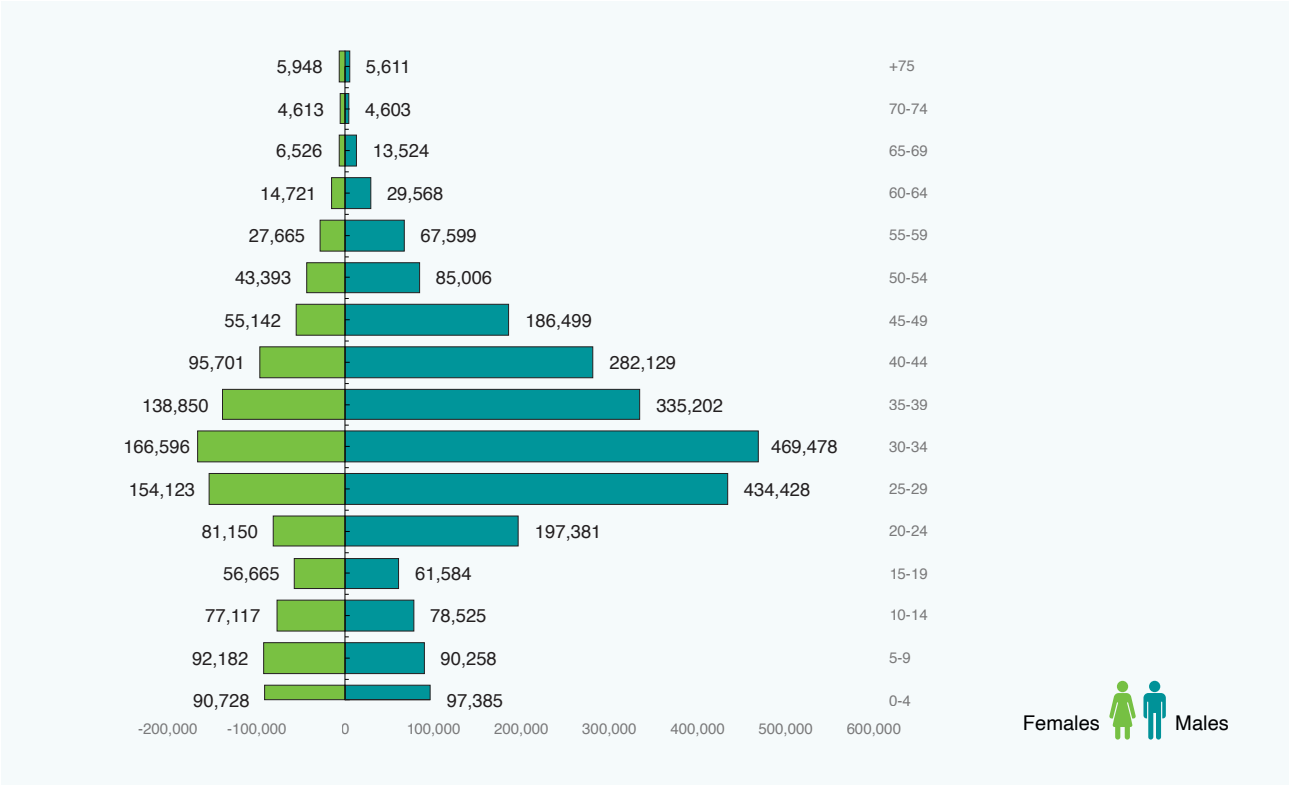
1.4 Frequency of Health Surveys

Regional healthcare systems typically conduct health surveys at fixed-years intervals, allowing sufficient time to measure changes in key performance indicators (KPIs). The metrics include change in health and social indicators among individuals and the larger population, the occurrence of profound epidemiological, health and social transformations.

The successful health systems are mandated to measure and address changes in the health and sickness trends that happen for many reasons, e.g. achieving sustainability of the health databases, supporting policy development, making effective decisions, applying powerful interventions and bridging gaps in the health system.The extent of survey logistics and workforce efforts required to implement comprehensive health surveys is also considered to decide on survey frequency. Taking into consideration the financial resources available for such surveys is another important factor. Therefore, the methodology followed by the Dubai Health Authority (DHA) to approve the periodicity of the health surveys has been determined by DHA health and technical experts, and it has been agreed on carrying out these surveys every five years as a sufficient period for the variables changes to be measured.

Fig 1.1

Distribution of Dubai population by age groups and gender 2022.



1.5 About the Dubai Health Authority

His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai created the Dubai Health Authority (DHA) in June 2007. As the strategic health authority for the Emirate of Dubai, the DHA is mandated to develop and implement health policies and strategies.

1.6 Socio-Economic Indicators

Currently, Dubai's health status indicators compare well with those of many developed countries. Thanks to considerable economic and social development and progress in healthcare over the years, the emirate has achieved a life expectancy of around 79 years (which is the highest among the neighbouring countries).

This has been achieved despite a relatively large share of the population being under the age of 15 years (13.4%). The health indicators show a remarkable reduction in mortality, especially childhood mortality. The emirate is recognized internationally as one of the few places in this region with a successful experience in health development. It has achieved a dramatic transformation in its healthcare system over a remarkably short span of time. The emirate seems to have achieved remarkable success in evolving policies and plans for controlling or eradicating major communicable diseases.

There has been a substantial improvement in child mortality rates in the emirate. The infant mortality rate dropped from 80 deaths/1000 live births in 1970 to 4 deaths/1000 live births in 2022. The same drop was experienced in the mortality rates of children under 5 years - from 110 deaths/1000 to 4.9/1000 in 2022.

In 2022, the health sector contributed 5.2% to Dubai's GDP. The Government of Dubai's share of current healthcare expenditure is approximately 43%. The total expenditure on healthcare in Dubai was 21.39 billion AED in 2022. Healthcare service indicators show that Dubai has a well-developed healthcare infrastructure and that this is constantly improving in terms of the density of physicians and nurses and hospital beds (the density of physicians in Dubai reached 3 per 1,000 people in 2022).

In 2013, Dubai established a comprehensive health insurance system. The law mandates health insurance for all residents in Dubai. Requiring the employers or sponsors to bear the cost of their employees' health insurance and the employees are responsible for the insurance costs of their families.

1.7 About Dubai Household Health Survey 2023

The Dubai Household Health Survey (DHHS), 2023 is the largest and most comprehensive survey of health and healthcare issues ever carried out in the Emirate of Dubai. The current survey is the fourth in the DHHS series. It provides a statistically accurate and representative picture of key health and healthcare variables across all of the Dubai population. Surveyors randomly selected around 2,520 households across the Emirate of Dubai and visited them personally to obtain detailed information on subjects like household health expenditure, health services, exercise levels, dietary habits, lifestyle diseases and use of medicines. The survey, which had a response rate of 89.3%, also included questions on injuries, mental health and physical capabilities and a detailed module on people's use and satisfaction with in-patient and out-patient health services in the emirate. The survey was designed and led by DHA's Data Analysis, Research and Studies department drawing on in-house expertise from senior staff. The survey was implemented in close collaboration with the Dubai Data and Statistics Establishment. The design and methodology of the survey were adapted from those used in the World Bank's Living Standards Measurement Surveys (LSMS) and the World Health Organization's World Health Surveys (WHS).

The Dubai Household Health Survey 2023 will cover four main themes:

1. Diseases and chronic health problems (diabetes, blood pressure and obesity).?
2. Healthy lifestyles (tobacco use, physical activity and healthy food).
3. Spending on health (spending on out-patient clinics and hospitals).
4. Quality of health services (satisfaction with the health status and services provided, and periodic examinations).

Table 1.1

Distribution of household population by age groups and gender, 2022.

Age Groups	Males	Females	Total	Percent
0 - 4	97,385	90,728	188,113	5.3
5 - 9	90,258	92,182	182,440	5.1
10 -14	78,525	77,117	155,642	4.4
15 - 19	61,584	56,665	118,249	3.3
20 - 24	197,381	81,150	278,531	7.8
25 - 29	434,428	154,123	588,551	16.6
30 - 34	469,478	166,596	636,074	17.9
35 - 39	335,202	138,850	474,052	13.3
40 - 44	282,129	95,701	377,830	10.6
45 - 49	186,499	55,142	241,641	6.8
50 - 54	85,006	43,393	128,399	3.6
55 - 59	67,599	27,665	95,264	2.7
60 - 64	29,568	14,721	44,289	1.2
65 - 69	13,524	6,526	20,050	0.6
70 - 74	4,603	4,613	9,216	0.3
75+	5,611	5,948	11,559	0.3
TOTAL	**2,438,780**	**1,111,120**	**3,549,900**	**100**
PERCENT	**68.7**	**31.3**	**100.0**	

Source: Dubai Data and Statistics Establishment

Chapter

2

Survey Methodology

2.1. Introduction

The Dubai Household Health Survey 2023 was carried out during the period September 10th to November 6th, 2023. It covered different parts of the emirate of Dubai (randomly selected clusters in selected geographical areas, including the far-flung Hatta district). The survey interviewed a randomly selected representative sample of Dubai households and adult population aged 18+. In addition, the survey included a household roster on demographic and socio-economic characteristics of all family members, laboratory tests, and anthropometric measurements for adults aged 18 and above. Also, data related to children aged 5–17 years and anthropometrics were included as part of the survey.

The survey involved direct field visits that included face-to-face interviews, laboratory tests and anthropometric measurements, during which real time healthcare data and information was collected from the participants. Real time data collection was achieved using an interviewer-administered mobile survey.

The survey presents realistic data that is collected and classified in accordance with the highest international standards in the field, meant to enable decision-makers to take necessary actions and address all challenges.

2.2 Survey Aim and Objectives

The Dubai Household Health Survey 2023 aims to provide accurate information and data that empower decision-makers in Dubai and support the government's strategic plans to elevate the healthcare sector and build a reliable database.

This database can then drive proactive measures to enhance the healthcare sector's performance and ensure attainment of international benchmarks. It also aims to gather and employ evidence-based data for the creation of interventions, policies, and procedures designed to improve the health and overall quality of life for Dubai residents.

Specific Objectives

- Promote public health and quality of life for the residents of Dubai
- Enhance the level of utilization of healthcare services and systems
- Identify future healthcare needs of the population
- Enhance the performance of the healthcare system
- Update health indicators of the residents of Dubai
- Advance the healthcare database and health information system
- Achieve a global healthcare model

2.3 Survey Sample

2.3.1 Target population for the DHHS 2023:

The target groups in this survey are the population in the emirate of Dubai residing in households (Emirati and non-Emiratis families, as well as collective households, and those residing in labour camps). Data was collected from adult family members (18+ years old), including elderly population (60+). Data related to children from 0-17 years was collected from the heads of the households. Anthropometric measurements were collected from the household heads and only weight and height measures were taken for children aged 5-17 years.

2.3.2 Sample design:

According to the international best practices for similar surveys such as the World Health Survey (WHS), the Demographic and Health Survey (DHS), the Living Standards and Measurement Survey (LSMS), and the US National Health Interview Survey (NHIS), the best sample design is the multi-stage stratified cluster sampling design. Such sampling method is appropriate for this type of sampling frame as it reduces the cost of the fieldwork compared to the direct sampling of households from the frame. Direct sampling could lead to an increase in the total cost of the fieldwork, particularly in scattered sampling units that are distant from one another. Based on these facts, the current 2023 Dubai Household Health Survey and its earlier editions have used the multi-stage stratified cluster sampling design. Four population strata were identified (Emirati households, Non-Emirati households, collective households and labour camps). Clusters were identified as Primary Sampling Units (PSUs) in each stratum, each of which ranged in size from 100 to 200 households. It was arranged in a geographical sequence within each PSU and within each of the nine districts using GIS and GPS. Families were reached by withdrawing a specified number of initial units in each stratum as the first stage, and a specific number of households were withdrawn from each enumeration unit in the second stage. Therefore, the survey sample is a multi-stage stratified cluster sample.

To ensure that the sample of households and individuals who were interviewed was representative of the population of Dubai, a detailed sample design was implemented and led by the Dubai Data and Statistics Establishment (DDSE), Digital Dubai Authority.

In order to obtain reliable results for both citizens and non-citizens in the emirate of Dubai, the DDSE made an update for the families that included about 50% of the total residential units provided by the aforementioned inventory in the form of clusters. The size of each cluster is 100 residential units based on the inventory data. The results of the updating process were used to select the sample population of residing families.

Regarding the sample of labour camps, the framework of labour camps that was updated in 2022 was used. In order to make use of this framework to design the survey sample, it was divided into three layers:

First layer: It included the planning areas that are expected to have 40% of the population from UAE (Emirati) and it has been fully updated.

Second layer: It included a third of the other areas, which have been randomly selected. This new framework is updated and suitable for selection of the families' sample.

Third layer: Labour camps, with each camp representing a counting unit (cluster) of the size of 50.

2.3.3 Sampling units selection:

Overall, 100 clusters were selected in each layer, so that the total number of families in these clusters is no less than the sample size for each layer. In light of this, the number of families in each layer was selected with probabilities proportionate to the size in two phases:

Phase 1: Primary Sampling Units (PSUs) assignment.

Phase 2 sampling: 12 families randomly selected (in addition to 4 replacement families) from the clusters assigned at the first phase from each layer.

With regard to sampling individuals from labour camps and in order to reduce the impact of the design effect and to ensure the widest spread of the sample, it was decided to randomly select 10 workers from each cluster in the labour camps. Clusters were selected according to the simple random sampling method.

2.3.4 Sampling frame:

The sampling frame is defined as a list of units from which the survey sample is collected. The model and best sampling frame should always be the latest framework encompassing all the units of the community for the study. The most recent framework for the target population in Dubai is the households' sampling frame provided by the latest household census, which included 90% of the total households in Dubai. The remaining 10% of households that are not covered by the census were enumerated based on the DEWA subscribers list. Geographically, the emirate of Dubai is divided into 9 main districts consisting of 224 areas representing the whole area of the emirate.

After selecting the required clusters based on probability proportionate to population size, all the households within these clusters were enumerated. This was to ensure that all households in a given cluster had an equal chance of being selected in the final sample. After this enumeration procedure was completed, the final sample was obtained. Random sampling methods were implemented to obtain the final sample of 15 households from each of the clusters. These 15 households were identified with the details of the name of the head of the household, building name, and street name. Then 10 households were planned to be selected for the primary sample, whereas five households were planned to be kept as a reserve sample to compensate for low response or refusals.

The head of the household is a member of the household who is "18 years and older" whom the family considers to be its head, who is related to some or all of its members and is most often responsible for household spending and he/she does not have to be the oldest person, with the highest income, or a male. Relationship to the head of the household is a social relationship between any member of the family and the head, and this field is fulfilled only for members of individual families, whether citizens or non-citizens. **Fig. 2.2** shows the target population of the Dubai Household Health Survey 2023.

2.3.5 Sample size:

According to the statistical methods, the final sample size is determined using four indicators:

- The first indicator is the size of the target population.
- The second indicator is the standard deviation of the population.
- The third indicator is the degree of confidence required in the estimation process.
- The fourth Indicator is the permissible margin of error for the estimates.

The key goal of this survey is to estimate the ratio for many indicators. In such cases, the sample size is estimated depending on the contrast ratio, the degree of expected confidence in the data, and the tolerated margin of error according to the law of simple random sample size, without repetition of the following ratio estimation:

$$n = t^2 * \frac{pq}{e^2} * \left(1 - \frac{n}{N}\right)$$

Whereas:

- **n** is the sample size;
- **t** is the value corresponding to the confidence rate in the normal distribution table;
- **N** is the population size.
- **p** is the ratio of the studied phenomenon;
- **q** = 1 – p
- **e** is the error margins;

It should be noted that the ratio for $\frac{n}{N}$ in the previous relationship is usually small and can be disregarded if it is less than 5%, while the previous relationship devolves to the random sample size with the following repetition:

$$n = t^2 * \frac{pq}{e^2}$$

The general principle for estimating the sample size in the case of comparative indicators is based on estimates of these indicators from previous surveys, the sample size estimation for all or some of these indicators, and the adoption of the larger sample size. Since the latest available estimates are from the previous survey of 2019, and taking into account that these estimates are old, another method was resorted to for estimating the sample size, which depends on the contrast ratio which is maximum when the ratio is p=0.50 , so q=0.50, which means contrast is equal to 0.25, which is bigger than any other expected contrast ratio. This means that the sample size for this contrast is maximum too, according to a specific degree of confidence and a margin of error and that the expected error of this size is minimum.

Given the fact that the survey targeted the whole population, (r) is equal to one, (the calculated sample size accordingly would be enough for adults and children, and for that reason there have been no estimations of the sample size for each, because that will lead to enlarging the size of the sample. By dividing the total population by the average family size ($\bar{x}$), we get the desired sample size of families. On the other hand, because the sample is a cluster one, the sample size must be enlarged to cover the impact of internal consistency (Design Effect) between cluster units (d), and the sample size is enlarged normally by a coefficient of (1.5) in most of the surveys of this kind, according to international practices.

To calculate the sample size for this survey, the following were adopted based on the data provided by the 2022 population. Using the previously mentioned equations to calculate the sample size, and in view of the available human and financial resources, and the time required to carry out this survey, and taking a prevalence of diabetes of 19.3% among UAE-Nationals (Emirati) and 12.4% among non-Nationals (non-Emirati), the sample size was calculated. In addition, a confidence level of 95% and a margin of error of 13% from the prevalence of diabetes patients were adopted. The proportion of Emiratis within the sample was over-sampled, and this was corrected by weighting.

The sample size calculated in the previous equation expresses the number of individuals targeted in the survey. Given the consideration that the family is the final statistical unit for target groups in this survey, the sample size of individuals should be transferred to families by dividing the sample size of individuals by the ratio of the target group (r) of the total population to get the total population. **Diagram 2** demonstrates the sample general frame used for the survey.

The original sample was composed of 890 Emirati families, 1,630 non-Emirati and collective families, and 300 from labour camps. Based on all of the previous assumptions, and a response rate of 89.3%, the total sample size added up to around 2,500 families, with 9,795 individuals.

Table 2.1 shows the distribution of the sample across strata and clusters in each region.

Fig 2.1

Methodology and steps of the Dubai Household Survey 2023.

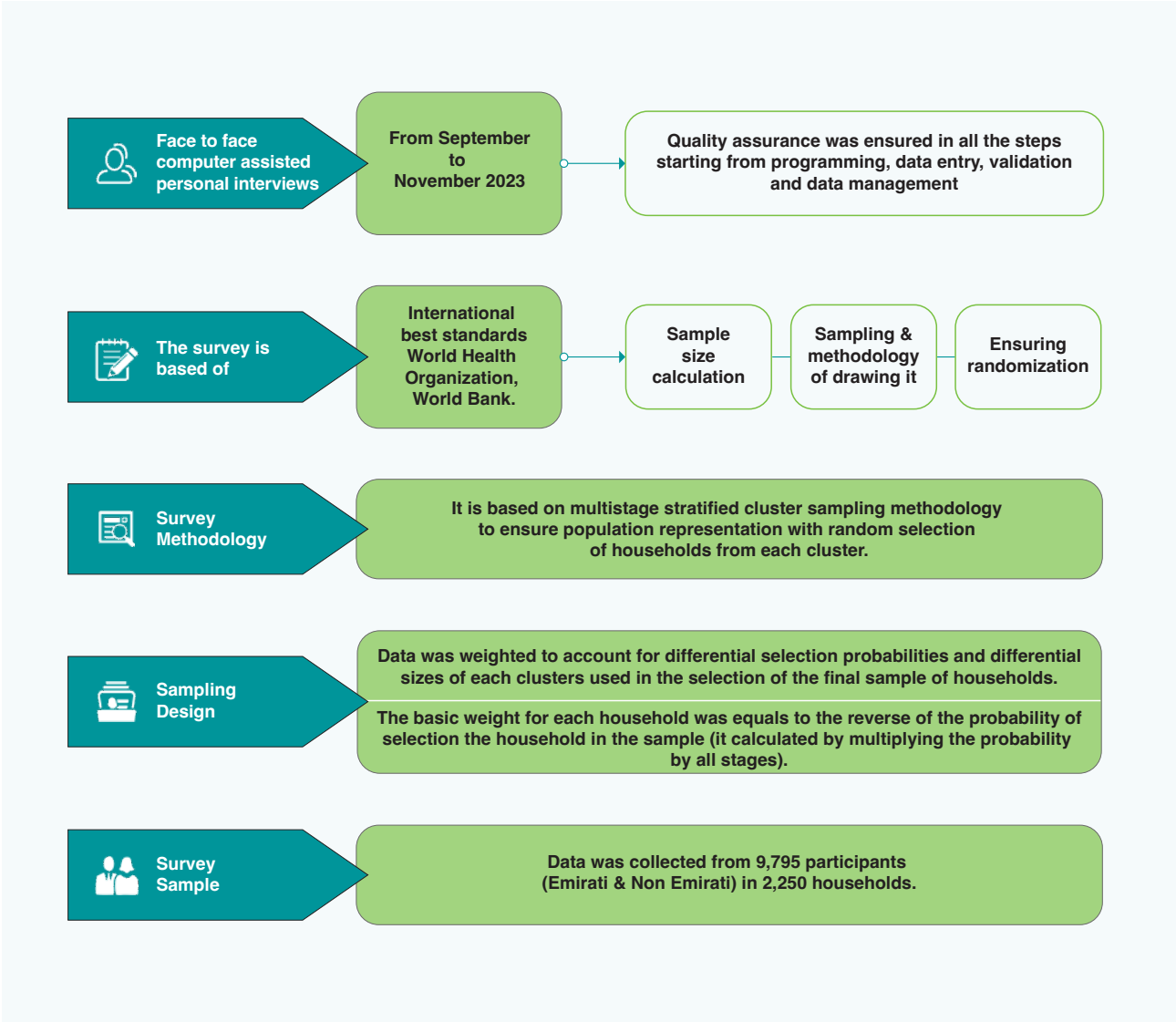


Fig 2.2

Target population of the Dubai Household Health Survey 2023.

Sample Size	
2,250 Families	9,795 Individuals

Non-Emiratis	
Number of Individuals	%
5,809	59.4%

Emiratis	
Number of Individuals	%
3,986	40.6%

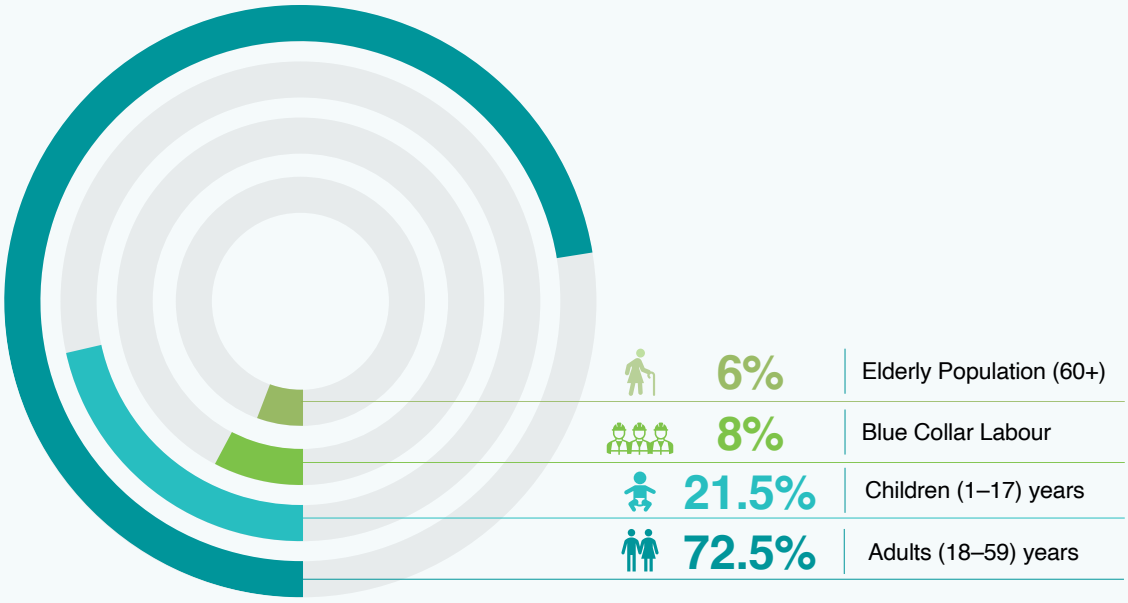


Table 2.1

Sampling Details of Dubai Household Health Survey 2023.

Strata	Number of Clusters	Cluster Size	Sample Size
Emirati	89	10	890
Non-Emirati	91	10	910
Collective	42	10	420
Labour Groups	30	10	300
TOTAL	**252**	**40**	**2520**

2.3.6 Sample weights:

Prior to the data tabulations and analysis, the data was weighted to account for differential selection probabilities and differential sizes of each of the clusters used in the selection of the final sample of households. These weights are calculated from the sizes of the different PSUs and to account for households that did not respond to the survey.

The sample design was self-weighting at the stratum level before conducting the survey; so it was important to calculate the final weights after completing the survey and cleaning the data for each cluster.

The basic weight for each household was equal to the reverse of the probability of selection of the household in the sample (it was calculated by multiplying the probability of all stages).

Relative weight was also calculated to find a factor to change the sample from not self-weighting to the self-weighting sample. This factor is called the relative weight, and this operation is applied to make use of the relative weight advantage.

Therefore, the relative weight calculated for each observation and the summation of relative weights will be equal to the total number of observations. This method provides high flexibility to the researchers when using the data for analysis purposes and deals with the results in the best way to estimate means, or proportions, or totals of the sample at different levels. The relative weight for each household from a specific cluster is equal to the adjusted weight of the cluster divided by the result of mean weight multiplied by the number of completed questionnaires. After weighing the counts of respondents in each category, it may not be a round number. If this was the case, the count was rounded to the nearest whole number. Therefore, one will observe that in many tables described in later sections, the total number of respondents may differ from the sum of the respondents in each of the population categories.

2.4 The Fieldwork Phase

The survey was prepared for and undertaken during the period from the 10th of September to the 6th of November, 2023.

2.4.1 Data collection, cleaning and validation:

The Computer-Assisted Personal Interview (CAPI) tool was developed for data collection. Data was uploaded to the servers immediately by the interviewers. The program can work offline in the field and sync the data by the end of the day using Wi-Fi. CAPI has an inbuilt quality check mechanism. The field supervisors checked the entered data once when received and again before leaving the field to give the interviewers timely feedback on a daily basis. Moreover, the data auditing team constantly monitored and checked the data for quality purposes.

Questionnaires of completed interviews were checked by the field supervisors for incomplete and missing information. The completed ones were then sent for double-checking, coding, and cross-item verification.

2.4.2 Statistical analysis of Dubai household health survey data 2023:

Finally, during the analysis phase, data cleaning, validation and examination of data were done thoroughly. Data was aggregated centrally and the SPSS data sheet was created by the Dubai Health Authority team. Utilizing SPSS 24 and Stata 18 software, simple and compound frequency distribution tables were created with further adequate charts for more illustration.

For each variable, odd readings in frequency analyses were rechecked against the original data in the data collection forms and corrected accordingly, before the variable was classified and used in the final analysis.

2.4.3 Survey response rate:

Each selected household was visited thrice, at different times, to obtain a response and ensure coverage as per the sample plan. For households who were not available after three visits, or could not be reached (e.g. wrong address), they were replaced, if possible, by randomly choosing one of the two on either side of the original household. This process was done by the field workers after consulting their field supervisor. Households that were contacted but refused to participate were not replaced.

The DHHS 2023 revealed that the response rate was 89.3% among the total identified sample size. The total number of households addressed within the current survey was 2,520 households, accounting for a total number of 9,795 individuals interviewed.

2.5. Limitations of the Survey

The main limitation of the DHHS was that the information collected was of self-reported chronic health problems and health difficulties from individuals interviewed, and hence was subjected to some form of bias. The length of the interview remained a challenge to both the interviewers and respondents. The survey length could have affected the response rates and completeness of data and could have caused fatigue and hence altered responses among subjects/ interviewers. Additionally, some challenges concerning locating the selected households and accessing them were also reported. This difficulty was mainly due to some households being located in remote areas that were distant and difficult to access.

Besides, some issues related to social stigma such as divorce, alcohol consumption, and smoking in females and younger adults seem to give a high reporting bias and need to be investigated in a different way. Based on the challenges faced during the past survey, corrective and preventive measures were made to improve the field processes, the quality of data, and the response rates. Interviewers were advised to emphasize the importance of collecting population health data in order to assist decision-makers in improving healthcare services and better response to their needs. In addition, interviewers were also instructed to demonstrate to respondents that the tests are simple and quick and cause minimum inconvenience. Finally, interviewers were instructed to reassure respondents that their data will remain anonymous and delinked from their personal information.

2.6. Diagnostic Criteria and Definitions Used in the Survey

2.6.1 Smoking:

Participants were classified according to their smoking status into; current daily, current occasional, ex-smokers, and non-smokers. Smokers were classified according to tobacco types as cigarette (manufactured and hand-rolled), shisha (water pipe), vape or other types (cigar or pipe) smokers. For calculation of prevalence rates of each type, the participant was counted in each type he/she currently smokes or used to smoke.

Age of participants when they started smoking was either directly obtained or derived from the questions on duration of smoking and date of birth.

The average number of cigarettes smoked daily was calculated for daily smokers only.

2.6.2 Adequate fruits and vegetables intake:

Responses were classified into either having enough or not enough consumption of fruits and vegetables. The WHO recommends that an adequate intake of fruit and vegetables is five or more servings in a typical day. An intake of less than this amount is classified as insufficient. Five servings should equate to about 400g of fruit and vegetables (WHO, 2003). Low fruit and vegetable intake is a key risk factor for conditions such as heart disease, cancer, and obesity. Consuming a healthy diet throughout the life course helps to prevent a range of non-communicable diseases (NCDs).

2.6.3 Adequate physical activity:

Adults' physical activity was measured into two situations:

- Physical activity at work
- Physical activity during leisure time

Further, the intensity of physical activity was classified into:

- Vigorous-intensity activity: activities such as lifting heavy weights and intensive work for at least 10 minutes continuously,
- Moderate-intensity activity: activities such as fast walking and lifting light weights for at least 10 minutes continuously.

2.6.4 Obesity:

Body Mass Index (BMI) is defined for children in the same way as it is for adults: weight (kg)/ square of height (m2). For analyzing the BMI among adults, the WHO definition was considered: readings less than 25 were considered normal or low, readings between 25 and <30 were considered overweight, and readings ≥30 were considered obese. In this classification, women who stated they were pregnant at the time of the interview, were excluded from the analysis.

For childhood obesity, BMI is defined for children in the same way as it is for adults: weight (kg)/ square of height (m2).

The International Obesity Task Force concluded that BMI is a reasonable measure of adiposity in children, and it is the key measure to consider obesity among children used in this survey.

The classification of children's BMI used in this survey, set out below, has been derived from BMI percentiles of the WHO 1990 reference curves (referred to as the regional BMI percentiles classification); these have been used in each DHHS to date.

The BMI percentiles classification has been shown to be reasonably sensitive (i.e. not classifying obese children as non-obese) and specific (i.e. not classifying non-obese children as obese). The growth references classify BMI based on age and gender as described below:

- Underweight is when BMI is less than (-2) standard deviation below the WHO growth reference median.
- Normal weight is when BMI is between (-2 and +1) standard deviation from the WHO growth reference median.
- Overweight is when BMI is greater than (+1 to +2) standard deviation above the WHO growth reference median.
- Obesity is when BMI is greater than (+2) standard deviations above the WHO growth reference median.

2.6.5 Other Anthropometric measures (Abdominal obesity & waist to hip ratio):

- **Central/abdominal obesity or raised WC:** is defined as more than 102 cm for men and more than 88 cm for women.
- **Waist-to-hip ratio (WHR):** is defined as the ratio of the circumference of the waist to that of the hips. The WHO states that abdominal obesity is defined as a waist-hip ratio above 0.90 for males and above 0.85 for females.

2.6.6 Hypertension:

According to the WHO classification for blood pres¬sure measurement, individuals with systolic blood pressure (SBP) ≥140 mmHg or diastolic blood pressure (DBP) ≥90 mmHg are considered hypertensive. The estimated prevalence of hypertension was derived by adding up the prevalence of self-reported hypertension and that of subjects found to have high average readings of systolic or diastolic pressure.

2.6.7 Hyperglycaemia & diabetes:

The respondent was considered diabetic if HbA1c result was shown as 6.5% or above. Prediabetes was diagnosed if the HbA1C was between 5.7% to 6.4% inclusive. Normoglycemia (non-diabetic) was considered if HbA1c is <5.7%.

The estimated prevalence of diabetes was derived by adding up the prevalence of self-reported diabetes and that of newly discovered diabetes based on HbA1C results (newly diagnosed).

2.6.8 Labour force participation:

Labor Force Participation was calculated based on the formula “the number of participants ages 18 and older (excluding children) who mentioned that are currently employed or actively seeking employment, divided by the total participants in the working-age group.

2.7. Survey Management

2.7.1 Survey staff:

The survey was organized, managed and conducted through the following teams - The survey official committee, the survey technical team, field supervisors, 75 qualified surveyors, 25 well-trained nurses and other laboratory technicians.

2.7.2 Survey training phase:

Well-trained data collectors and nurses were enrolled for data collection under direct supervision of the technical team from both the Dubai Statistics Center and the Dubai Health Authority. A number of professional training sessions were conducted over a one-week duration by about 15 trainers, supervisors, and statisticians.

In addition, technical training for the nurses was conducted on blood sampling techniques and proper anthropometric measurement techniques for blood pressure, height, weight, hip and waist circumference. Training was made available to survey staff using certain techniques on how to conduct personal interviews, how to deal with household heads, and privacy issues.

The training included the following main modules:

- General idea about the survey and its objectives
- Survey management process and responsibilities of different categories of survey staff
- Detailed explanation of the content of the questionnaire
- Interview skills
- Field data entry on the provided tablets’ software
- And finally, methods used to encourage participation.

Chapter

3

Socio-Demographic Characteristics of the Respondents

Key Findings

- **Age:**

- The mean age of the surveyed population was 33.4 years (±15.0 SD). This mean was almost similar for both males 34.3 years (±13.8 SD) and females 31.4 years (±17.1 SD).
- The mean age of Emiratis was 30.8 years (±20.5 SD) compared to 33.6 years (±14.4 SD) for Non-Emiratis.

- **Gender:**

- The percentage of male respondents was 67.7% compared to 32.3% of females.
- The gender ratio among the population of the Emirate of Dubai is 210.1 males for every 100 females.

- **Nationality:**

- The distribution of the participants by nationality group was 92% non-Emirati and 8% Emirati
- The difference is most evident in the age group of 25–44 years, 96% of them were non-Emirati compared with 4% Emirati.

- **Education:**

- The largest proportion of respondents (46.1%) had completed secondary education or its equivalent, followed by those with university or higher education qualifications (9.3%).
- Those who earned their university degrees were higher in females (56.4%) than in males (32.7%).

- **Employment:**

- 81.5% of the participants were actively enrolled in work (currently employed), while 13.9% were currently not working at the time of conducting this survey.
- Higher percentage of non-Emiratis (84%) were among the current workers compared to Emiratis (46.9%).

- **Marital status:**

- 71% of the participants were currently married, 1.5% were separated/divorced, 26.3% were single (never married), and 1.2% were widowed.
- Among the currently married group, there were more non-Emiratis (73.1%), compared to (42.4%) Emiratis.

3.1 Unweighted Sample Characteristics of the Respondents

Percentage distribution of surveyed participants (unweighted) according to age groups, gender and nationality is shown in **Table 3.1.** Age distribution of the sample reflects the current demographic trends in Dubai. Accordingly, the highest percentage of participants was from those in the age group of 25-44 years (46.3%), followed by children and teenagers aged 0-17 years (21.4%). The mean age of the surveyed participants was 33.3 (±17.1 SD) years. **Figure 3.1** shows that this mean was almost similar for both males and females at 31.9 (±16.8 SD) years & 32.7 (±17.4 SD) years, respectively. However, the mean age of Emirati nationals was 30.5 (±20.4 SD) years compared to 33.5 (±14.3 SD) years for non-Emiratis (data is not shown in tables).

A more detailed distribution of the participants by age groups, gender and nationality are shown in **Figures 3.2 and 3.3.** Males and females were evenly distributed within all the age groups. Some differences in nationality distribution were evident within the age group of 25–44 years, where 75.6% were non-Emirati compared to 24.4% Emirati. However, for the children from 5 to 17 years, the reverse was noted as 65.9% of the sample were Emirati (UAE nationals) compared to 34.1% non-Emirati. The table also reveals that 40.7% of the total surveyed participants were Emirati, compared to 59.3% non-Emirati. Non-Emirati to Emirati ratio was (1: 1.46). Proportion of Emirati was over-sampled, and this was corrected by weighting. The total number of respondents in the household survey reached 9,795 individuals. Of this total, the percentage of male respondents were 52.3% compared to 47.7% of females.

3.2 Socio-Demographic Characteristics of the Respondents

3.2.1 Age distribution of the sample:

Table 3.2 describes the socio-demographic profile of the survey participants (representing the population of Dubai) in DHHS 2023 after sample weighting. Results in the table illustrate the percentage distribution of surveyed participants according to age groups, gender and nationality. Age distribution of the sample (unweighted) reflects the current demographic trends in Dubai.

Accordingly, the highest percentage of participants was of those in the age group of 25-44 years (55.7%), followed by those in the age group of 45-59 years (17.9%). The mean age of the surveyed population was 33.4 (±15.0 SD) years. **Figure 3.1** shows that this mean was almost similar for both males and females 34.3 years (±13.8 SD) and 31.4 years (±17.1 SD), respectively). However, the mean age of Emiratis was 30.8 (±20.5 SD) years compared to 33.6 (±14.4 SD) years for non-Emiratis - this data was not mentioned in tables.

A more detailed distribution of the participants by age groups, gender and nationality is shown in **Figures 3.1 to 3.3.** Males were distributed in higher percentages than females within all the age groups. The total number of respondents in the household survey reached 9,795 individuals. Of this total, the percentage of male respondents was 52.3% compared to 47.7% of females. Therefore, the gender ratio (male ratio ÷ female ratio) × 100 among the population of the Emirate of Dubai is 109.5%. This indicates that there are 109.5 males in the community for every 100 females.

3.2.2 Nationality group:

Some differences by nationality distribution were evident - in the age group of 25–44 years, 96% of them were non-Emirati compared with 4% Emirati. Moreover, for the children from 5 to 17 years, 18.9% of the sample was UAE nationals (will be referred herein as Emirati), compared to 81.1% of non-Emiratis. **Table 3.2 and Figure 3.4** also reveal that 8% of the total surveyed participants were Emirati, compared to 92% non-Emirati. The non-Emirati to Emirati ratio was (11.5: 1). Kindly note that the proportion of Emiratis was over-sampled, and this was corrected by weighting.

Table 3.1

Percentage distribution of survey sample by age groups, gender and nationality (unweighted), DHHS, 2023.

Age Groups	Females			Males			Nationality Group		Total Number Of Respondents (Unweighted)	
	Emirati	Non-Emirati	Total	Emirati	Non-Emirati	Total	Emirati	Non-Emirati	Number	Percent
0 - 4	42.4	53.4	47.4	57.6	46.6	52.6	54.5	45.5	519	5.3
5 - 17	47.3	49.4	48	52.7	50.6	52	65.9	34.1	1580	16.1
18 - 24	44.3	40.9	42.7	55.7	59.1	57.3	54	46	967	9.9
25 - 44	51.3	46.8	47.9	48.7	53.2	52.1	24.4	75.6	4533	46.3
45 - 59	55.5	43.7	48.2	44.5	56.3	51.8	38.1	61.9	1597	16.3
60+	56.1	44	52.6	43.9	56	47.4	70.8	29.2	599	6.1
TOTAL	**1987**	**2688**	**4675**	**1999**	**3121**	**5120**	**3986**	**5809**	**9795**	**100**
%	**42.5**	**57.5**	**100**	**39**	**61.0**	**100**	**40.7**	**59.3**	**100**	**100**

Emirati and Non-Emirati are added up to 100% for both males and females.

Table 3.2

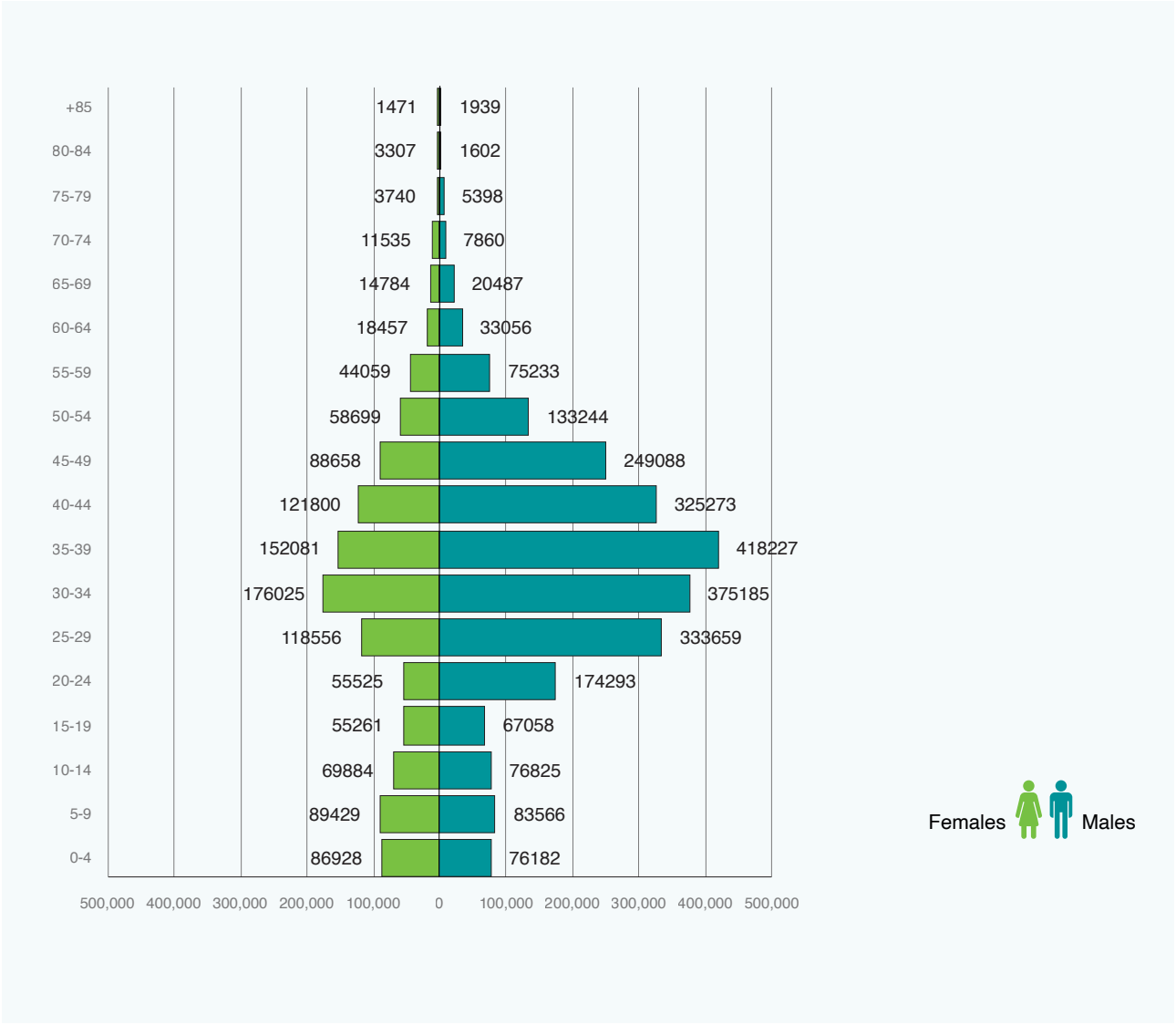
Percentage distribution of household population by age groups, gender and nationality (weighted), DHHS, 2023.

Age Groups	Females			Males			Nationality Group		Total Number Of Respondents (Unweighted)	
	Emirati	Non-Emirati	Total	Emirati	Non-Emirati	Total	Emirati	Non-Emirati	Number	Percent
0 - 4	43.9	54.7	53.3	56.1	45.3	46.7	12.6	87.4	519	4.5
5 - 17	47.4	50.1	49.6	52.6	49.9	50.4	18.9	81.1	1580	10.8
18 - 24	43.4	24.5	27.1	56.6	75.5	72.9	13.5	86.5	967	7.7
25 - 44	51.7	27.1	28.1	48.3	72.9	71.9	4.0	96.0	4533	55.7
45 - 59	56.6	27.5	29.5	43.4	72.5	70.5	6.8	93.2	1597	17.9
60+	56.3	38.5	43.1	43.7	61.5	56.9	25.9	74.1	599	3.4
TOTAL	**1987**	**2688**	**4675**	**1999**	**3121**	**5120**	**3986**	**5809**	**9795**	**100.0**
%	**50.2**	**30.7**	**32.3**	**49.8**	**69.3**	**67.7**	**8.0**	**92.0**	**100.0**	**100.0**

**All the figures in table were weighted as percentage while total number of respondents are unweighted.*

Fig 3.1

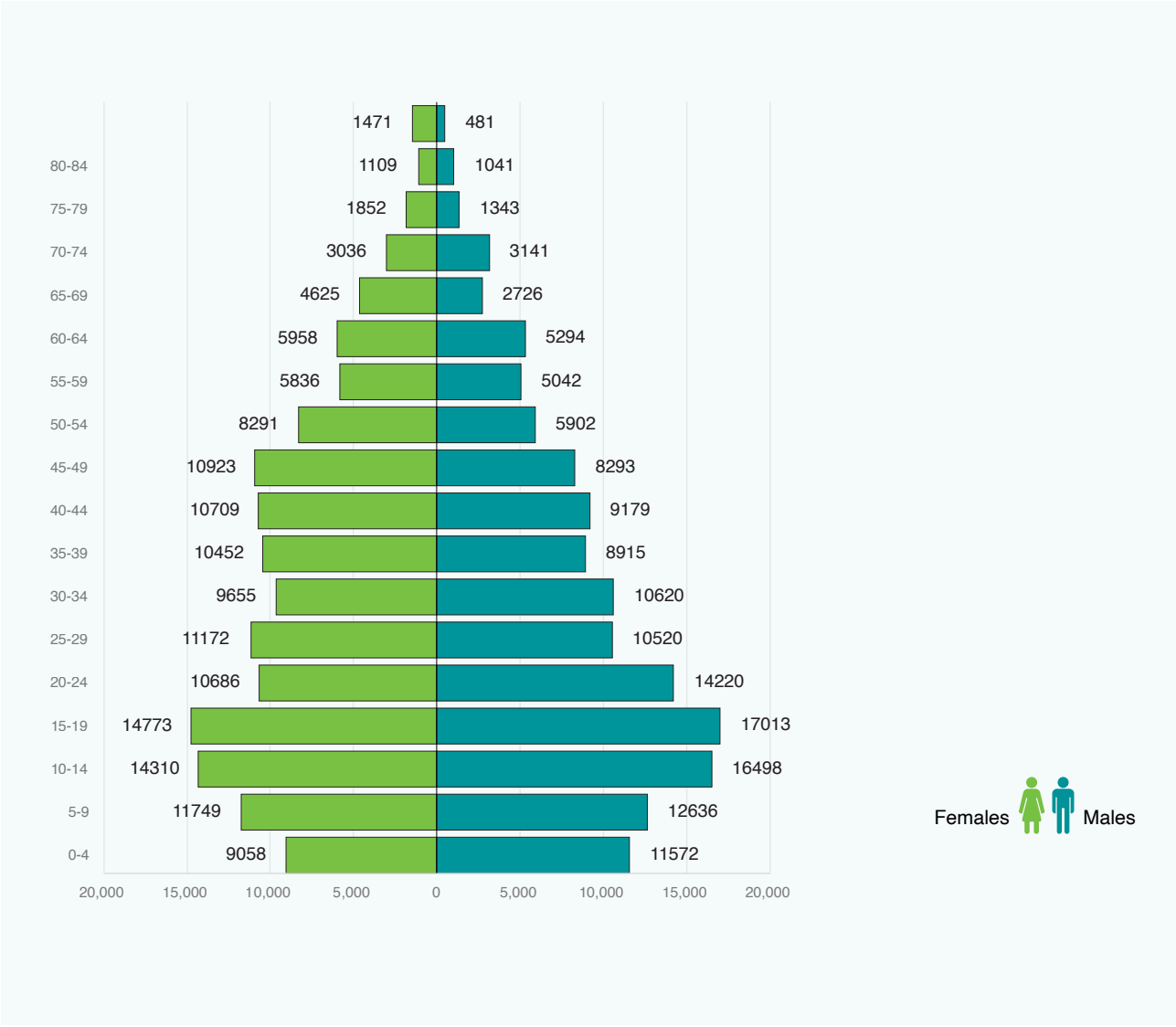
Age-gender pyramid for the surveyed sample.



The pyramid is based on the population weighted data.

Fig 3.2

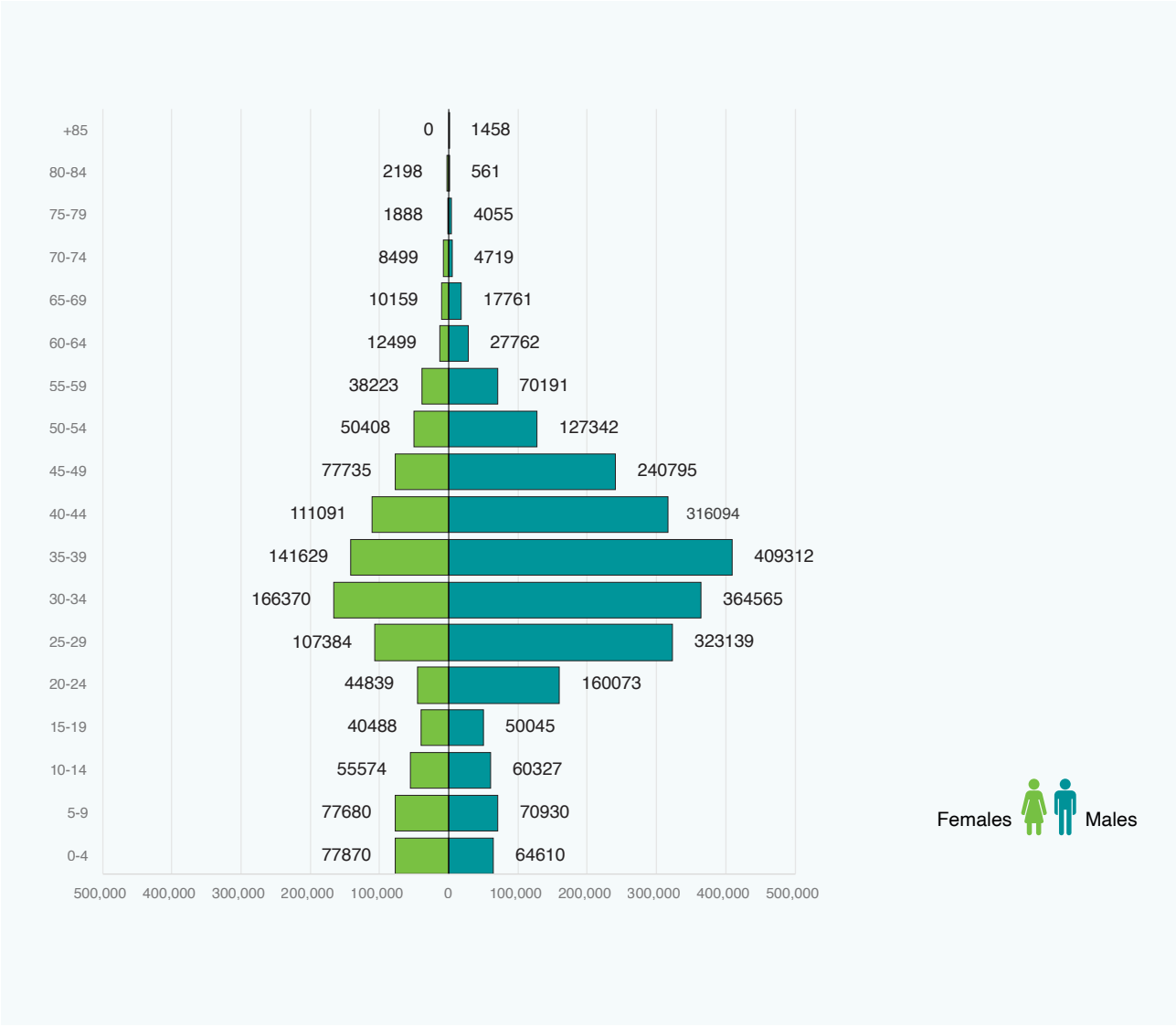
Age-gender pyramid for the Emirati respondents.



The pyramid is based on the population weighted data.

Fig 3.3

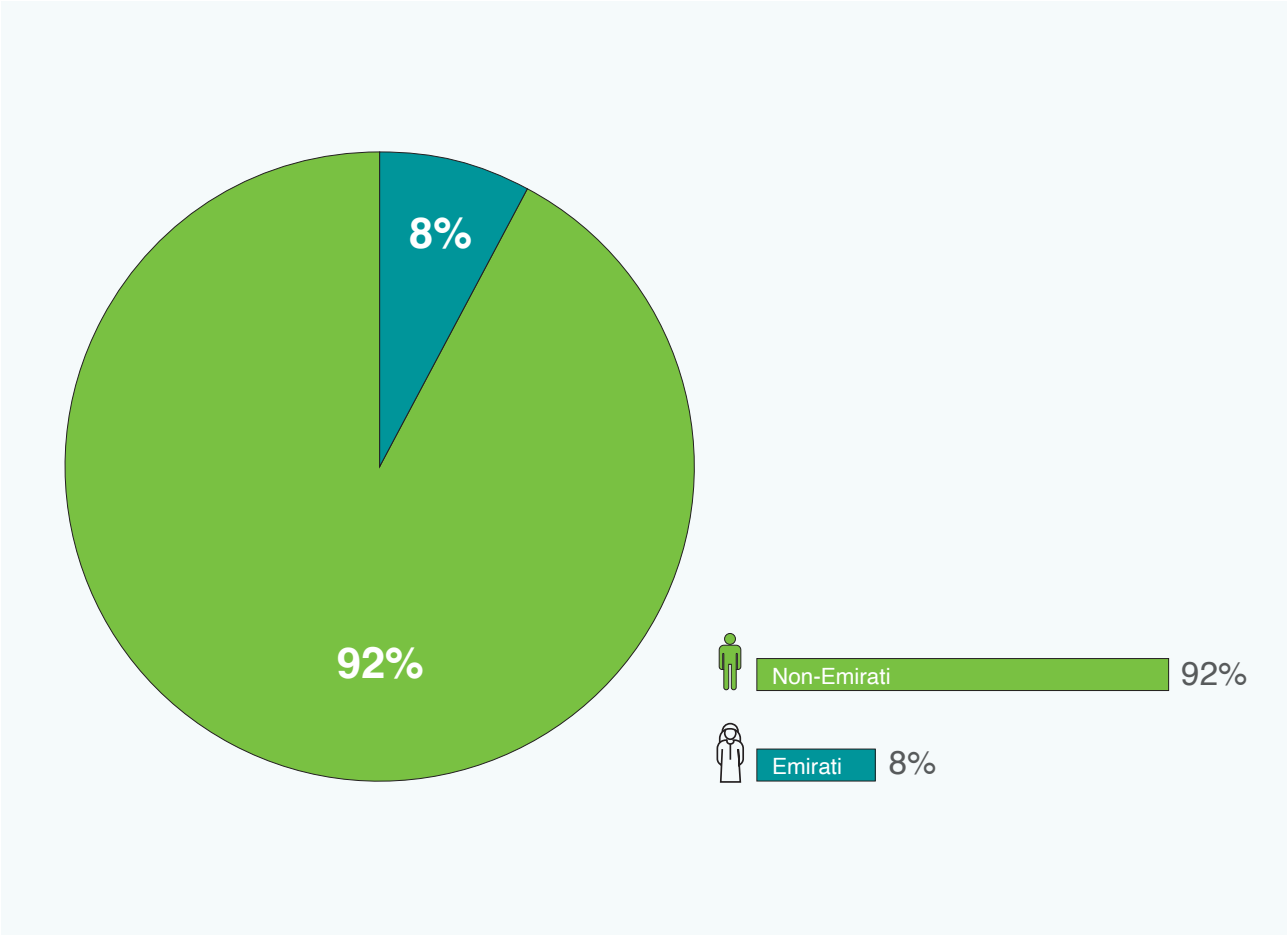
Age-gender pyramid for the Non-Emirati respondents.



The pyramid is based on the population weighted data.

Fig 3.4

Percentage distribution of the surveyed sample (weighted) by nationality group, DHHS 2023.



3.2.3 Gender distribution:

The total number of respondents in the survey households and labour camps reached 9,795 individuals. Of this total, the percentage of male respondents was 67.7% compared to 32.3% of females. Therefore, the gender ratio (male ratio ÷ female ratio) × 100 among the population of the Emirate of Dubai is 210.1%. This indicates that there are 210.1 males in the community for every 100 females.,In other words, it can be said that the number of males in the Dubai is greater than the number of females.

3.2.4 Educational status:

The percentage distribution of surveyed participants according to their educational status is shown in **Table 3.3.** The survey data reveals that only 4.9% had no formal education (Illiterate or just read & write), and this percentage was slightly higher among Emiratis (6.9%) compared to 4.7% of non-Emiratis. The largest proportion was that of those who had completed secondary education or equivalent (46.1%), followed by the university and higher education (9.3%). Those who earned their university degrees were higher in females (56.4%) than in males (32.7%). At the same time, there was a higher proportion of non-Emiratis who had completed higher education than Emiratis (40.3% & 31.7%, respectively). The age differentials with education was logical, with the highest proportion of those in the age groups (25- 44) & (60+) years holding university degrees and above (43.3% & 40.9%, respectively).

3.2.5 Work status:

The percentage distribution of surveyed participants according to work status is illustrated in **Table 3.4**. The survey data reveals that 81.5% of the participants were currently working (actively enrolled in work) during the time period of the survey, while 13.9% reported they never worked at the time of conducting this survey. Higher percentage of non-Emiratis (84%) were among the current workers compared to Emiratis (46.9%). Overall, those currently not working were more among Emiratis (15.9%) compared to 3.8% non-Emiratis. As expected, males (92.3%) were more among those currently working as compared to females (55.2%).

The 'currently not working group', which includes students and homemakers, constituted only 4.6% of the sample. Among those who were currently not working, 6.3% were females (homemakers) versus 3.9% males.

At the same time, among the currently not working participants, Emiratis greatly outnumbered non-Emiratis (15.9% & 3.8%, respectively).

3.2.6 Marital status:

Table 3.5 shows the distribution of the survey participants according to marital status. Data shows that 71% of the participants were currently married, 1.5% were separated/divorced, 26.3% single (never married), and only 1.2% were widowed. Unexpectedly, among the survey sample, the currently married group were more of non-Emiratis (73.1%) compared to (42.4%) of Emiratis. For the never married category, a higher proportion (46.1%) was among Emiratis than non-Emiratis (24.8%). Among those surveyed, females (3.6%) were more likely to report being separated/divorced than males (0.6%).

Fig 3.5

Percentage distribution of the surveyed sample by gender, DHHS 2023.

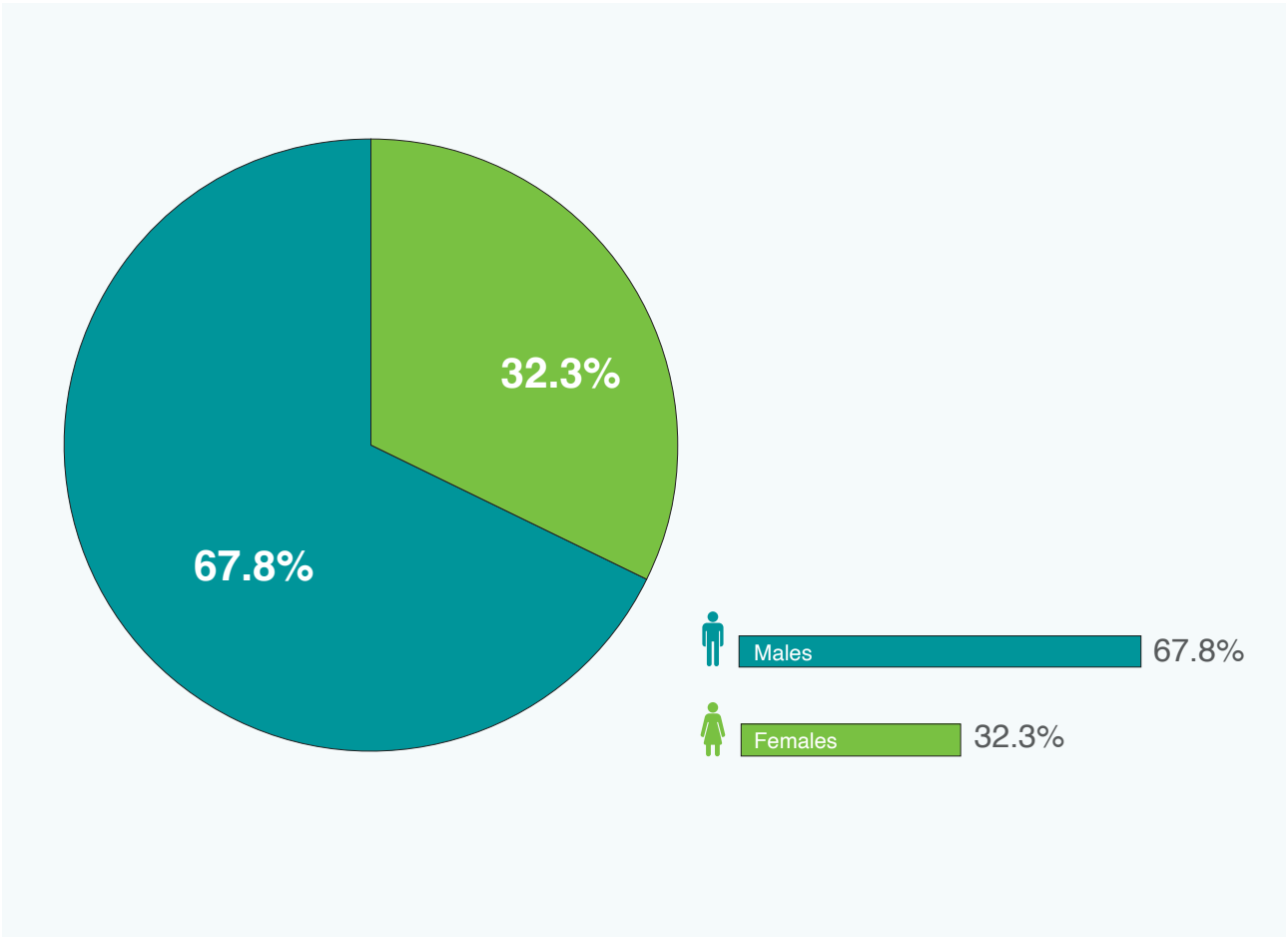


Table 3.3

Percentage distribution of household population by education status and background characteristics, DHHS, 2023.

Variable	Weighted Percentage (%)				No. Of Respondents (Unweighted)
	No Formal Education	Primary & Preparatory	Secondary Completed or Equivalent	University and Above	
Age Groups					
5 - 17	-	97.9	2.1	-	355
18 - 24	4.8	57.1	14	24.1	967
25 - 44	4.4	42.7	9.6	43.3	4533
45 - 59	5.2	47.9	7.8	39.2	1597
60+	14.2	38.1	6.9	40.9	599
Gender					
Females	5.5	31.9	6.2	56.4	3839
Males	4.6	52	10.6	32.7	4212
Nationality Group					
Emirati	6.9	55.5	5.9	31.7	2925
Non-Emirati	4.7	45.5	9.6	40.3	5126
TOTAL	**4.9**	**4.9**	**46.1**	**9.3**	**8051^**

**All the figures in table were weighted as percentage while total number of respondents are unweighted.*

^Toddlers in the age group 0-4 were excluded from this table.

Fig 3.6

Percentage distribution of the surveyed sample by education and nationality, DHHS 2023.

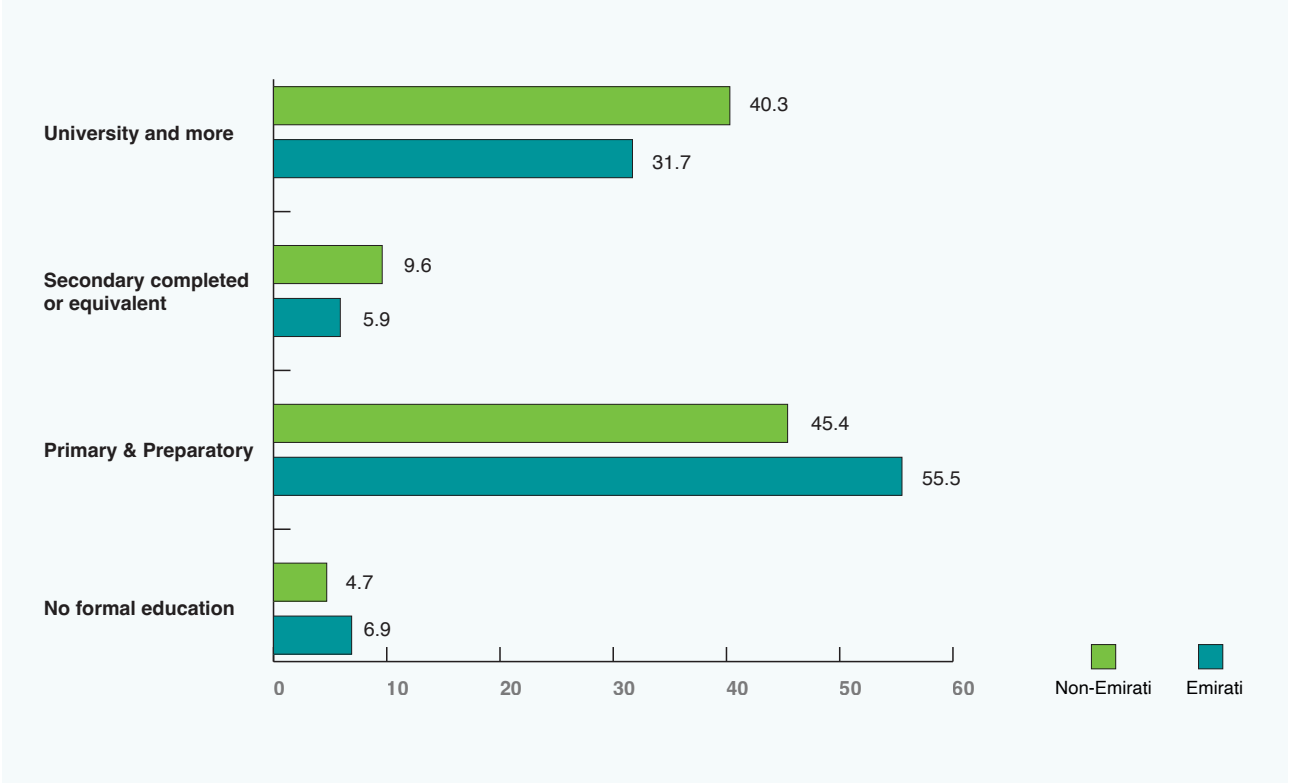


Fig 3.7

Percentage distribution of the sample by education and gender, DHHS 2023.

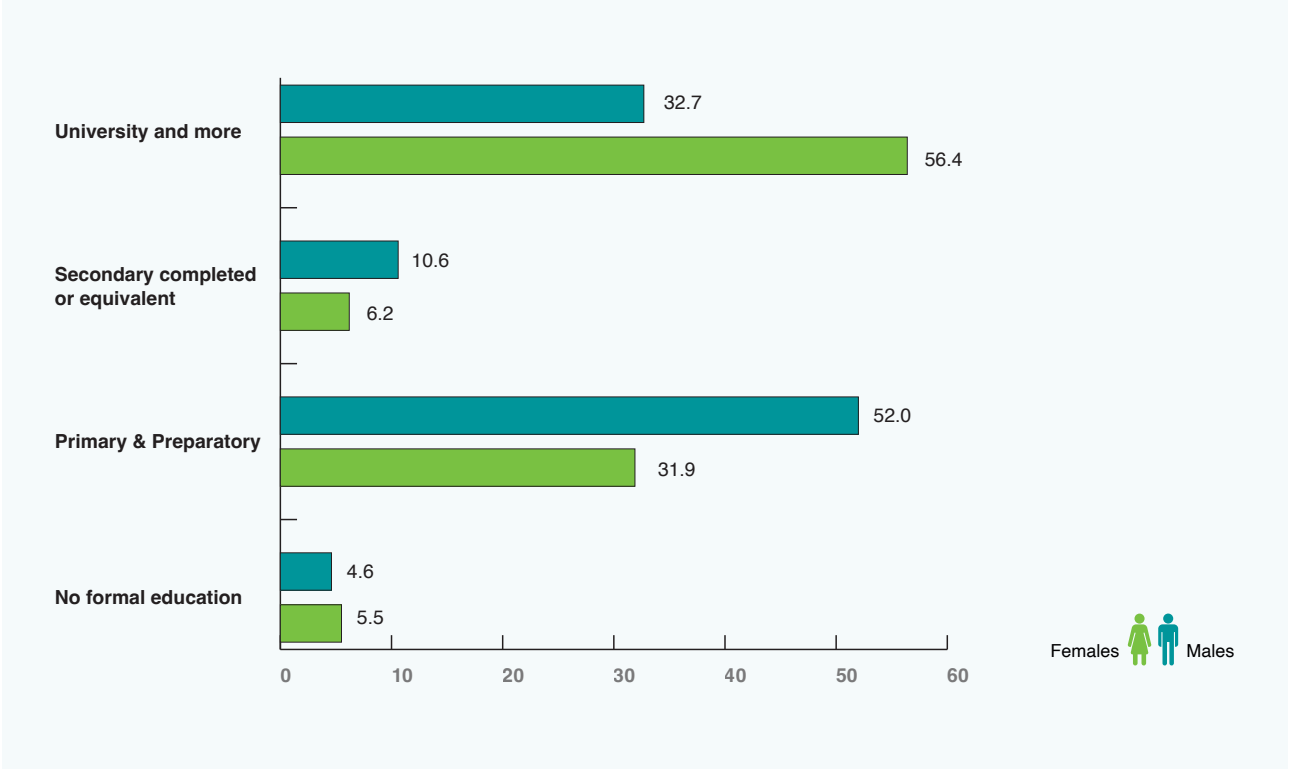


Table 3.4

Percentage distribution of household population by work status and background characteristics, DHHS 2023.

Variable	Weighted Percentage (%)			No. Of Respondents (Unweighted)
	Currently Working	Currently Not Working	Never Worked	
Age Groups				
5 - 17	0.5	0.4	99.1	355
18 - 24	66.5	8.8	24.7	967
25 - 44	87.9	4.1	8.0	4533
45 - 59	83.8	3.5	12.7	1597
60+	44.0	12.1	43.8	599
Gender				
Females	55.2	6.3	38.4	3839
Males	92.3	3.9	3.8	4212
Nationality Group				
Emirati	46.9	15.9	37.2	2925
Non-Emirati	84.0	3.8	12.2	5126
TOTAL	**81.5**	**4.6**	**13.9**	**8051^**

** Currently working refers to those who mentioned that are currently employed or actively seeking employment among the participants ages 18 and older, divided by the total participants in the working-age group.*

**All the figures in table were weighted as percentage while total number of respondents are unweighted.*

^Toddlers at age group 0-4 were excluded from this table.

Fig 3.8

Percentage distribution of the sample by working status and gender, DHHS 2023.

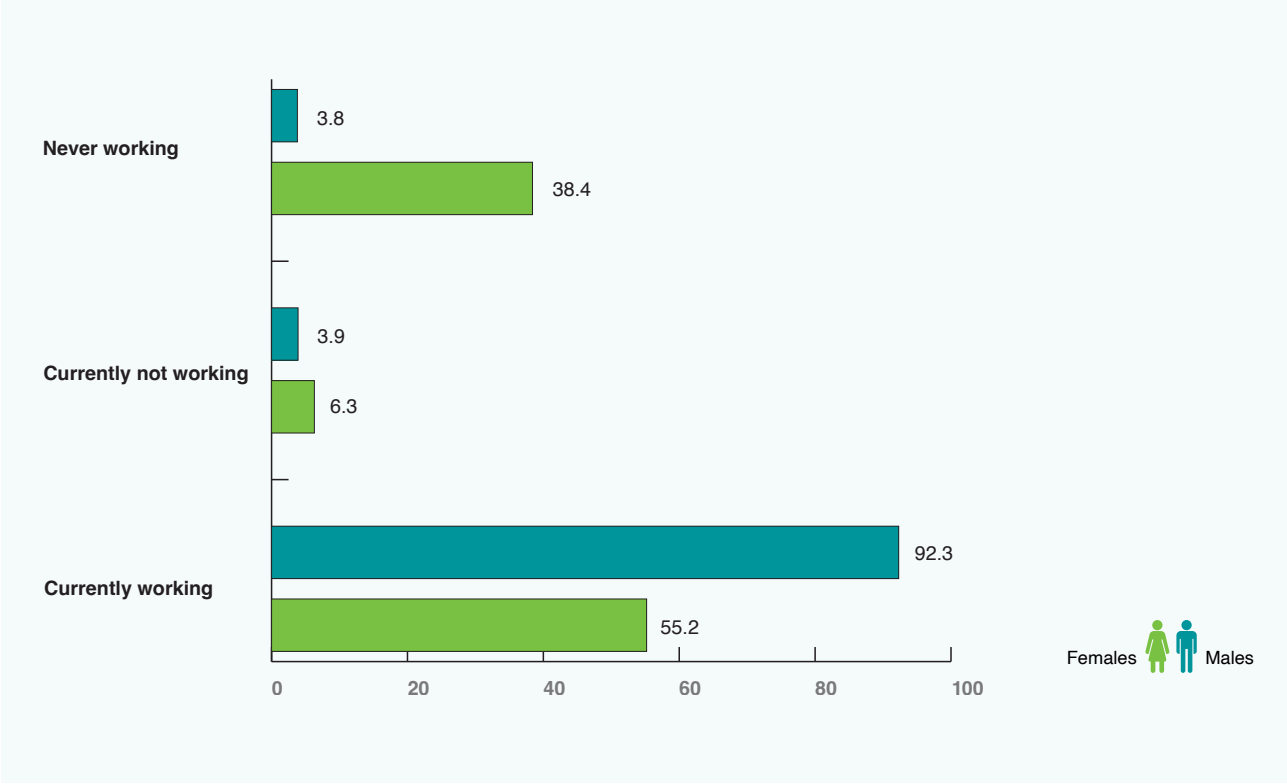


Fig 3.9

Percentage distribution of the sample by working status and nationality, DHHS 2023.

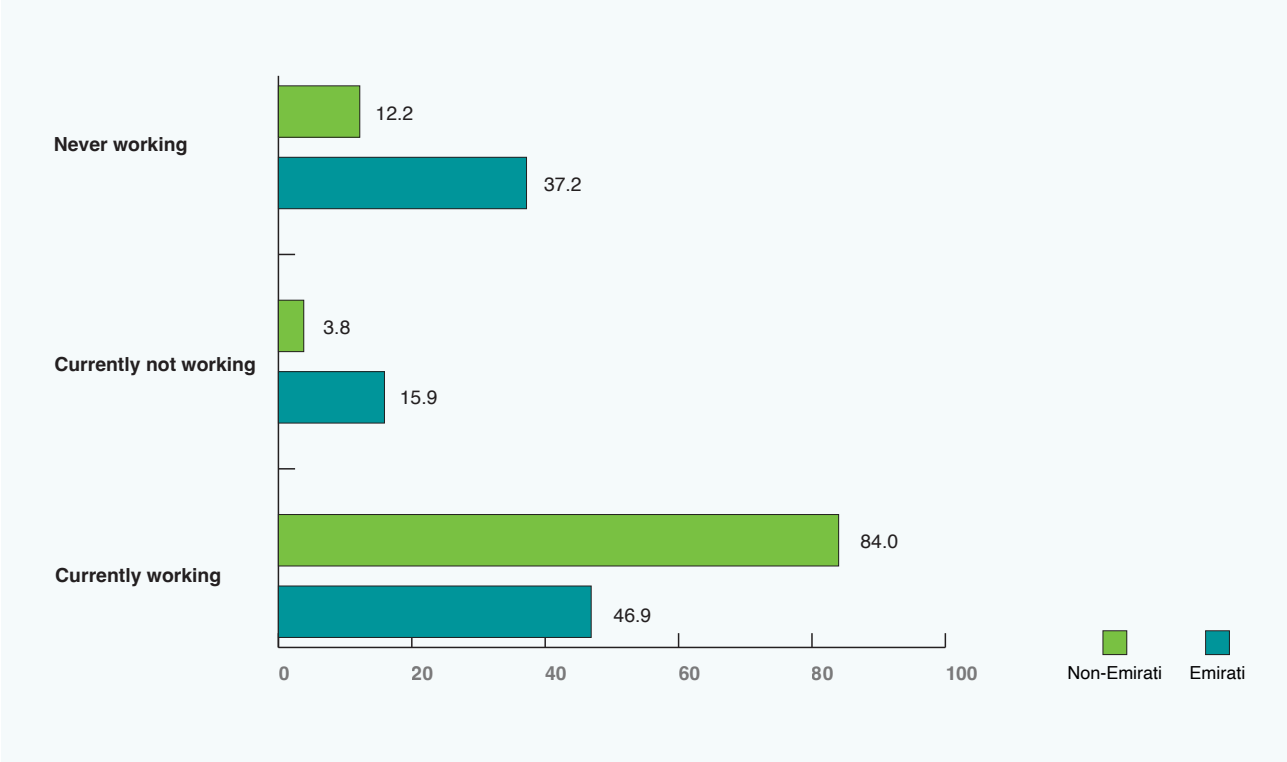


Table 3.5

Percentage distribution of household population by marital status and background characteristics, DHHS, 2023.

Variable	Weighted Percentage (%)				No. Of Respondents (Unweighted)
	Single	Currently Married	Separated / Divorced	Widowed	
Age Groups					
5 - 17	100.0	-	-	-	355
18 - 24	85.9	14.0	0.2	-	967
25 - 44	23.9	74.5	1.4	0.2	4533
45 - 59	4.4	91.6	1.9	2.1	1597
60+	2.1	75.2	5.4	17.3	599
Gender					
Females	28.2	64.6	3.6	3.5	3839
Males	25.5	73.6	0.6	0.3	4212
Nationality Group					
Emirati	46.1	42.4	6.3	5.2	2925
Non-Emirati	24.8	73.1	1.2	0.9	5126
TOTAL	**26.3**	**71.0**	**1.5**	**1.2**	**8051^**

**All the figures in table were weighted as percentage while total number of respondents are unweighted.*

^Toddlers in the age group 0- 4 were excluded from this table.

Fig 3.10

Percentage distribution of the sample by marital status and gender, DHHS 2023.

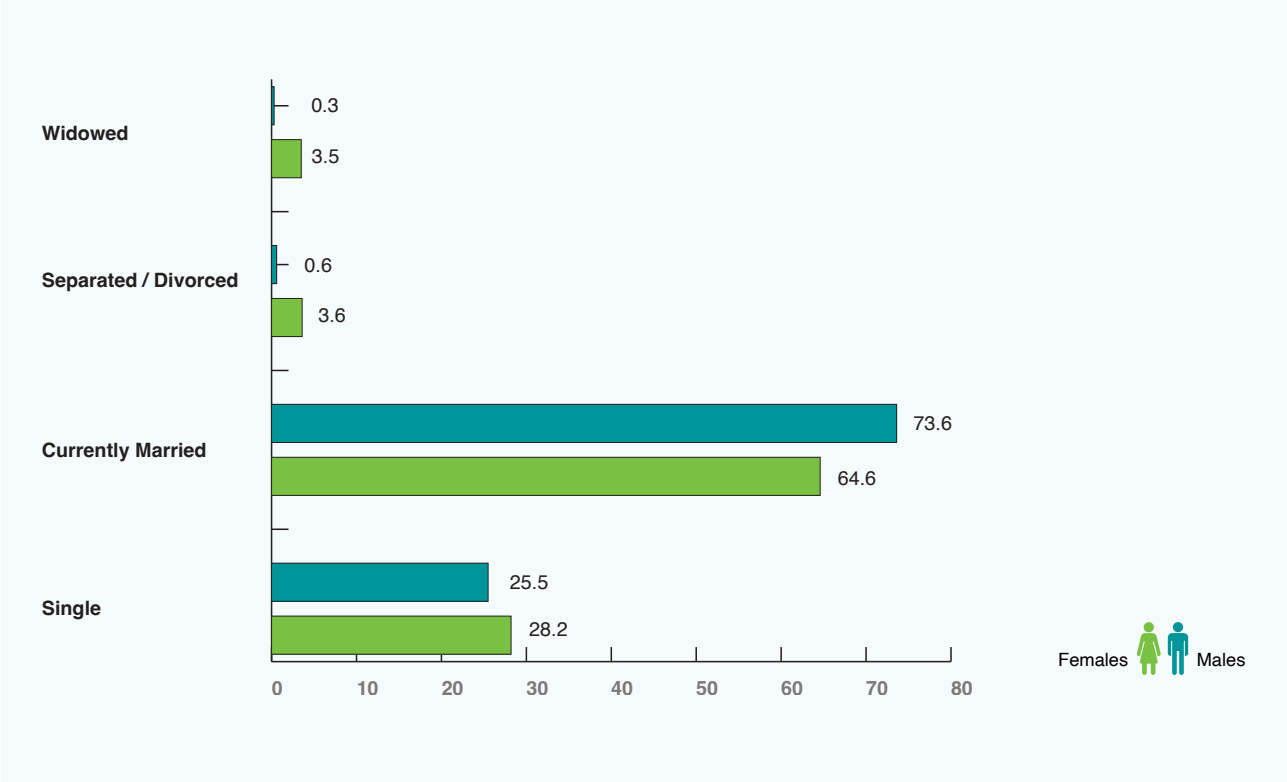
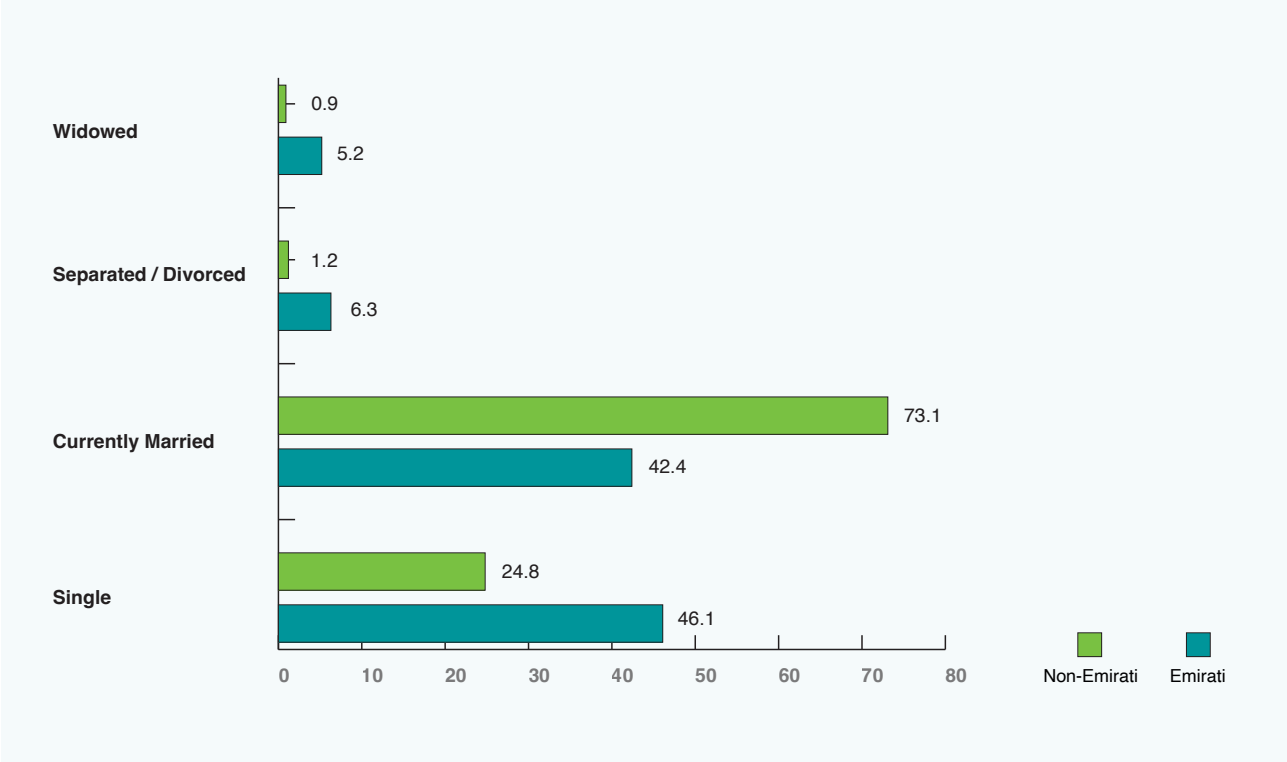


Fig 3.11

Percentage distribution of the sample by marital status and nationality, DHHS 2023.



Chapter

4

Risk Factors and Health Behaviour

Key Findings

- **Smoking:**

- 25.7% of respondents are current tobacco smokers (31% of males and 11% in females).
- Only 3.4% are ex-smokers, while 70.9% never smoke tobacco.
- Mean age when they started smoking is 24 years.
- 86.3% are cigarette smokers.
- Only 8.4% are current users of smokeless tobacco and e-cigarettes, 3.8% smoke shisha.

- **Fruit and Vegetable Intake:**

- Almost one fifth (21.7%) of respondents have sufficient intake of fruit and vegetables.
- Females consume more fruits and vegetables than males do in Dubai (27.9% versus 19.5%).
- Non-Emiratis consume slightly more fruits and vegetables than Emirati adults do (21.9% versus 19.7%).

- **Physical Activity:**

- Overall, 36.9% of respondents have sufficient physical activity which varies between males (38%) and females (33.8%). A slightly higher percentage of Emirati adults (39%) perform sufficient physical activities than non-Emiraties (36.7%) do.

- **Alcohol Consumption:**

- Almost one fourth have ever consumed alcohol products (26.7%).

4.1 Tobacco Use

The risks associated with tobacco use are long recognized and well documented. The tobacco epidemic is one of the biggest public health threats the world has ever faced, killing over 8 million people a year around the world (WHO). All forms of tobacco use are harmful, and there is no safe level of exposure to tobacco. Cigarette smoking is the most common form of tobacco use worldwide. The main illnesses associated with its use being lung cancer (as well as other cancers), vascular disease (including heart disease and strokes), and chronic lung diseases.

Table 4.1. indicates that 25.7% of the surveyed sample identified as current smokers, 70.9% as never-smokers and 3.4% as ex-smokers. **Table 4.1** also shows the distribution of current smokers across select demographic characteristics. The prevalence of current smokers varied greatly between the younger and oldest age groups **(Figure 4.2)**, with prevalence being lowest among the 60+ years age group (12%) compared to double that in the youngest 18-24 years age group (24.2%). **Figure 4.1** illustrates that 11% of females are current smokers compared to 31% of males. However, underreporting among female respondents is likely, as smoking continues to carry social stigma for females, potentially making them more reticent in disclosing their smoking status to the interviewer. **Figure 4.1** also shows there was a noticeable differ¬ence in the prevalence of smoking between Emiratis (17.3%) and non-Emiratis (26.3%). Current smokers, when analysed by educational background, showed minimal variation except in the most highly educated group - that had completed university education and above – who exhibited the lowest prevalence (22.2%) of current smokers.

In addition, **Table 4.1** reveals the mean age at which current smokers reported to have started smoking. It was the early adulthood years where no real difference was observed between genders 24 (±8 SD) years for males and 23 (±5 SD) years for females. The mean age at which Emirati respondents reported starting to use tobacco (19 ±4 years) was slightly earlier than non-Emiratis (24 years ±7 SD). When examining mean age of starting tobacco use by age groups, the younger respondents (18-24) were more likely to have started smoking at a younger age of 21 (±7 SD) years than older respondents of 60+ at 25 (±1 SD) years. Results by age is quite interesting which might suggest a future pattern in which younger respondents are more likely to have started smoking at a younger age than older respondents. This indicates the mean age to start using tobacco has become younger over the years. When examining the average age to start tobacco use by educational status, respondents who reported being illiterate reported that the mean age they started smoking tobacco was 39 (±5 SD) years compared to university graduates and above who started at 23 (±7 SD) years.

Table 4.1 finally shows the mean duration of smoking among the current smokers in Dubai. The mean duration was 11.3 years (±8.1 SD). Surprisingly, this duration was higher in females (13.1 ±11.9 SD), Emiratis (13.1 years ±10.9 SD), and those with primary or preparatory education (18.7 years ±6.2 SD) than males at 10.7 years (±8.6 SD), non-Emiratis (10.9 years ±8.6 SD), and individuals with secondary education (7.8 years ±8.2 SD).

Table 4.1

Percentage distribution of respondents by smoking status and average smoking starting age by demographic characteristics.

Variable	Weighted Prevalence (%)					No. Of Respondents (Unweighted)
	Current Smokers	Never Smoker	Ex-Smoker	Age (In Years) When Started Smoking (Mean ±SD)	Duration Of Smoking In Years (Mean ±SD)	
Age Groups						
18 - 24	24.2	74.7	1.20	21 (±2)	1.8 (±0.9)	205
25 - 44	27.5	68.7	3.70	24 (±8)	9.9 (±7.5)	1369
45 - 59	23.2	74.2	2.60	24 (±7)	19.3 (±6.6)	489
60+	12.1	81.4	6.50	25 (±1)	19.9 (±11.6)	189
Gender						
Females	11.0	86.1	2.90	23 (±5)	13.1 (±11.9)	887
Males	31.0	65.4	3.60	24 (±8)	10.7 (±8.6)	1365
Nationality Group						
Emirati	17.3	78.5	4.20	19 (±4)	12.5 (±11.1)	668
Non-Emirati	26.3	70.4	3.30	24 (±7)	10.9 (±8.6)	1584
Education						
No Formal Education	27.8	70.9	1.30	39 (±5)	16.9 (±13.6)	102
Primary & Preparatory	28.2	70.1	1.80	21 (±7)	18.7 (±6.2)	888
Secondary Completed or Equivalent	28.2	70.2	1.50	24 (±6)	7.8 (±8.2)	206
University and Above	22.2	71.9	5.90	23 (±7)	11.9 (± 8.5)	1056
TOTAL	**25.7**	**70.9**	**3.40**	**24 (±3)**	**11.3 (±8.1)**	**2252**

All the figures in table were weighted as percentage while total number of respondents are unweighted.

Fig 4.1

Percentage distribution of current adult smokers by nationality group and gender, DHHS 2023.

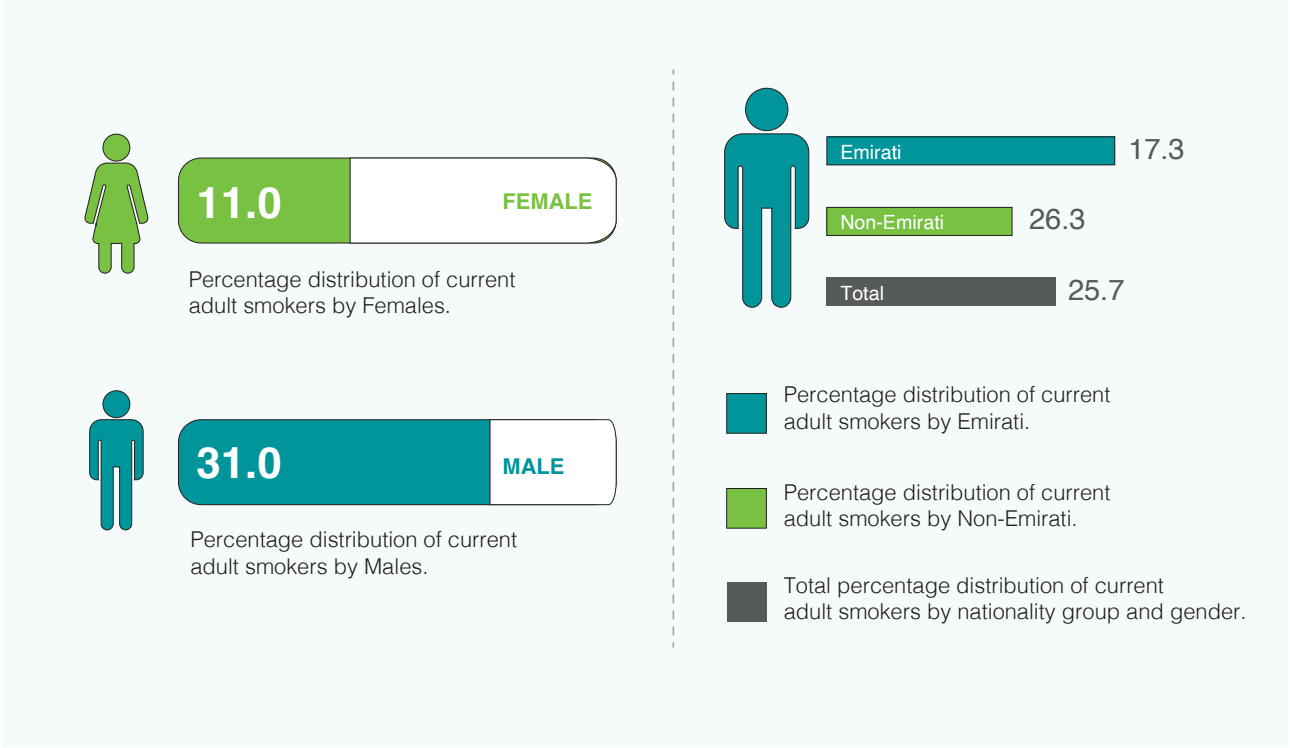


Fig 4.2

Percentage distribution of current adult smokers by age group, DHHS 2023.

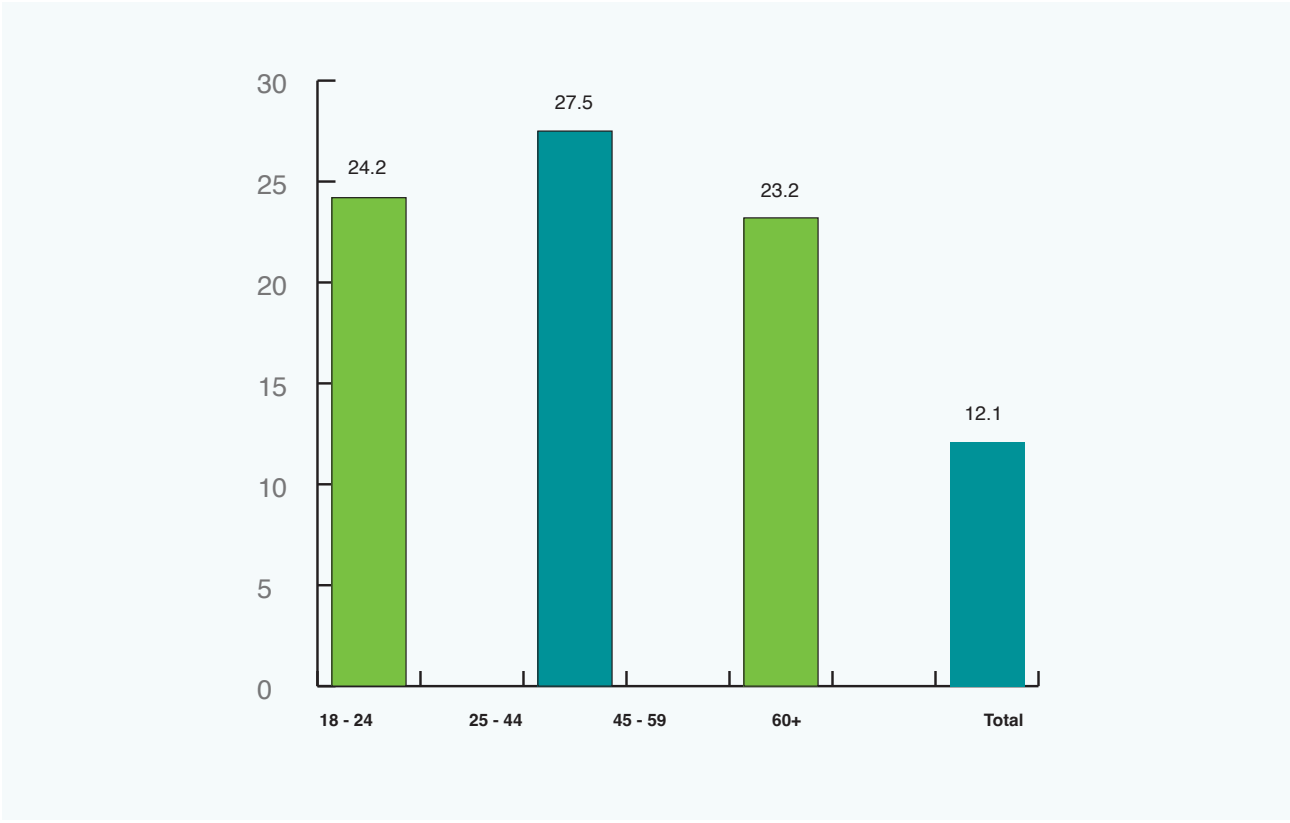
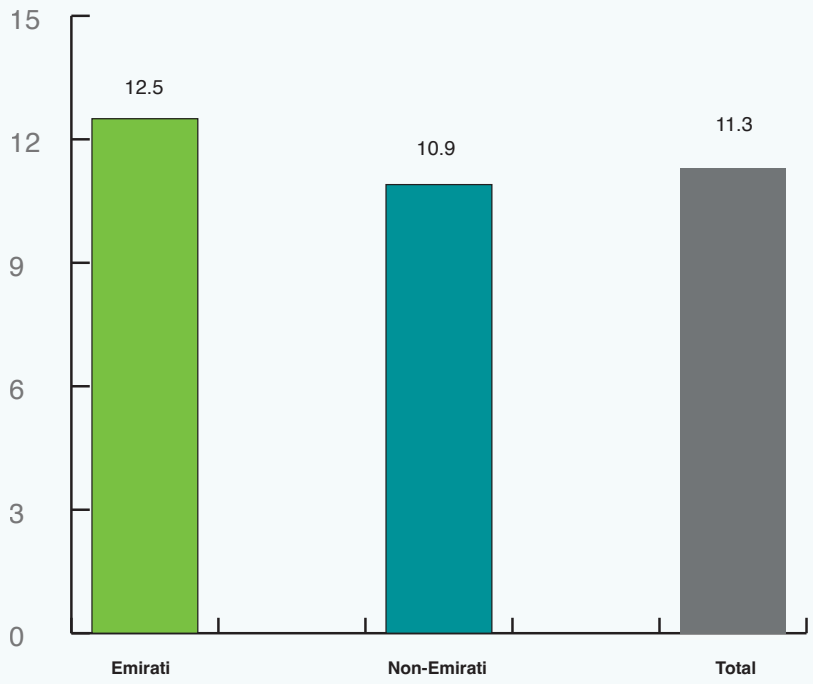


Fig 4.3

Mean years of smoking by adult participants according to nationality group, DHHS 2023.



4.2 Type of Tobacco Used

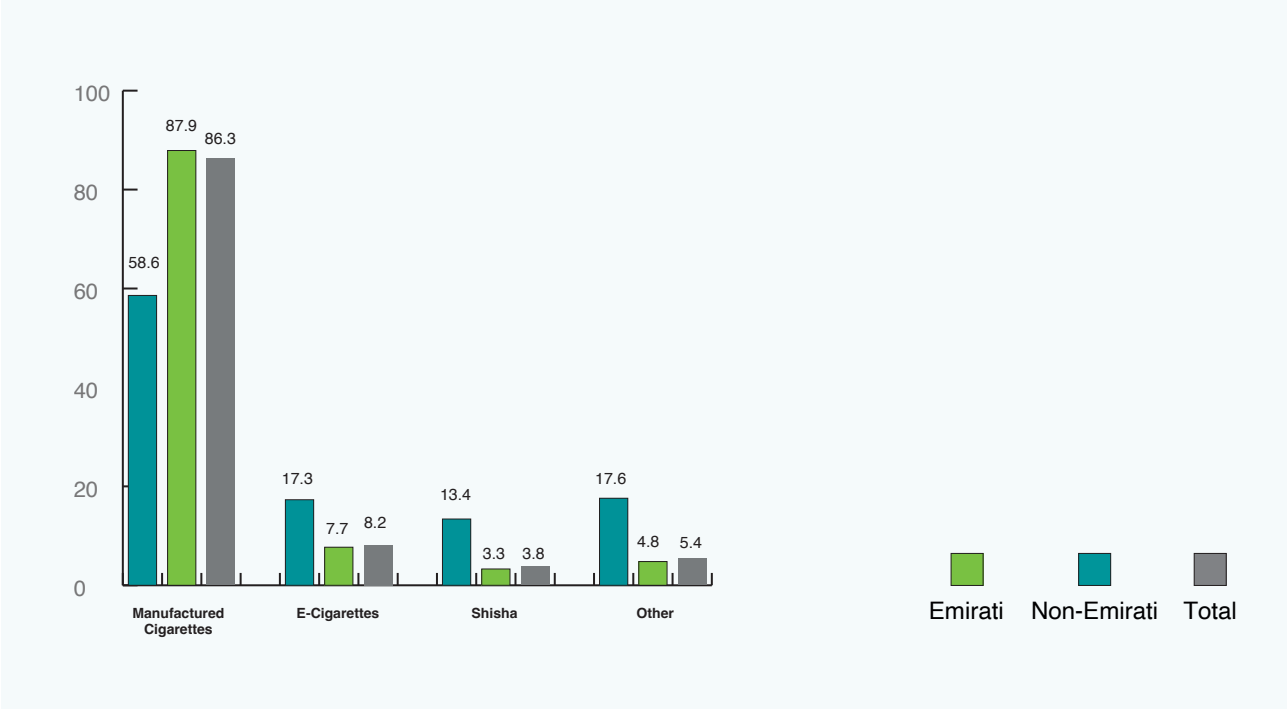
Respondents who reported being current smokers were asked about other tobacco products they used each day/week. Respondents were allowed to choose multiple types of tobacco products. The results illustrated in **Figure 4.4** show that manufactured cigarettes were the most common type of tobacco product used (86%). The results agree with international studies which show that cigarette smoking is the most common form of tobacco use world¬wide, other forms of tobacco products used include pipefuls of tobacco, cigars, and Midwakh. Local names of waterpipe in the Middle East are Narjeeleh, hookah, and shisha. Waterpipe tobacco smoking is increasing globally and is especially prevalent in the Eastern Mediterranean Region. There is evidence of associations between its use and respiratory and cardiovascular disease and cancer (WHO).

Figure 4.4 also shows use of Narjeeleh/Shisha was 3.8% and use of Midwakh was less than 2%, and was not considered one of the main types of tobacco use. Electronic cigarettes or vaping devices use a battery to heat up a liquid mix into an aerosol that users inhale. Studies have found that even e-cigarettes, which are claimed to be nicotine-free, contain trace amounts of nicotine. Additionally, when the e-liquid heats up, more toxic chemicals are formed. **Figure 4.4** shows use of electronic cigarettes and vaping devices was approximately 8%, and was the second most common way to use tobacco.

Figure 4.5 shows that the majority of respondents (97.5%) use only one type of tobacco product per day, almost 2.5% reported using two types of products, with less than 1% of the respondents using more than two types of tobacco products.

Fig 4.4

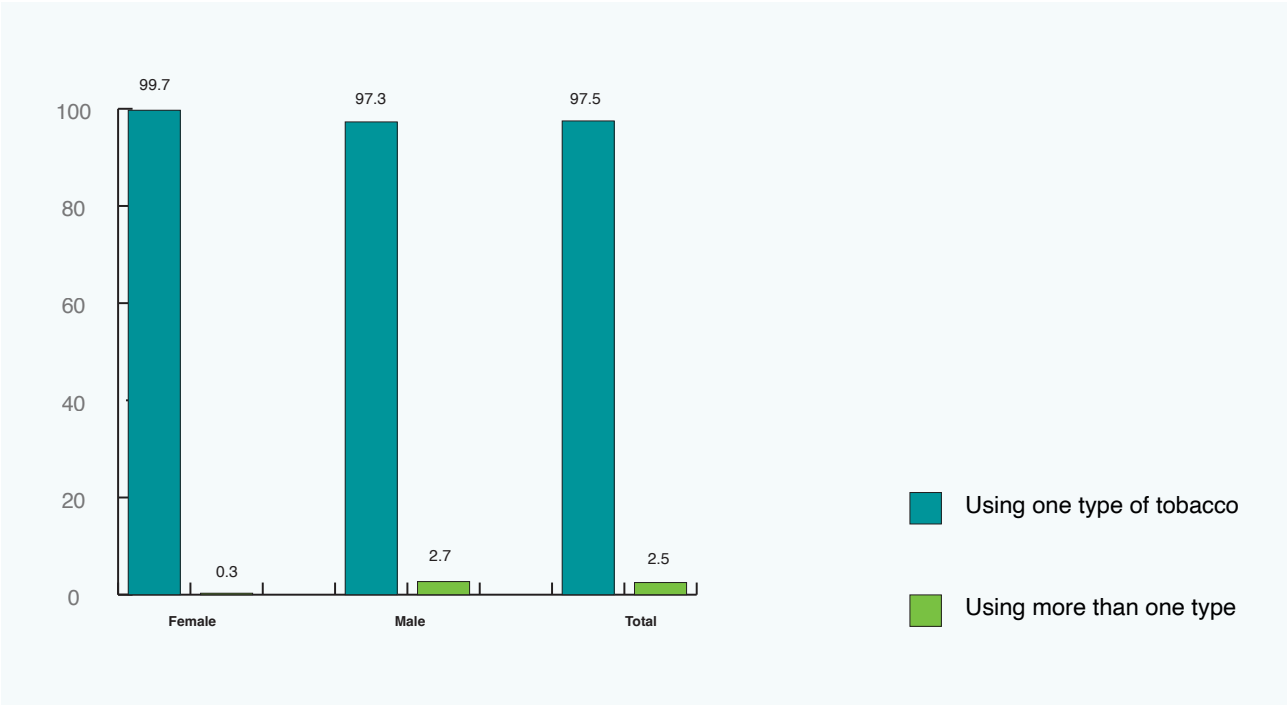
Types of Tobacco products used per day by adult participants according to nationality group, DHHS 2023.



Total exceeds 100 because multiple responses apply.

Fig 4.5

Number of Tobacco product types used per day by adult participants according to gender, DHHS 2023.



4.3 Nutrition (Dietary Habits)

Knowledge of the dietary habits of a population is vital for targeted planning and implementation of nutritional health policies and programs. The adequate consumption of fruits and vegetables is one way to reduce the risk of cardiovascular disease and certain cancers (WHO, 2003). WHO recommends that an adequate intake of fruit and vegetables is five or more servings in a typical day, an intake of less than this amount is classified as insufficient. Five servings should equate to about 400 g of fruit and vegetables (WHO, 2003). Low fruit and vegetable intake are a key risk factor for conditions such as heart disease, cancer, and obesity. Consuming a healthy diet throughout the life course helps to prevent a range of non-communicable diseases (NCDs). However, changing lifestyles has led to a shift in dietary patterns. People are now consuming more foods high in energy, fats, sugars, and salt/sodium, and many people do not eat enough fruits, or vegetables.

Table 4.2 shows the percentage of respondents who reported sufficient and insufficient fruit and vegetable intake. Out of the total respondents, only 21.7% reported eating a sufficient amount of fruit and vegetables on a typical day, with the vast majority (78.3%) of the surveyed population stating that they did not eat five servings per day.

Healthy eating habits are affected by certain demographic factors such as age, gender, nationality and education. When examining fruit and vegetable consumption in different age groups, older age groups were better at eating the recommended amounts of fruits and vegetables compared to younger age groups. Eating a sufficient amount of fruits and vegetable increased with age with the 60+ age range eating the most at 33.2% compared to 19.6% in the 25-44 age range.

In terms of gender, 27.9% of female respondents reported eating sufficient amounts of fruit and vegetables compared to only 19.5% of males **(Figure 4.6).** Studies show that, in general, health-promotion behaviours (such as healthy food habits) are more common among females (Manierre, 2015).

Then examining nationality among respondents **(Figure 4.7)**, there was a small difference in consumption of fruits and vegetables between non-Emiratis (21.9%) and Emiratis (19.7%). When examining sufficient fruit and vegetable intake by levels of education, eating sufficient fruits and vegetables increased with higher educational status. The highest consumption was reported in respondents who described themselves as having university or higher qualifications (27.5%). The lowest was reported by the respondents who had only completed primary & preparatory levels of education (12.7%). The exception was the illiterate category or those who were just able to read and write as they reported higher levels (27.4%) similar to those with university education. This may be due to the fact that this group included senior respondents.

Table 4.2 and **Figures 4.8, 4.9** show the percentage of participants who reported having breakfast by demographics. It reveals that 81.6% of the participants surveyed reported they always/most of the times eat breakfast. The figure also illustrates that a higher percentage of males (85.2%) than females (71.5%) have breakfast. In addition, non-Emiratis were more likely to always/most of the time have breakfast as compared to Emiratis (82% & 75%, respectively). The table also shows that 9.6% of the participants never eat breakfast.

Table 4.4 shows the average number of meals eaten by the participating adults on a daily basis. It illustrates that 63.5% of the participants reported eating three meals per day on most days. Data from the tables also show that three in ten of the surveyed adults (30.7%) had two meals per day, while only 2.6% of them ate one meal per day. **Figure 4.10** displays that more males (67.1%) eat three meals per day than females (53.3%), while **Figure 4.11** displays a higher percentage of non-Emiratis (64.6%) who reported eating three meals a day compared to Emiratis (47.6%).

Table 4.2

Percentage distribution of sufficient intake of fruit and vegetables and sufficient physical activity, according to background characteristics, DHHS, 2023.

Variable	Weighted Prevalence (%)				No. Of Respondents (Unweighted)
	Sufficient Fruits and Vegetables		Sufficient Physical Activity		
	Sufficient	Insufficient	Sufficient	Insufficient	
Age Groups					
18 - 24	21.4	78.6	36.4	63.6	205
25 - 44	19.6	80.4	36.4	63.6	1369
45 - 59	26.6	73.4	34.8	65.2	489
60+	33.2	66.8	53.8	46.2	189
Gender					
Females	27.9	72.1	33.8	66.2	887
Males	19.5	80.5	38.0	62.0	1365
Nationality Group					
Emirati	19.7	80.3	39.0	61.0	668
Non-Emirati	21.9	78.1	36.7	63.3	1584
Education					
No Formal Education	27.4	72.6	15.5	84.5	102
Primary & Preparatory	12.7	87.3	24.3	75.7	888
Secondary Completed or Equivalent	19.3	80.7	38.1	61.9	206
University and Above	27.5	72.5	44.2	55.8	1056
TOTAL	**21.7**	**78.3**	**36.9**	**63.1**	**2252**

**All the figures in table were weighted as percentage while total number of respondents are unweighted.*

Fig 4.6

Percentage distribution of sufficient intake of fruits and vegetables per day by adult participants according to gender, DHHS 2023.

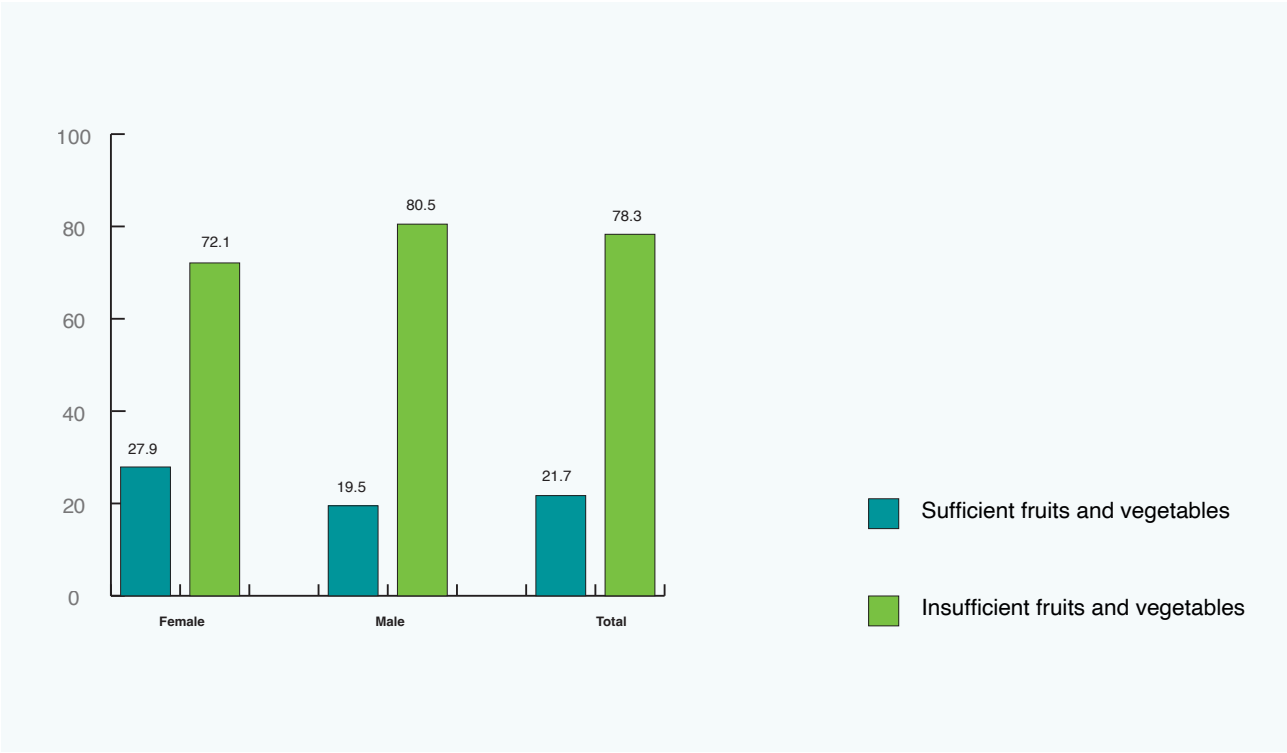


Fig 4.7

Percentage distribution of sufficient intake of fruits and vegetables per day by adult participants according to nationality, DHHS 2023.

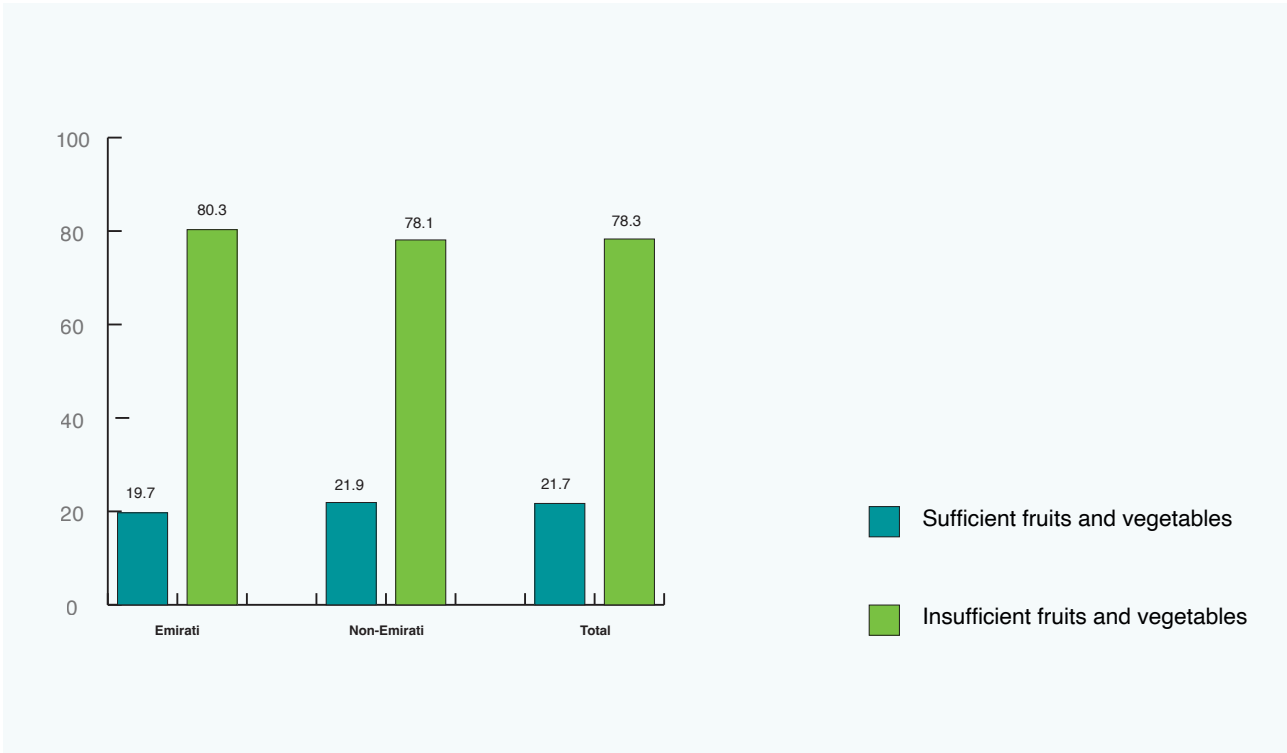


Table 4.3

Percentage distribution of adults having breakfast by frequency and background characteristics, DHHS 2023.

Variable	Weighted Prevalence (%)					No. Of Respondents	Weighted Average
	Never	Rarely	Sometimes	Most of Times	Always		
Age Groups							
18 - 24	11.2	3.7	6.0	15.8	63.3	205	85.3
25 - 44	10.4	4.1	4.7	7.1	73.8	1369	88.2
45 - 59	7.3	4.6	4.7	4.4	79	489	89.7
60+	5.0	0.8	5.6	9.3	79.3	189	91.2
Gender							
Females	11.5	7.5	9.5	9.8	61.7	887	81.3
Males	9.0	2.8	3.1	6.6	78.6	1365	90.9
Nationality Group							
Emirati	12.3	8.0	4.7	15.3	59.7	668	83.4
Non-Emirati	9.4	3.7	4.9	6.9	75.1	1584	88.7
Education							
No Formal Education	5.8	4.6	1.4	11.3	76.9	102	91.6
Primary & Preparatory	8.9	2.5	4.3	5.7	78.6	888	90.4
Secondary Completed or Equivalent	10.0	2.9	2.5	3.9	80.7	206	91.5
University and Above	10.6	5.9	6.4	9.8	67.3	1056	85.2
TOTAL	**9.6**	**4.0**	**4.8**	**7.5**	**74.1**	**2252**	**88.4**

**All the figures in table were weighted as percentage while total number of respondents are unweighted.*

Fig 4.8

Percentage distribution of adult participants having breakfast by frequency and gender, DHHS 2023.

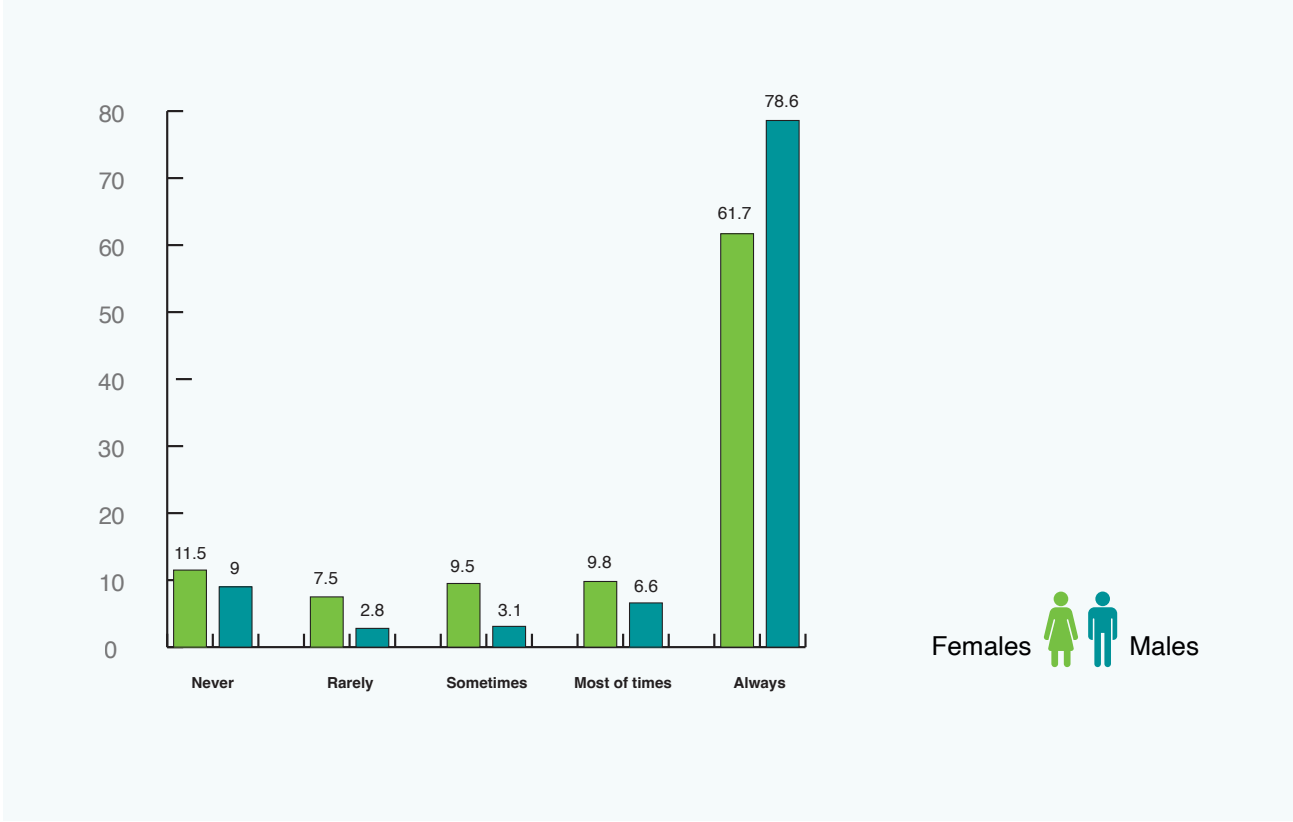


Fig 4.9

Percentage distribution of adult participants having breakfast by frequency and nationality group, DHHS 2023.

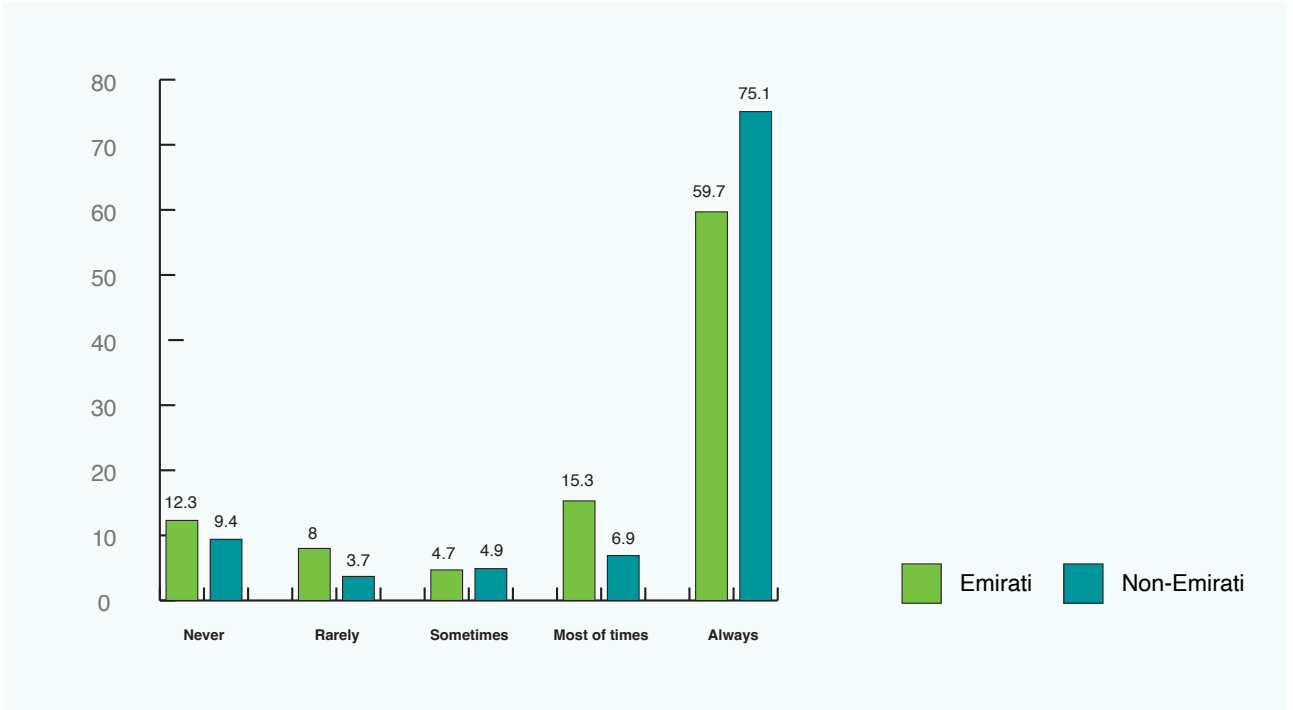


Table 4.4

Average number of meals eaten by participating adults on a daily basis by background characteristics, DHHS 2023.

Variable	Weighted Prevalence (%)				No. Of Respondents
	Number of Meals Per Day				
	More Than 3 Times	Three Times	Two Times	One Time	
Age Groups					
18 - 24	8.4	60.3	29.5	1.8	205
25 - 44	2.8	63.3	31.2	2.7	1369
45 - 59	2.1	64.2	31.5	2.2	489
60+	4	69.7	22.2	4.1	189
Gender					
Females	4.9	53.3	37.9	3.9	887
Males	2.7	67.1	28.1	2.1	1365
Nationality Group					
Emirati	2.8	47.6	43.4	6.2	668
Non-Emirati	3.3	64.6	29.8	2.3	1584
Education					
No Formal Education	0.9	67.5	29.5	2.1	102
Primary & Preparatory	1.8	67	29.8	1.4	888
Secondary Completed or Equivalent	1.9	64.6	31.3	2.3	206
University and Above	5.3	59.1	31.7	3.9	1056
TOTAL	**3.2**	**63.5**	**30.7**	**2.6**	**2252**

**All the figures in table were weighted as percentage while total number of respondents are unweighted.*

Fig 4.10

Average number of meals eaten per day by adult participants by gender, DHHS 2023.

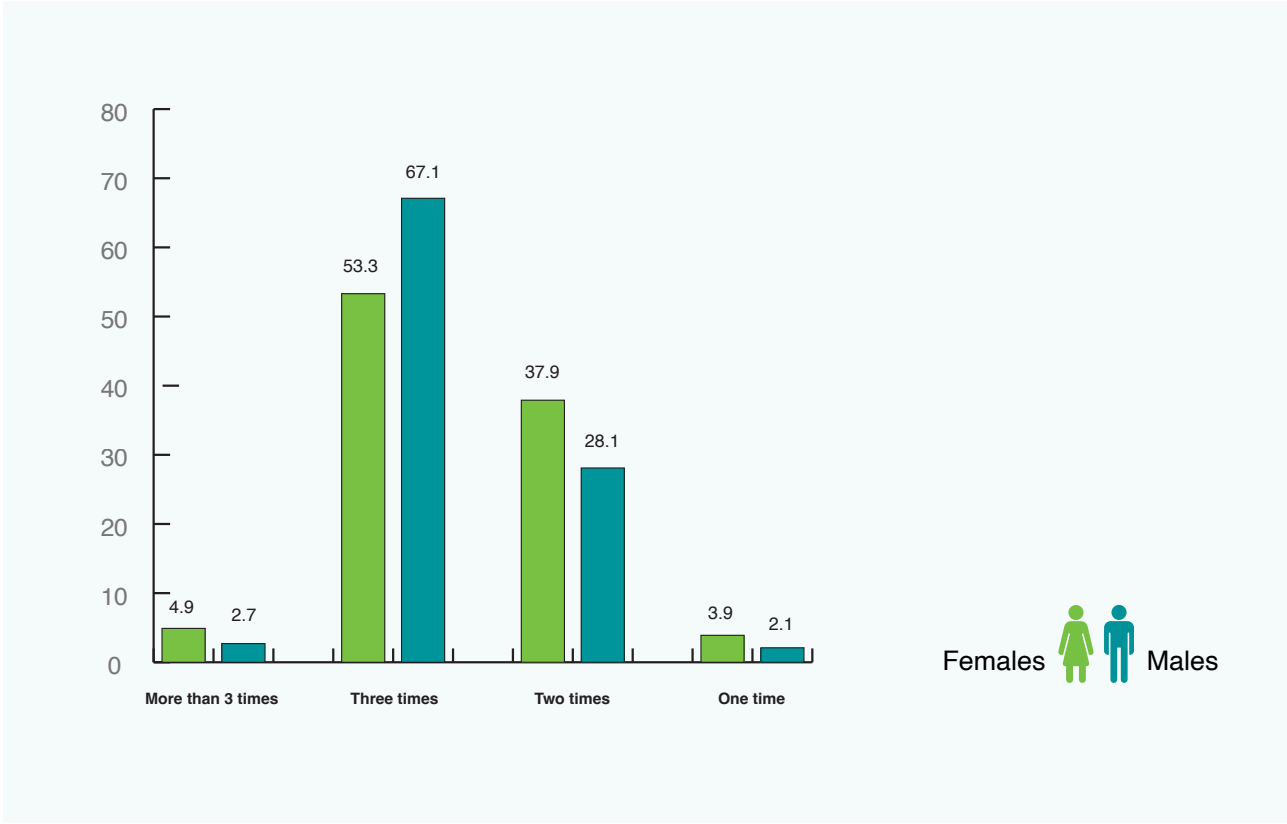
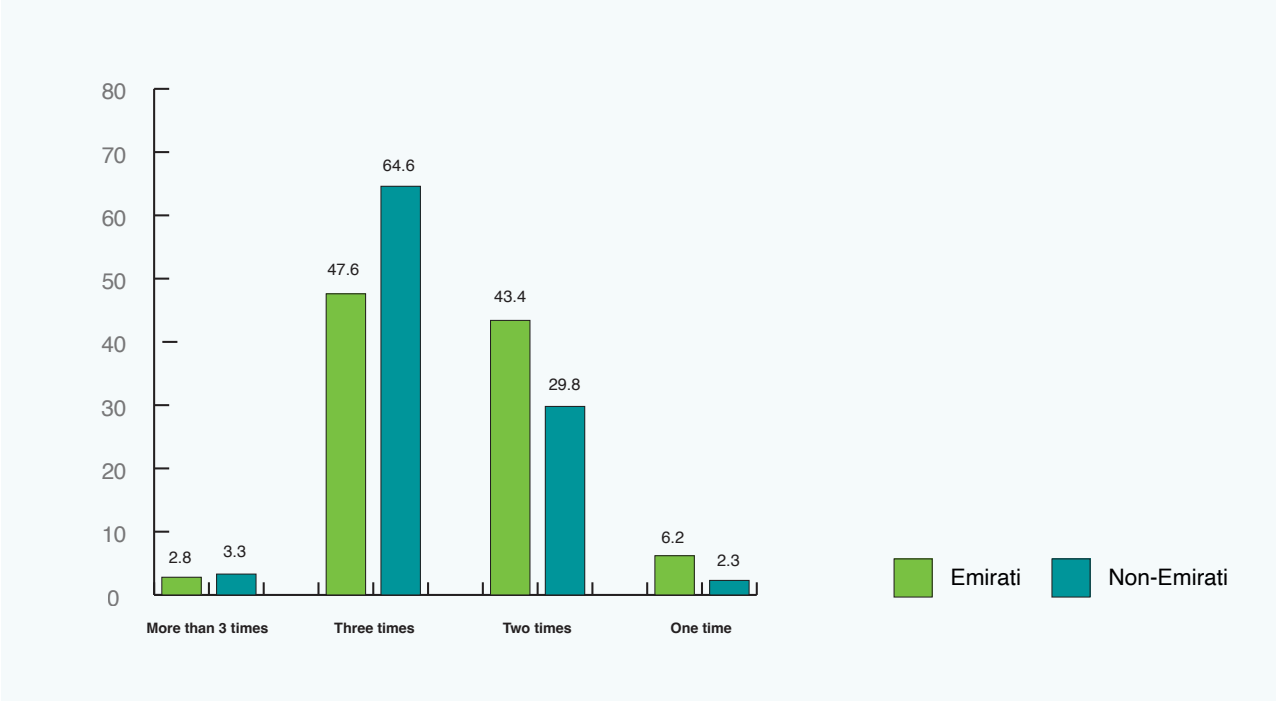


Fig 4.11

Average number of meals eaten by adult participants by nationality group, DHHS 2023.



4.4 Physical Activities

There is compelling evidence that exercise and physical activity contribute to preventing and managing non-communicable diseases such as cardiovascular diseases i.e. ischemic heart disease, strokes, cancer, and type 2 diabetes. Furthermore, there is indisputable evidence of the effectiveness of regular physical activity in the prevention of hypertension, obesity, depression, osteoporosis, and premature death.

Physical inactivity is one of the leading risk factors for non-communicable diseases and mortality worldwide. Insufficiently active people have a 20%–30% increased risk of death compared to people who are sufficiently active (WHO, 2020).[1]

The 2023 DHHS survey investigated the levels of physical activity through structured questions designed specifically to assess physical activity at both work and at home, including vigorous and moderate-intensity exercise. Exercise also includes lifting, cleaning, cooking and washing that cause small or large increases in breathing or heart rate. Furthermore, cycling to and from places for at least 10 minutes is included. The number of days that this exercise is noted, coupled with the length of time that these activities take place for. From this information, the amount of exercise per week was calculated and categorized into sufficient or insufficient, with those reporting more than 150 minutes of exercise a week being classified as sufficient as per the WHO recommendations of at least 30 minutes of regular, moderate-intensity physical effort for at least five days a week, totalling 150 minutes.

Figure 4.12 shows the prevalence percentage of sufficient physical activity according to gender. The prevalence of physical activity levels - people who self-reported that they did sufficient exercise over the course of a typical week - among the general population of Dubai was (36.9%). Results revealed that males (38%) reported higher physical activity levels than females (33.8%). **Figure 4.13** shows the prevalence of physical activity levels among Emirati residents (39%) was higher than the prevalence among non–Emiratis (36.7%).

The survey results illustrate that a higher level of education was associated with a higher amount of physical activity, varying between 15.5% among people who had no formal education to 44.2% among individuals holding a university degree and above.

4.5 Alcohol Consumption

Reducing harmful consumption of alcohol is an integral part of the WHO Global Action Plan for the prevention and control of NCDs 2013–2030. Harmful use of alcohol is considered one of the five key risk factors for the development of non-communicable diseases (NCDs).[2] Despite the intensive and continuous investigation, the level of alcohol consumption remains unclear. Alcohol consumption estimates in public health predominantly rely on self–reported interviewer-administered survey data which is likely to underestimate consumption levels.

In this survey, we collected information on the frequency of alcohol consumed by an individual in the past 12 months. For the sake of analysis, we classified alcohol consumption frequency into two categories:

- Occasional drinkers (those who consume alcoholic drinks on occasions) whose frequency of alcohol consumption is not even once per month.
- Frequent drinkers who had alcoholic drinks either daily/weekly or at least once per month.

It needs to be mentioned that social stigma attached to drinking, if any, might result in under-reporting of alcohol consumption.

1 World. Physical activity [Internet]. Who.int. World Health Organization: WHO; 2024 [cited 2024 Oct 31]. Available from: https://www.who.int/news-room/fact-sheets/detail/physical-activity

Fig 4.12

Percentage distribution of adults performing sufficient physical activity by gender, DHHS 2023.

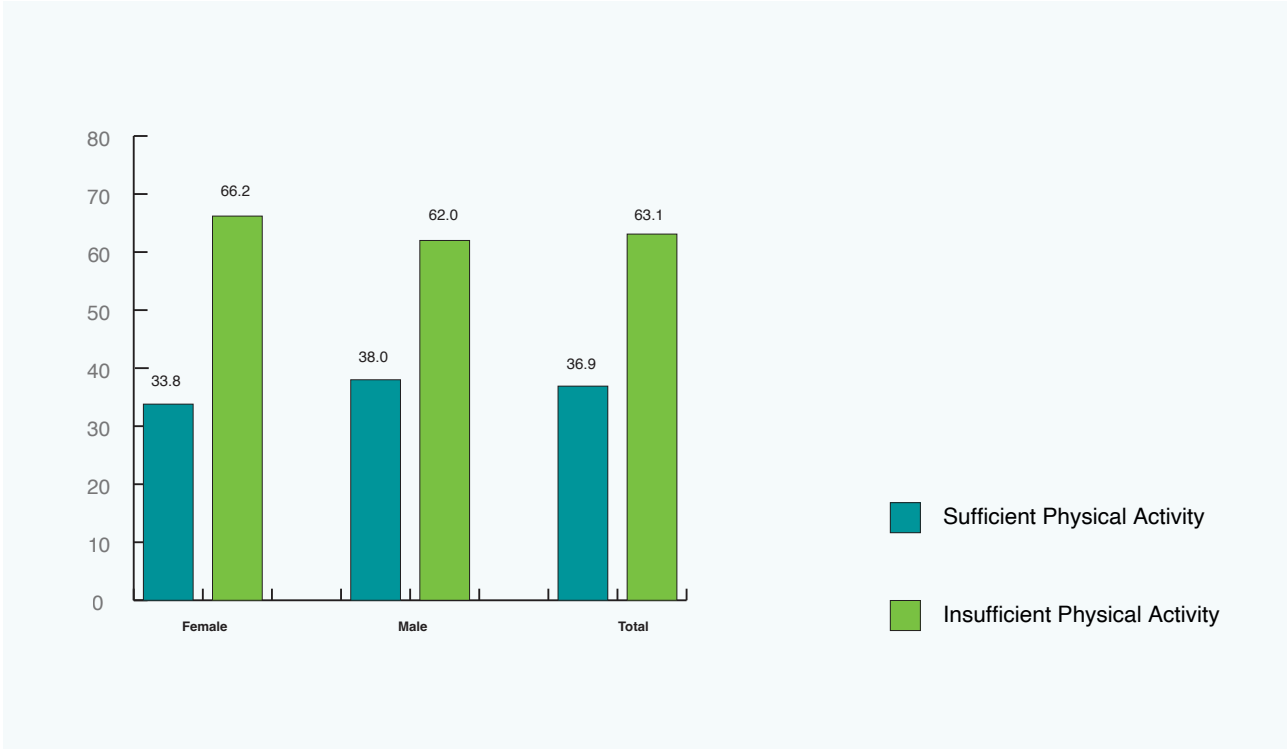
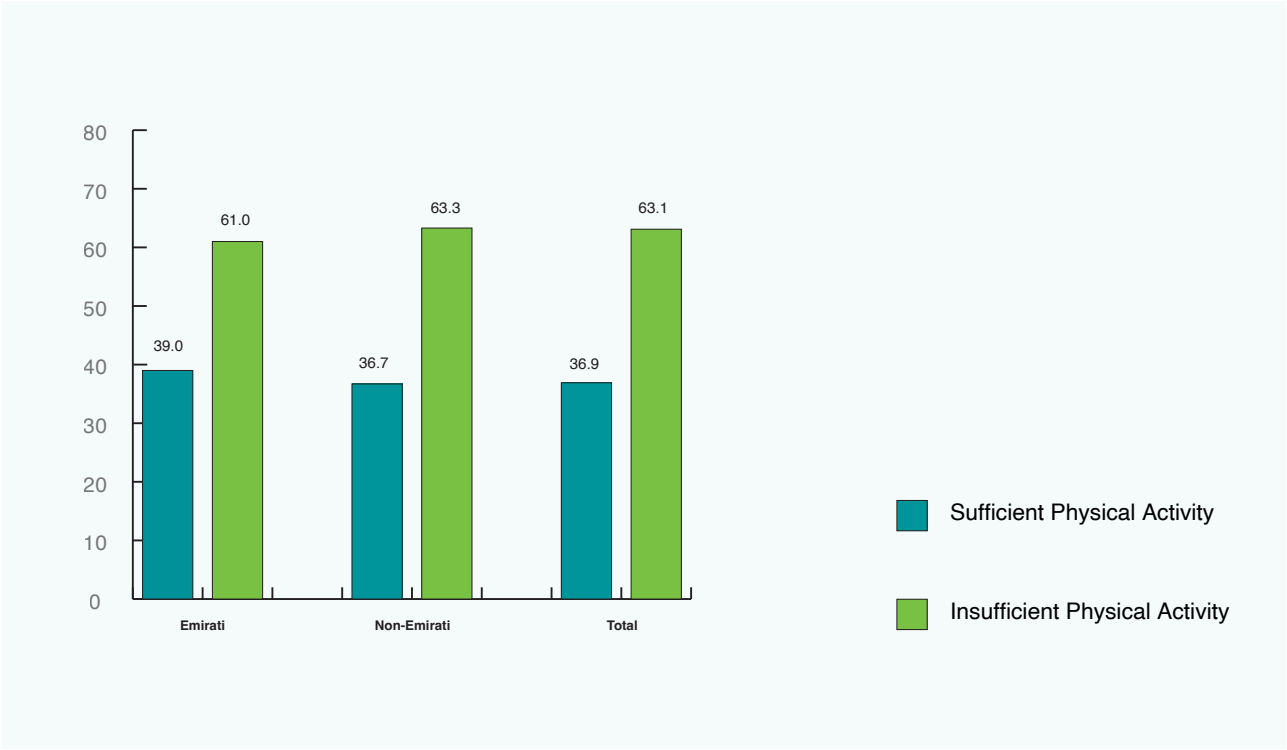


Fig 4.13

Percentage distribution of adults performing sufficient physical activity by nationality group, DHHS 2023.



It needs to be mentioned that social stigma attached to drinking, if any, might result in under-reporting of alcohol consumption.

Table 4.5 provides key information about alcohol consumption and frequent alcohol drinkers among adults in Dubai, DHHS 2023.

Overall, nearly a quarter of respondents (26.7% of adults aged 18 and above) stated that they consumed alcohol in the past 12 months (had one or more drinks of any type of alcoholic beverage). **Figure 4.14** further illustrates the level of alcohol consumption was higher among males (27.6%) compared to females (24%). The prevalence of alcohol consumption among Emiratis (2.1%) was substantially lower than the rate among non-Emiratis (28.4%) – as seen in **Figure 4.15**. Young adults aged 18–24 (15.4%) had a lower prevalence of alcohol consumption than any other age group, while people aged 45–59 had the highest rate of alcohol consumption (28.5%). Surprisingly, the survey results showed that people with more education i.e. holding a university degree and above, had higher levels of alcohol consumption (34.4%) compared to people who have no formal education (15.4%).

A separate investigation was carried out with almost a quarter of the survey participants (26.7%), who ever-consumed alcoholic drinks (at least once in the last one year) and hence are classified as ever-drinkers.

Among the ever-drinkers, 25.9% of respondents were frequent drinkers (either daily, weekly, or monthly). The rate among Emiratis was (1.3%), much lower than non–Emiratis (27.6%). University graduates (33.5%) were the most frequent drinkers than other educational levels. Males were more likely to be frequent drinkers than females (26.6% and 23.3%, respectively). However, the small sample size can have a huge impact on the reliability of statistics and may lead to bias.

2 NCDs [Internet]. Who.int. 2017 [cited 2024 Oct 31]. Available from: https://www.who.int/teams/mental-health-and-substance-use/alcohol-drugs-and-addictive-behaviours/alcohol/governance/ncds

Table 4.5

Percentage distribution of alcohol consumption and frequent alcohol drinkers (daily/weekly/monthly) among them, according to background characteristics, DHHS, 2023.

Variable	Weighted Prevalence (%)			No. Of Respondents
	Drinks Alcohol		Frequent Drinkers (Daily/ Weekly/ Monthly) From Ever - Alcohol Drinkers	
	Never Drinks Alcohol	Ever Drinks Alcohol		
Age Groups				
18 - 24	84.6	15.4	15.2	205
25 - 44	72.1	27.9	27.3	1369
45 - 59	71.5	28.5	27.2	489
60+	76.4	23.6	20.3	189
Gender				
Females	76.0	24.0	23.9	887
Males	72.4	27.6	26.6	1365
Nationality Group				
Emirati	97.9	2.1	1.3	668
Non-Emirati	71.6	28.4	27.6	1584
Education				
No Formal Education	84.3	15.7	15.7	102
Primary & Preparatory	78.9	21.1	20.5	888
Secondary Completed or Equivalent	78.1	21.9	21.0	206
University and Above	65.6	34.4	33.5	1056
TOTAL	**73.3**	**26.7**	**25.9**	**2252**

**All figures in table were weighted as percentage while total number of respondents were unweighted.*

Fig 4.14

Percentage distribution of adults by frequency of alcohol drinking and gender, DHHS 2023.

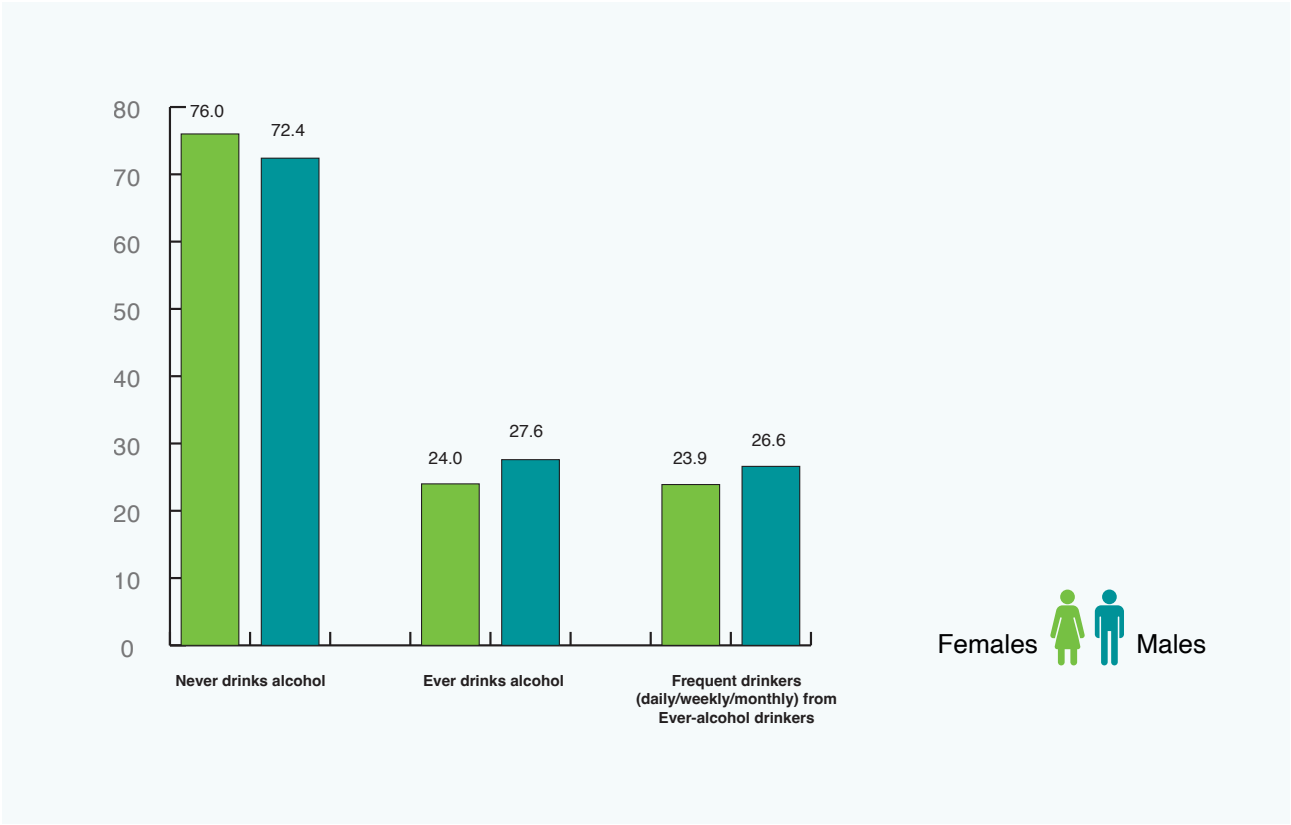
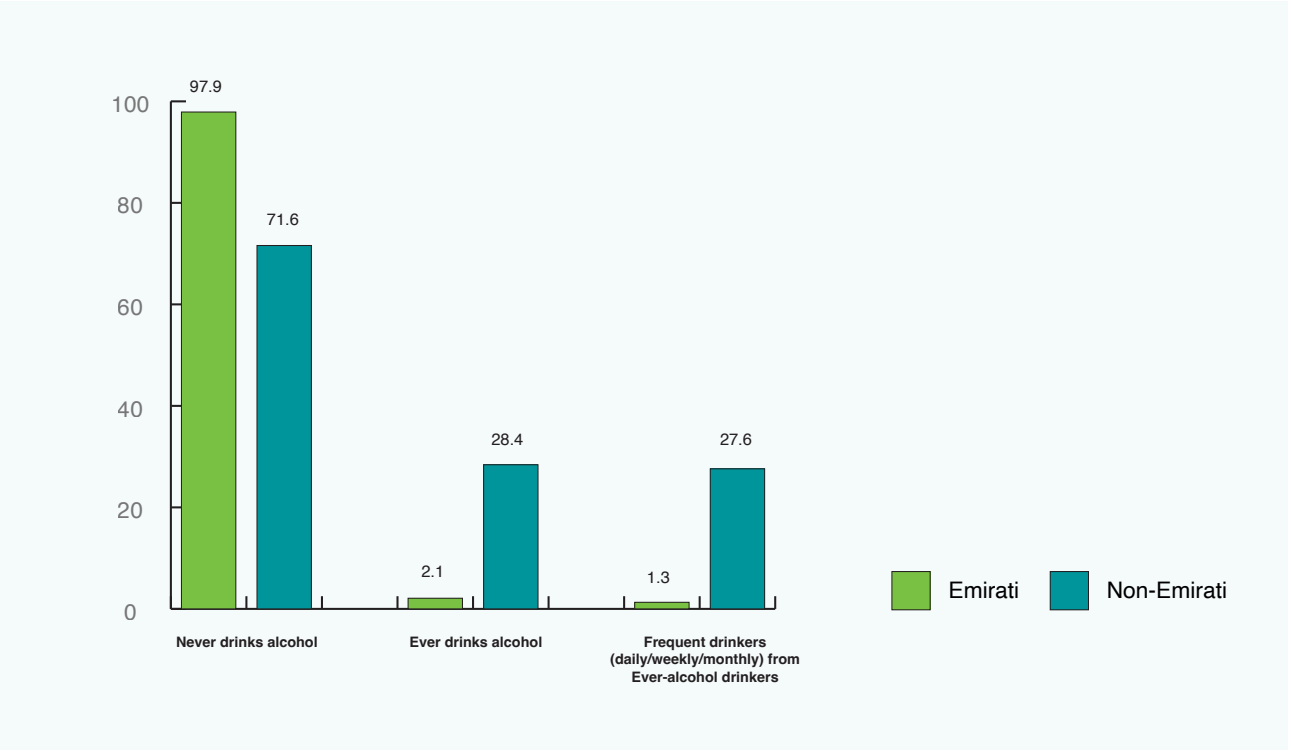


Fig 4.15

Percentage distribution of adults by frequency of alcohol drinking and nationality Group, DHHS 2023.



Chapter

5

Self-Reported Morbidity and Receiving Treatment

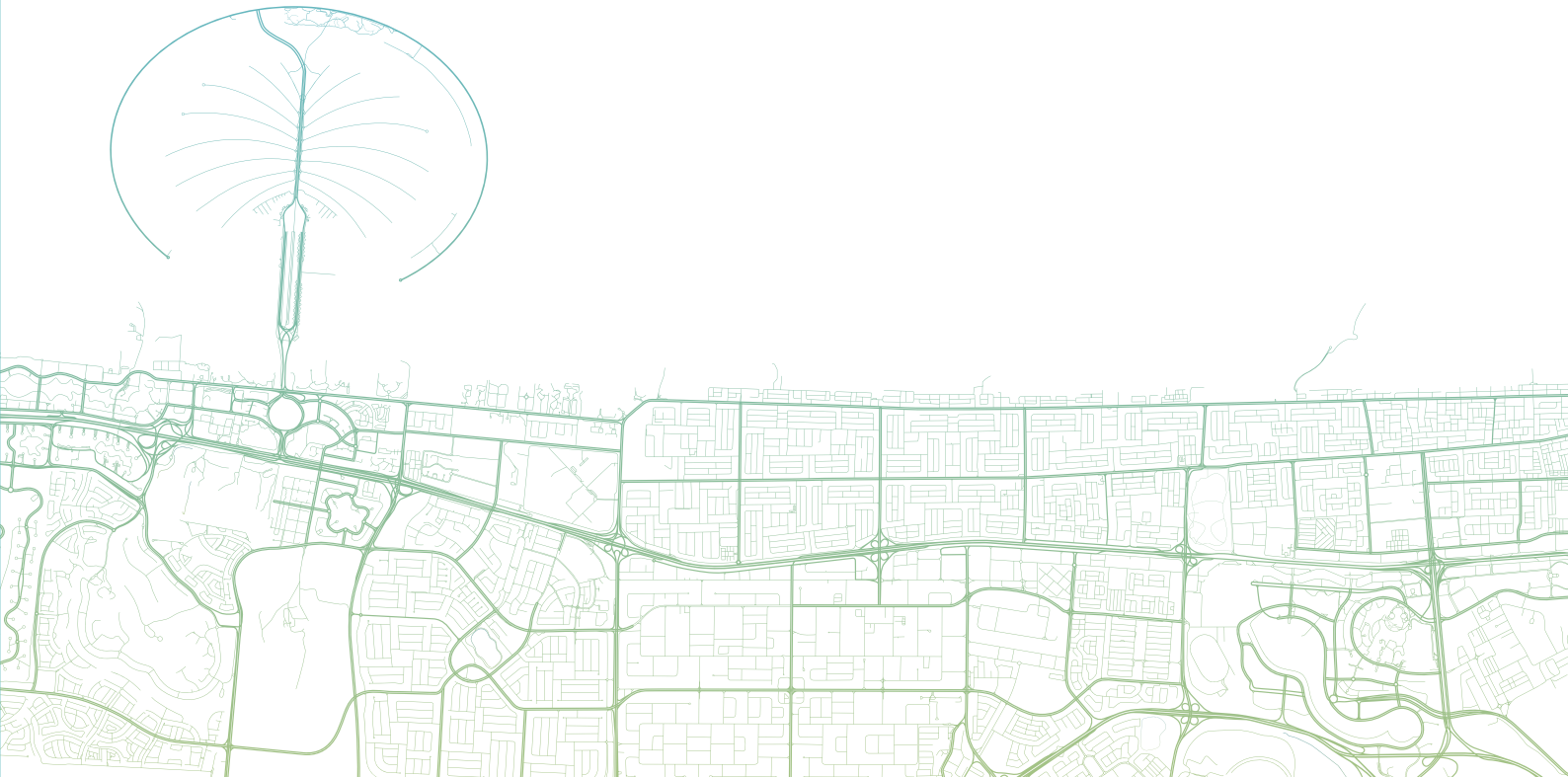
Key Findings

- **Self-Reported Chronic Conditions:**

- The most prevalent chronic conditions reported by the respondents are hypertension (8.9%) and diabetes (7.3%).
- The treatment receiving rates for hypertension and diabetes are 84.9% and 93.1%, respectively.

- **Self-Reported Osteoarthritis, Asthma, and Road Traffic Accident:**

- Osteoarthritis is reported by 1.3% of the population, with 71.2% of them having received treatment for their condition.
- Asthma is reported by 4.8%, with 69.6% of the cases receiving recent treatment.
- Angina is reported by 4.4% of the participants while stroke by 0.4%.
- Treatment received for stroke was the highest among all the self-reported conditions, with 97.5% having received treatment for it, while 51.3% were treated for angina.
- Road traffic accidents were encountered by 1.2% of the participants with no difference by nationality among Emiratis and non-Emiratis.
- More than half of them (57%) reported receiving treatment after accidents.



5.1 Introduction

The morbidity pattern of a population is considered as a proxy measure to understand their health status. Measures of self-reported morbidity are directly linked to the health status of any given population. One of the important critiques of the self-reported measure is the reporting bias. Factors such as levels of education, media exposure and economic status etc. contribute to this self-reported bias. However, the issue of reporting bias is minor compared to the inability to account for the unknown or undiagnosed morbidities. Moreover, in the absence of the availability of adequate information on medically diagnosed morbidity, self-reported morbidity prevalence gives an insight to understand the morbidity profile of the population. It enables the assessment of whether the delivery of healthcare services is reaching those diagnosed with morbidity and whether those diagnosed are actually receiving care to alleviate their illness. Information on effective treatment and critical health interventions is becoming a cornerstone in the assessment of provision of health services.

This chapter therefore summarizes the number of respondents diagnosed requiring specific treatment interventions and the number of respondents actually receiving the care that they were diagnosed for in terms of receiving treatment for their morbidity. The term health receiving treatment is defined as a probability of receiving a health intervention conditional on the healthcare issue diagnosed. Accordingly, this chapter will present data about the prevalence and receiving treatment of certain chronic conditions in adults aged 18 years and above. First, they were asked whether they had been diagnosed with a specific illness. If so, further questions were asked regarding their treatment and whether they were on current medication for the illness, and if they are not on treatment, why they are not receiving treatment? In this chapter, it is worth noting that the sample sizes for certain conditions are small once disaggregated by age. Results in the older age groups could be influenced by the small sample sizes, hence for this chapter, the age grouping will be re-constructed to allow for large age bands. Also, the percentages of chronic conditions presented in this chapter are based on self-reporting by respondents which might not reflect the overall prevalence of the condition among the population.

5.2. Self-Reported Non-communicable Conditions

5.2.1 Cardiac angina, stroke and chest pain:

The prevalence of the diagnosed (percentage of total respondents indicating having received a formal diagnosis of angina, stroke or chest pain) and the prevalence of those receiving treatment (percentage of respondents with a self-reported condition - for angina, stroke or chest pain - indicating that they have received treatment or screening in the last two weeks) is displayed in **Table 5.1.** The percentage of respondents who stated that they had been formally diagnosed as suffering from angina is 4.4% of the population and 51.3% of them reported having received a treatment. This condition has been predominantly observed in Females and Emiratis. In addition, 5.9% of females compared to 3.9% of male respondents indicated having received a diagnosis of angina. The 51.8% of males who self-reported that they suffered from angina indicated that they have received treatment or screening for the condition in the last two weeks.

The percentage of total respondents who have been diagnosed with angina was lower among non-Emiratis (3.9%) compared to Emiratis (11.4%). Overall, the total treatment received for the condition did not exceed 51.3% within any group. As for the difference with age, it was higher among the age groups 60+ (8%) compared with 3.3% among the age group of 45-59 years. The percentage of respondents who stated that they had been formally diagnosed with stroke was 0.4% and 97.5% of them reported having received treatment.

1 *https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases#:~:text=Key%20facts,%2D%20and%20middle%2Dincome%20countries.*

There was no clear difference between male and female respondents having received a diagnosis of stroke. However, there is a variation in treatment received by gender – the percentage of females (95.4%) who received treatment or screening was less than that of males (98.2%). In addition, the percentage of Emiratis who have been diagnosed with stroke was 1.3%, compared to 0.3% in non-Emiratis. Surprisingly, all the non-Emiratis (100%) received treatment compared to Emiratis (89.1%). The percentage of respondents who stated that they had been suffering from unspecified chest pain during the past two weeks was 5.4%.

5.2.2 Diabetes and hypertension:

The figures of those diagnosed for diabetes and hypertension (percentage of total respondents indicating having received a formal diagnosis of diabetes, hypertension) and the rate of those receiving treatment for the same (percentage of respondents with a self-reported condition for diabetes, hypertension - indicating that they have received treatment or screening in the last two weeks) is displayed in **Table 5.2.**

The percentage of respondents who stated that they had been formally diagnosed as suffering from diabetes was 7.3% of the population and the percentage of those receiving treatment from amongst those diagnosed was 93.1%. Self-reported diabetes has been predominantly observed in the older age group (60+ years) where it reached 29.5%, compared to 1.3% in younger age group (18-25 years). Among the surveyed sample, Emiratis were more likely to indicate having received a diagnosis of diabetes at 15.5% compared with 6.8% in non-Emiratis. This percentage was also higher in males (7.8%) than in female respondents (6.4%). The majority of those who self-reported as suffering from diabetes indicated that they had received treatment or screening for the condition in the last two weeks (91.6% and 93.3 % for Emirati and non-Emirati, respectively).

In addition, the percentage of respondents who stated that they had been formally diagnosed as suffering from hypertension was 8.9% of the population and those receiving treatment for hypertension treatment was 84.9% from amongst those diagnosed. The highest number of hypertensive patients was observed among the older age group. While 40.1% of the surveyed older age group (60+) self-reported a diagnosis of hypertension compared with 2.2% for the younger (18-24 years) age group. Almost all those in the older age group (98.7%) who self-reported suffering from hypertension indicated that they had received treatment or screening for the condition in the last two weeks.

Emiratis who mentioned self-reported hypertension also outnumbered non-Emiratis (18.5%, 8.3%, respectively). However, the majority of both mentioned receiving treatment (90.5% and 84.1% for Emirati and non-Emirati, respectively).

Table 5.1

Percentage distribution of participants by self-reported non-communicable conditions (angina, stroke, and chest pain) according to background characteristics, DHHS 2023.

Variable	Angina		Stroke		Chest Pain		No. of Respondents
	Diagnosed*	Receiving Treatment^	Diagnosed*	Receiving Treatment^	Diagnosed*	Receiving Treatment^	
Age Groups							
18 - 24	5.2	40.6	0.0	0.0	6.0	35.0	205
25 - 44	4.4	38.6	0.1	100.0	5.3	31.8	1369
45 - 59	3.3	96.0	0.7	100.0	4.1	76.4	489
60+	8.0	89.1	3.4	93.8	10.7	66.5	189
Gender							
Females	5.9	50.5	0.3	95.4	7.0	42.3	887
Males	3.9	51.8	0.4	98.2	4.8	41.7	1365
Nationality Group							
Emirati	11.4	76.4	1.3	89.1	14.4	60.4	668
Non-Emirati	3.9	46.2	0.3	100.0	4.8	38.0	1584
Education							
No Formal Education	6.8	69.8	0.7	87.3	7.2	65.5	102
Primary & Preparatory	5.3	51.4	0.1	91.2	6.3	43.7	888
Secondary Completed or Equivalent	7.1	34.3	0.8	100.0	9.3	26.0	206
University and Above	2.5	57.2	0.5	100.0	3.3	44.5	1056
TOTAL	**4.4**	**51.3**	**0.4**	**97.5**	**5.4**	**41.9**	**2252**

** Percentage of total respondents indicating having received a formal diagnosis of Angina, Stroke, and chest pain*

^ Percentage of respondents with a self-reported condition - for angina, stroke, and chest pain - indicating that they had received treatment or screening in the last two weeks.

#All the figures in table were weighted as percentages, while the total number of respondents are unweighted.

Fig 5.1

Percentage distribution of self-reported NCDs (angina, stroke and chest pain) according to gender, DHHS 2023

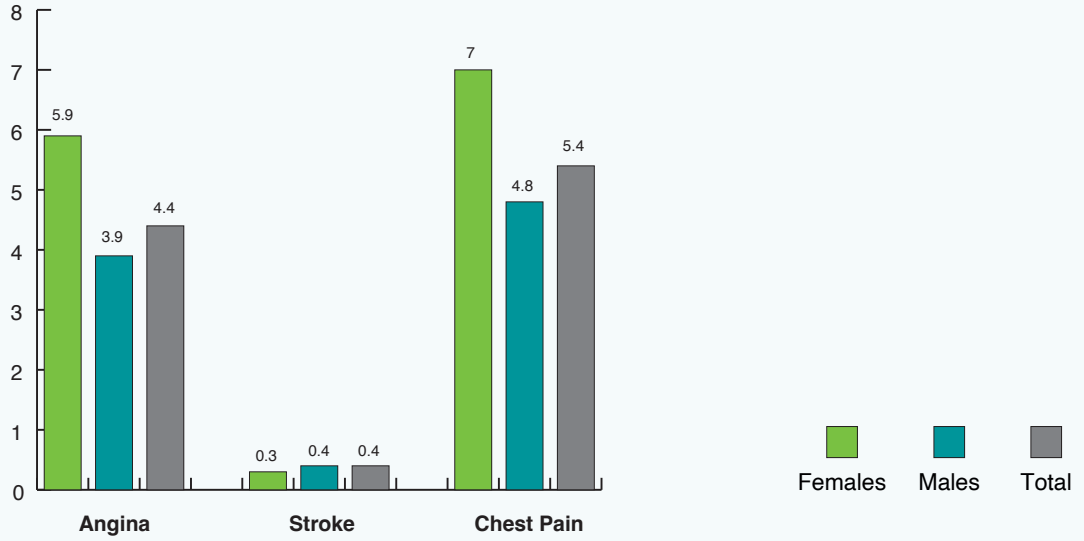


Fig 5.2

Percentage distribution of self-reported NCDs (angina, stroke and chest pain) according to nationality group, DHHS 2023

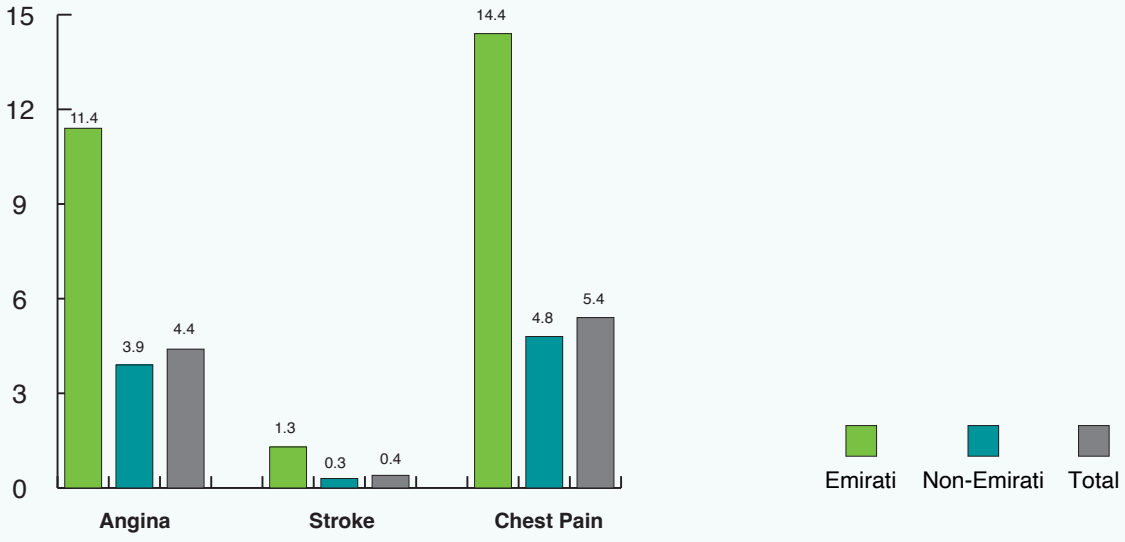


Table 5.2

Percentage distribution of participants by self-reported non-communicable conditions (diabetes & hypertension) according to background characteristics, DHHS 2023.

Variable	Diabetes		Hypertension		No. Of Respondents
	Diagnosed*	Receiving Treatment^	Diagnosed*	Receiving Treatment^	
Age Groups					
18 - 24	1.3	93.0	2.2	100.0	205
25 - 44	3.6	90.4	4.6	72.3	1369
45 - 59	14.0	93.3	19.5	88.0	489
60+	29.5	96.8	40.1	98.7	189
Gender					
Females	6.4	91.2	7.7	93.4	887
Males	7.8	93.6	9.4	82.4	1365
Nationality Group					
Emirati	15.5	91.6	18.5	90.5	668
Non-Emirati	6.8	93.3	8.3	84.1	1584
Education					
No Formal Education	15.6	96.4	9.1	100.0	102
Primary & Preparatory	8.0	90.6	8.7	80.5	888
Secondary Completed or Equivalent	7.2	93.6	9.9	73.6	206
University and Above	6.2	96.2	8.2	91.8	1056
TOTAL	**7.3**	**93.1**	**8.9**	**84.9**	**2252**

** Percentage of total respondents indicating having received a formal diagnosis of diabetes or hypertension*

^ Percentage of respondents with a self-reported condition - for diabetes or hypertension - indicating that they have received treatment or screening in the last two weeks.

#All the figures in table were weighted as percentage while total number of respondents are unweighted.

Fig 5.3

Distribution of self-reported NCDs (diabetes, and hypertension) according to gender, DHHS 2023.

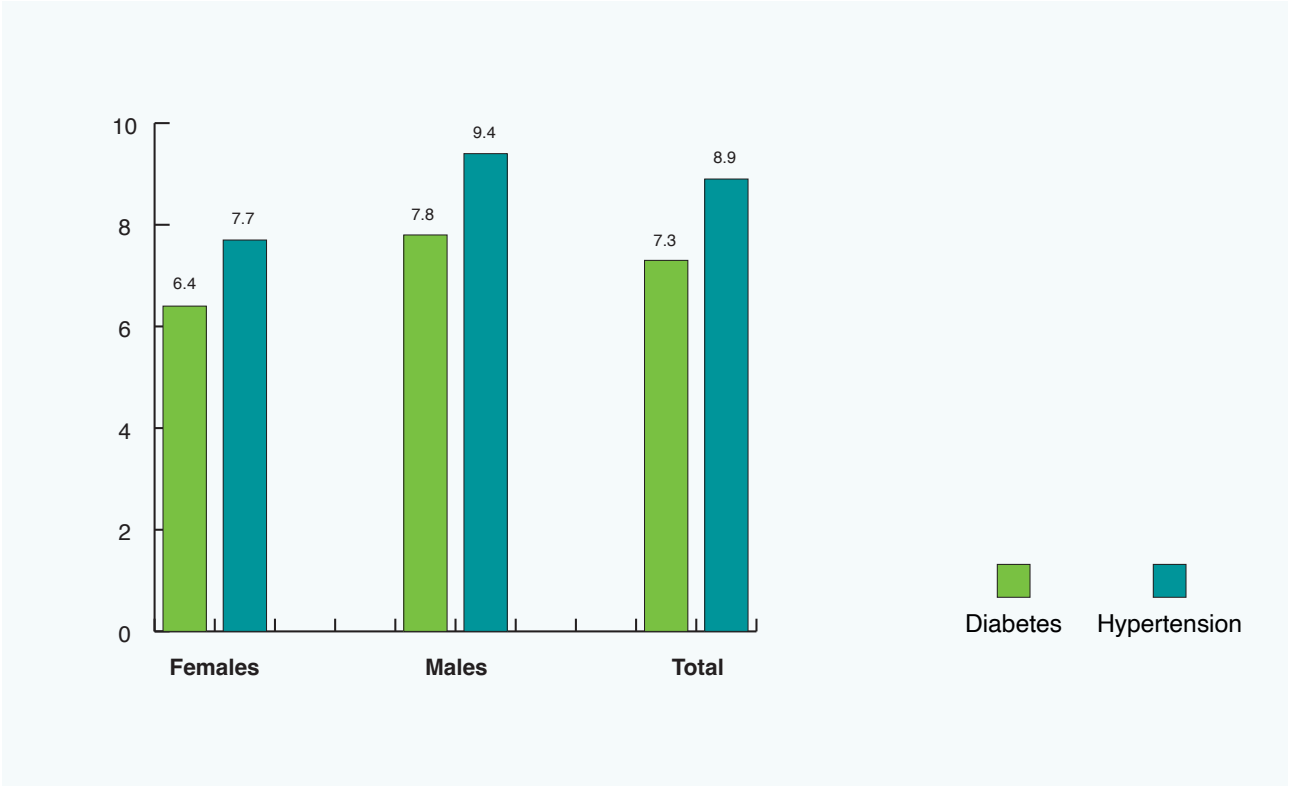
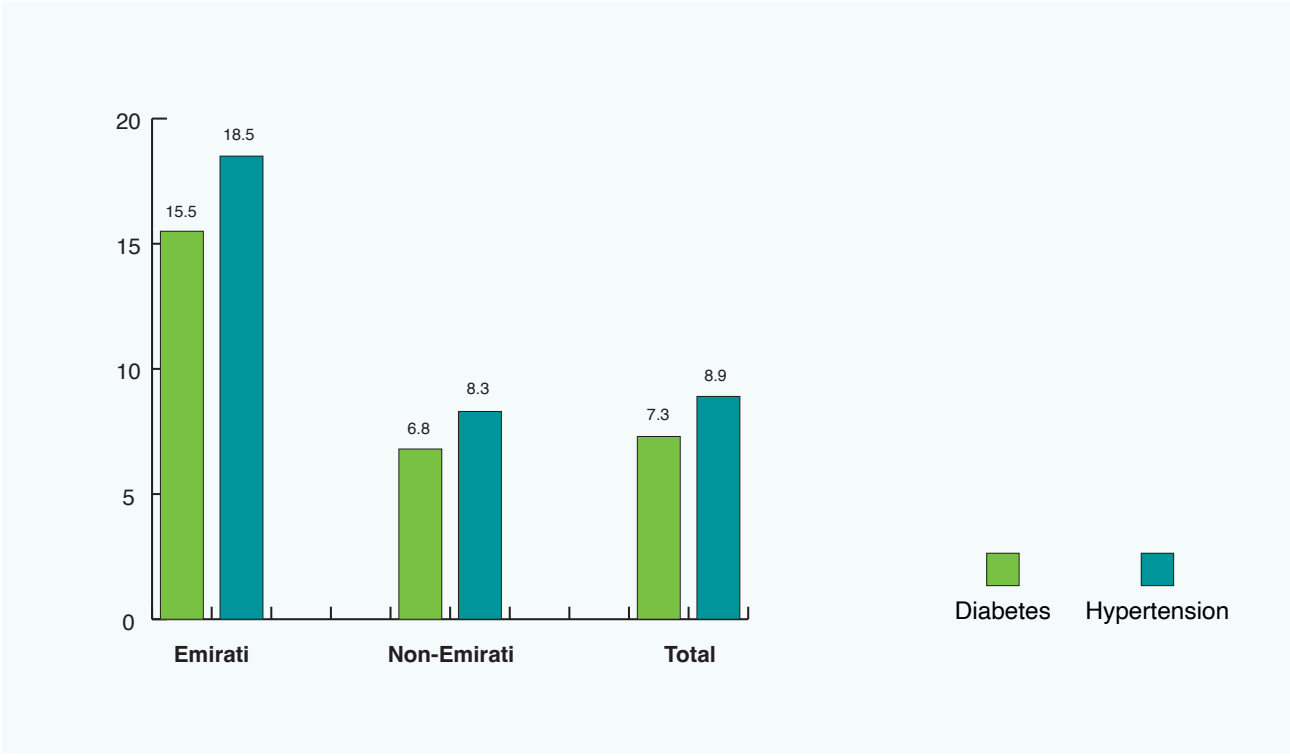


Fig 5.4

Percentage distribution of self-reported NCDs (diabetes, and hypertension) according to nationality, DHHS 2023.



5.3 Self-reported Osteoarthritis, Asthma and Road Traffic Accidents

The percentage of total respondents indicating having received a formal diagnosis of osteoarthritis, asthma and road traffic accidents and the percentage of respondents with a self-reported condition of osteoarthritis, asthma and road traffic accidents indicating that they have received treatment or screening in the last two weeks are displayed in **Table 5.3.**

The percentage of people who reported having osteoarthritis was only 1.3 %, and 71.2% of them reported receiving treatment for the condition. Among the Emiratis surveyed, 6% self-reported suffering from osteoarthritis, greatly outnumbering the reported cases amongst non-Emiratis (0.9%). The condition was more likely to be reported by females than males (2.9% vs. 0.7%, respectively). There was no difference detected between age groups for osteoarthritis except for the oldest age group (60+ years) which showed the highest reported prevalence of 7.8%.

The percentage of those who were diagnosed with asthma was 4.8%, of which those who received treatment was 69.6%. The reported prevalence of asthma was higher among Emiratis (10.3%) compared to non-Emiratis (4.4%) and higher among females (6.8%) than males (4.1%). The percentage of adults (25-44 years) who met with a road traffic accident was 1.2%, and 53.3% of them reported receiving treatment for the condition. The distribution of respondents who reported having road traffic accidents differed between different population groups. It was reported more by males than females (1.4% vs. 0.6%), and it was equal among Emiratis (1.2%) and non-Emiratis. The highest incidence of road accidents was reported (3.3%) by the 18-24 years age group.

Table 5.3

Percentage distribution of self-reported osteoarthritis, asthma and road traffic accidents according to background characteristics, DHHS 2023.

Variable	Osteoarthritis		Asthma		Road Traffic Accidents		No. Of Respondents
	Diagnosed*	Receiving Treatment^	Diagnosed*	Receiving Treatment^	Reported*	Receiving Treatment^	
Age Groups							
18 - 24	0.6	18.4	3.1	31.3	3.3	62.2	205
25 - 44	0.8	70.2	5.5	84.8	1.2	53.3	1369
45 - 59	1.6	88.9	4.0	43.3	0.2	74.5	489
60+	7.8	64.8	1.7	75.6	0.4	100	189
Gender							
Females	2.9	76.5	6.8	45.6	0.6	52.3	887
Males	0.7	62.6	4.1	92.1	1.4	57.8	1365
Nationality Group							
Emirati	6.0	91.9	10.3	74.9	1.2	45.3	668
Non-Emirati	0.9	61.6	4.4	68.1	1.2	57.9	1584
Education							
No Formal Education	5.1	96.5	3.0	78.3	2.1	100	102
Primary & Preparatory	1.0	79.5	4.9	92.6	0.9	27.4	888
Secondary Completed or Equivalent	0.3	100.0	4.3	76.4	3.8	74	206
University and Above	1.3	52.6	5.1	50.4	0.8	57.7	1056
TOTAL	**1.3**	**71.2**	**4.8**	**69.6**	**1.2**	**57**	**2252**

** Percentage of total respondents indicating having received a formal diagnosis / report of osteoarthritis, asthma and road traffic accidents*

^ Percentage of respondents with a self-reported condition - for osteoarthritis, asthma and road traffic accidents - indicating that they have received treatment or screening in the last two weeks.

**All the figures in table were weighted as a percentage while the total number of respondents are unweighted.*

Fig 5.5

Percentage distribution of self-reported osteoarthritis, asthma and road traffic accidents by gender, DHHS 2023.

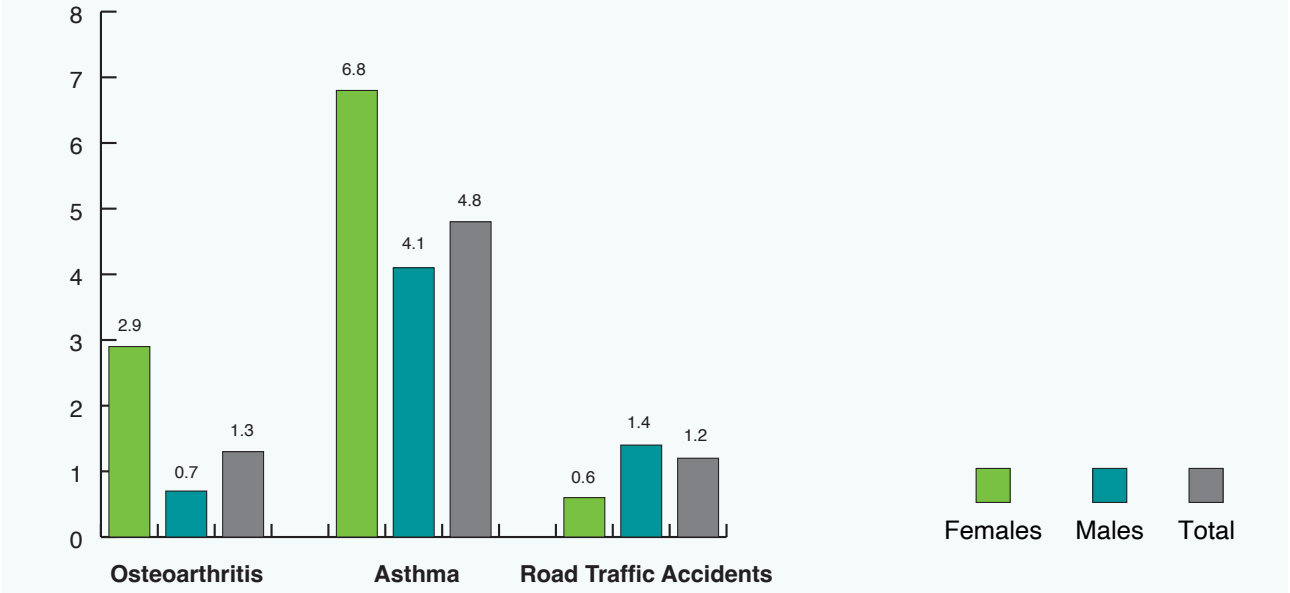
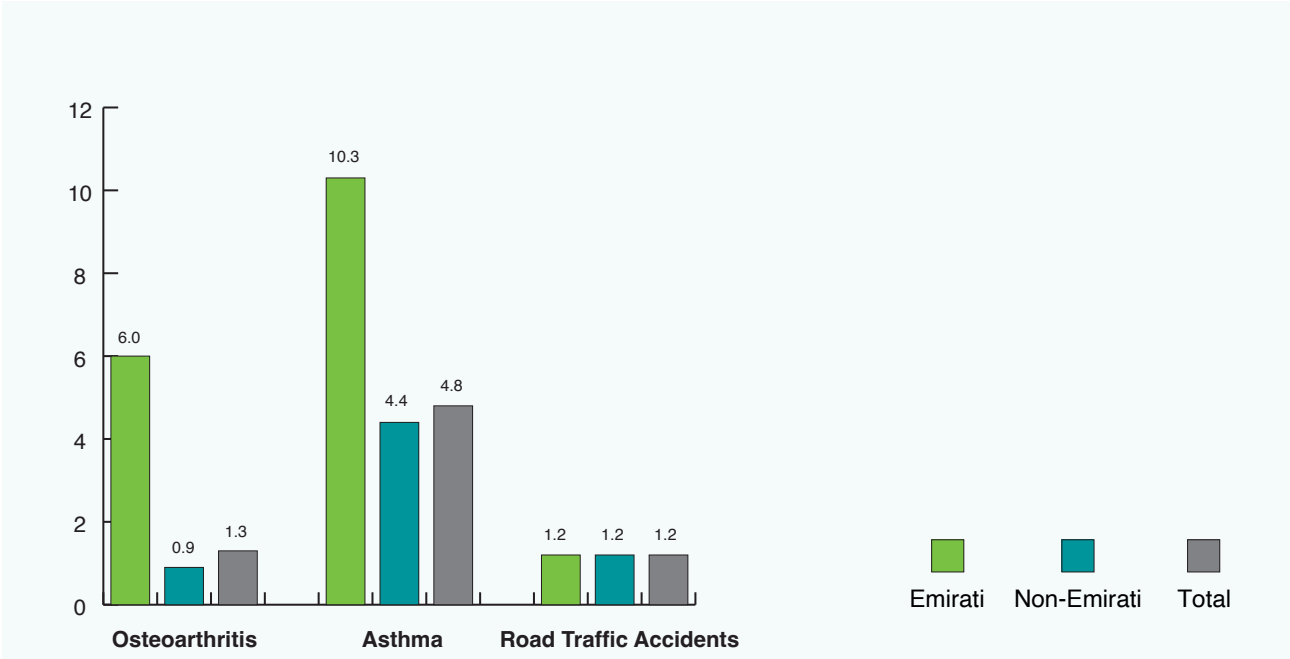


Fig 5.6

Percentage distribution of self-reported osteoarthritis, asthma and road traffic accidents by nationality group, DHHS 2023.



Chapter

6

Reported General Health Status Rating and Disability

Key Findings

- **General Health Rating:**

- 52.1% of respondents reported their health status to be very good, 41.7% as good and 5.4% reported having average health.
- Less than 1% of respondents reported having poor health.

- **General Health Score:**

- The overall health score is 89%.
- When analysed by gender, it is higher in males (89.5%) as compared to females (87.6%).

- **Disability Prevalence:**

- The total prevalence of disability among the Dubai population surveyed was 0.6%.
- Within the population groups, this percentage was higher among Emiratis (2.8%) as compared to non-Emiratis (0.4%).

6.1 General Health Rating

The DHHS 2023 assessed participants in eight health domains, and the overall general health rating was calculated based on findings across all these domains. Items related to each domain were assembled together into a composite scale and were subsumed under two questions for the purpose of gathering information pertaining to all domains. Respondents were asked to rate the extent of difficulty that they had with each aspect of health on a 5-point scale (very bad, bad, average, good, and very good). The rating was obtained for the 30-day period prior to the survey.

Table 6.1 reveals the general health rating of the adult participants in DHHS 2023. Respondents were asked to rate their health on the day of the interview, ranging from very good to bad. **Table 6.1** also presents the percentage distribution of participants according to their general health status ratings, categorized by selected demographic characteristics such as age, gender, nationality, and education. The majority of the respondents rated their health as either good or very good (93.8%), with 52.1% and 41.7% of participants falling in these two categories respectively. Males were much more likely to rate their health as good or very good compared to females, with 94.9% males in the top two categories, compared with 90.8% of females. Non-Emirati respondents were also more likely to rate their health as good or very good (94.1%) than Emiratis (89.5%).As expected, there is a relationship between age and self-rated health status, with the highest percentage of those who said their health was very good in the youngest age groups (96.3%), and the lowest in the older age groups (87.0%).

Figures 6.1 and 6.2 show the distribution of the general health rating by gender and nationality. It reveals that 93.9% of the surveyed population rated their health as good or very good. The average total health status index was 89%, with the highest status score reported by participants in the age group 18- 24 years (92.5%).

Table 6.1

Percentage distribution of participants by their rated general health status, according to background characteristics, DHHS, 2023.

Variable	Weighted Prevalence (%)					Health Status Score (%)	No. Of Respondents
	Very Good	Good	Average	Bad	Very Bad		
Age Groups							
18 - 24	66.3	30.0	3.6	0.1	0.0	92.5	205
25 - 44	50.7	43.1	5.4	0.7	0.1	88.7	1369
45 - 59	51.2	42.9	5	0.8	0.1	88.9	489
60+	45.1	41.9	12.6	0	0.4	86.2	189
Gender							
Females	47.9	42.9	8.6	0.5	0.1	87.6	887
Males	53.6	41.3	4.3	0.7	0.1	89.5	1365
Nationality Group							
Emirati	59.8	29.7	9.3	0.8	0.4	89.6	668
Non-Emirati	51.5	42.6	5.2	0.7	0	89.0	1584
Education							
No Formal Education	43.4	47.9	7.9	0.4	0.4	86.7	102
Primary & Preparatory	49.3	45.7	4.4	0.6	0	88.7	888
Secondary Completed or Equivalent	64.7	31.7	3.5	0.1	0.0	92.2	206
University and Above	52.5	39.7	6.9	0.8	0.1	88.8	1056
TOTAL	**52.1**	**41.7**	**5.4**	**0.7**	**0.1**	**89.0**	**2252**

**All the figures in table were weighted as percentage while total number of respondents are unweighted.*

Fig 6.1

Percentage distribition of health status among adult particpants by gender, DHHS 2023.

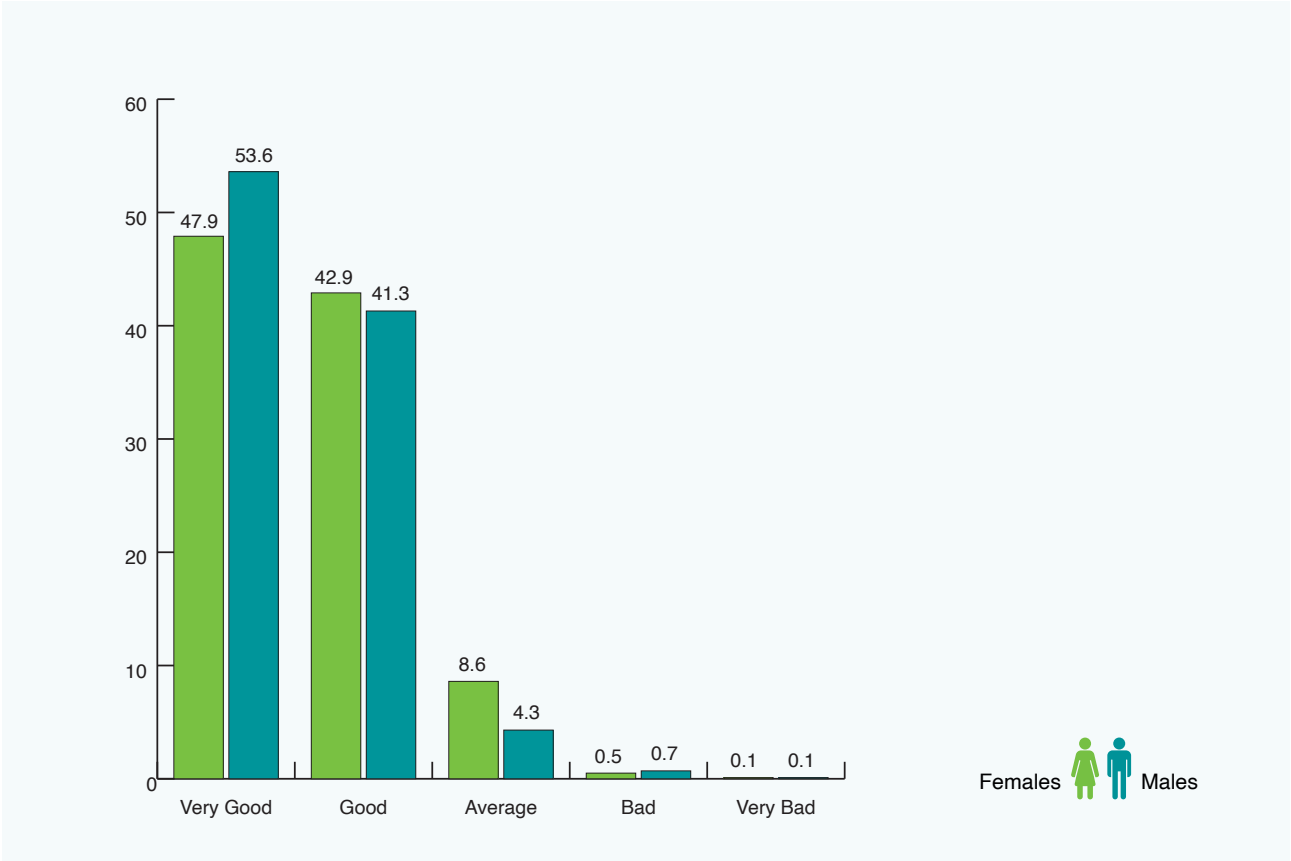


Fig 6.2

Percentage distribition of health status among adult particpants by nationality, DHHS 2023.

6.2 Functional Disability Status

The Dubai Household Health Survey (DHSS) shows the following findings concerning disability disorders among the population of Dubai in 2023.

Disability was assessed using the measures developed by the Washington Group on Disability Statistics (WG). The respondents were asked to rate the extent of difficulty they had across six domains including senses and activities. The questions include difficulties in seeing, hearing, walking or climbing stairs, remembering or concentrating, self-care, and communication.

1. Do you have difficulty seeing even if you are wearing glasses?
2. Do you have difficulty hearing even if you are using a hearing aid?
3. Do you have difficulty walking or climbing stairs?
4. Do you have difficulty remembering or concentrating?
5. Do you have difficulty with self-care such as washing all over or dressing?
6. Using your usual (customary) language, do you have difficulty communicating (for example understanding or being understood by others)?

The response categories ranged between "No - no difficulty"; "Yes - some difficulty"; "Yes - a lot of difficulty"; and "Cannot do at all".

Then the disability score was calculated as those who stated at least one domain that is coded as "a lot of difficulty" or "cannot do it at all".

The total prevalence of disability among the Dubai population surveyed was 0.6%. The prevalence of disability was 0.4% among males and 1% among females. As for age distribution, the highest prevalence of disability was among the oldest age group (60+ years) at 7.0% followed by 0.7% in the next oldest age group (45-59 years).

According to nationality, the findings show that the prevalence of disability was higher among Emiratis (2.8%), compared to non-Emiratis (0.4%). As per the education categories, disability conditions were reported to be highest among the non-educated group (4.8%), and the least in the highly educated group (University and above) as well as the Primary & Preparatory group (0.2%).

1 The Washington Group on Disability Statistics. (2023). Retrieved July 4, 2024, from Washingtongroup-disability.com website: https://www.washingtongroup-disability.com/

Table 6.2

Percentage distribution of participants by their rated disability status according to background characteristics, DHHS, 2023.

Variable	Weighted Prevalence (%)		No. Of Respondents
	Disabled	Not Disabled	
Age Groups			
18 - 24	0.1	99.9	205
25 - 44	0.2	99.8	1369
45 - 59	0.7	99.3	489
60+	7.0	93.0	189
Gender			
Females	1.0	99.0	887
Males	0.4	99.6	1365
Nationality Group			
Emirati	2.8	97.2	668
Non-Emirati	0.4	99.6	1584
Education			
No Formal Education	4.8	95.2	102
Primary & Preparatory	0.2	99.8	888
Secondary Completed or Equivalent	0.7	99.3	206
University and Above	0.2	99.8	1056
TOTAL	**0.6**	**99.4**	**2252**

**All the figures in table were weighted as percentage while total number of respondents are unweighted.*

Fig 6.3

Percentage distribution of disability status by gender and nationality, DHHS 2023.

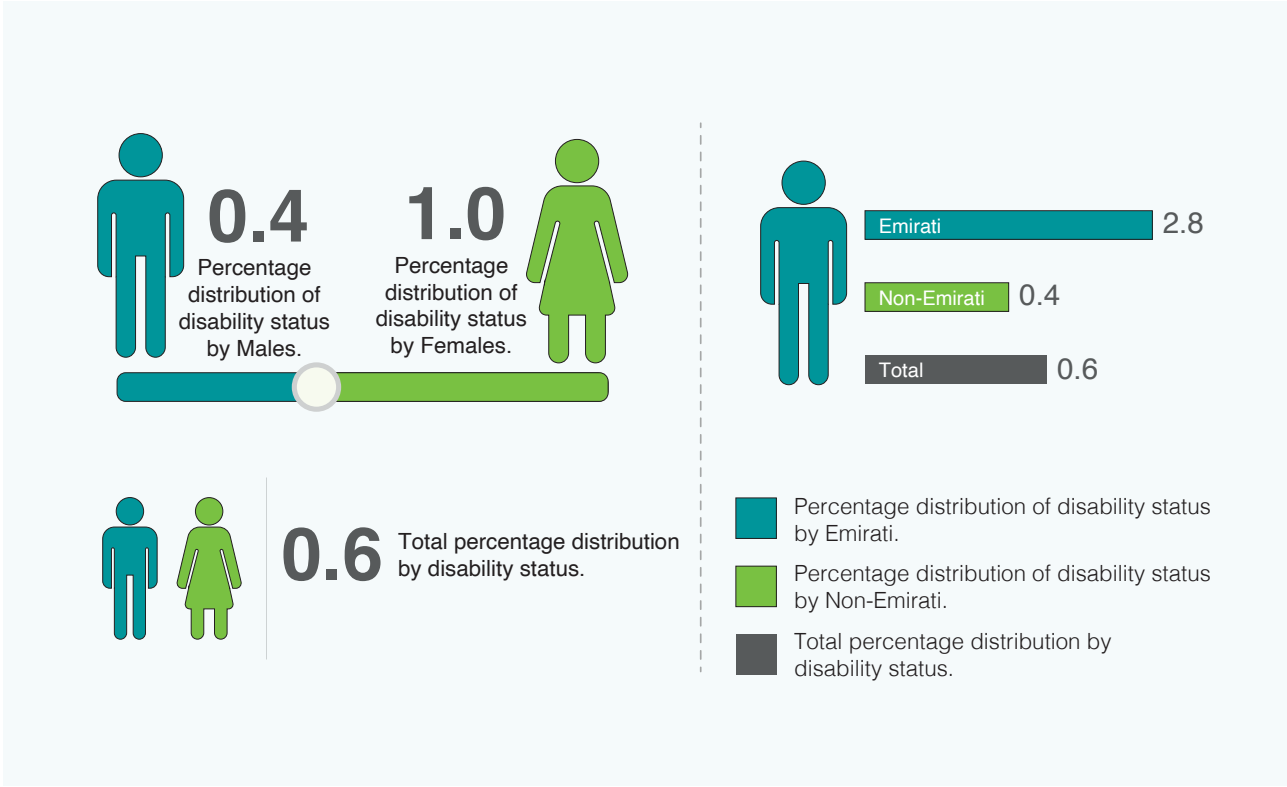
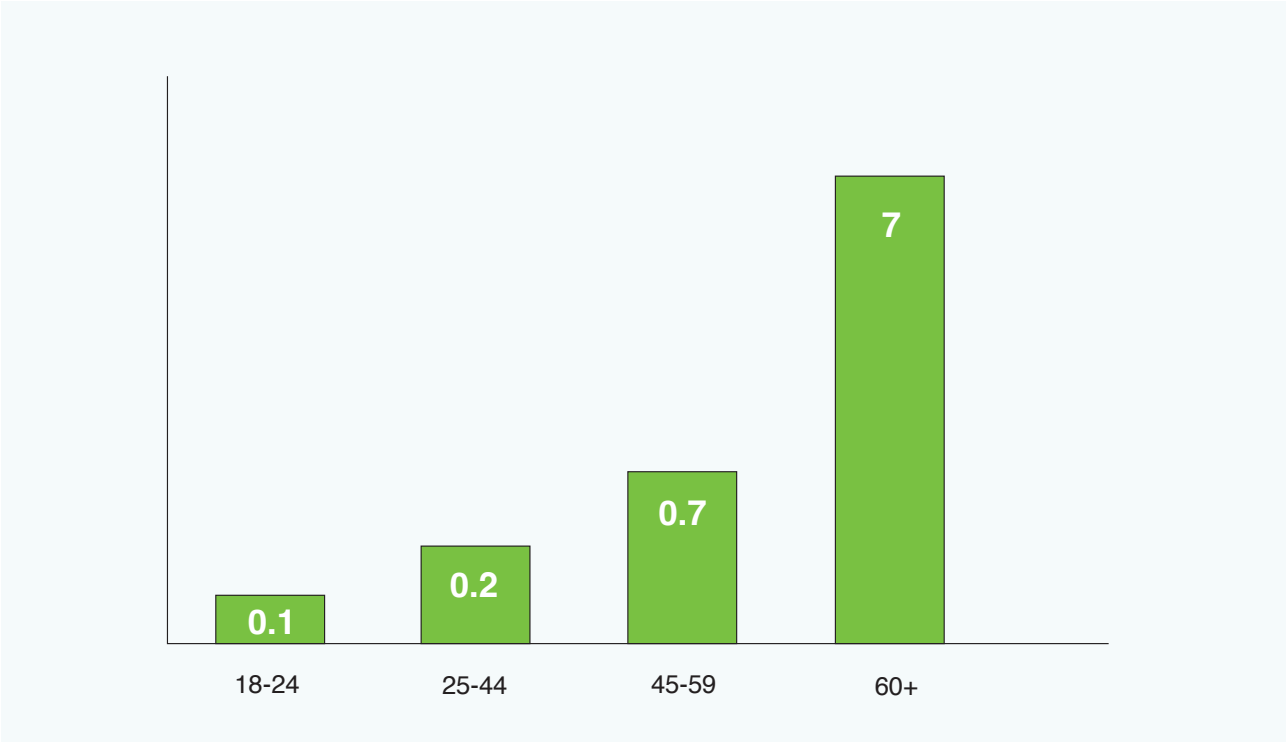


Fig 6.4

Percentage distribution of participants by their rated disability status by age groups, DHHS 2023.



Chapter

7

Anthropometrics and Chronic Health Conditions

Key Findings

- **Anthropometrics:**

- Almost 4 in 10 adults (40.1%) are overweight.
- Around one-fifth of adults are obese (21.9%).
- Around one-fifth of children 5-17 years (20.1%) are overweight, while 16.9% are obese.

- **Diabetes Mellitus:**

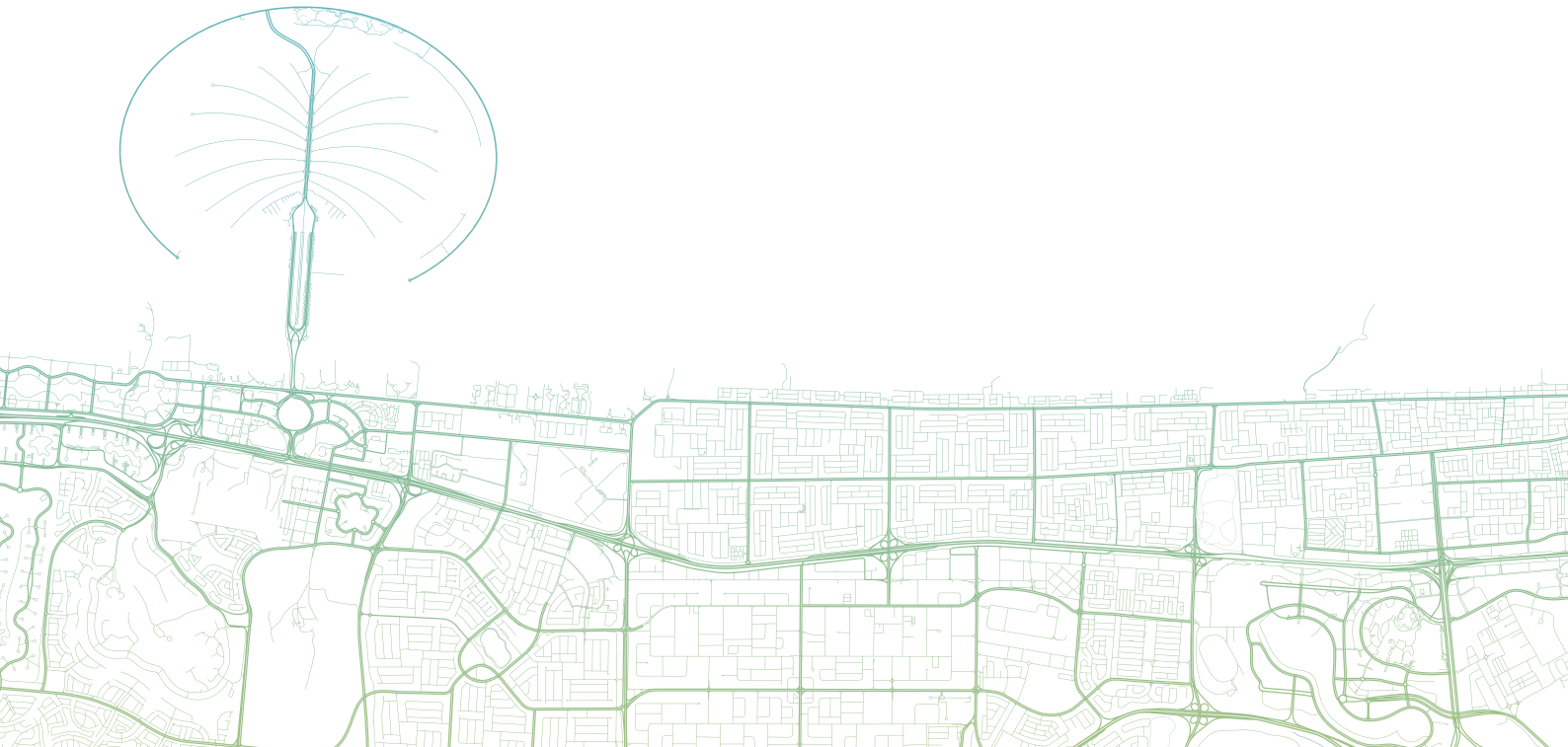
- The percentage of respondents with raised blood glucose was 12.9%, and the percentage with prediabetes was 16.1%.
- Among diabetics, 7.3% already had a previous diagnosis of diabetes, while 5.6% were unaware of their condition.

- **Blood Pressure:**

- Approximately 37% of respondents had raised blood pressure.
- Only 8.9% of those who were classified as having high blood pressure had a previous diagnosis of their condition, while the remaining 28% were newly diagnosed during the survey.

- **Lipid Profile:**

- Cholesterol: The mean total cholesterol was 195.9 mg/dl.
- Raised serum cholesterol was observed in 43% of respondents.
  The mean HDL was 42.9 mg/dl, and the mean LDL was 115.6 mg/dl.
  The mean total triglycerides was 216.5 mg/dl.



7.1. Overweight and Obesity

In 2022, globally, 43% (2.5 billion adults) of adults aged 18 years and over were overweight, and 16% (890 million) were obese. In addition, 37 million children under the age of five years were overweight or obese. Overweight and obesity, and their associated non–communicable diseases, are largely preventable and manageable. The anthropometric measures presented in this chapter are relevant to adult and childhood obesity. Height, weight and waist circumference were measured during the field visits.

The body mass index (BMI) is a measure that uses a person's height and weight to determine if they are within a healthy weight range. BMI is calculated by dividing an adult's weight in kilograms by the square of their height in meters, expressed as BMI (kg/m^2).

- Below 18.5 – underweight range.
- Between 18.5 and 24.9 – healthyweight range.
- Between 25 and 29.9 – overweight range.
- 30 or above – obesity range.

Table 7.1 shows that approximately 3% of adults aged 18 years and above have a BM) of less than 18.5 kg/m^2 However, the survey found that the prevalence of being underweight was the highest among 18–24-years-olds (10.6%). This could indicate the potential presence of eating disorders within this age group, warranting further investigation. Overall, the prevalence of being underweight varied between 3.3% in females and 2.8% in males. However, the level of underweight among girls aged 18–24 years needs to be examined further. Nearly one-third (35%) of adults aged 18 years and above were in the healthy weight range (18.5 to 24.9 kg/m^2).

Young adults seem more interested in physical activity and regular exercise as a means of managing their weight compared to other age groups. Evidence from the survey shows that more than half (53.6%) of respondents aged 18–24 years fall within a healthy weight range, with BMI between 18.5 and 24.9 kg/m^2. Approximately only a third of the other age groups were within a healthy weight range.

Survey findings on overweight and obesity reveal that over two in five adults (40.1%) are classified as overweight. It was estimated that around one-fifth of adults were obese (21.9%). More males (43.3%) than females (30.6%) were overweight. However, females (25.7%) were more likely than males (20.6%) to be obese. Obesity increases with age. The highest level of obesity was among people aged 60+ years (32.5%), followed by people aged 45 to 59 years (26.6%). The prevalence of obesity was lower (11.2%) among adults aged 18 to 24 years than among adults aged 25 to 44 years (21.5%).

The overweight prevalence was highest among people aged 25–44 years (42.9%). The prevalence of overweight was 24.7% among adults aged 18–24 years, 38.8% among adults aged 45–59 years, and 38.2% among adults aged 60 years and older.

Emiratis were more likely to be obese (38.2%) compared to non-Emiratis (20.9%). On the other hand, the prevalence of overweight among Emiratis (30.5%) was less than non-Emiratis (40.7%). The survey results illustrate that there was no difference in the prevalence of overweight and obesity between the less-educated and higher-educated adults. Adults who completed primary and secondary or equivalent education attainment were less likely to be obese.

1 https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight#:~:text=In%202022%2C%202.5%20billion%20adults,age%20of%205%20were%20overweight.

Table 7.1

Percentage distribution of Body Mass Index (BMI) among the adult population by background characteristics, DHHS 2023.

Variable	Weighted Prevalence (%)				No. Of Respondents (Unweighted)
	Underweight	Normal	Overweight	Obese	
Age Groups					
18 - 24	10.6	53.6	24.7	11.2	205
25 - 44	2.2	33.5	42.9	21.5	1369
45 - 59	2.3	32.3	38.8	26.6	489
60+	0.2	29.1	38.2	32.5	189
Gender					
Females	3.3	40.4	30.6	25.7	887
Males	2.8	33.3	43.3	20.6	1365
Nationality Group					
Emirati	3.0	28.4	30.5	38.2	668
Non-Emirati	2.9	35.4	40.7	20.9	1584
Education					
No Formal Education	0.1	37.4	37.5	25.0	102
Primary & Preparatory	3.9	33.4	44.2	18.6	888
Secondary Completed or Equivalent	3.4	37.3	39.7	19.6	206
University and Above	2.4	33.7	38.6	25.3	1056
TOTAL	**2.9**	**35.0**	**40.1**	**21.9**	**2252**

**All the figures in the table were weighted as a percentage, while the total number of respondents was unweighted.*

Fig 7.1

Percentage distribution of BMI by gender among the adult participants of Dubai, 2023.

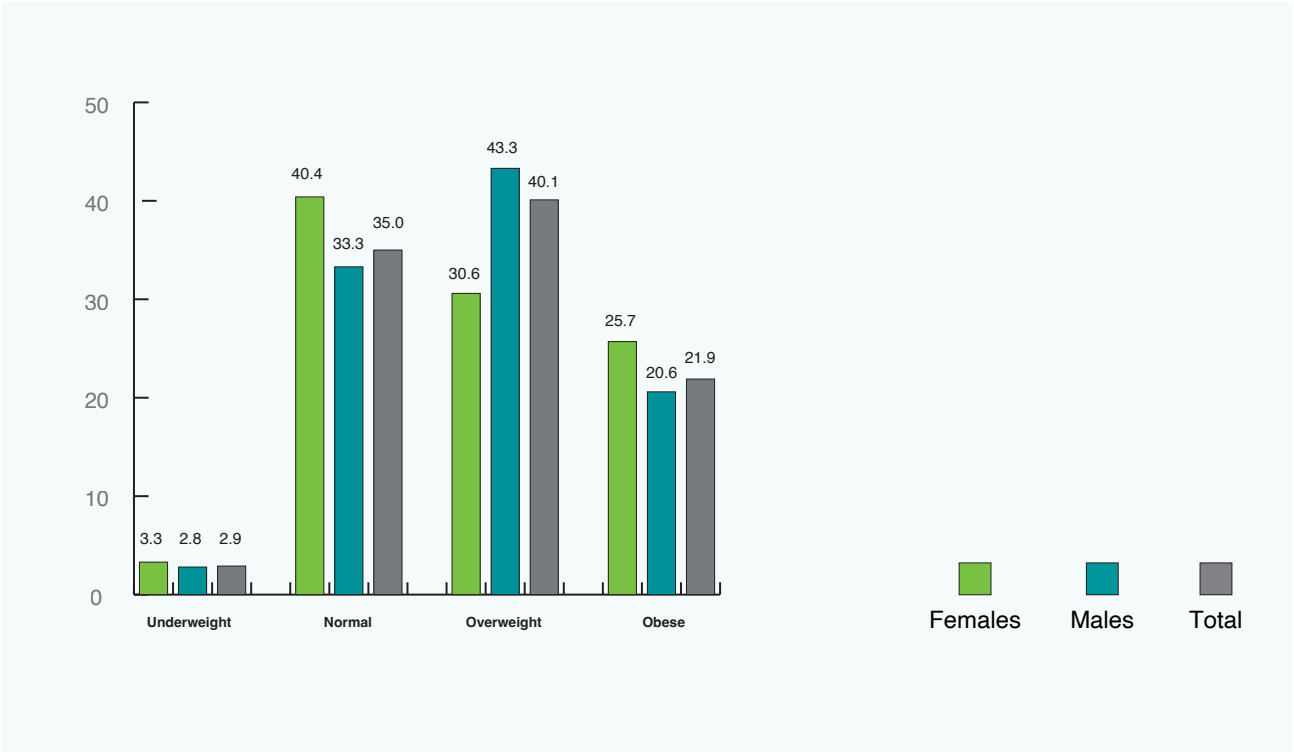


Fig 7.2

Percentage distribution of BMI by nationality group among adult participants of Dubai, 2023.

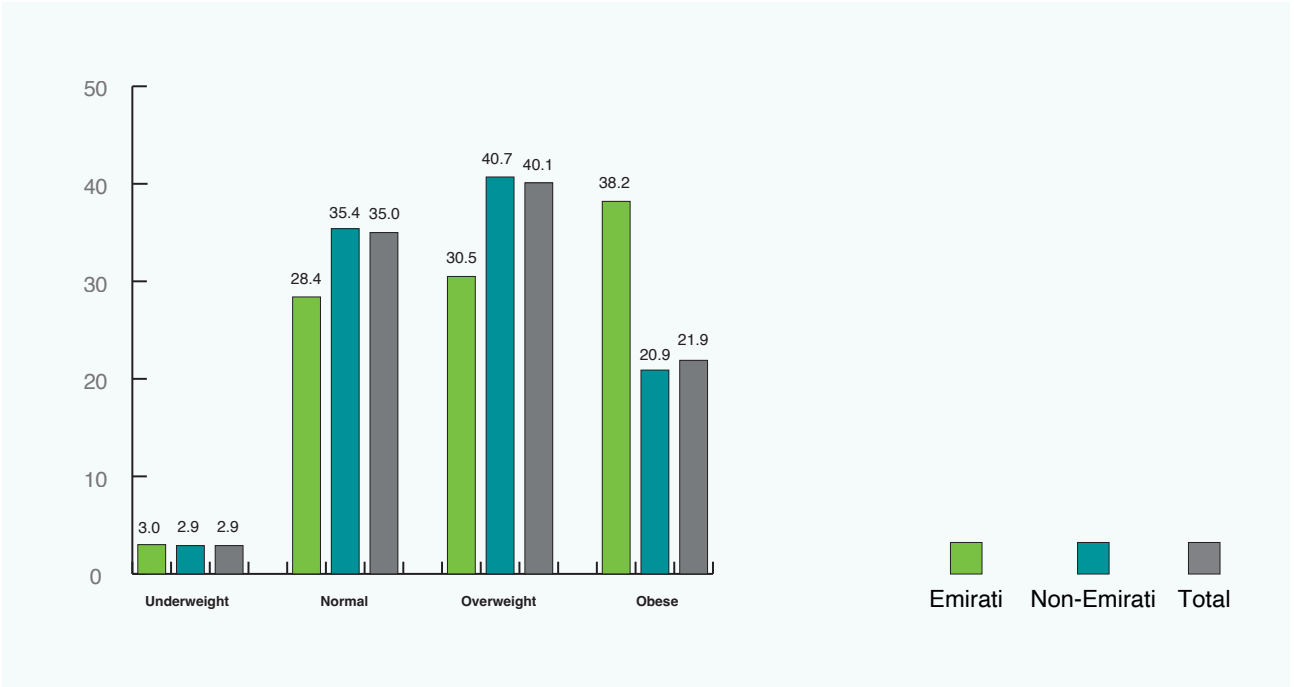
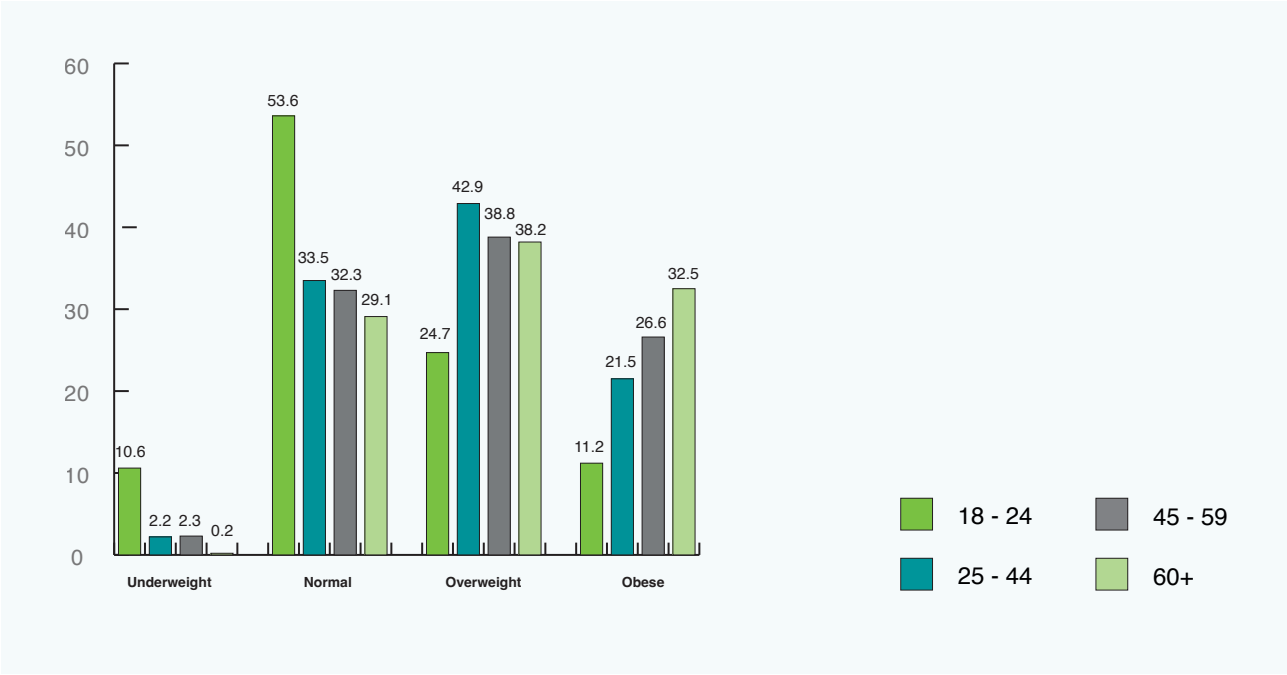


Fig 7.3

Percentage distribution of BMI by age group among adult participants of Dubai, 2023.



7.2 Central Obesity (Increased Waist Circumferences (WC) & Waist to Hip Ratio (WHR))

7.2.1 Waist-to-hip ratio (WHR):

The waist-to-hip ratio (WHR) is a quick measure of fat distribution that may indicate a person's overall health. People who carry more weight around their middle than their hips may be at a higher risk of developing certain health conditions. The waist-to-hip ratio (WHR) is a good measure of overweight and obesity. It is defined as the ratio of the circumference of the waist to that of the hips. Research shows that people with "apple-shaped" bodies (more weight around the waist) face more health risks than those with "pear-shaped" bodies (more weight around the hips). The WHO states that central/abdominal obesity is defined as a waist-hip ratio above 0.90 for males and above 0.85 for females.

Among the sampled adults, 82.9% of adults in the age group 60+ showed evidence of abdominal obesity compared to 63.9% among the age group 25-44 years. The distribution of obesity among adults according to nationality revealed that Emiratis showed a lower prevalence (52.7%) compared to non-Emiratis (64.7%). Gender-based distribution of obesity among the respondents reflected a 50% prevalence among females compared to 68.8% among males. When it comes to the distribution of obesity according to educational status, the results revealed that 71.4% of the no formal education group showed the highest percentage of abdominal obesity, followed by the primary education group (67.8%). This data is alarming and requires a well-informed policy and adequate preventive measures.

Table 7.2

Percentage distribution of adult participants by waist / hip ratio and background characteristics, DHHS 2023.

Variable	Weighted Prevalence (%)		No. Of Respondents
	Normal Waist / Hip Ratio	Abnormal Waist / Hip Ratio	
Age Groups			
18 - 24	71.3	28.7	205
25 - 44	36.1	63.9	1369
45 - 59	21.4	78.6	489
60+	17.1	82.9	189
Gender			
Females	50.0	50.0	887
Males	31.2	68.8	1365
Nationality Group			
Emirati	47.3	52.7	668
Non-Emirati	35.3	64.7	1584
Education			
No Formal Education	28.6	71.4	102
Primary & Preparatory	32.2	67.8	888
Secondary Completed or Equivalent	42.3	57.7	206
University and Above	39.3	60.7	1056
TOTAL	**35.9**	**64.1**	**2252**

** Abnormal waist / hip ratio is defined as ≥0.85 in women and ≥0.9 in men.*

#All the figures in the table were weighted as a percentage, while the total number of respondents is unweighted.

Fig 7.4

Percentage distribution of adult participants by waist / hip ratio circumference and gender, DHHS 2023.

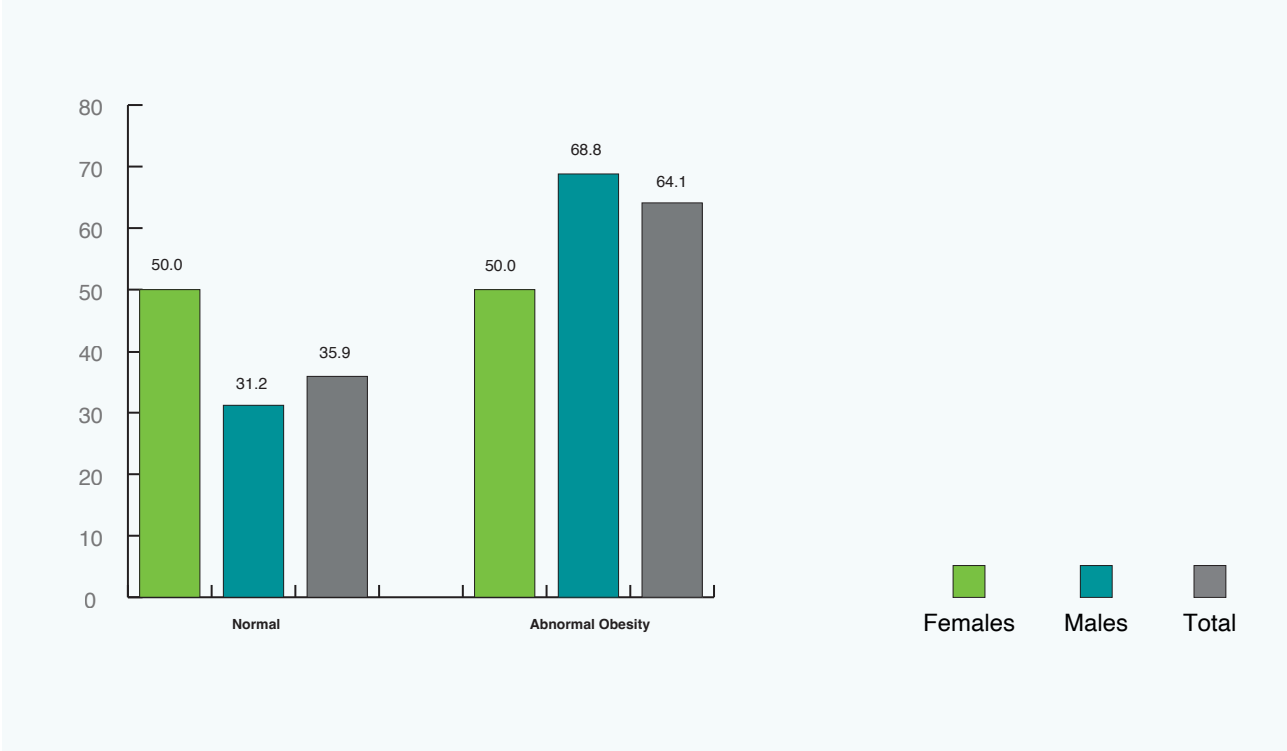
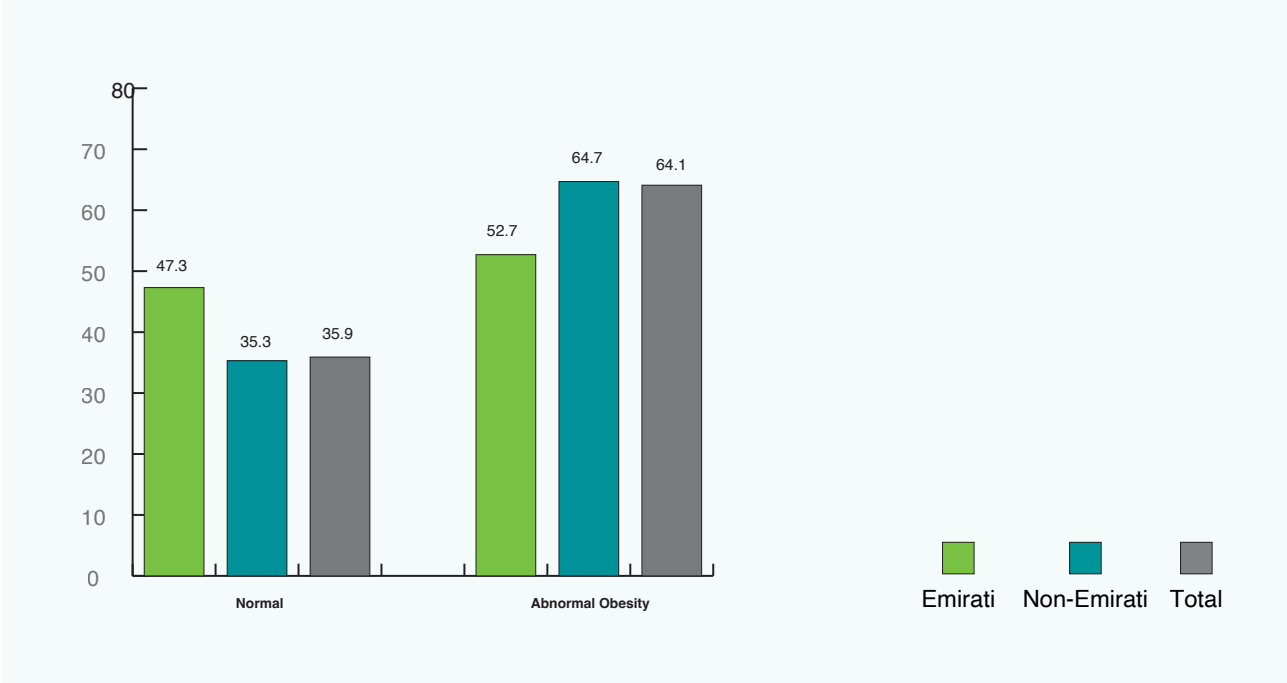


Fig 7.5

Percentage distribution of adult participants by waist / hip ratio circumference and nationality group, DHHS 2023.



7.2.2 Central obesity and mean WC:

The mean waist circumference for adult women was 91.2 cm compared to 94.1 cm for men (18+). Moreover, the mean hip circumference was 104 cm for females compared to 100.7 for males. The proportion of adult males and females with abdominal/central obesity (waist circumference of ≥102cm for males and ≥88 cm for females) is illustrated in **Figures 7.6 and 7.7** below.

The mean waist circumference data revealed that 42.6% of females had abdominal obesity, which is quite high compared to 19.8% of males. Abdominal obesity was most prevalent among respondents aged 60 and above (47.6%), followed by the 45–59 years age group (33.3%), and 25–44 years (24.2%). Emirati nationals revealed a higher percentage of abdominal obesity (44.1%) compared to the non-Emirati group (24.4%). The distribution of abdominal obesity by educational status showed that it was highest among university-educated individuals (31.6%), followed by those who were illiterate or could only read and write (30.8%), and those with a secondary school education (21.0%). The overall prevalence of abdominal obesity among the total respondents was 25.5%, highlighting that almost one-quarter of the studied population was at some cardiometabolic risk. Waist measurement reflects excess body fat around the heart, kidneys, liver, digestive organs and pancreas and can increase the risk of NCDs.

7.3. Childhood Obesity

For childhood obesity, BMI in children is defined in the same way as in adults: "weight (kg)/ square of height (m^2). The Inter Emirati Obesity Task Force concluded that BMI is a reasonable measure of adiposity in children, and it is the key measure of overweight and obesity for children used in this survey.

The classification of children's BMI used in this survey, set out below, has been derived from BMI percentiles from the WHO 1990 reference curves (referred to as the regional BMI percentiles classification); these have been used in each DHHS to date.

The BMI percentile classification has demonstrated reasonable sensitivity (i.e. not classifying obese children as non-obese) and specificity (i.e. not classifying non-obese children as obese).

The growth references classify Body Mass Index (BMI) based on age and gender as described below:

- Thinness is a BMI less than -1 standard deviation below the WHO Growth Reference median.
- Normal weight is BMI between -2 and +1 standard deviations from the WHO Growth Reference median.
- Overweight is a BMI greater than one standard deviation above the WHO Growth Reference median.
- Obesity is a BMI greater than two standard deviations above the WHO Growth Reference median.

Table 7.3

Percentage distribution of abdominal obesity (increased waist circumferences among the adult population by background characteristics, DHHS 2023.

Variable	Weighted Prevalence (%)		No. Of Respondents
	Normal Waist Circumference	Abdominal Obesity	
Age Groups			
18 - 24	89.8	10.2	205
25 - 44	75.8	24.2	1369
45 - 59	66.7	33.3	489
60+	52.4	47.6	189
Gender			
Females	57.4	42.6	887
Males	80.2	19.8	1365
Nationality Group			
Emirati	55.9	44.1	668
Non-Emirati	75.6	24.4	1584
Education			
No Formal Education	69.2	30.8	102
Primary & Preparatory	79.2	20.8	888
Secondary Completed or Equivalent	79.0	21.0	206
University and Above	68.4	31.6	1056
TOTAL	**74.5**	**25.5**	**2252**

** Abnormal waist circumference is defined as ≥102cm for males and ≥88 cm for females*

#All the figures in the table were weighted as percentages, while the total number of respondents is unweighted.

Fig 7.6

Percentage distribution of adult participants by waist circumference and gender, DHHS 2023.

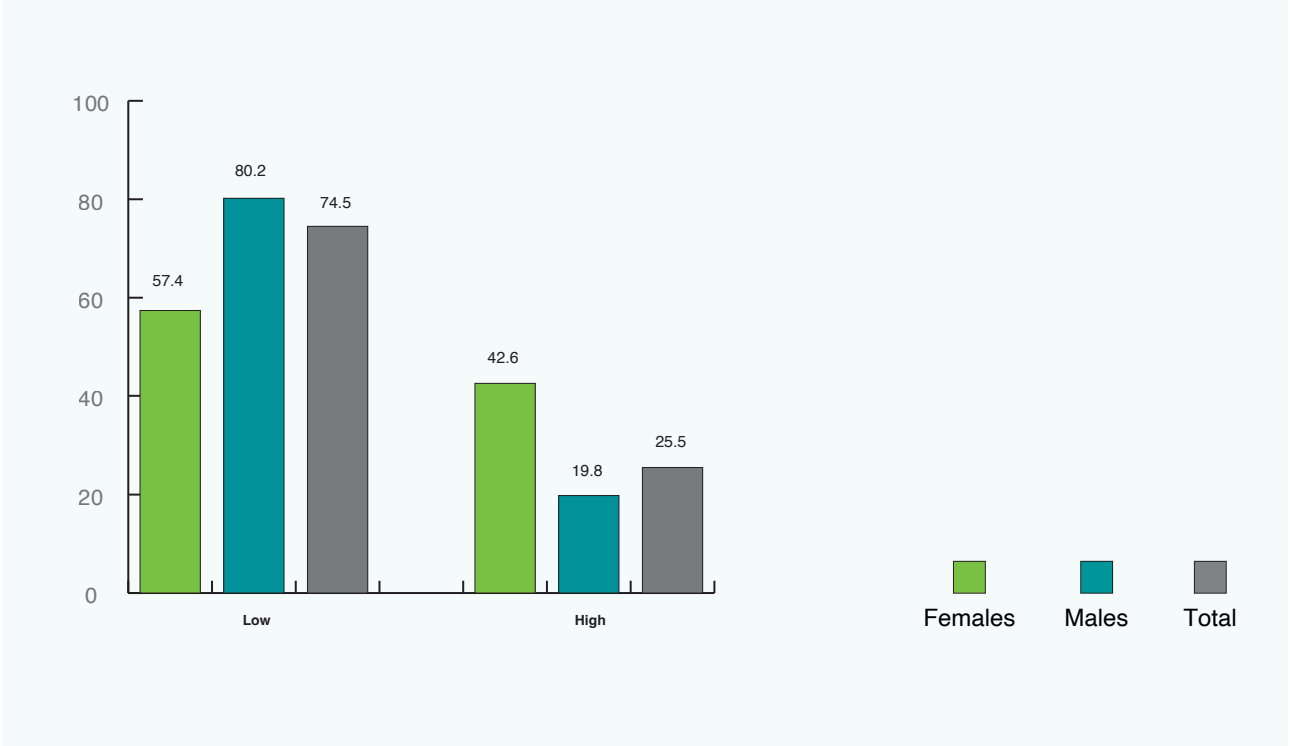
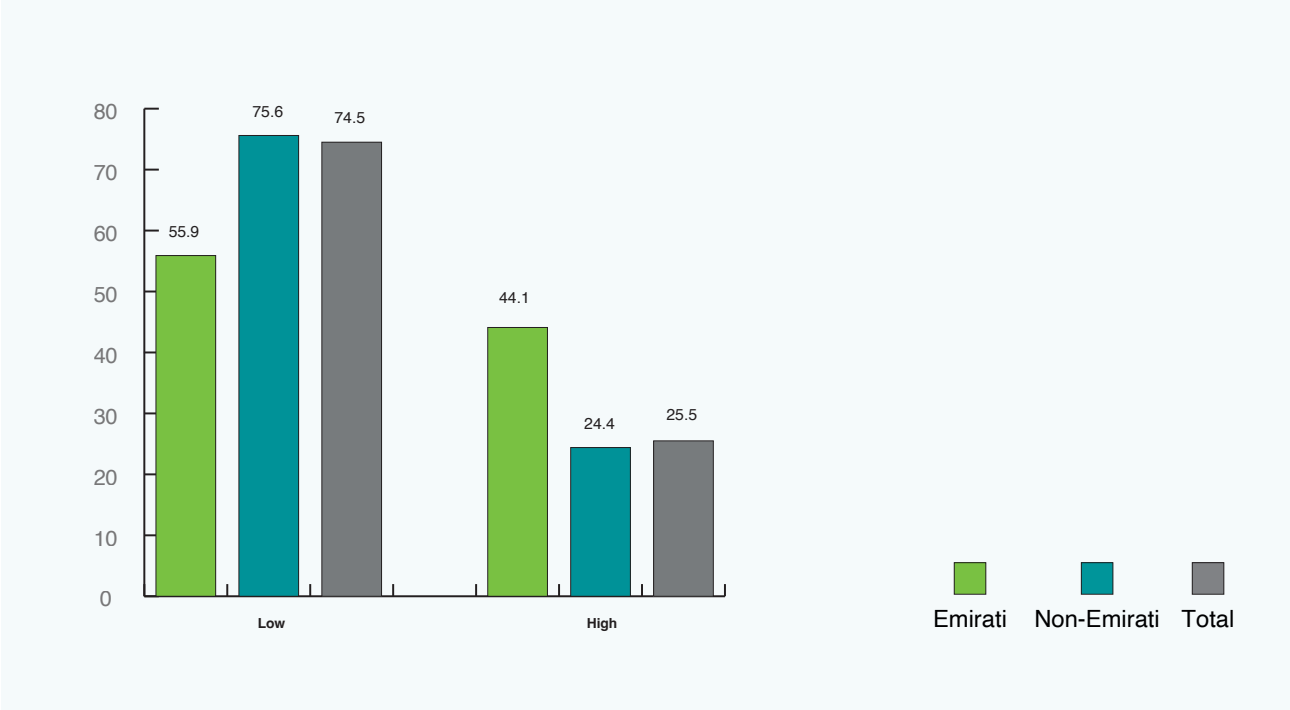


Fig 7.7

Percentage distribution of adult participants by waist circumference and nationality group, DHHS 2023.



7.3.1 Child growth assessment:

The DHHS 2023 measured the weight and height of children from five to less than 18 years by a trained nurse. The calculated BMI for age and gender was charted against WHO criteria for thinness, normal weight, overweight and obesity. The results are shown in **Table 7.4.**

Table 7.4 shows that the total percentage of children with normal weight was 62.9% amongst the surveyed children, with no big difference between boys (63.3%) and girls (62.6%). The percentage of children found to be overweight was 20.1%, with females (22.7%) being more likely to be overweight than boys (17.6%). Obesity was 16.9% among the studied child population, with obesity in boys being slightly higher at 19.1% compared to 14.7% in girls.

Results showed that whilst 62.9% of the child population were of normal weight, 37% of the population of the children surveyed were either overweight or obese (20.1% were overweight and 16.9% were obese). In terms of nationality Figure 7.9 illustrates that Emiratis were less likely to be of normal weight (58.1%) compared to non-Emiratis (64.1%) and were more likely to be obese (22%) compared to non-Emiratis (15.7%).

In terms of BMI and age groups, In the 5-9 years age group, 63.9% of children were of normal weight, whilst almost 16.8% were overweight and 19.2% were obese. In the 10-14 years age group, 56.3% were normal weight, the lowest percentage from all the age groups; 26% were overweight, and 17.7% were obese. Of the 15-17 years age group, 77.3% were of normal weight, 14.3% were overweight, and 8.4% were obese. Of all the age groups, the highest percentage of overweight children (including obese) was in the 10-14 years old groups, with 43.7% having a BMI greater than one standard deviation above the WHO Growth Reference median. In contrast, the lowest was in the young females (22.7%) as they are likely to be more body conscious and independent in diet and lifestyle choices.

Table 7.4

Percentage distribution of BMI classification among children aged 5-17 years by demographic characteristics, DHHS 2023.

Variable	Weighted Prevalence (%)			No. Of Respondents
	Normal	Overweight	Obesity	
Age Groups				
5 - 9	63.9	16.8	19.2	592
10 - 14	56.3	26	17.7	633
15 - 17	77.3	14.3	8.4	355
Gender				
Females	62.6	22.7	14.7	759
Males	63.3	17.6	19.1	821
Nationality Group				
Emirati	58.1	19.8	22.0	1042
Non-Emirati	64.1	20.2	15.7	538
TOTAL	**62.9**	**20.1**	**16.9**	**1580**

**All the figures in the table were weighted as a percentage, while the total number of respondents was unweighted.*

Fig 7.8

BMI classification among children aged 5-17 years by gender, DHHS 2023.

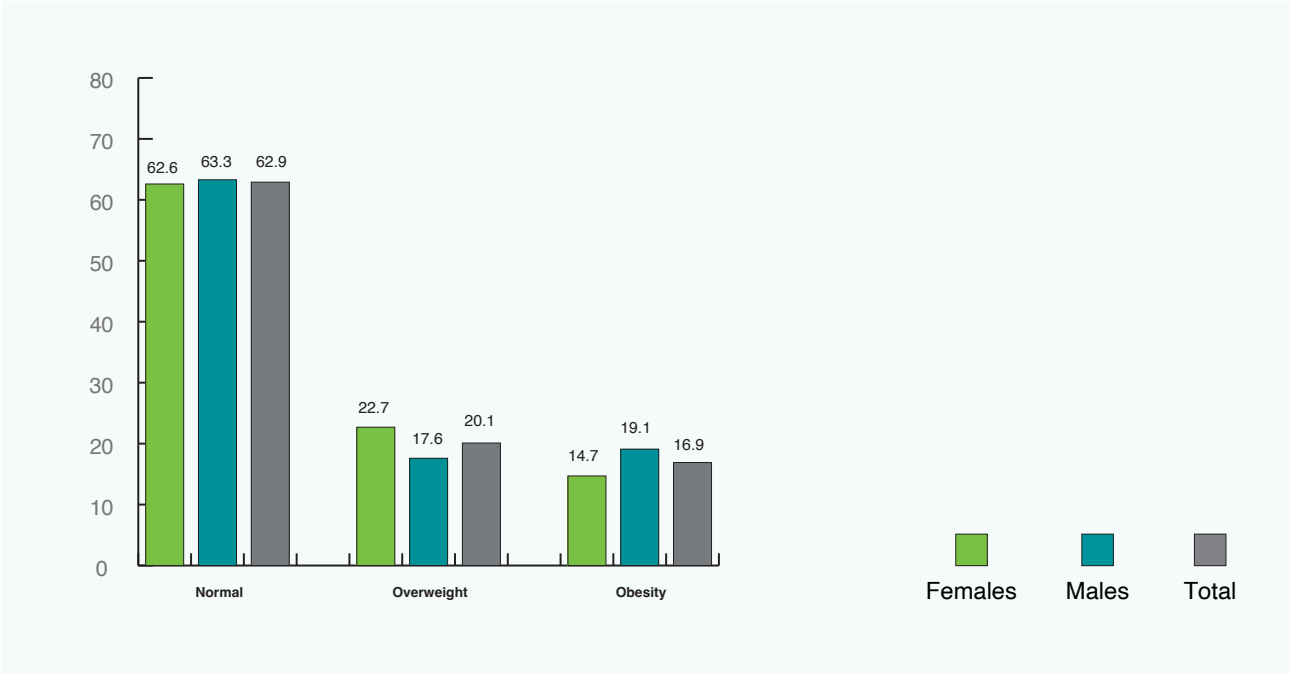


Fig 7.9

Percentage distribution of BMI classification among children aged 5-17 years by nationality group, DHHS 2023.

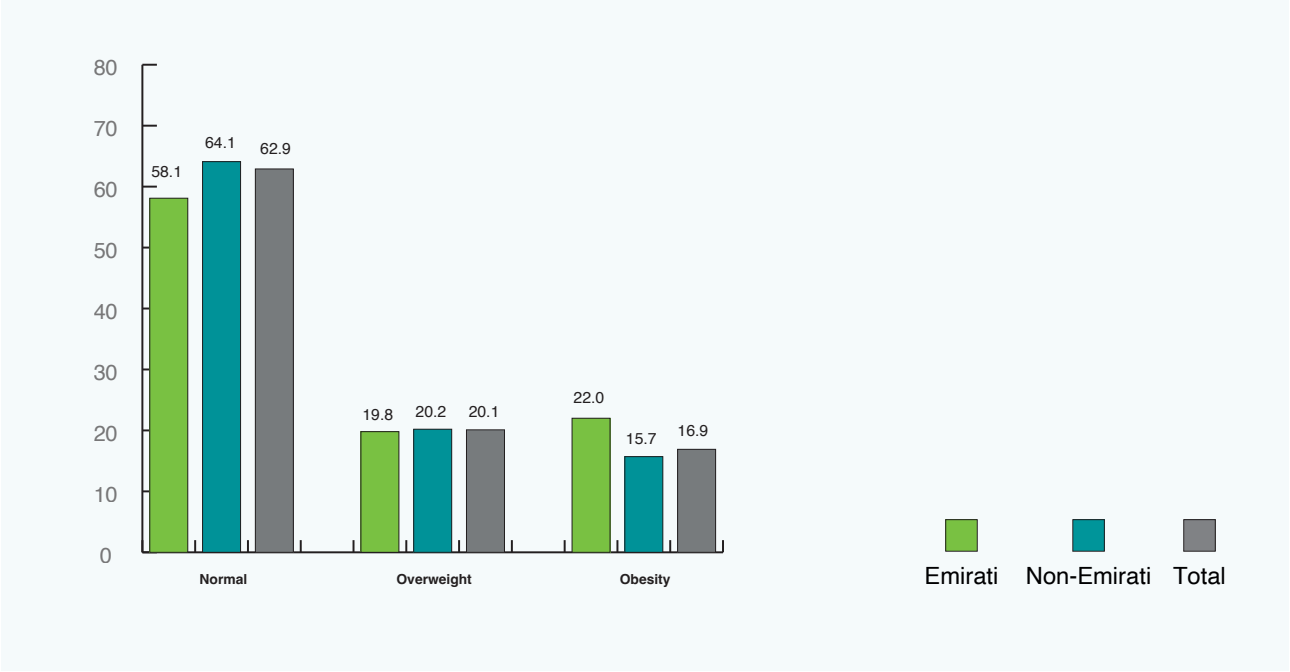
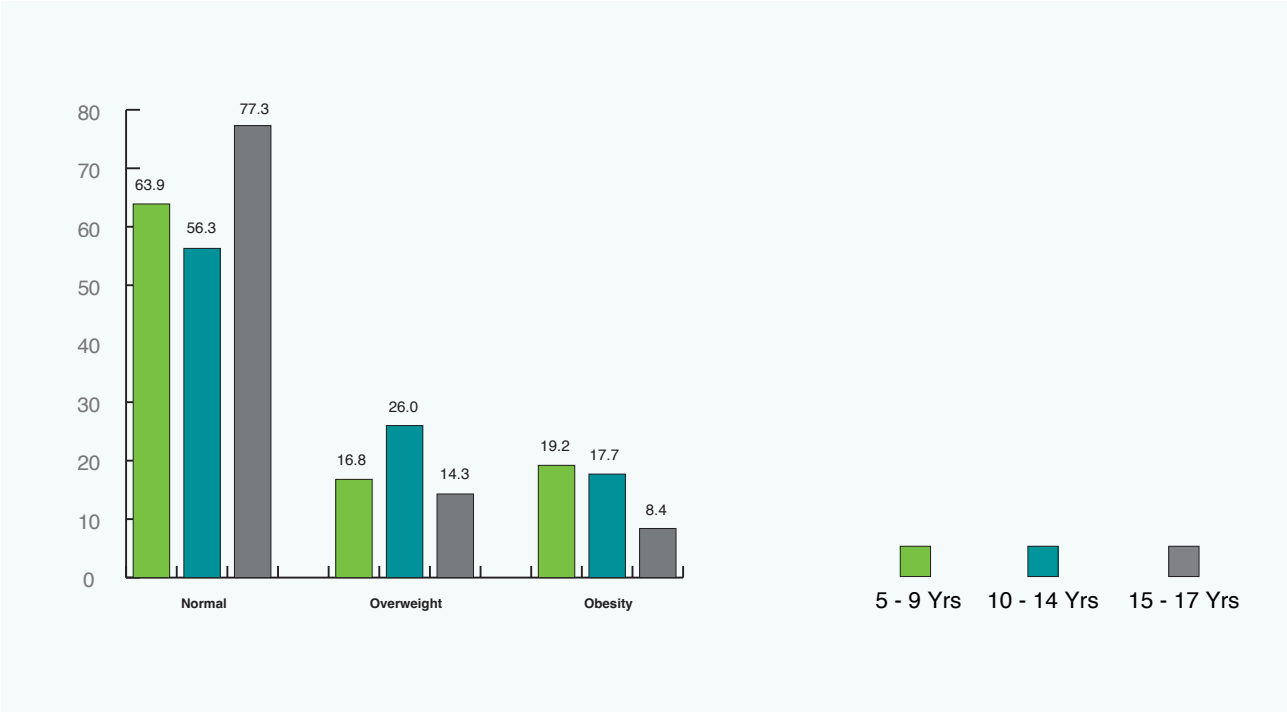


Fig 7.10

Percentage distribution of BMI classification among children aged 5-17 years by age group, DHHS 2023.



7.4 Prevalence of Diabetes Mellitus

The rising burden of NCDs has been an increasing public health concern globally. The World Health Organisation (WHO) estimated that by 2030, the proportion of total global deaths due to chronic diseases is expected to increase to 70 per cent and the global burden of disease to 56 per cent. The greatest increase is anticipated in the African and Eastern Mediterranean regions. The health care system of UAE in general, and Dubai in particular, faces formidable challenges in its efforts to prevent chronic diseases from eroding the achievements of the past decades. Several studies over the past two decades have documented the distribution of risk factors associated with NCDs along with the increase in lifestyle-related NCDs, which have emerged as new health challenges to the UAE. The estimated prevalence of diabetes within the surveyed adults was derived by adding up the prevalence of self-reported diabetes and that of newly discovered diabetes based on HbA1C results (newly diagnosed).

Table 7.5 presents the prevalence of diabetes mellitus among the respondents (self-reported and measured) according to background characteristics. It illustrates that 12.9% are diabetics and 16.1% are pre-diabetics, indicating that almost 30% of the population has diabetes or prediabetes. The table also reveals that 5.6% of the respondents did not know they had diabetes (newly diagnosed) as they were diagnosed with the blood sample test (HbA1c), while 7.3% of them self-reported having the disease. The prevalence of diabetes increased significantly with age, rising from 1.3% among respondents aged 18–24 to 37.8% among those aged 60 and above. When data is aggregated by nationality grouping, the results showed that the prevalence of diabetes was higher among Emiratis (17.6%) compared to non-Emiratis (12.7%). On the other hand, more Non-Emiratis (16.2%) were detected to have prediabetes state than Emirati nationals (12.8%). as shown in Figure 7.12. The data also highlight disparities in healthcare-seeking behavior, with nearly three times as many non-Emiratis (5.9%) being unaware of their diabetic condition and newly diagnosed during the survey compared to Emiratis (2.1%).

The effect of education attainment on diabetes revealed a significant finding, where diabetes was the highest among those without any formal education (26%). This percentage decreases gradually with increasing the level of education (it reached 9.6% among those with a university education or higher).

Variations by gender were also obvious, as more males self-reported diabetes, and diabetes was currently more prevalent in males (14.7%) than in females (9.7%). In addition, details in table 7.5 show that the prevalence of prediabetes was higher among males (18.2%) compared to females (12.2%).

Table 7.5

Percentage distribution of adult participants diabetes mellitus (self-reported and newly diagnosed), according to background characteristics, DHHS 2023.

Variable	Weighted Prevalence (%)					No. Of Respondents
	Self-Reported (Diagnosed)	Newly Diagnosed	Total Diabetes#	Pre-Diabetes^	Normal Blood Glucose*	
Age Groups						
18 - 24	1.3	0.0	1.3	5.8	92.9	205
25 - 44	3.6	4.6	8.2	16.5	75.3	1369
45 - 59	14.0	10.5	24.5	20.2	55.3	489
60+	29.5	8.3	37.8	13.1	49.1	189
Gender						
Females	6.4	3.3	9.7	12.2	78.1	887
Males	7.8	6.9	14.7	18.2	67.1	1365
Nationality Group						
Emirati	15.5	2.1	17.6	12.8	69.6	668
Non-Emirati	6.8	5.9	12.7	16.2	71.1	1584
Education						
No Formal Education	15.6	10.4	26.0	16.8	57.2	102
Primary & Preparatory	8.0	8.9	16.9	22.7	60.4	888
Secondary Completed or Equivalent	7.2	6.2	13.4	15.3	71.3	206
University and Above	6.2	3.4	9.6	13.7	76.7	1056
TOTAL	**7.3**	**5.6**	**12.9**	**16.1**	**71.0**	**2252**

 # Diabetes was diagnosed if the HbA1c result was shown as 6.5% or above. Total diabetes is the sum of both self-reported cases and those newly diagnosed through the test.

*^ Prediabetes was diagnosed if HbA1C was between 5.7% to 6.4 %. * Normal (non-diabetic) was considered if HbA1c <5.7 %.*

**All the figures in the table were weighted as percentages, while the total number of respondents is unweighted.*

Fig 7.11

Percentage distribution of adult participants according to diabetes diagnosis status and gender, DHHS 2023.

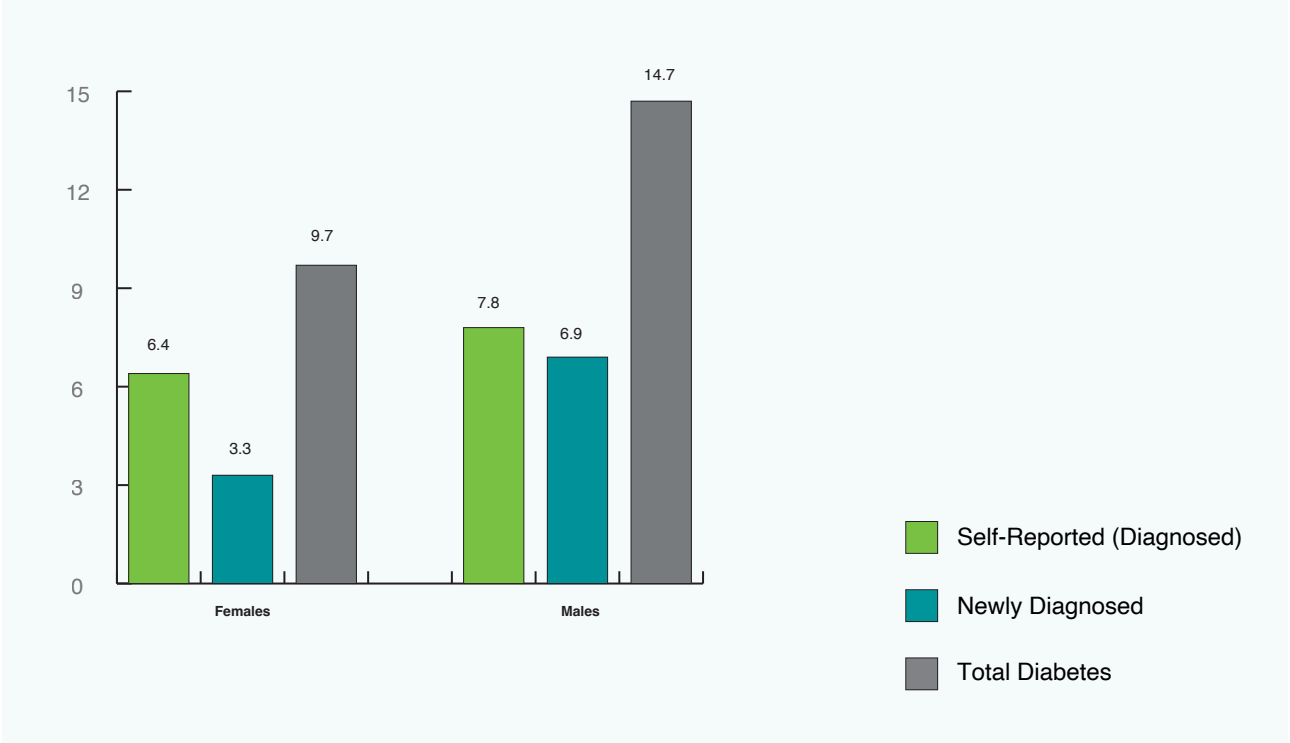


Fig 7.12

Percentage distribution of adult participants according to diabetes diagnosis status and nationality, DHHS 2023.

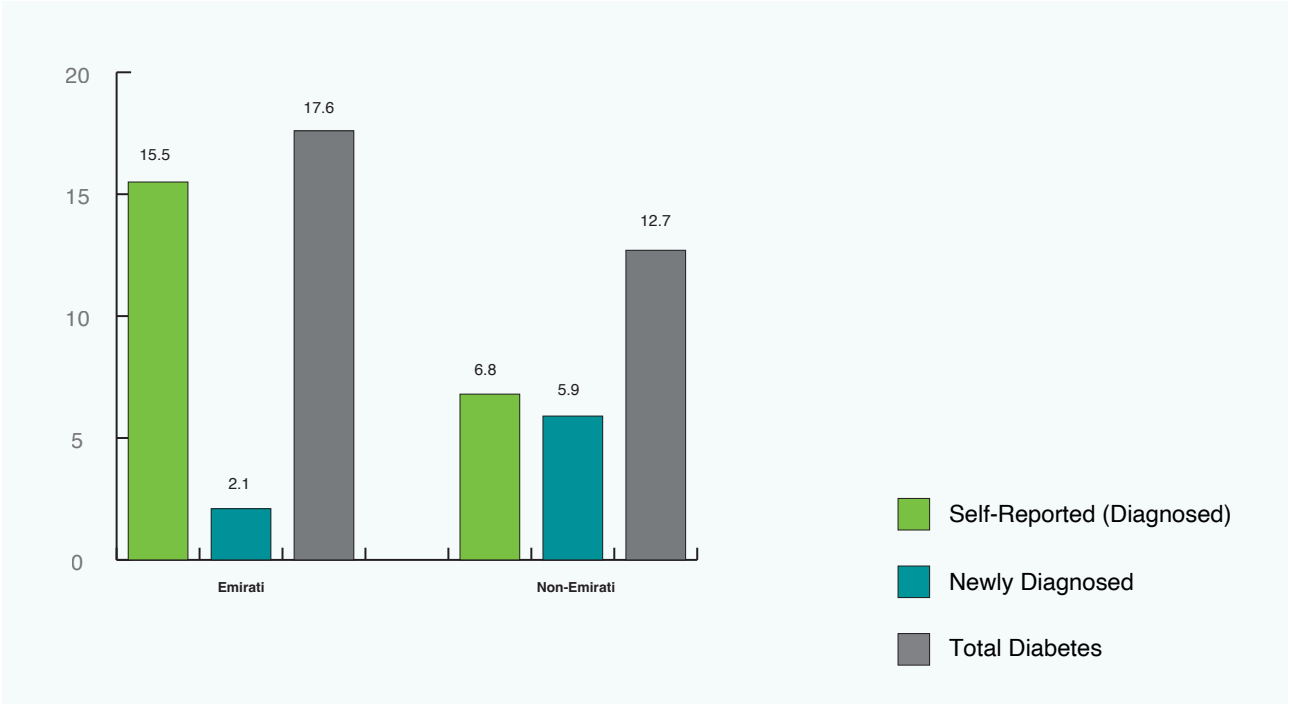


Fig 7.13

Percentage distribution of adult participants according to the diabetes diagnosis status by age group, DHHS 2023.

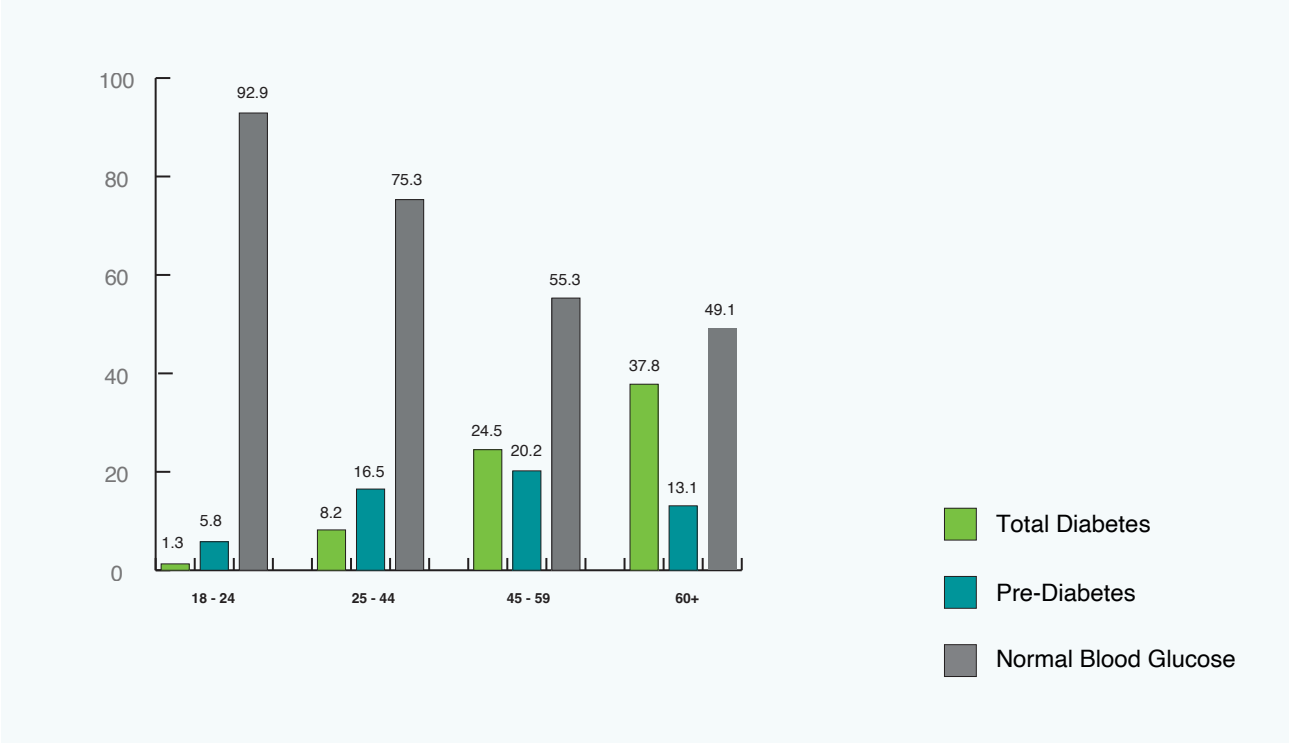


Fig 7.14

Percentage distribution of adult participants according to the diabetes diagnosis status by gender, DHHS 2023.

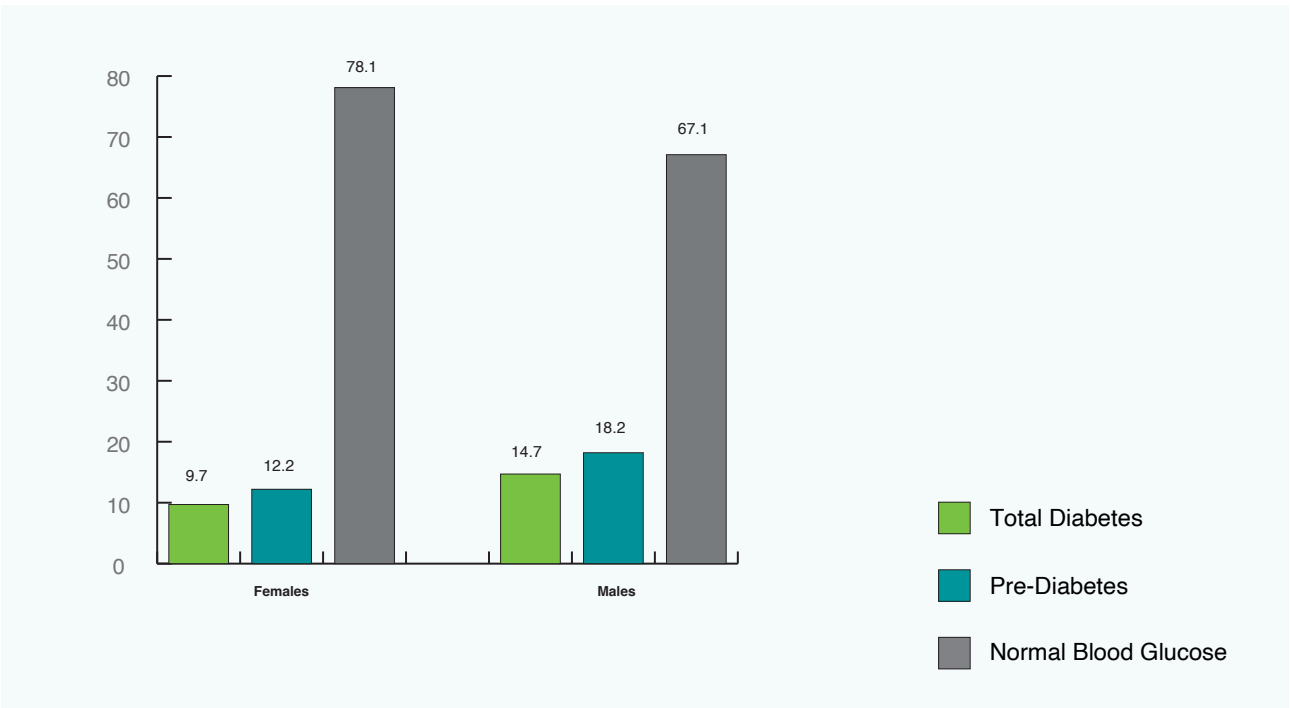


Fig 7.15

Percentage distribution of adult participants according to the diabetes diagnosis status by nationality group, DHHS 2023.

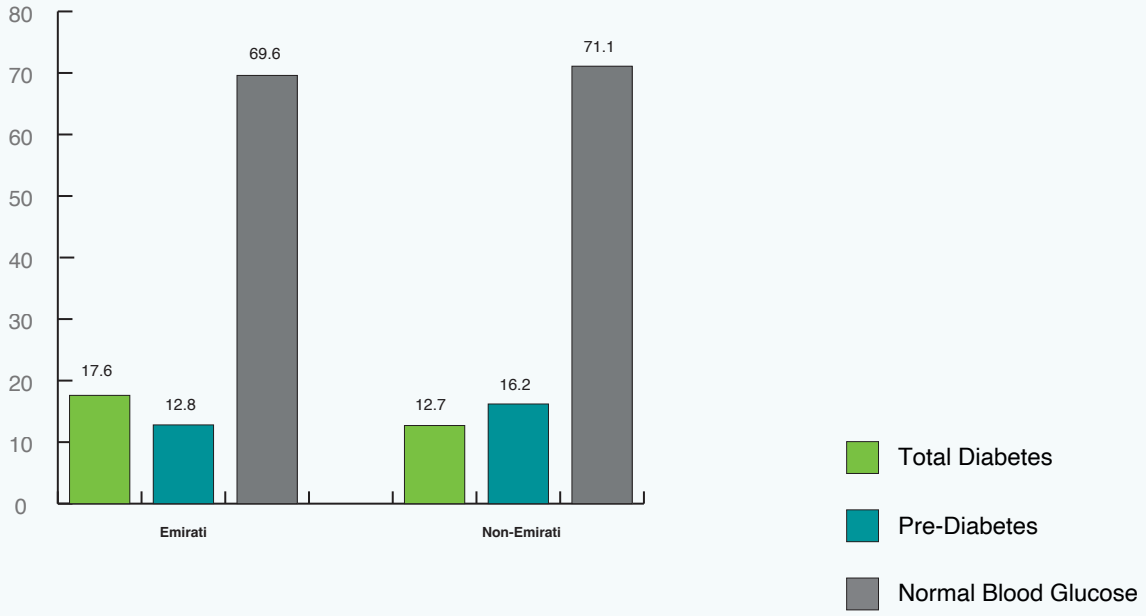
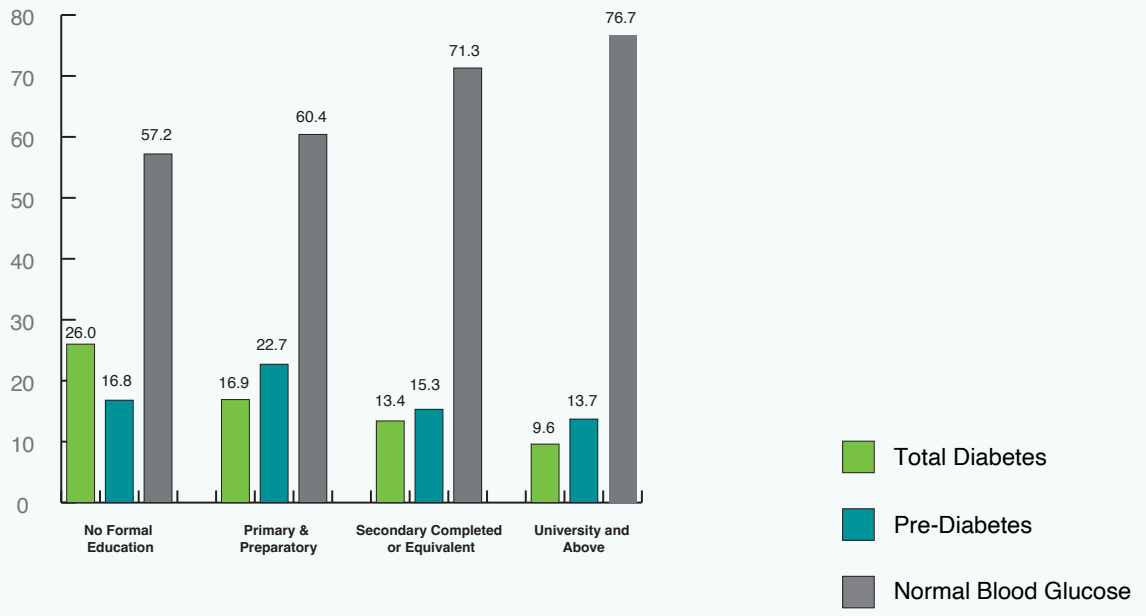


Fig 7.16

Distribution of adult participants according to the diabetes diagnosis status by level of education, DHHS 2023.



7.5. Prevalence of Hypertension (High Blood Pressure)

Having blood pressure measures above normal may result in a diagnosis of high blood pressure (or hypertension) when the diastolic level is 90 mm Hg or higher, and the systolic is or above 140 mm Hg. Those adults whose blood pressure is measured and is elevated (140/90 mm Hg or higher) could suggest that they have hypertension. Having blood pressure measurements consistently above normal may result in a diagnosis of hypertension (or high blood pressure). Many things can increase the risk of getting high blood pressure, such as being overweight, excess salt consumption and not eating enough fruit and vegetables, not doing enough exercise, drinking too much alcohol or coffee (or other caffeine-based drinks), smoking, lots of stress, or age over sixty-five, in addition to having a first degree relative with high blood pressure. However, elevated blood pressure does not always indicate that the person is suffering from hypertension. Therefore, it needs to be investigated by a physician and some routine tests given to confirm or exclude a diagnosis of hypertension.

Hypertension is one of the risk factors that contribute to cardiovascular morbidity and mortality. According to the WHO classification, a normal adult has Systolic Blood Pressure (SBP) of less than 120 mmHg and Diastolic Blood Pressure (DBP) of less than 80 mmHg. Higher readings for blood pressure levels are either prehypertension or hypertension. Some people have hypertension that is undiagnosed and untreated. Diagnosis and proper treatment of hypertension are needed to decrease the risk of an adverse cardiovascular event. The 2023 DHHS aimed to identify individuals with potentially undiagnosed hypertension. Participants aged 18 years or above were screened for hypertension by blood pressure measurements using a calibrated sphygmomanometer by trained nurses. Each individual had three blood pressure measurements at two points of time after the first measurement.

The mean of the three blood pressure readings was calculated, and the participant was labelled potentially undiagnosed hypertension if meeting the definition of hypertension as per the WHO classification.
Thus, in the DHHS (2023), the prevalence of hypertension was based on either of the following two conditions:

- Self-reported individuals who were previously diagnosed with hypertension.
- Participants that were identified by the survey as having potentially undiagnosed hypertension.

7.5.1 Self–reported diagnosed hypertension:

Data from **Table 7.6** shows that the overall prevalence of self-reported hypertension in 2023 was approximately 8.9% of adults. There has been quite a dramatic decrease in the trend of self-reported hypertension from 11.6% in 2019 to 8.9% in 2023. In 2023, the prevalence of hypertension was higher in males (9.4%) compared to females (7.7%). According to data from the DHHS 2023 survey, it was found that the prevalence of hypertension among Emiratis (18.5%) was considerably higher than the rate among non-Emiratis (8.3%). Hypertension prevalence increased with age, almost double between 18–24 years to 25–44 years (from 2.2% to 4.6%). Prevalence continued to increase with age, with over a third (40.1%) of all people aged 60+ years and over reporting hypertension. This survey assessed educational level inequalities in people with self-reported diagnosed hypertension as well as measured high BP. No differences in hypertension were observed with educational level, as it varied between 8.2% among adults who held university and more degrees and 9.1% among those with no formal education.

7.5.2 Measured high blood pressure (BP) during examination (potentially undiagnosed):

Less than one-third (28%) of adults in Dubai had high BP in 2023. These people should be aware of the risks of elevated BP and should have further examinations, treatments or lifestyle changes. Males tend to have higher blood pressure (33.8%) than females (12%). Non-Emirati adults with elevated BP were four times higher than Emiratis. The prevalence of hypertension (15.8%) among the older population aged 60+ years was less likely than in middle-aged adults (29.5% among 25–44 years and 29.1% among 45–59 years). Adults holding a university and higher degrees were less likely to have higher blood pressure (19%) than other groups who had less education.

7.5.3 Prevalence of the total high blood pressure (BP):

The prevalence of both self–reported hypertension as well as measured high BP in 2023 was (36.9%). As per the age group, the highest reported high blood pressure was among the elderly, with 55.9% of them possibly having high BP. High blood pressure was more frequent among non-Emiratis (37.7%) than Emiratis (25.9%). Among Dubai adults, males had twice the potential for high BP compared to females (43.2% and 19.7%, respectively). Lastly, by educational attainment, the highest prevalence of high BP was detected in those who had secondary education or equivalent (46.7%).

Fig 7.17

Percentage distribution of adult participants according to high blood pressure status and gender, DHHS 2023.

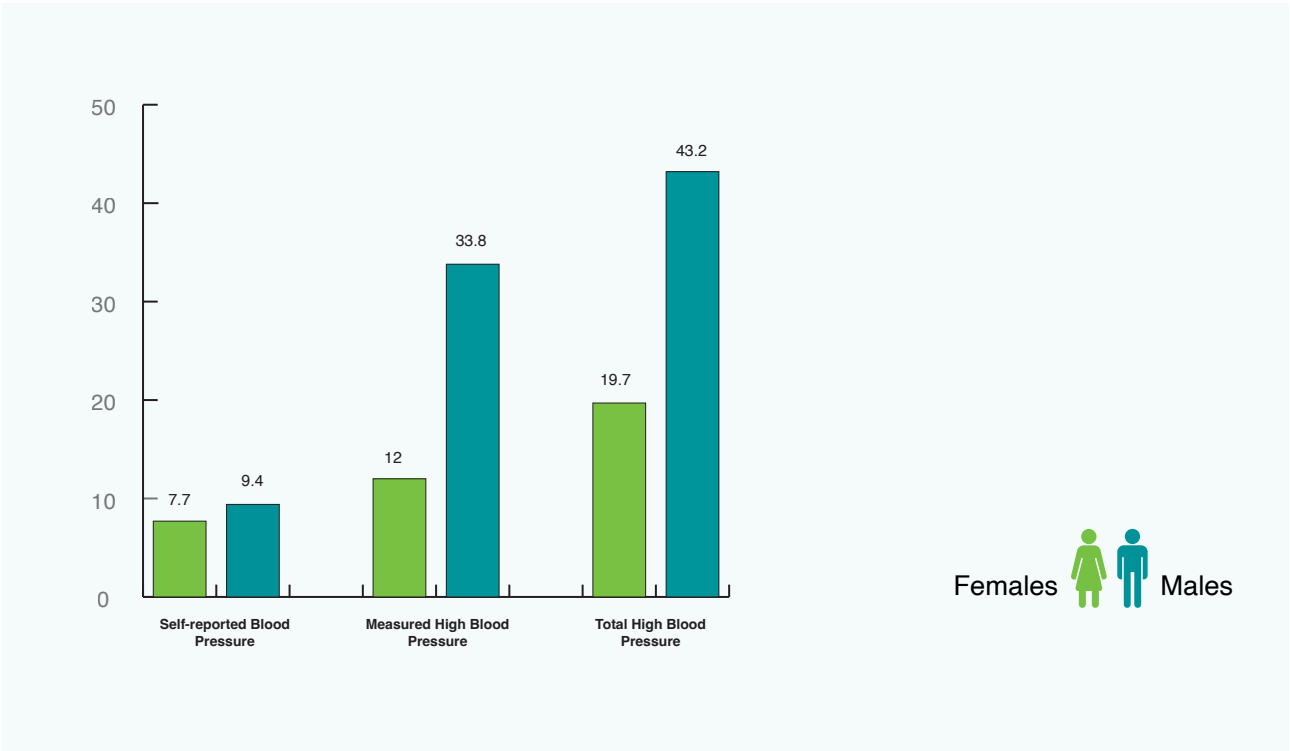


Table 7.6

Percentage distribution of participants with high blood pressure (hypertension) according to background characteristics, DHHS 2023.

Variable	Weighted Prevalence (%)			No. Of Respondents
	Self–Reported Hypertension	Measured (Undiagnosed) High Blood Pressure#	Total High Blood Pressure	
Age Groups				
18 - 24	2.2	20.4	22.6	205
25 - 44	4.6	29.5	34.1	1369
45 - 59	19.5	29.1	48.6	489
60+	40.1	15.8	55.9	189
Gender				
Females	7.7	12.0	19.7	887
Males	9.4	33.8	43.2	1365
Nationality Group				
Emirati	18.5	7.4	25.9	668
Non-Emirati	8.3	29.5	37.7	1584
Education				
No Formal Education	9.1	33.8	42.9	102
Primary & Preparatory	8.7	30.4	39.1	888
Secondary Completed or Equivalent	9.9	36.9	46.8	206
University and Above	8.2	19.0	27.2	1056
TOTAL	**8.9**	**28.0**	**36.9**	**2252**

 # Potentially undiagnosed hypertension is the one measured during the survey screening process and is based on measured blood pressure (raised blood pressure) and defined as having systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg.

**All the figures in the table were weighted as percentages, while the total number of respondents was unweighted.*

Fig 7.18

Percentage distribution of adult participants according to high blood pressure status and nationality group, DHHS 2023.

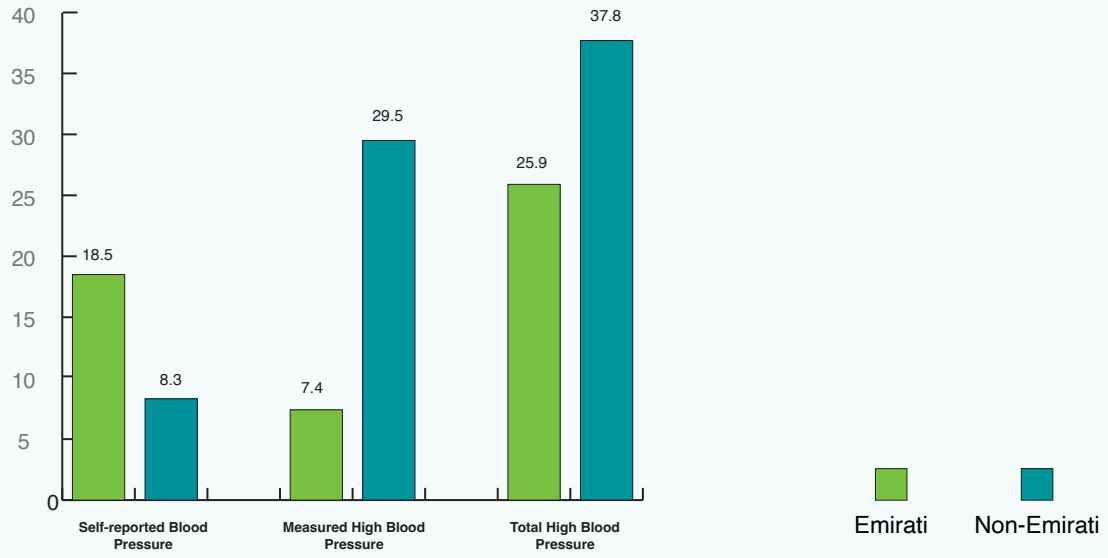
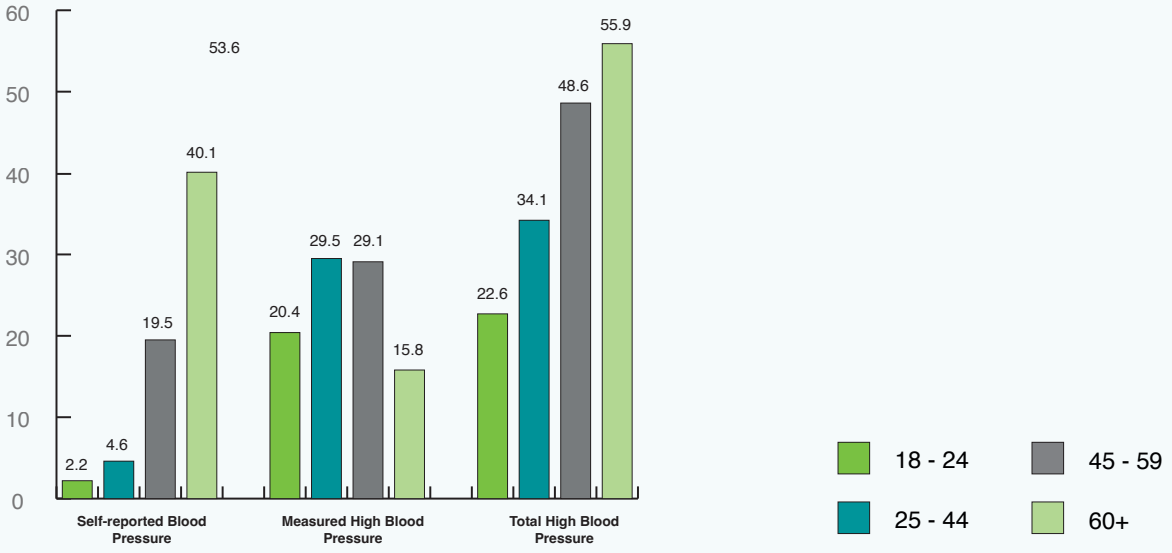


Fig 7.19

Percentage distribution of adult participants according to high blood pressure status and age group, DHHS 2023.



7.6. Lipid Profile

The lipid profile, encompassing cholesterol and other lipid components, serves as a cornerstone in cardiovascular risk assessment. Understanding cholesterol metabolism, its clinical implications, and demographic influences is paramount in developing effective preventive and therapeutic strategies for managing dyslipidaemia and reducing the burden of cardiovascular diseases.

Table 7.7 showed that 41.4% of the population have had raised serum cholesterol (CHOL) with a mean of 195.9 mg/dl (±41.1 SD), as per age distribution, the 45-59 years age group revealed 41.3% the same as age group 25-44 while the 60+ age group showed 36.9% raised. According to gender, males showed 46.0% raised cholesterol compared to 34.8% among females. In terms of nationality, the distribution of raised serum cholesterol was 24.7% among Emiratis compared to 44.3% among non-Emiratis. Raised cholesterol distribution according to educational status revealed that 47.5 % of individuals with Primary and Preparatory education had raised cholesterol compared to 37.1% of individuals with no formal education.

Concerning High Density Lipoprotein (HDL), the result showed the mean was 42.9 mg/dl for all age groups, while age groups 25-44 and 45-59 years revealed that the mean HDL was 42.7 mg/dl and 43.3 mg/dl, respectively. Regarding the distribution by gender, the results showed that the mean HDL was 52.3 mg/dl for females and 40.3 mg/dl for males. As for the distribution per nationality, the mean HDL was 49.5 mg/dl among Emiratis compared to 42.6 mg/dl among non-Emiratis. Finally, the mean HDL according to educational level showed that the highest mean was among individuals with university and above degrees, which showed 46.2 mg/dl compared to the other educational groups.

Regarding the Low-Density Lipoprotein (LDL) measures, the results showed that the mean LDL among all groups was 115.6 mg/dl. It was highest among the 25-44 age group, which revealed a mean LDL of 117.9 mg/dl and the lowest among the 60+ age group, which reflected a mean LDL of 101.9. As for gender, the LDL mean was 114.0 mg/dl among females compared to 116.0 gm/dl among males. Nationality distributions showed the mean LDL was 108.4 mg/dl among Emiratis compared to 116 mg/dl among non-Emiratis. The mean LDL distribution according to educational level showed the highest mean (118.2 mg/dl) among university and more educational groups and the lowest 104.3 among no formal education group.

Regarding the triglycerides (TRI) level, the results showed that the overall mean triglyceride (TRI) level across all groups was 216.5 mg/dl, with the highest mean level of 230.7 mg/dl observed in the 45–59 age group. The lowest mean of 202.9 mg/dl was among the age group 60+ years. As for the gender of the respondents, females showed a triglyceride mean of 161.1 mg/dl compared to 231.8 mg/dl for males. In terms of nationality distribution for the triglycerides, the mean of triglycerides among Emiratis was 142.5 mg/dl compared to 220.3 mg/dl among non-Emiratis. Regarding the distribution by educational status, the results show that the highest mean triglyceride level (319.1 mg/dl) was observed among respondents with no formal education. The lowest, with 187.9 mg/dl, was among the secondary completed or equivalent educational group.

Table 7.7

Mean high-density lipoprotein (HDL), low-density lipoprotein (LDL), total cholesterol (TC), raised serum cholesterol and triglycerides according to background characteristics, DHHS, 2023.

Variable	Weighted Prevalence (%)									No. Of Respondents
	CHOL		Raised Serum Cholesterol	HDL		LDL		TRI		
	Mean	SD	%	Mean	SD	Mean	SD	Mean	SD	
Age Groups										
18 - 24	174.7	36.5	28.7	43.5	13.8	104.3	31.7	147.8	122.8	205
25 - 44	198.8	41.3	45.8	42.7	12.8	117.9	34.8	222.8	182.4	1369
45 - 59	198.5	41.3	45.5	43.3	14.1	115.4	36.2	230.7	172.7	489
60+	181.7	36.9	19.9	43.5	11.2	101.9	33.1	202.9	202.9	189
Gender										
Females	196.4	36.4	34.8	52.3	14.4	114	31.5	161.1	122.2	887
Males	195.7	42.7	46	40.3	11.5	116	1294.4	231.8	184.6	1365
Nationality Group										
Emirati	185.2	40.9	24.7	49.5	13	108.4	35.6	142.5	84.7	668
Non-Emirati	196.4	41.4	44.3	42.6	13.1	116	35.0	220.3	178	1584
Education										
No Formal Education	187.6	55.9	37.1	37.8	9.7	104.3	45.2	319.1	418.2	102
Primary & Preparatory	195.3	40.5	47.5	40.6	11.2	116	34.3	226.8	161.2	888
Secondary Completed or Equivalent	189.6	41.7	42.5	45	16.5	110.7	37.0	187.9	144.2	206
University and Above	199.9	39.8	39.2	46.2	13.8	118.2	33.3	197.8	135.6	1056
TOTAL	**195.9**	**41.4**	**43.0**	**42.9**	**13.2**	**115.6**	**35.1**	**216.5**	**175.4**	**2252**

 # Raised serum cholesterol is defined as total cholesterol >=190 mg/dL

SD standard deviation: HDL high-density lipoprotein, LDL low-density lipoprotein, CHOL cholesterol; TRI triglycerides.

Fig 7.20

Percentage distribution of adult participants according to raised serum cholesterol, nationality and gender, DHHS 2023.

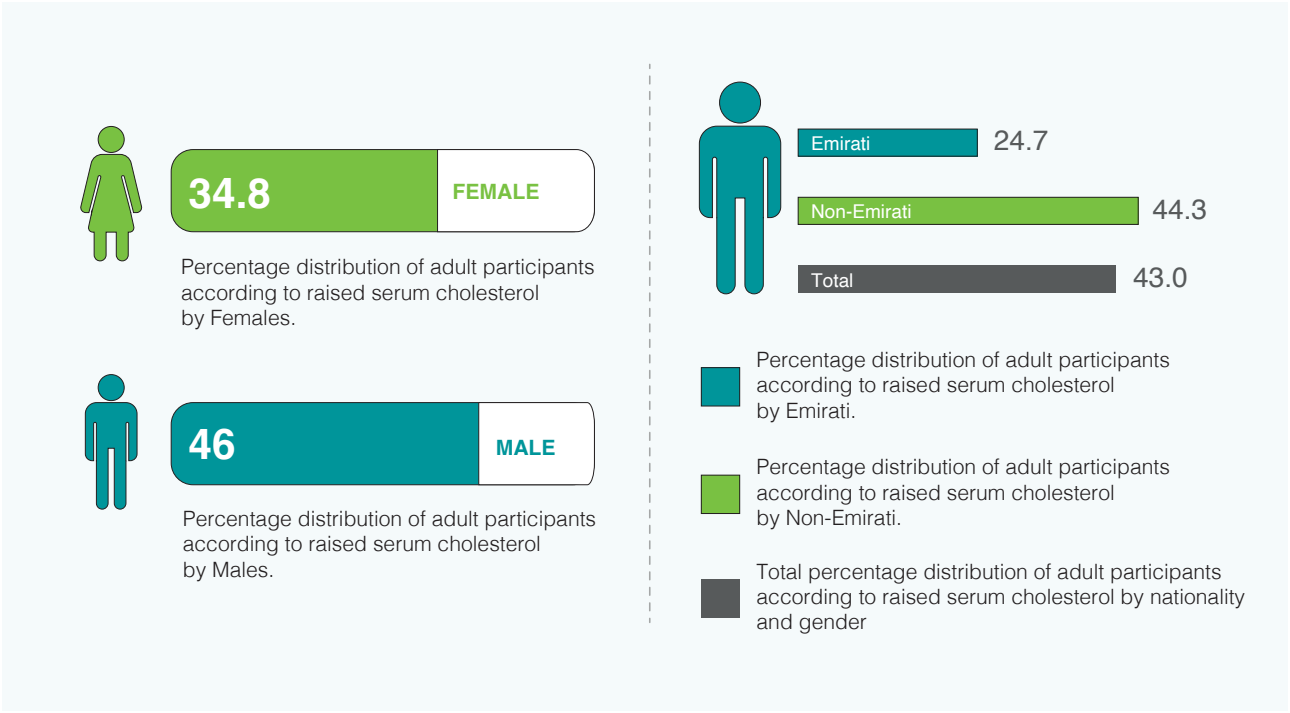
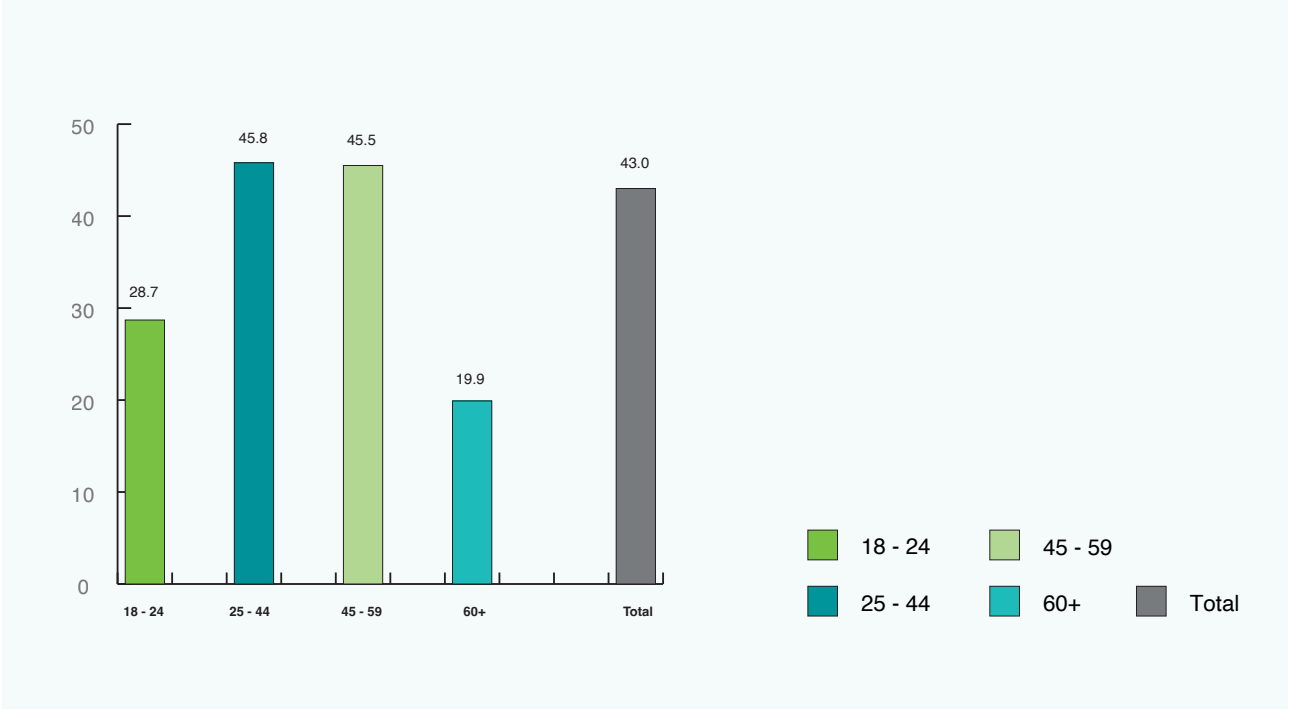


Fig 7.21

Percentage distribution of adult participants according to raised serum cholesterol and age groups, DHHS 2023.



7.7 Depressive Disorders

Depressive disorders are characterised by sadness, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, feelings of tiredness, and poor concentration. Depression (major depressive disorder) is a common and serious medical illness that negatively affects how people feel, the way they think and how they act. Fortunately, it is also treatable.

Depression can be long-lasting or recurrent, substantially impairing an individual's ability to function at work or school or cope with daily life. At its most severe, depression can lead to suicide.

The prevalence of depressive disorders was estimated using the Patient Depression Questionnaire (PHQ-9), a symptom-screening questionnaire that allows for criteria-based diagnoses of depressive disorders. Considering the self-reported (diagnosed) cases of depression, the total prevalence of depression was calculated.

According to **Table 7.8**, the prevalence of depressive disorders among adults aged 18 and over was 2%. This varies between 4.3% for females and 1.4% for males **(as shown in Fig. 7.22**). As per age distribution, the 25-44 age group showed the highest prevalence of depression (2.5%), while the 18-24 age group showed the second highest prevalence of depression (1.9%). Based on DHHS survey 2023 results, the prevalence of depressive disorders among Emiratis (5.1%) was twice as much as non–Emiratis (1.9%), as shown in **Fig. 7.23.** Further work is required with health care providers in order to identify patients with undiagnosed depressive disorders. In reference to education attainment, the highest prevalence of depressive disorders was among the university-educated group (3%), followed by those who had a secondary education (2.6%).

Table 7.8

Percentage distribution of depressive disorders among the adult population according to demographic characteristics, DHHS 2023.

Variable	Weighted Prevalence (%)		No. Of Respondents
	Have A Depressive Disorder	Negative For Depressive Disorders	
Age Groups			
18 - 24	1.9	98.1	205
25 - 44	2.5	97.5	1369
45 - 59	0.6	99.4	489
60+	0.8	99.2	189
Gender			
Females	4.3	95.7	887
Males	1.4	98.6	1365
Nationality Group			
Emirati	5.1	94.9	668
Non-Emirati	1.9	98.1	1584
Education			
No Formal Education	0.5	99.5	102
Primary & Preparatory	0.2	99.8	888
Secondary Completed or Equivalent	2.6	97.4	206
University and Above	3	97	1056
TOTAL	**2.0**	**98.0**	**2252**

**All the figures in the table were weighted as percentages, while the total number of respondents is unweighted.*

Fig 7.22

Percentage distribution of participants by depressive disorders and gender.

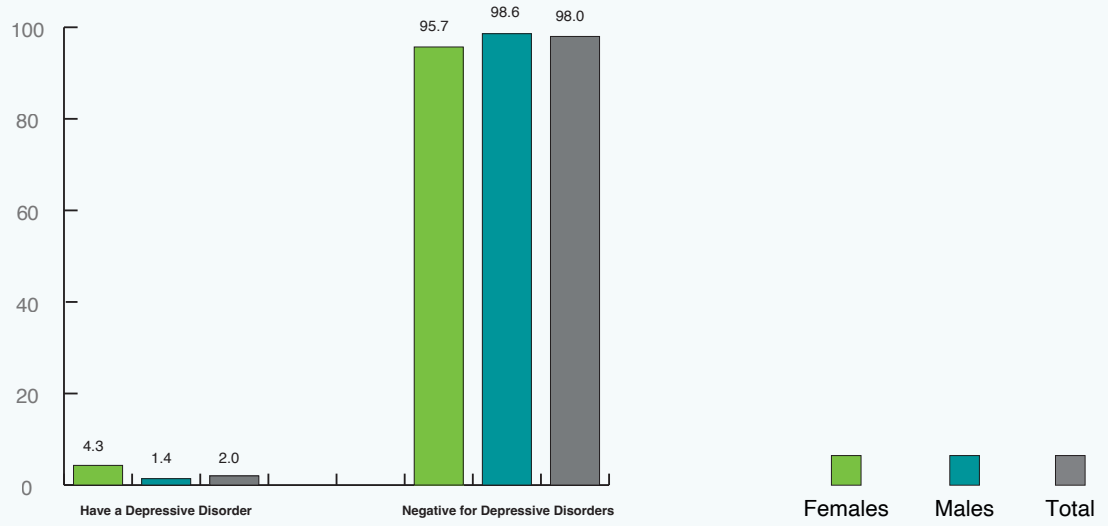
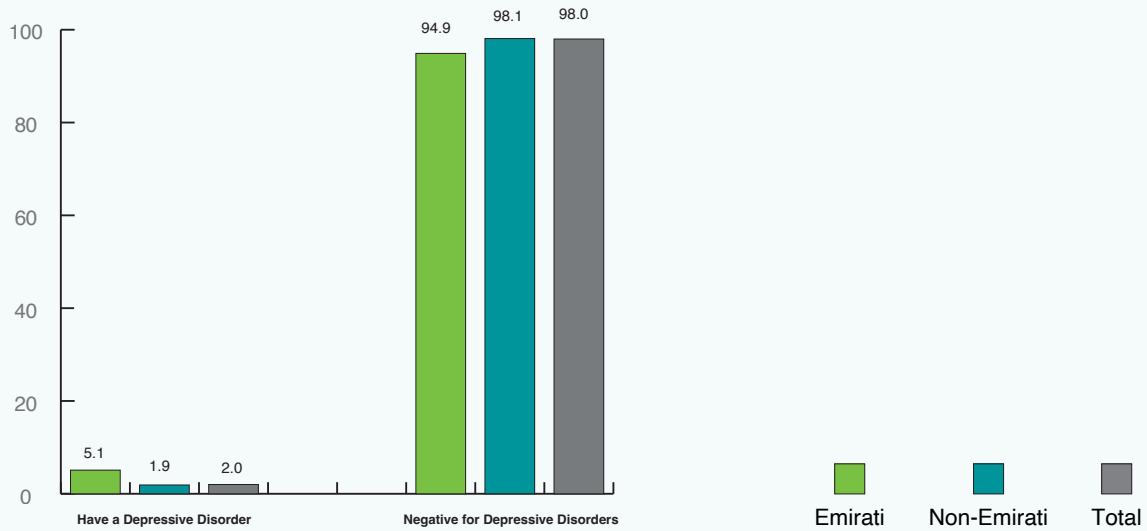


Fig 7.23

Percentage distribution of participants by depressive disorders and nationality.



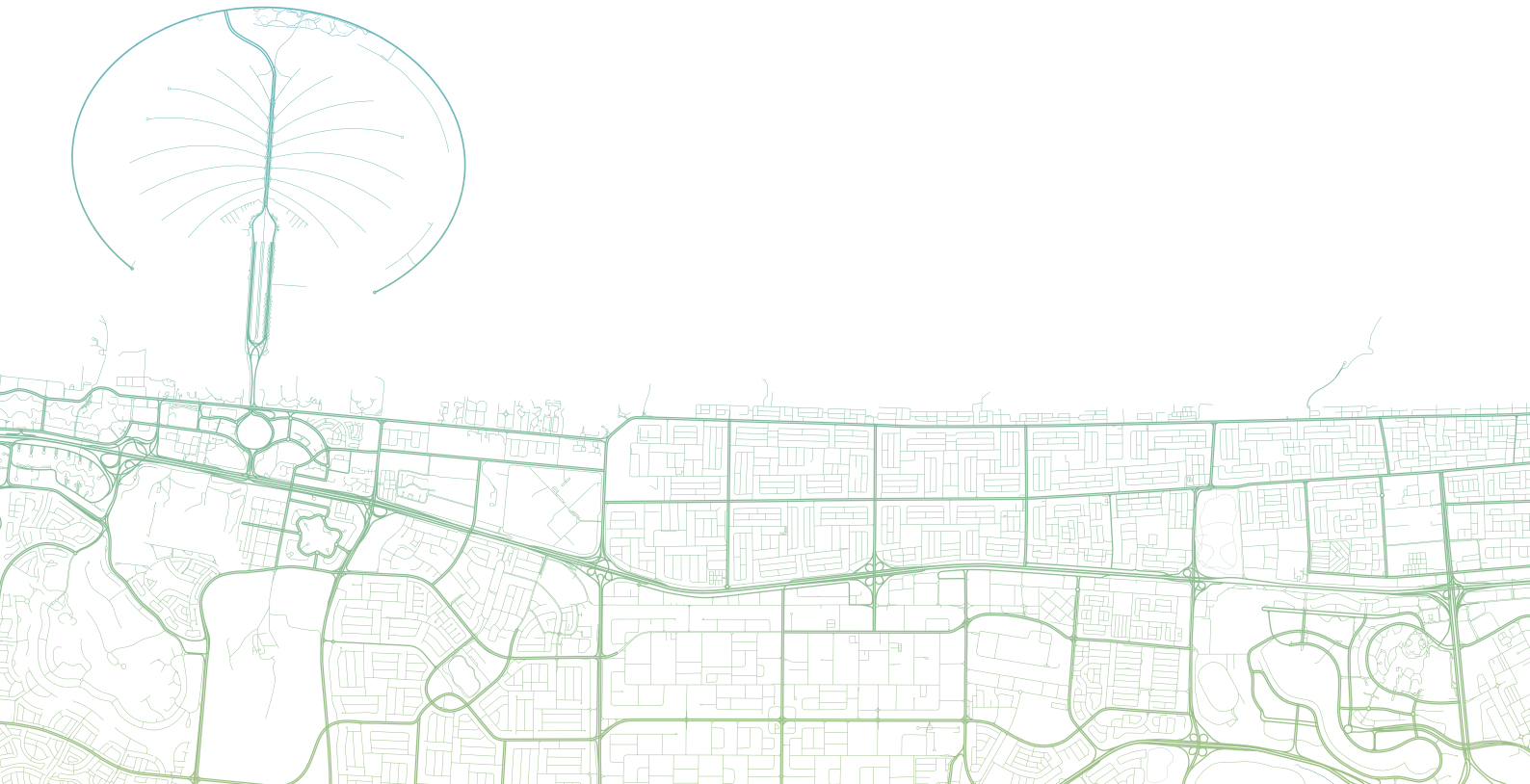
Chapter

8

Cancer Diagnosis and Screening

Key Findings

- Less than one percent (0.6%) of total respondents reported having a cancer diagnosis.
- Among those who reported having cancer, there is a higher prevalence in females (1.32%) compared to males (0.34%); especially, Emiratis (1.02%) compared to non-Emiratis (0.57%).
- Only 0.6% of total respondents have had at least one kind of screening tests done.
- Out of which, the highest was among the elderly age groups of 60+ (6.88%). Screening rates were higher in females (1.32%) compared to males (0.34%); for Emiratis the rate was 1.02% compared to non-Emiratis (0.57%); and for those with university education, the rate was 1.19% compared to 0.12% among participants with no formal education.
- As for the type of screening test done by those who had any screening, the highest screening test reported by the respondents was mammography (41.4%), followed by prostate cancer screening test (23.5%), then the Pap Smear test (21.4%).
- Out of those who reported having cancer diagnosed:
  - Breast Cancer was the highest among all cancers; it was the leading form of cancer among females (39.8%, out of all reported cancers).
  - It was followed by prostate cancer (as one of the highest prevalent cancers among males 21.3%), blood cancer (8.7%), and the least prevalent was colon cancer (1.2%).



8.1. Cancer Screening

Early detection of cancer does not only improve health outcomes for cancer patients, it also considerably reduces healthcare expenditures. Among the most important screening tests, breast cancer and cervical cancer screening tests are the most famously known and used. Early detection of breast cancer considerably reduces mortality and morbidity. The Center for Disease Control and Prevention recommends that women aged 50–74 undergo a mammography test every two years. Other types of breast cancer screening include breast magnetic resonance imaging (MRI), clinical breast examination, and self-examination. In the survey, women aged 18-69 who had been ever-married, were asked about the last time they had undergone mammography. Cervical cancer can be effectively prevented through screening programs that enable the detection of pre-cancerous lesions; they could be treated before they progress to cancerous lesions. In this survey, female respondents between the age of 18 - 69 who have been ever-married were asked if they had undergone a pap smear test during their most recent pelvic examination over the last three years.

Tables 8.1 shows adult participants, who had any cancer screening by type of cancer and background characteristics. Results reveal that only 0.6% of total respondents have had at least one kind of screening tests done. Out of which, the highest was among the elderly age groups of 60+ years (6.88%). Additionally, it was noted that the screening rates were higher in females (1.32%) compared to males (0.34%); Emiratis (1.02%) compared to non-Emiratis (0.57%); and those with university education (1.19%) compared to participants with no formal education (0.12%). As for the type of screening test done by those who had any screening, the highest screening test reported by the respondents was mammography (41.4%), followed by prostate cancer screening test (23.5%), then the Pap Smear test (21.4%). This data may reflect the attitude of the population towards cancer screening practice in Dubai with low uptake of cancer screening over all categories.

Women aged between 25-44 have the highest screening percentage; 71.4% reported having undergone a mammography test. While women aged 45-59 are less likely to undergo the mammography test in the last three years (14.3%). The percentage of those who underwent a mammography test are much higher among non-Emirati women (45.6%) compared to Emirati women (7.9%).

Regarding the screening of cervical cancer using Pap-Smear, women in the age group of 25–44 have the highest screening percentage (i.e. 31.2%) in the last three years. Similar percentage of both non-Emirati and Emirati women underwent the Pap smear test in the last three years (21.5% and 20.5%, respectively). For Prostate cancer screening, surprisingly, only some men in the elderly group of 60+ (47.8%) reported undergoing the necessary test. Unfortunately, based on the nationality grouping, non-Emirati were the only group that used this screening test; it was used by 23.5% of the total respondents.

Table 8.1

Percentage distribution of adult participants who had any cancer screening by type of cancer and background characteristics, DHHS 2023.

Variable	Has Cancer-screening	Weighted Prevalence (%)					No. Of Respondents
		Mammograph (Females Only)	PAP Smear (Females Only)	Prostate Cancer (Males Only)	Colonoscopy	Others	
Age Groups							
18 - 24	*	66.7	*	*	*	*	205
25 - 44	0.38	71.4	31.2	*	*	33.3	1369
45 - 59	0.27	14.3	14.3	*	14.3	*	489
60+	6.88	41.4	14.3	47.8	14.3	21.3	189
Gender							
Females	1.32	70.7	36.5	-	12.1	13.2	887
Males	0.34	-	-	56.7	3.1	40.2	1365
Nationality Group							
Emirati	1.02	7.9	20.5	0.0	11.5	69.1	668
Non-Emirati	0.57	45.6	21.5	23.5	7.9	18.8	1584
Education							
No Formal Education	0.12	*	*	*	*	100	102
Primary & Preparatory	0.13	9.8	*	*	*	*	888
Secondary Completed	0.39	*	*	*	18.1	82	206
University and more	1.19	48.8	25.8	28.4	8.5	21.3	1056
TOTAL	**0.6**	**41.4**	**21.4**	**23.5**	**8.3**	**24.4**	**2252**

**This refers to the percentage of people in the community of less than 0.001, and therefore, has been suppressed.*

^Numbers don't add up to 100% as multiple response was allowed.

All the figures in the table were weighted as percentage, while the total number of respondents are unweighted.

Fig 8.1

Percentage distribution of adult participants who had any kind of cancer screening by gender and nationality group, DHHS 2023.

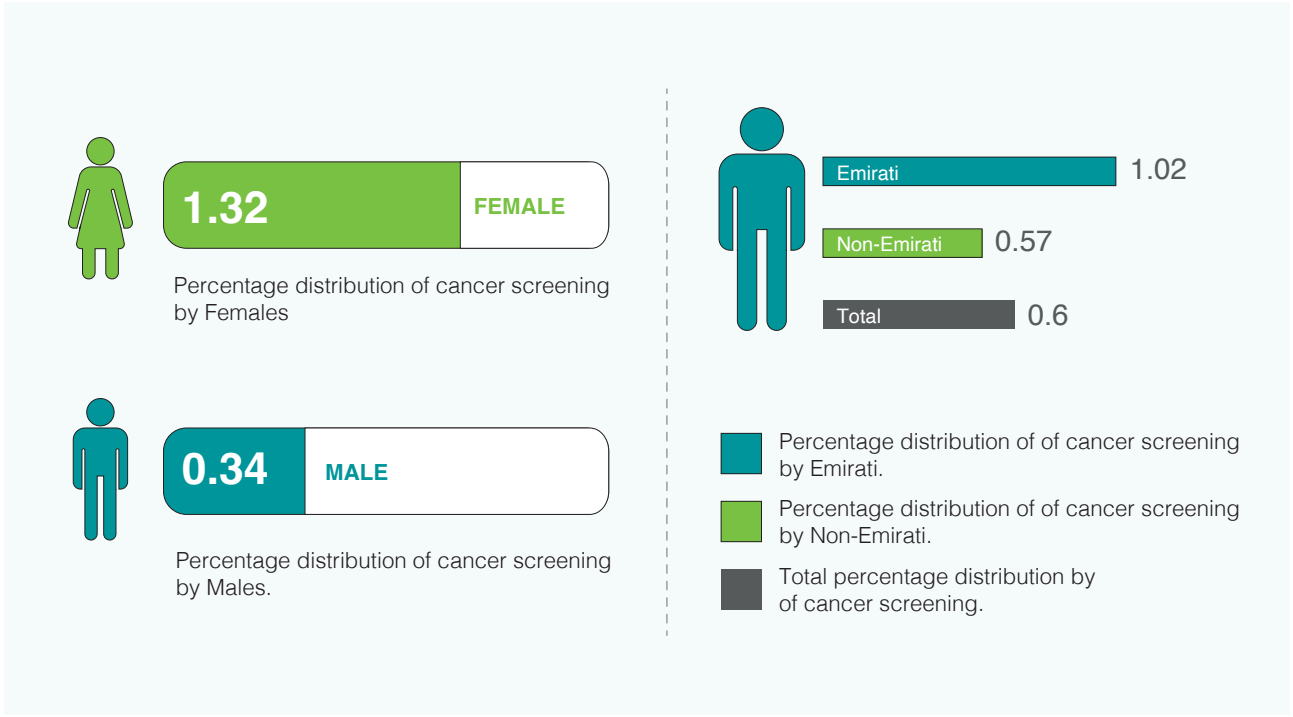


Fig 8.2

Percentage distribution of adult participants who had any kind of cancer screening by gender, DHHS 2023.

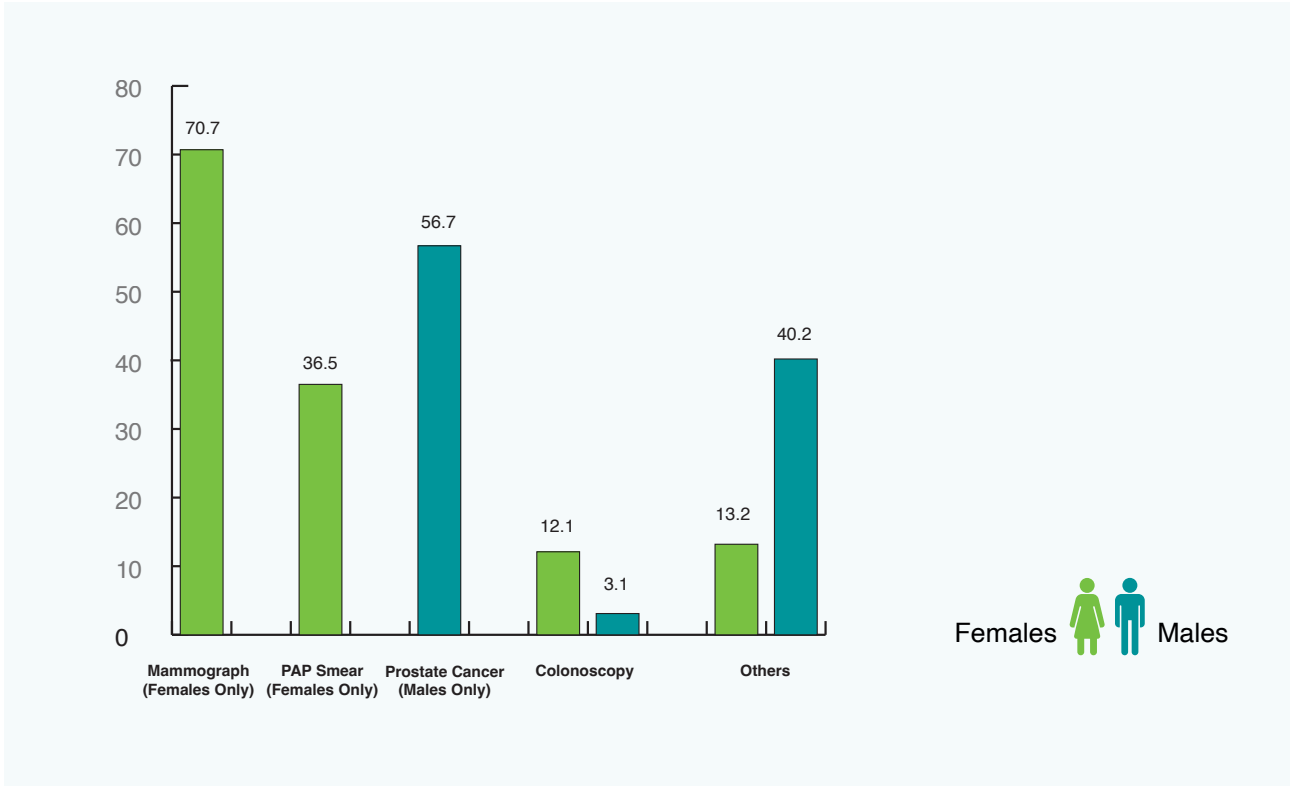
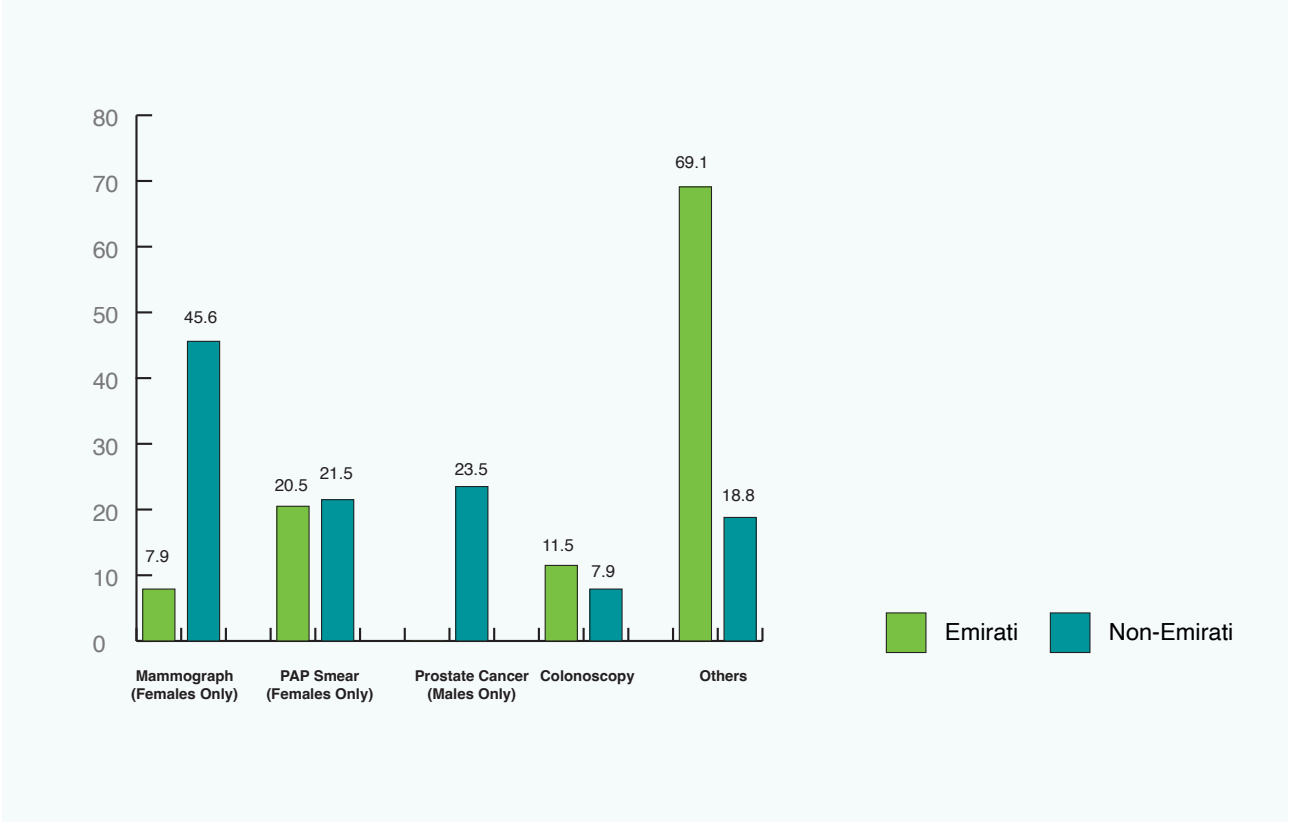


Fig 8.3

Percentage distribution of adult participants who had any kind of cancer screening by nationality group, DHHS 2023.



8.2 Cancer Diagnosis

This section presents the results of cancer diagnosis among randomly selected individuals by background characteristics. **Table 8.2** shows the prevalence of cancer cases among the respondents of the DHHS 2023. Results reveal that 0.66% of total respondents reported having a cancer case diagnosed. Among these, the prevalence was higher in females (1.56%) compared to males (0.34%), and higher in Emiratis (1.02%) compared to non-Emiratis (0.64%). According to the age distributions, people above the age of 60 had the highest prevalence of 8.36%. Finally, cancer distribution in relation to educational status revealed that the highest prevalence was among individuals with a university degree or higher (1.19%), while the lowest was among those with no formal education (0.12%). Out of those who reported having been diagnosed with cancer, Breast Cancer was noted to be the highest among females, which constitutes 39.8% of all reported cancers. This was followed by prostate cancer, which was one of the most prevalent types among males (21.3%), and blood cancer (8.7%). Notably, the least prevalent was colon cancer (1.2%).

Table 8.2

Percentage distribution of adult participants diagnosed with cancer by type and background characteristics, DHHS 2023.

Variable	Had Cancer	Weighted Prevalence (%)							No. Of Respondents
		Lung and Bronchial Cancer	Colon Cancer	Breast Cancer	Prostate Cancer	Thyroid Cancer	Blood Cancer	Others Specify#	
Age Groups									
18 - 24	*	*	*	*	*	*	*	*	205
25 - 44	0.38	*	*	64.6	*	9.2	*	26.2	1369
45 - 59	0.27	*	14.3	71.4	*	*	*	*	489
60+	8.36	13.6	*	17.7	39.3	1.5	16.1	26.1	189
Gender									
Females	1.56	11.8	*	63.7	-	6.8	*	17.7	887
Males	0.34	*	3.1	-	56.7	*	23.2	17	1365
Nationality Group									
Emirati	1.02	*	11.5	*	*	42.1	*	9	668
Non-Emirati	0.64	8.2	*	44.3	23.7	*	9.7	51.6	1584
Education									
No Formal Education	0.12	*	*	*	*	*	*	*	102
Primary & Preparatory	0.27	41.5	*	54	*	4.5	*	*	888
Secondary completed or equivalent	0.39	*	18.1	*	*	41.4	*	3.5	206
University and more	1.19	*	*	40.3	28.4	*	11.6	19.8	1056
TOTAL	**0.66**	**7.4**	**1.2**	**39.8**	**21.3**	**4.3**	**8.7**	**17.5**	**2252**

 # Numbers don't add up to 100%, as multiple response was allowed.

**This refers to the percentage of people in the community of less than 0.001, and therefore, has been suppressed.*

All the figures in the table were weighted as percentages, while the total number of respondents have been unweighted.

Total exceeds 100% because multiple response apply.

Fig 8.4

Percentage distribution of adult participants diagnosed with type of cancer and age groups, DHHS 2023.

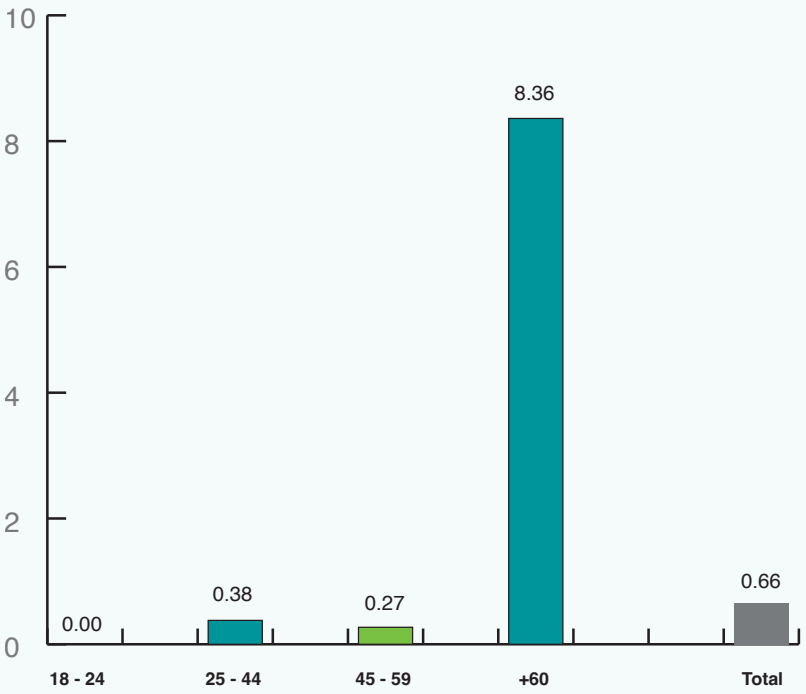


Fig 8.5

Percentage distribution of adult participants diagnosed with any type of cancer, by gender and nationality group, DHHS 2023.

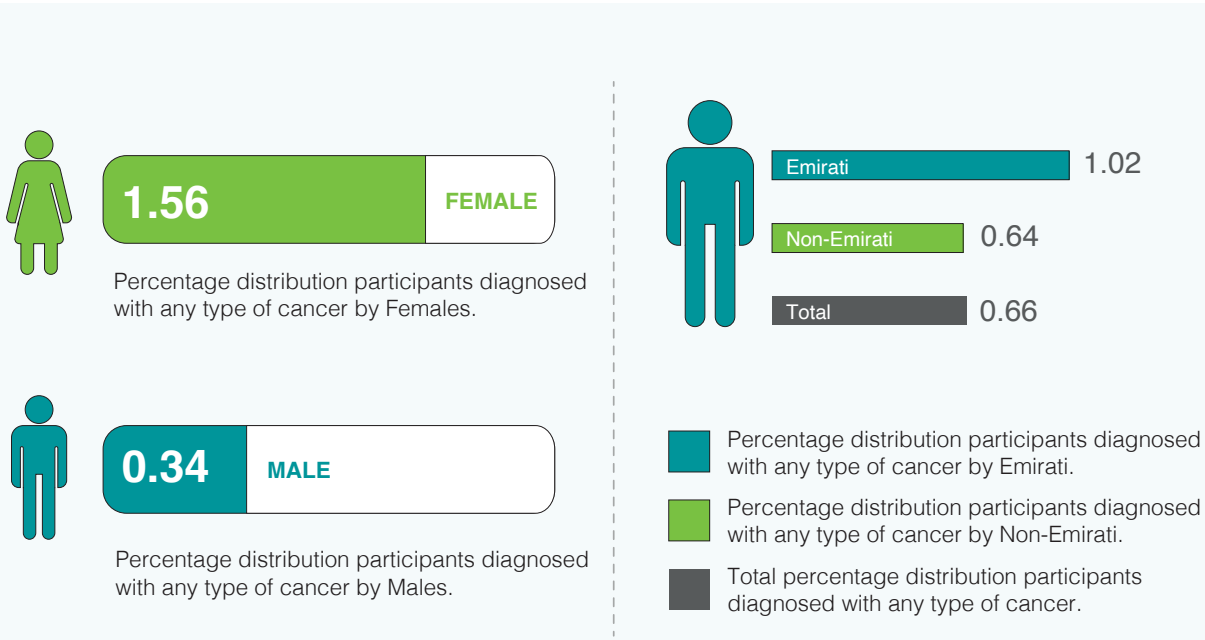
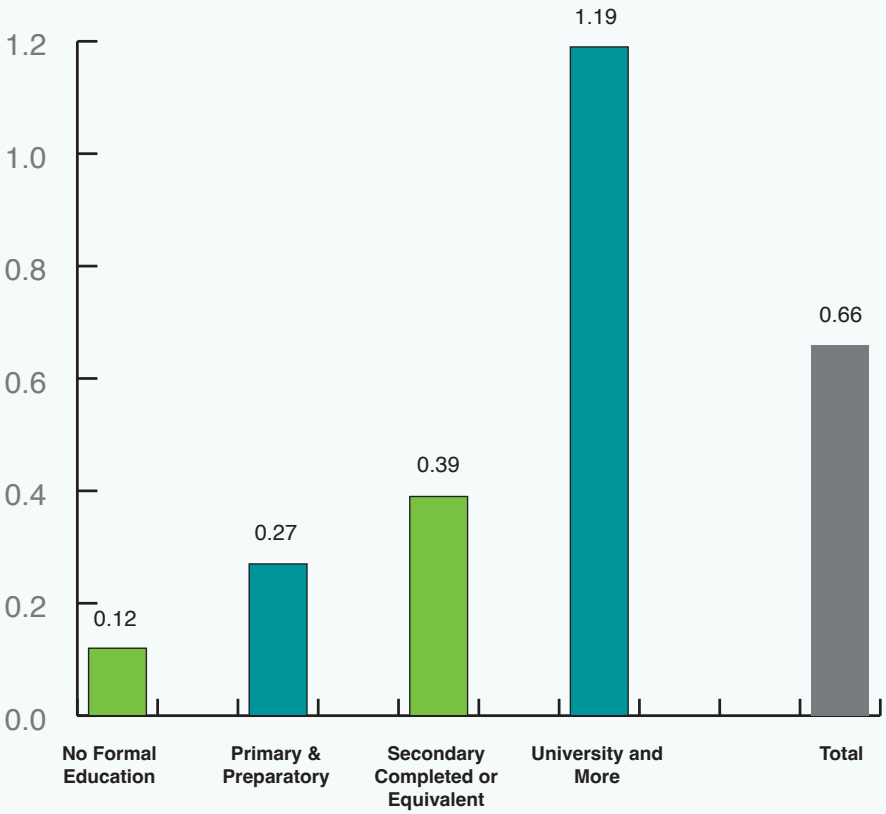


Fig 8.6

Percentage distribution of adult participants diagnosed with any type of cancer by education attainment, DHHS 2023.



Chapter

9

COVID-19

Key Findings

- About three out of ten (28.2%) of the adult participants surveyed stated that they had been diagnosed with COVID-19 at least once.
- Among those who reported having had COVID-19, the highest proportion was observed in the 60+ age group (44.4%). The prevalence was higher among females (41%) compared to males (23.5%) and significantly higher among Emiratis (70.6%) compared to non-Emiratis (25.2%).
- Among those who reported having COVID-19, the majority (73%) had mild symptoms, while only 0.3% said they were admitted to the ICU and needed critical care.
- Less than 1 percent (0.7%) of the adults surveyed, reported having any long COVID-19 symptoms, while 23.5% of them mentioned that they still have long COVID-19 symptoms (till the survey interview date)
- Joint or muscle pain was the most reported long COVID-19 symptom (44%), followed by neurological symptoms (30.7%), and Bronchial Asthma (18.4%).
- Only 1% of the adult population reported they had one family member who died of COVID-19.

9.1 COVID-19 Reported Cases

In 2023 DHHS version, respondents were asked whether they were diagnosed with COVID-19 or were told by a physician that they have COVID-19 (as per the contact tracing criteria). COVID-19 severity was classified into four categories following the WHO ISARIC classification [1];

These categories included:

- **Mild:** symptomatic patients meeting the case definition for COVID-19 without evidence of viral pneumonia or hypoxia;
- **Moderate:** a patient with clinical signs of pneumonia (fever, cough, dyspnea, fast breathing), but no signs of severe pneumonia, including SpO2 ≥ 90% in room air;
- **Severe:** a patient with clinical signs of pneumonia (fever, cough, dyspnea, fast breathing), along with one of the following: respiratory rates > 30 breaths/min, severe respiratory distress, or SpO2 < 90% on room air); and
- **Critical:** individuals who had respiratory failure, septic shock, and/or multiple organ dysfunction. In addition to those who reported having no any symptoms.

About three in ten adult participants (28.2%) surveyed reported having been diagnosed with COVID-19 at least once. Among those who reported having had COVID-19, the highest proportion was in the 60+ age group (44.4%). Females reported a higher prevalence (41%) compared to males (23.5%), while Emirati nationals accounted for 70.6%, significantly higher than their non-Emirati counterparts (25.2%).

Among those who reported having COVID-19, the majority (73%) had mild symptoms, while only 0.3% said they were admitted to the ICU and needed critical care. Among those who did not have symptoms, 15.7% were in the 25 to 44 age group, while only 6% belonged to the elderly populous (60+). More males reported not having any symptoms (18.5%) compared to 6.4% of females. Those who reported that they were admitted to the ICU were more likely to be males (0.6%) than females (0.2%); Emirati reported higher percentage (0.9%) than non-Emirati (0.3%). Among those who had mild symptoms, similar percentage was reported by Emirati (74.3%) and non-Emirati (72.8%) participants.

1 *ISARIC International Severe Acute Respiratory and Emerging Infection Consortium-COVID-19 Long Term Protocol.*
Available online: ***https://isaric.org/research/COVID-19-clinical-research-resources/COVID-19-long-term-follow-up-study/*** *(accessed on 15 July 2021)*

Table 9.1

Percentage distribution of participants, who were diagnosed with COVID-19, and the severity of symptoms, and by background characteristics, DHHS 2023.

Variable	Had Covid-19	Weighted Prevalence (%) ^					No. Of Respondents
		The Severity of Symptoms					
		I Didn't Have Any Symptoms	Mild Symptoms	Moderate Symptoms	Severe Symptoms	Admission To Critical Care	
Age Groups							
18 - 24	20.2	9.0	82.4	5.2	6.5	0.0	205
25 - 44	26.3	15.7	71.2	9.5	5.4	0.1	1369
45 - 59	34.8	12.6	74.5	11.9	4.7	0.3	489
60+	44.4	6.0	74.6	14.2	6.2	3.9	189
Gender							
Females	41	6.4	75.8	15.2	5.3	0.2	887
Males	23.5	18.5	71.2	6.9	5.4	0.6	1365
Nationality Group							
Emirati	70.6	6.4	74.3	14.6	11.0	0.9	668
Non-Emirati	25.2	15.3	72.8	9.2	4.3	0.3	1584
Education							
No Formal Education	13.7	16.9	76.9	3.5	2.7	0.0	102
Primary & Preparatory	19.3	24.7	65.1	9.5	4.3	0.5	888
Secondary completed or equivalent	19.2	5.0	76.2	8.7	10.7	0.0	206
University and more	41.2	9.5	76.3	10.8	5.4	0.3	1056
TOTAL	**28.2**	**13.8**	**73.0**	**10.1**	**5.4**	**0.3**	**2252**

! Have positive test for coronavirus or COVID-19.

^ Multiple response applies for COVID-19 symptoms

All the figures in table were weighted as percentage, while the total number of respondents have been unweighted.

Fig 9.1

Percentage distribution of participants by COVID-19 symptoms and gender, DHHS 2023.

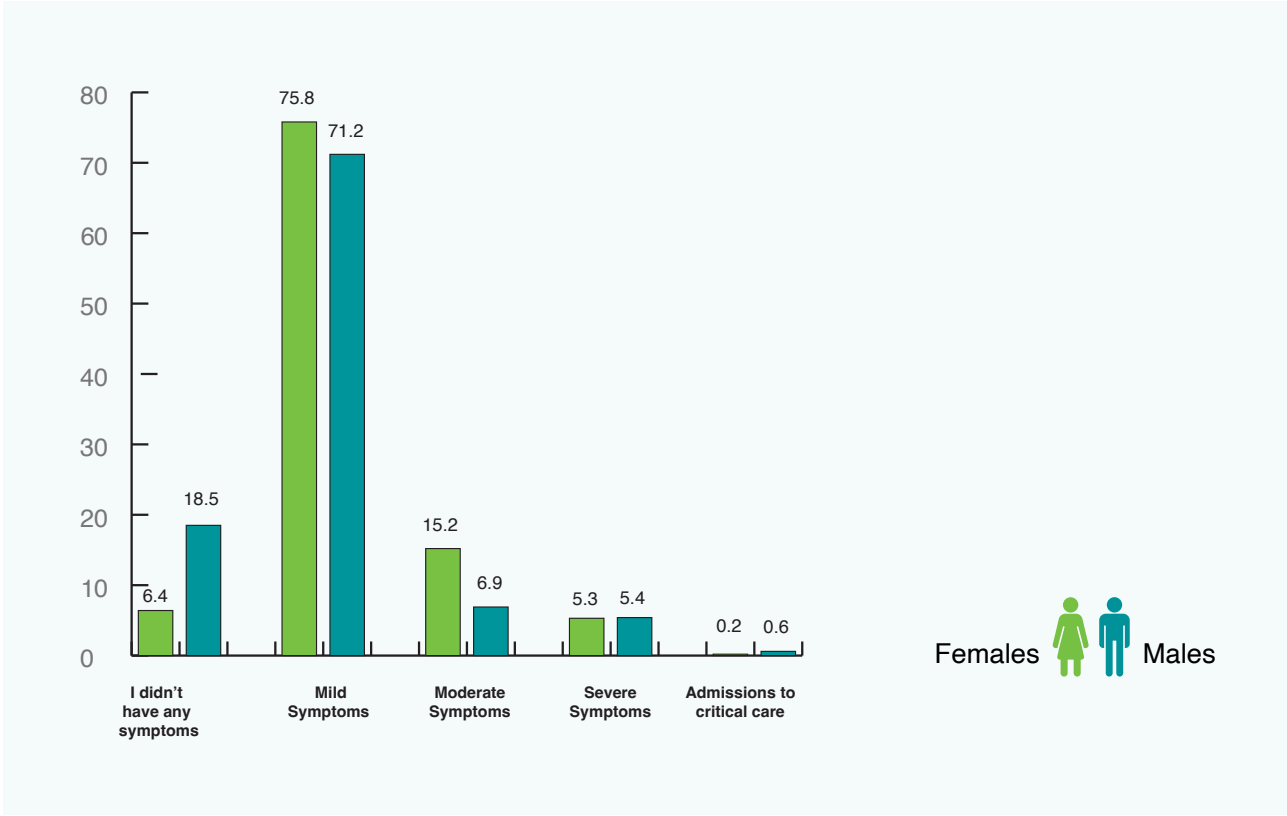
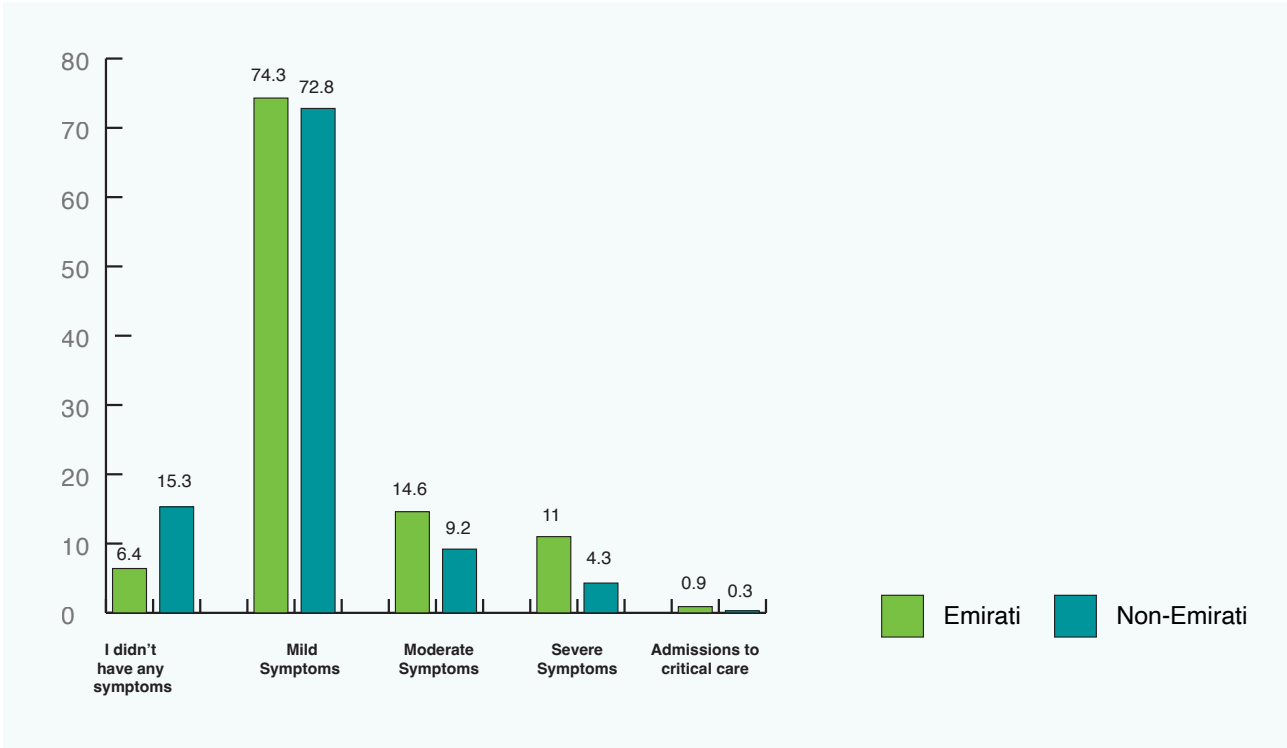


Fig 9.2

Percentage distribution of participants by COVID-19 symptoms and nationality group, DHHS 2023.



9.2 Long COVID-19

Some people infected with COVID-19 can experience long-term effects from their infection, known as Long COVID or Post-COVID Conditions (PCC). As per the USA CDC, long COVID is broadly defined as signs, symptoms, and conditions that continue or develop after acute COVID-19 infection. Long COVID is a real illness and can result in chronic conditions that require comprehensive care. Long COVID can include a wide range of ongoing health problems; these conditions can last weeks, months, or years. Usually, long COVID occurs more often in people who were severely affected by COVID-19; but potentially anyone who has been infected with the virus can experience it. People with Long COVID can have a wide range of symptoms that can last weeks, months, or even years after infection. Sometimes the symptoms can disappear and re-appear and can even result in disability for some.

Long COVID-19 symptoms typically last for 3 months or longer. **Table 9.2** reveals the percentage distribution of long COVID-19 symptoms among the adult population (18+ Years), according to demographic characteristics, DHHS 2023.

Surprisingly, only 0.7% of the adults surveyed reported having any long COVID-19 symptoms and 23.5% of them mentioned that they still have long COVID-19 symptoms (till the survey interview date). Joint or muscle pain was the most reported long COVID-19 symptom (44%), followed by the neurological symptoms (30.7%), and Bronchial Asthma (18.4%). As shown in **Figure 9.3**, the highest percentage of long COVID-19 symptoms was reported among those in the age group of 45-59 years (1.3%), females (1.2%) and Emirati (3.5%). Symptoms like allergies, bronchial asthma and rash were most reported by the youngest age group (18-24). In addition, 62.7% of the participants above 60 years stated they had cardiac symptoms of long-term COVID.

9.3 Reported Deaths Due to COVID-19

The survey asked whether any member of the households interviewed passed away/ died due to COVID-19 or its complications. The results in **Figures 9.4 & 9.5** show that only 1% of the adult population reported they had one family member, who died of COVID-19. As expected, the highest proportion of deaths due to COVID-19 was reported in the elderly group (60+ years). The proportion was higher in females (1.2%) compared to males (0.7%), in Emiratis (1.7%) compared to non-Emiratis (0.9%), and among those with no formal education (1.9%) compared to university graduates (0.7%).

2 *https://www.cdc.gov/coronavirus/2023-ncov/long-term-effects/index.html#:~:text=Long%20COVID%20is%20broadly%20defined,after%20acute%20COVID%2D19%20infection.*

Table 9.2

Percentage distribution of participants, who had long COVID-19 symptoms and the type of symptoms by background characteristics, DHHS 2023.

Variable	Have Long COVID-19	Weighted Prevalence (%) ^						Have Any Symptoms Till Now	Total No. Of Respon-dents
		Neurological	Joint or Muscle Pain	Cardiac Conditions	Allergies	Bronchial Asthma	Others		
Age Groups									
18 - 24	0.2	*	*	*	100.0	57.1	57.1	42.9	205
25 - 44	0.5	24.6	42.9	*	10.7	27.0	13.4	13.9	1369
45 - 59	1.3	46.4	49.8	6.9	8.8	7.2	*	38.4	489
60+	1.0	*	37.3	62.7	*	*	*	4.8	189
Gender									
Females	1.2	17.5	46.7	6.9	14.8	27.1	17.5	8.2	887
Males	0.5	43.1	41.5	6.8	8.8	10.1	*	38.1	1365
Nationali-ty Group									
Emirati	3.5	27.9	40.2	20.1	24.9	20.9	20.2	28.7	668
Non-Emirati	0.5	32.1	46.0	*	4.9	17.0	2.4	20.8	1584
Educa-tion									
No Formal Education	0.4	*	52.9	*	47.1	47.1	*	*	102
Primary & Preparatory	0.3	14.5	74.8	5.6	20.0	27.6	8.7	22.8	888
Secondary completed or equivalent	1.5	*	57.6	*	24.6	*	17.8	5.7	206
University and more	0.9	43.1	27.4	10.6	1.7	22.0	4.8	32.6	1056.
TOTAL	**0.7**	**30.7**	**44**	**6.9**	**11.7**	**18.4**	**8.5**	**23.5**	**2252**

^ Multiple response applies for COVID-19 symptoms

**This refers to a percentage of people in the community of less than 0.001, and therefore, has been suppressed.*

All the figures in the table were weighted as percentages, while the total number of respondents have been unweighted.

Fig 9.3

Percentage distribution of participants by COVID-19 symptoms and gender, DHHS 2023.

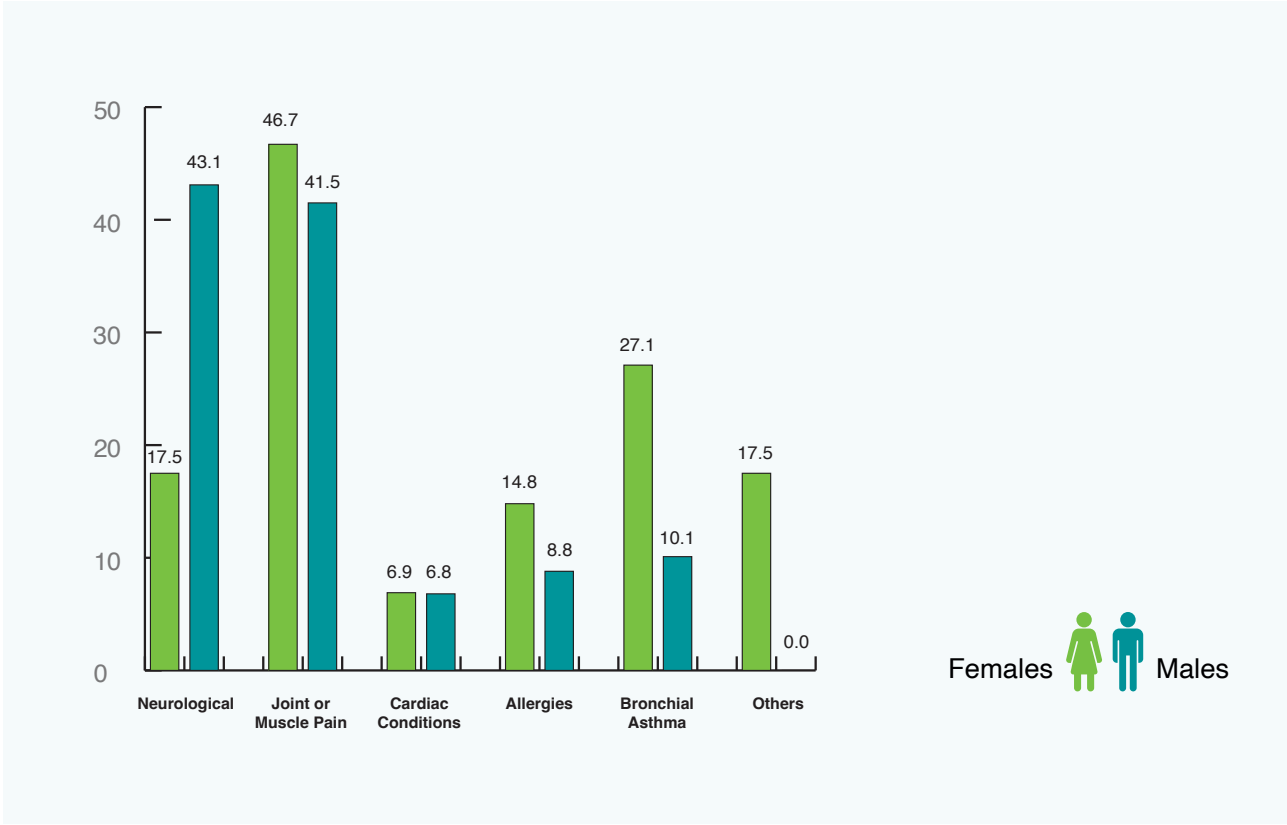


Fig 9.4

Percentage distribution of adult population, who reported having one family member, who died from COVID-19 by age group, DHHS 2023

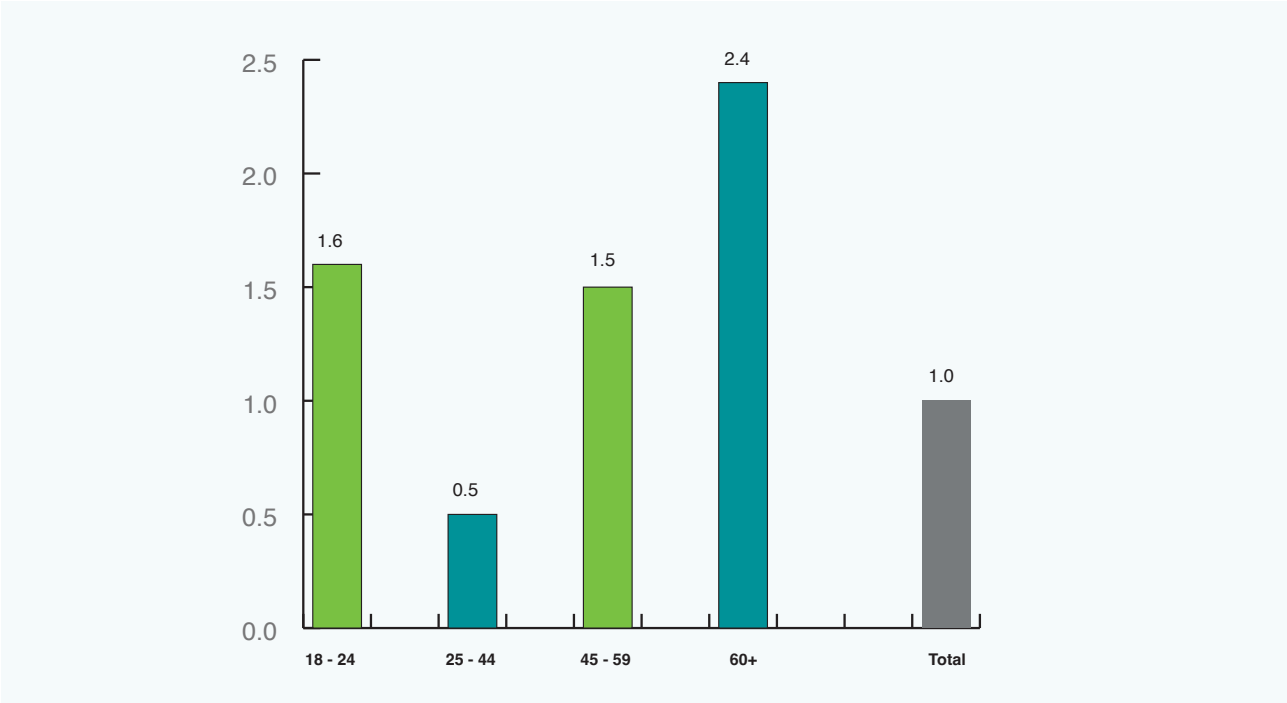
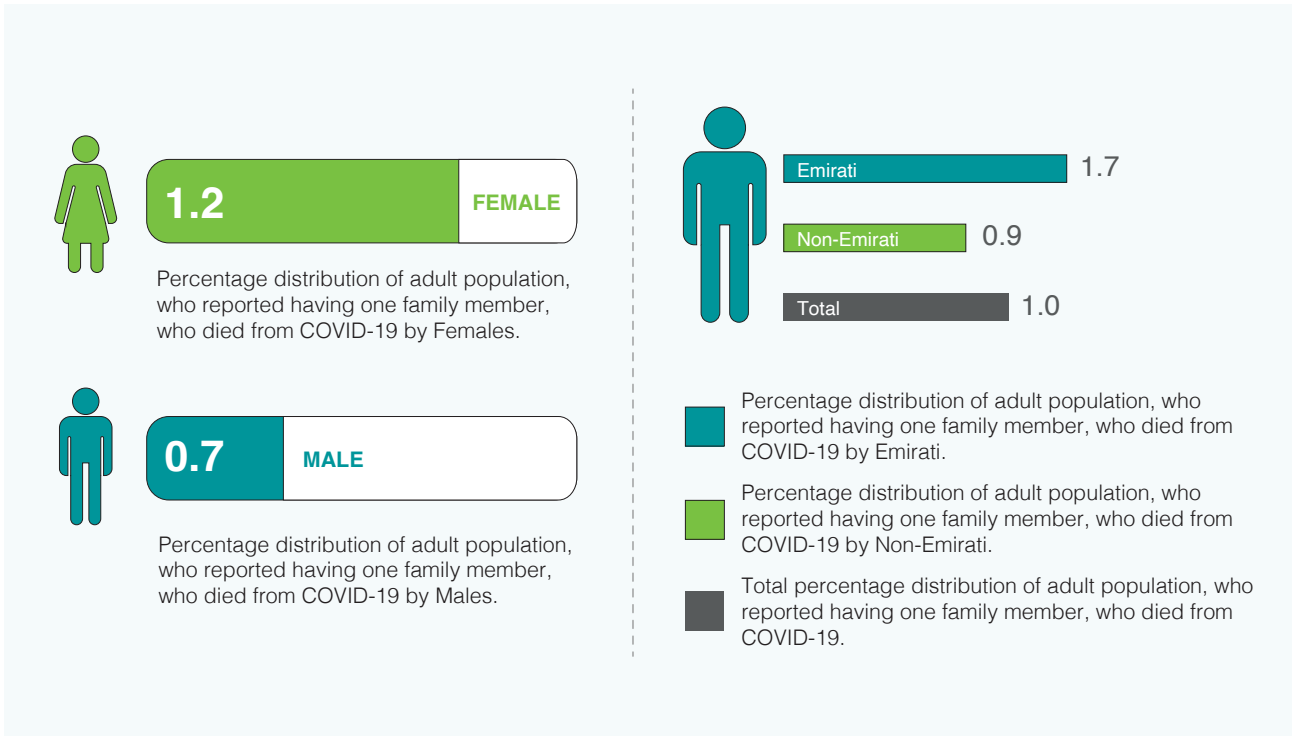


Fig 9.5

Percentage distribution of adult population, who reported having one family member, who died from COVID-19 by gender and nationality group, DHHS 2023.



Chapter

10

Healthcare Expenditure and Utilization

Key Findings

- The average visit rate of an individual to an outpatient clinic or a health center or a private clinic over three months was 1.7 visits; the annual inpatient admission rate was 1.23.
- Out Of Pocket (OOP) spending on pharmaceuticals and medical equipment was the highest and accounted for 48% of the total OOP spend, followed by outpatient services constituting 40%, while inpatient services accounted for the remaining 12% of the total OOP expenditure.
- The average OOP spent on outpatient visits in the last three months before the survey was 190 AED.
- The average OOP spend on an inpatient admission in the past one year was 3278 AED.
- The estimated average spent on an inpatient admission in a year by women was four times higher than men (5345 AED versus 1275 AED).
- The average OOP spend on pharmaceuticals and medical goods by an individual in the last one month before the survey was 509 AED.
- Particpants aged over 60 had the highest average OOP expenditure of 754 AED. The average OOP spend of a female was 30% higher than that of male.

10.1 Healthcare Utilization

This section presents the results of respondents' self-reported utilization of healthcare services according to the selected background characteristics. The surveyors reported whether members of the participants' household have utilized outpatient care services in the past three months, or inpatient care services in the past twelve months. The analysis showed that the average visit rate of an individual to an outpatient clinic or a health center or a private clinic over three months was 1.7 visits, while the annual inpatient admission rate was 1.23.

Results on healthcare utilization by background characteristics are displayed in **Table 10.1**, both for inpatient and outpatient services. According to the survey, the population age groups of 60 years and above had the largest average number of inpatient (IP) admissions and outpatient (OP) visits. It was observed that the frequency of OP visits and inpatient admission was higher for nationals compared to non-nationals, and that a women visits a doctor more often than a man.

10.2 Healthcare Expenditure

Out-Of-Pocket (OOP) health spending refers to the direct costs incurred by households, including gratuities and in-kind payments to medical professionals, suppliers of pharmaceuticals, medical equipment, and other goods and services, whose main goal is to improve or restore the health status of individuals. It also covers payments made by households to non-profits, governmental organizations, and public services.

Usually, healthcare spending consists of direct medical expenses, such as doctor visits, hospital stays, prescription purchases and fillings, durable medical equipment, and diagnostic tests. Direct non-medical expenditures for lodging, travel, and other expenses are also included in case of treatment overseas. Notably, OOP spending excludes any government reimbursement or contribution, as well as private health insurance.

This section presents the results of the Out-Of-Pocket (OOP) spending on different service types, namely outpatient, inpatient, and pharmaceutical/ durable medical goods.

Further, it provides details on the distribution of OOP spent by background characteristic for each service type separately. During the survey, households with members who utilized outpatient care services were asked to report the amount of money paid out of pocket (i.e., not covered by insurance or the government) for consultation fees (for doctors and other health personnel), diagnostic and laboratory tests, medication, minor surgeries, and therapy sessions." Similarly, households with members who reported using inpatient care services were asked similar questions, along with questions about the Out-Of-Pocket costs for health-related items such as prescription glasses, hearing aids, canes, and prosthetic devices.

The survey analysis showed that OOP spending on pharmaceuticals and medical equipment was the highest, and accounted for 48% of the total OOP spend, followed by outpatient services constituting 40%; while inpatient services accounted for the remaining 12% of the total OOP expenditure **(Figure 10.1).**

Table 10.1

Utilization of outpatient and inpatient healthcare services according to background characteristics, DHHS 2023.

Variable	Mean No. Of Outpatient Visits In Last 3 Month*	Mean No. Of Inpatient Admissions*
Age Groups		
<18	1.06	-
18 - 24	1.62	1.09
25 - 44	1.7	1.3
45 - 59	1.6	1.09
60+	2.2	1.42
Gender		
Female	2.0	1.27
Male	1.6	1.19
Nationality Group		
Emirati	2.3	1.46
Non-Emirati	1.6	1.19

**All the figures in table were weighted as percentage, while the total number of respondents have been unweighted.*

Fig 10.1

Percentage distribution of total OOP health expenditure by service type, DHHS 2023.

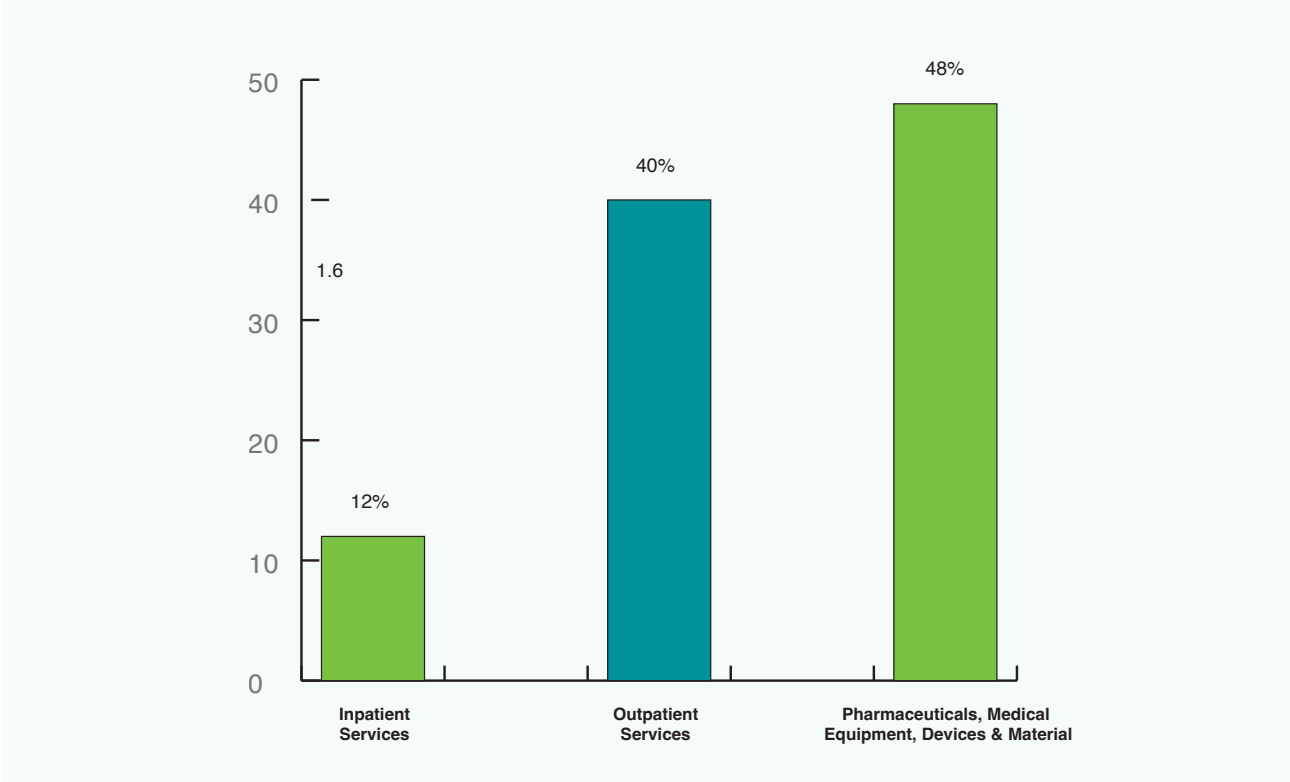


Figure 10.2 illustrates the percentage distribution of total OOP spending for different service types by nationality. The survey showed that the Emiratis' Out-Of-Pocket expenditure (OOP) on pharmaceuticals and medical equipment was significantly higher than that of non-Emiratis' (35%). The analysis also revealed that non-Emiratis' spent around 50% of their total Out-Of-Pocket healthcare expenses on outpatient services.

Fig 10.2

Percentage distribution of total OOP health expenditure by service type and by nationality group, DHHS 2023.

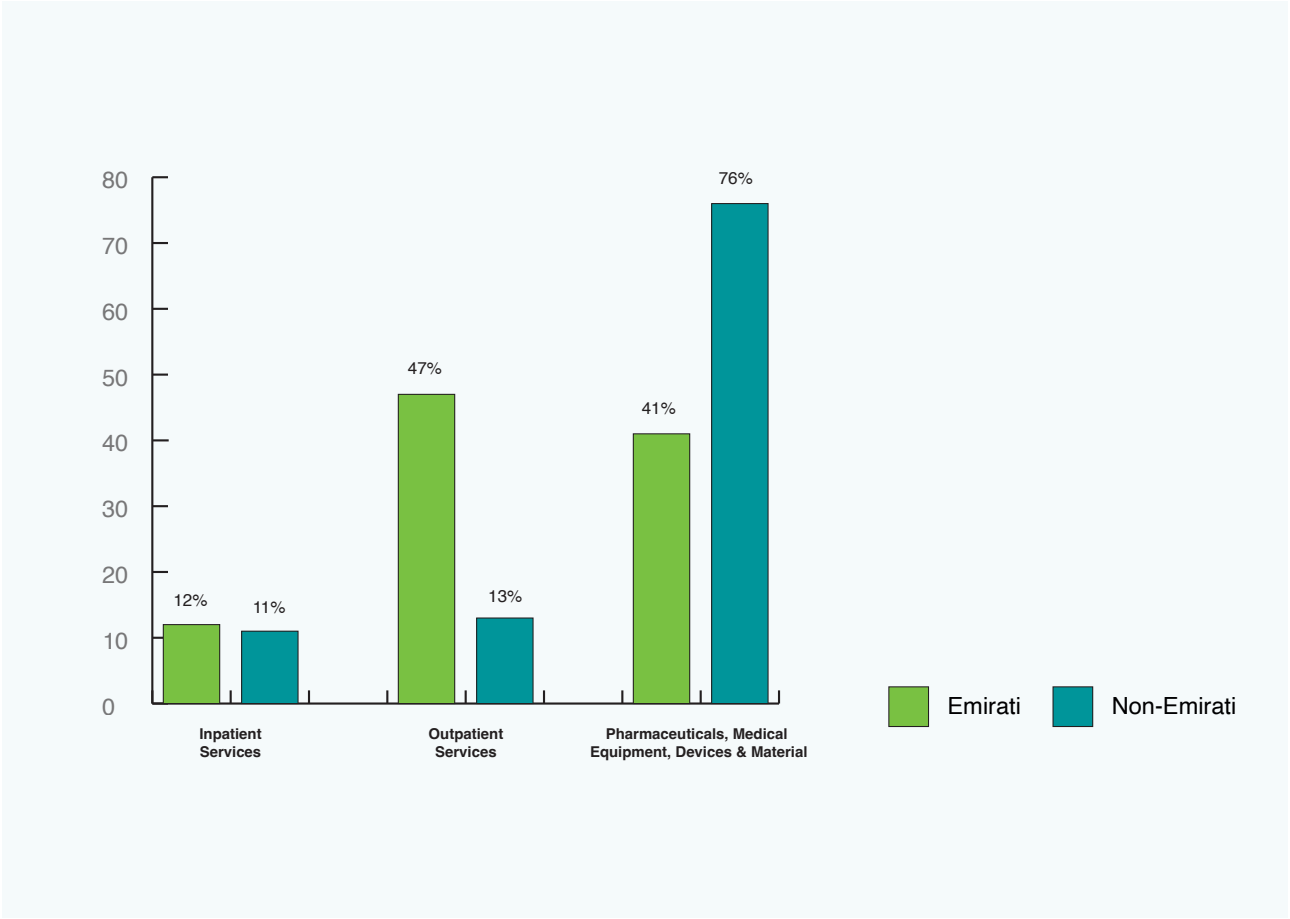


Table 10.2

Distribution of OOP health expenditure on Outpatient services, according to background characteristics, DHHS 2023.

Variable	Average Spending (AED) (Weighted)*	Number Of Respondents	Percentage Of Respondents
Age Groups			
<18	25	4	0.7
18 - 24	194	35	6.0
25 - 44	172	353	60.0
45 - 59	182	140	23.8
60+	694	56	9.5
Gender			
Female	354	255	43.4
Male	131	333	56.6
Nationality Group			
Emirati	191	198	33.7
Non-Emirati	190	390	66.3
TOTAL		**588**	**100.0**

 # Respondents who had OP visit

**All the figures in table were weighted as percentage, while the total number of respondents have been unweighted.*

Table 10.2. displays the OOP health expenditure on outpatient services, according to background characteristics. Notably, the average OOP spent on outpatient visits in the last three months before the survey was 190 AED. People aged over 60, had the highest average expenditure on outpatient care (694 AED per person). Further, it was observed that a female spent approximately three times more than a male on outpatient services (354 AED and 131 AED, respectively).

There was little difference in the average spending between Emiratis and non-Emiratis **(Table 10.2).**

Table 10.3

Distribution of OOP health expenditure on Inpatient services, according to background characteristics, DHHS 2023.

Variable	Average Spending (AED) (Weighted)*	Total Number Of Respondents#	Percentage Among Respondents
Age Groups			
18 - 24	3564	7	5.2
25 - 44	4731	66	48.9
45 - 59	3181	33	24.4
60+	4774	29	21.5
Gender			
Female	5345	80	59.3
Male	1275	55	40.7
Nationality Group			
Emirati	3100	88	65.2
Non-Emirati	3307	47	34.8
TOTAL		**135**	**100.0**

 # Respondents who reported to have IP admission

**All the figures in table were weighted as percentage, while the total number of respondents have been unweighted.*

Table 10.3. shows the distribution of OOP health expenditure on inpatient services, according to background characteristics. The average OOP spent on an inpatient admission in the past year was 3278 AED. For people aged 25 - 44 and 60+, respectively, the average Out-Of-Pocket expense for inpatient care was above 4500 AED. The estimated average spend on an inpatient admission in a year by a female was four-times higher than by a male (5345 AED and 1275 AED, respectively). There was no clear difference in OOP expenditure between Emiratis and non-Emiratis.

Table 10.4

Distribution by other OOP health expenditure - Pharmaceuticals and other medical nondurable goods, medical devices, according to background characteristics, DHHS 2023.

Variable	*Average Spending (AED) (Weighted)	Number Of Respondents	Percentage Among Respondents
Age Groups			
< 5	532	107	5.2
5 - 17	499	427	20.9
18 - 24	393	194	9.5
25 - 44	365	872	42.6
45 - 59	402	314	15.3
60+	754	132	6.5
Gender			
Female	506	1148	56.1
Male	342	898	43.9
Nationality Group			
Emirati	853	1531	74.8
Non-Emirati	298	515	25.2
TOTAL		**2046**	**100.0**

**All the figures in the table were weighted as percentage, while total number of respondents have been unweighted.*

Data in **Table 10.4** describes the OOP health expenditure on pharmaceuticals according to background characteristics, along with other medical non-durable goods and medical devices. The average OOP spend on pharmaceuticals and medical goods by an individual in the last one month before the survey was 509 AED. People aged over 60 had the highest average OOP expenditure of 754 AED. The average OOP spend of a female was 30% higher than that of male. In addition, OOP spending on pharmaceuticals by nationality grouping showed that an Emirati- national spent three time as much on discretionary items as non-Emirati.

Table 11.1

Comparison of Main DHHS KPIs with Confidence Intervals: 2023 vs. 2019 - Overall

KPI Name (%)	2023 Results			2019 Results			Significant changes *
	Prevalence Estimate	Lower CI	Upper CI	Prevalence Estimate	Lower CI	Upper CI	
Smoking among adults	25.7	23.6	27.8	15.8	13.5	18.1	*
Adequate physical activity	36.9	34.5	39.4	19.9	17.2	22.6	*
Consuming adequate amounts of fruits and vegetables	21.7	14.5	28.9	36	32.9	39.1	*
Adults with Diabetes	12.9	10.4	15.43	13.7	11.7	15.7	-
Adults with Obesity	21.9	18.4	25.3	20.8	18.5	23.1	-
Adults with Hypertension	36.9	33.3	40.5	32.5	29.1	35.9	-
Adults with depression	2	1.4	2.6	2.3	1.3	3.3	-
Obesity among children (5-17 years old)	16.9	12.7	21.1	17.3	13.2	21.4	-
Satisfaction level with health Status	93.1	92.3	93.9	94.7	93.6	95.8	-
Satisfied with the quality of healthcare	91.2	90	92.5	89.3	88.6	90	-

CI; 95% Confidence interval

** Significant changes between 2023 and 2019 results*

Table 11.2

Comparison of Main DHHS KPIs with Confidence Intervals: 2023 vs. 2019 - Emirati Nationals

KPI Name (%)	2023 Results			2019 Results			Significant changes *
	Prevalence Estimate	Lower CI	Upper CI	Prevalence Estimate	Lower CI	Upper CI	
Smoking among adults	18	14.5	21.4	14.3	11.6	17	*
Adequate physical activity	38.4	33.7	43.1	23.8	19.8	27.8	*
Consuming adequate amounts of fruits and vegetables	19.5	15.9	23.1	34.6	30.4	38.8	*
Adults with Diabetes	17.6	14.4	20.8	19.3	17.1	21.5	-
Adults with Obesity	38.5	32.6	44.3	39.9	35.5	44.3	-
Adults with Hypertension	25.9	23.9	27.9	25.2	23.6	26.8	-
Adults with depression	5	3.5	6.5	4.8	3.2	6.4	-
Obesity among children (5-17 years old)	22.2	17.4	27	19.8	15.4	24.2	-
Satisfaction level with health Status	89.4	87.1	91.7	89.1	86.9	91.3	-
Satisfied with the quality of healthcare	89.7	87.3	92	86.3	85.6	87	-

CI; 95% Confidence interval

** Significant changes between 2023 and 2019 results*

Table 11.3

Comparison of Main DHHS KPIs with Confidence Intervals: 2023 vs. 2019 - Non-Emirati

KPI Name (%)	2023 Results			2019 Results			Significant changes *
	Prevalence Estimate	Lower CI	Upper CI	Prevalence Estimate	Lower CI	Upper CI	
Smoking among adults	25.7	23	28.4	16	13.4	18.6	*
Adequate physical activity	36.9	34.4	39.4	19.4	16.3	22.5	*
Consuming adequate amounts of fruits and vegetables	21.7	13.9	29.4	36	32.1	39.9	*
Adults with Diabetes	12.9	10.5	15.5	13.7	11.9	15.5	-
Adults with Obesity	20.8	17.8	23.8	18.2	15.8	20.6	-
Adults with Hypertension	36.9	33.9	39.9	32.5	29.3	35.7	-
Adults with depression	2	1.5	2.5	2.3	1.3	3.3	-
Obesity among children (5-17 years old)	16.9	13.5	20.3	16.9	12	21.8	-
Satisfaction level with health Status	93.1	92.2	93.9	94.7	94.2	95.2	-
Satisfied with the quality of healthcare	91.2	90	92.4	89.6	88.9	90.3	-

CI; 95% Confidence interval

** Significant changes between 2023 and 2019 results*

Conclusions

Dubai's rapid socio-economic development, coupled with demographic trends over the past three decades, has reflected positively on many health indicators. However, these achievements may be overshadowed by the rise in chronic diseases, including cardiovascular disease, diabetes, and other obesity-associated syndromes, all of which are costly to treat. To sustain the improvements in health outcomes achieved over the past decades, there must be focused efforts and coordinated policies, with greater emphasis on proven, cost-effective primary prevention services that target lifestyle and behavioural changes.

The DHHS 2023 obtained comprehensive information on the health status of the population in Dubai from a locally representative sample of 9,757 household members. The data has shown important and alarming findings among the respondents, concerning non-communicable diseases, behavioural health risk factors and other health-related areas. The survey highlights the need for an executive plan of action to promote population health status.

The Following Are Among The Most Crucial Findings of This DHHS Survey:

1. Regarding the socio-demographic characteristics of the respondents, the 2023 data highlighted the following trends:

- The mean age of the surveyed population was 33.4 (±15.0 SD) years. This mean was almost similar for both males 34.3 years (±13.8 SD) and females 31.4 years (±17.1 SD). The mean age of Emiratis was 30.8 (±20.5 SD) years compared to 33.6 (±14.4 SD) years for non-Emiratis.

- As for the gender, the percentage of male respondents was 67.7% compared to 32.3% females. The gender ratio among the population of the Emirate of Dubai is 210.1 males for every 100 females.

- The distribution of the participants by nationality group was 92% non-Emirati and 8% Emirati. The difference is most evident in the age group of 25–44 years wherein 96% were non-Emiratis compared to 4% Emiratis.

- Education: The largest proportion was that of those who had completed secondary level or equivalent (46.1%), followed by those who had a university degree and higher education (9.3%). The number of those who had earned their university degrees was higher among females (56.4%) than males (32.7%).

- The employment status showed that 81.5% of the participants were actively enrolled in work (currently employed), while 13.9% were not working at the time of conducting this survey. A higher percentage of non-Emiratis (84%) were among the current workers compared to Emiratis (46.9%).

- The majority of the survey participants (71%) were currently married, 1.5% were separated/divorced, 26.3% single (never married), and only 1.2% were widowed.

2. The DHHS 2023 data highlights the prevalence and treatment coverage of chronic conditions among the sampled population during the last 12 months. Asthma was reported by 4.8% of participants, with 69.6% of these cases receiving treatment within the past 12 months. Angina was reported by 4.4% of participants. Stroke was self-reported by 6.4% of participants, showing an impressive 97.5% treatment coverage, the highest among all conditions.

3. Concerning the self-reported risk factors for the NCDs, data has been collected on four major risk factors - use of tobacco, alcohol consumption, healthy eating and physical activity as below:

- Survey data revealed that tobacco use (smoking) is relatively high among the respondents, with 25.7% being current smokers and 3.5% ex-smokers. The mean age when they started smoking is 24 years.

- The survey data showed that more than one third of respondents (36.9%) did sufficient exercise over the course of a typical week.

- The data from DHHS 2023 showed that almost one fifth of respondents (21.7%) reported that they ate sufficient fruits and vegetables on a typical day, with the vast majority of surveyed population stating that they do not eat five servings per day.

- The data also showed that about one-fourth (26.9%) of the respondents reported that they consume alcohol.

4. According to the Dubai Household Health Survey (DHHS) 2023, data on the measurement of the most common NCDs was revealed as below:

- The data revealed that the prevalence of over-weight adults, including those who are obese (BMI of 25 kg/m^2 or greater), reached 62.1% among the sampled population of DHHS 2023. Two in ten of the population in Dubai were considered obese (21.9%), with the remaining (42.3%) being overweight.

- As for the prevalence of diabetes among the sampled population, data shows that 12.9% are diabetics and 16.1% are pre-diabetics.

- Results show that 36.9% of the adult individuals surveyed in Dubai have hypertension. At the time the survey was conducted, 28% of the participants were hypertensive, but they were unaware of their condition until they were tested as part of the current survey. Only 8.9% knew they had hypertension.

5. The results indicated that the majority of respondents rated their health as either good (52.1%) or very good (41.8%). Less than 1% of respondents reported having poor and fair health.

6. The total prevalence of disability among the Dubai population was 0.6%. This percentage was higher among Emiratis (2.8%) than non-Emiratis (0.4%).

7. The results of mental health screening revealed that the prevalence of depressive disorders among adults aged 18 and above was 2.0%. This This was 4.3% for females and 1.4% for males.

8. The 2023 DHHS survey also inquired about COVID-19 and the data showed the following:

- About three out of ten (28.2%) of the adult participants, who represent Dubai's population, revealed that they had been diagnosed with COVID-19 at least once.

- Among those who reported having had COVID-19, the highest proportion was in the 60+ age group (44.4%). 41% of females and 23.5% of males reported that they contracted COVID-19 Among Emiratis, it was 70.6%, compared to 25.2% of non-Emiratis.

- Among those who reported having COVID-19, the majority (70.7%) had mild symptoms, while only 0.4% said they were admitted to the ICU and needed critical care.

- Less than 1 percent (0.7%) of the adults surveyed reported having any long COVID-19 symptoms, while 23.5% of them mentioned they still had long COVID-19 symptoms (at the time of the survey interview).

- Joint or muscle pain was the most reported long COVID-19 symptoms (44%), followed by neurological symptoms (30.7%), then bronchial asthma (18.4%).

- Only 1% of the adult population reported that they had one family member who died from COVID-19.

9. The survey also reveals important data about the health expenditure and utilization:

The average visit rate of an individual to an outpatient clinic or a health centre or a private clinic during the three-month period preceding the survey was 1.7 visits and the annual inpatient admission rate was 1.23.

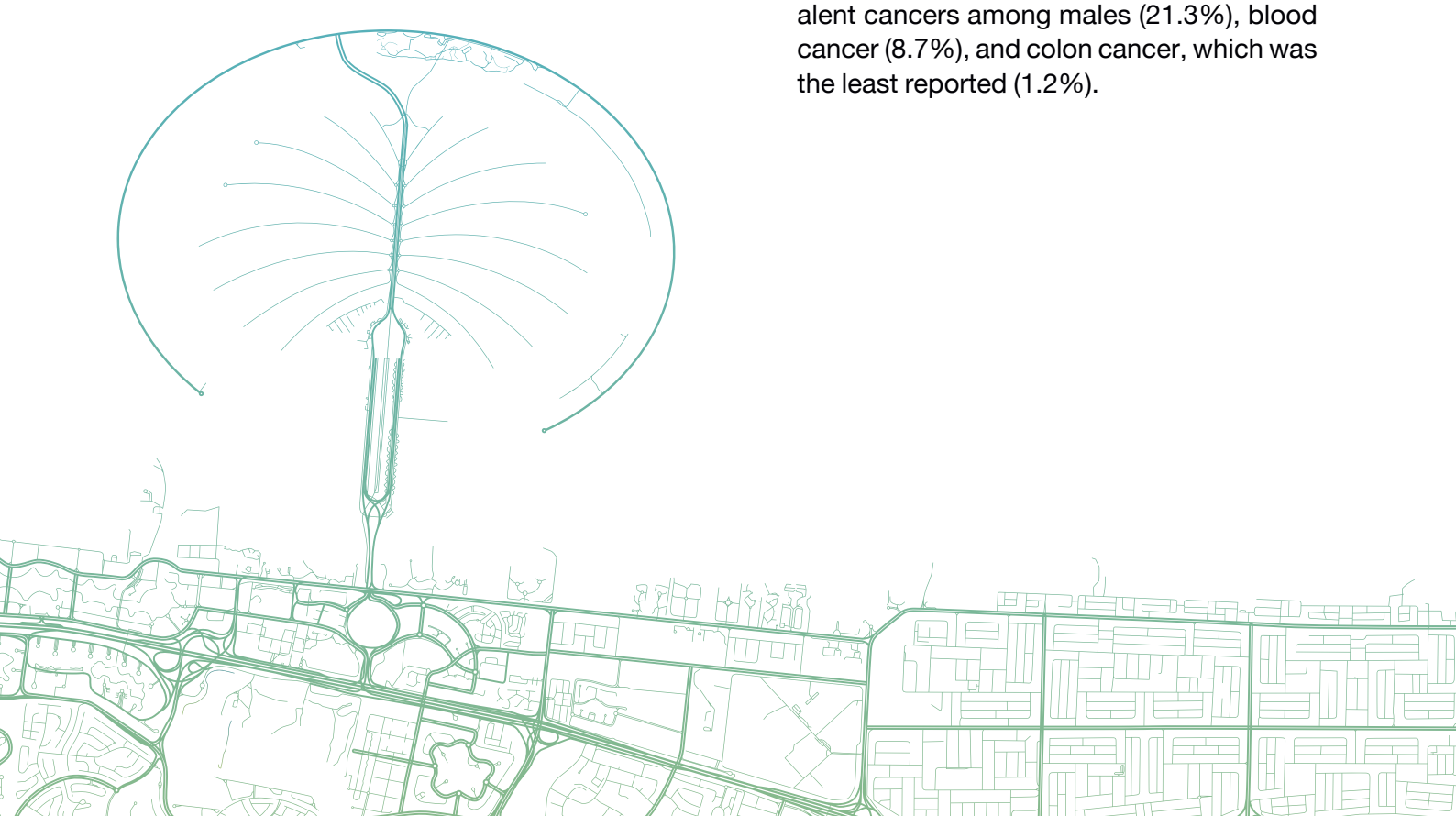
- Out-of-pocket (OOP) spending on pharmaceuticals and medical equipment was the highest, accounting for 48% of the total OOP expenditure, followed by outpatient services at 40%, and inpatient services making up the remaining 12%.

- The average OOP spend on outpatient visits in the three months preceding the survey was 190 AED. However, the average OOP spend on an inpatient admission in the past one year was 3,278 AED. Moreover, the estimated average spend on an inpatient admission in a year by females was four times higher than males (5345 AED versus 1275 AED).

10. The topics addressed by DHHS 2023 included an assessment of cancer screening and diagnosis, which yielded the following findings:

- Less than 1% (0.6%) of respondents reported having a cancer diagnosis, with females reporting higher rates (1.32%) than males (0.34%) and Emiratis reporting higher rates (1.02%) compared to non-Emiratis (0.57%). Only 0.6% of respondents had undergone at least one type of cancer screening test, with the highest screening rates observed among the elderly aged 60 and above (6.88%). Screening uptake was higher among females (1.32%) compared to males (0.34%), Emiratis (1.02%) compared to non-Emiratis (0.57%), and those with university education (1.19%) compared to individuals with no formal education (0.12%). Among the screening tests performed, mammography was the most reported (41.4%), followed by prostate cancer screening (23.5%) and Pap smear tests (21.4%).

- Among respondents diagnosed with cancer, breast cancer was the highest among all (39.8%) and the leading cancer among females. This was followed by prostate cancer, which was one of the highest prevalent cancers among males (21.3%), blood cancer (8.7%), and colon cancer, which was the least reported (1.2%).



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