

Preventive Healthcare Maintenance: A Fact-Finding Case From Lebanon

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Abstract

Preventive healthcare services are important elements in many healthcare systems. Concerns could lead to acute chronic diseases. This study explores and assesses preventive services awareness among a convenient sample of Lebanese citizens and how it may affect their economic standing. A survey is given to a hand-picked group of Lebanese residents depending on their willingness to participate. The required ethical steps were taken during data collection. The confidentiality assurance ensured that no personal identities were disclosed, and participants were free to withdraw from the study without any inquiries.

A descriptive statistical analysis was conducted with the aid of IBM SPSS software. The results indicate that 17.76% of respondents hold no insurance at all, their mean and median body weight index (BWI) recorded 25.76 Kg/m² and 25.16 Kg/m², respectively indicating non-healthy weights, 97.4% believe they are in good health. However, they do not practice good preventive services. 43.1% did not have a vision check-up during the last 12 months, also 52.9% visited their dentist, 38.1% tested their diabetes status, 41.4% have never done in-depth vision tests, more than three quarters never had a colonoscopy, colonography, computerized tomography, etc. As for females, only 14.7% had a Mammogram and 17.4% had a cervical screening. With such results, 97.4% of the respondents believe they are healthy. The findings showed a contradiction between the respondents' health status and preventive services practices. Hence, a poor understanding of what preventive healthcare services are. The overall findings are real data that will serve as a fact-finding base for relevant stakeholders in the healthcare sector, as well as for officials at the Ministry of Health, and researchers and professionals in the healthcare and wellness fields.

Keywords: Healthcare, preventive services, awareness, personal-care practices, Lebanon

Introduction

All nations globally are witnessing increasing numbers and percentages of elderly individuals within their populations. WHO (2024) reports that “By the year 2030, one out of every six individuals globally will be 60 years old or older. At this point, the proportion of individuals aged 60 and older will rise from 1 billion in 2020 to 1.4 billion. By the year 2050, the global population of individuals aged 60 and above will increase to 2.1 billion. The count of individuals aged 80 and above is projected to a threefold increase between 2020 and 2050, totaling 426 million” (para 2-3). However, the older we get, the more vulnerable we are to different diseases. Aging is a natural and unavoidable occurrence that introduces new challenges to health care in many nations. It arises from a buildup of unaddressed cellular and molecular harm over time, frequently resulting in a slow decline in physical and mental capabilities and, in the end, a heightened risk of illness [4,14,73]. Therefore, disease-prone elderly are exposed to many toxins. According to LibreTexts Libraries (2024) [36], “Disease-producing toxins are poisonous substances produced within living cells or organisms and can include various classes of small molecules or proteins that when in contact can cause disease (para 1). Also, the severity and kind of diseases caused by toxins can range

from minor outcomes to mortal consequences. In addition, Nursing Hero (2024) [52] reports that “The organisms that can generate toxins comprise bacteria, fungi, algae, and plants. Several key categories of toxins consist of but are not restricted to environmental, marine, and microbial toxins. Microbial toxins can consist of those generated by bacteria (known as bacterial toxins) and fungi (referred to as mycotoxins)” (para 5). Hence, according to the CDC (2024)[6], “Growing older raises the likelihood of chronic illnesses such as dementia, heart disease, type 2 diabetes, arthritis, and cancer. Elderly individuals are likewise more susceptible to serious illness due to infections, such as influenza and pneumonia” (para 1). Serious illnesses are more known as degenerative diseases, which according to the NCI Dictionaries (n.d.) [50], “A degenerative disease is a disease in which the function or structure of the affected tissues or organs changes for the worse over time. Osteoarthritis, osteoporosis, and Alzheimer's disease are examples.” A degenerative condition typically progresses slowly over an extended duration, with symptoms not immediately noticeable. According to IONC (2024), “If at first ignored, it progresses into cellular and tissue changes that eventually lead to functional disturbances.” Examples include

Alzheimer’s disease [14], Parkinson’s disease [55], Multiple Sclerosis, and Osteoarthritis [65], and Hypertension [69], among others. Thus, IONC (2024) posits that “to avoid functional decline and prolong health, two types of body maintenance are necessary: Preventative and corrective” (para 6).

Any functional system needs to undergo both types of maintenance, organic or inorganic. The Charles A. Dana Center (2018)[7] reports that “A healthy body requires effective, planned maintenance like any other mechanical machine. The human body is a system of interacting subsystems that include circulatory, excretory, digestive, respiratory, muscular, reproductive, and nervous systems” (p. 1). These subsystems also need preventive and corrective maintenance. When preventative maintenance is performed, proactively planned measures are adopted to enhance well-being and extend lifespan before the appearance of abnormalities (observed by self or medical expert) that can indicate a potential medical condition. Effectiveness increases when preventive maintenance is performed consistently on time, i.e., monthly, quarterly, or annually while the body remains in

good condition, aiming to avert or reduce the chance of disease onset. Conversely, IONC (2024) asserts that “corrective maintenance is performed to restore bodily function after its symptoms (observed by self) have exceeded a tolerance level that can no longer be overlooked” (para 7-8).

According to Greco (2021), “Preventative maintenance, also called self-care has a long list of benefits like optimizing the immune system, relieving stress, improving resilience, greater well-being, reducing risk of heart disease, ..., and enjoying a better quality of life” etc.” (para 1). Hence, as mentioned earlier, preventive body maintenance must be accompanied by periodic physical exams to assess body functioning. Additionally, a collection of screening tests is required to check for blood quality, diabetes, cholesterol, and cancer. Moreover, periodic dental and vision exams are needed to evaluate if more frequent visits are needed. **Exhibit 1**, herein, presents a sample of the most popular health screening tests arranged in alphabetical order.

Exhibit 1: Desired most popular health screening tests

- | |
|---|
| <ul style="list-style-type: none"> Blood pressure screening. BMI (Body Mass Index). Breast cancer screening. Cervical cancer screening. Cholesterol screening. Colorectal cancer screening. Dental exam. Diabetes screening. Eye exams. Fecal immunochemical test (FIT). Immunizations (Vaccines: Shingles, Hepatitis, Tetanus, COVID-19, Flu...). Infectious disease screening. Lung cancer screening. Osteoporosis screening (Bone density test). Prostate cancer screening. |
|---|

According to MedlinePlus (2024 a, b) [44,45] and medical experts (Prof. Mohammad Hejase, Urologist Surgeon and Consultant, Saint Therese Medical Center, Hadat, Lebanon; personal communication September 10, 2024; Dr. Mohammad Ali Trad, infectious diseases specialist at the Launceston General Hospital, Tasmania, Australia; personal communication August 31, 2024) and Ms. Hana Nemer, CEO, SAID NGO ‘Colorectal Cancer Awareness Association, Beirut, Lebanon’ (personal communication October 2, 2024), “all adults ought to visit their healthcare providers occasionally, even if they are healthy. These visits are proactive and aimed at detecting diseases, evaluating the risk of upcoming health issues, promoting wellness and a healthy way of living, and refreshing vaccinations along with other preventive health examinations. In the same way, physical measurements and body mass index (BMI) ought to be measured

during each appointment.” In summary, Johns Hopkins Medicine (2024)[32] asserts that “preventive medical tests should be routinely used as an important aspect of preventive health care for diagnosing disorders at their early stages of appearance.”

Preventive medicine is recommended as the most effective approach to enhance health and welfare, particularly in developing nations [16,51]. Furthermore, as per Rasmussen et al. (2007), “It has been demonstrated that preventive health screenings and consultations in primary care among individuals aged 30 to 49 lead to notably improved life expectancy without incurring additional direct and total costs over a six-year follow-up period.” Also, Dominicus & Akamatsu (1990) [16] assert that “Preventive medicine is urged as the best method to help promote health welfare, especially in developing countries.” Luijten (2010) [37] contends that “The most common

advantages of preventive healthcare are cost reduction through the decrease in clinical admissions and the decline in the intensity of treatments” (p. 12). Additionally, researchers like Rasmussen et al. (2007) [57] Christoffersen Nilou, Thilsing, et al., (2023) [9] inform that “it was shown that preventive health screening and consultation in primary care in 30- to 49-year-olds produce significantly better life expectancy without extra direct and total costs over a six-year follow-up period.”

The National Academy of Sciences (2024) [66] assert that “The gap in life expectancy between the richest and poorest countries now exceeds 40 years—in large measure owing to the toll of infectious diseases.” (p. 1). Moreover, as reported by Worldometer (2024) [74] and My Life Elsewhere (2024) [46], “In the United States, the average life expectancy is 79.46 years (77.05 years for men, and 81.98 years for women) as of 2024. In Lebanon, that number is 77.95 years (75.88 years for men, 79.86 years for women) as of 2024.”

This study’s objective is to assess preventive health care among a chosen sample of the Lebanese population. Knowing that “The private sector dominates Lebanon’s healthcare system, focused largely on hospital and curative care” [18] and capitalizing on Sir John Bell, Regius Professor of Medicine at Oxford University, recommendation as reported by Wels-Maug (2024) [71], “The main difficulty is in tackling the root issues before they emerged as symptoms” (para 3). In addition, Wels-Maug highlights Bell’s reasoning stating that “the necessity of shifting healthcare from a general, reactive strategy to a focused, preventive approach to improve individual’s well-being while also relieving financial burdens on healthcare systems” [71]. Hence, the merit of this research is to highlight preventive healthcare practices in the context of a particular Middle Eastern population living under stressful conditions caused by the current severe series of socioeconomic, financial, political, and war crises [59,60]. Ipsos (2023) reports [31], “The concurrent economic crisis has triggered a drastic devaluation of the Lebanese Pound, a surge in unemployment rates, and a widespread epidemic of poverty. The nation’s political landscape, marred by instability and an ineffectual response, has further eroded the quality of life for its citizens” (p. 5). To the best of the researchers’ knowledge, no such work has been recently carried out to present a holistic view of the Lebanese population’s current health and well-being affairs. This paper is divided into four sections with the introduction and background forming the first part. Section two delves into the research methodology details followed by the results, findings, and discussion covered in section three. Section four, the last section, presents the conclusion and recommendations.

Materials and Method

Achieving the aim of this research necessitates the collection of primary data from the field. This research is exploratory, and quantitative, and follows a positivist philosophical stance (Hejase & Hejase, 2013, p. 77)[23]. Also, according to Hejase and Hejase, “By

conducting exploratory research, a researcher gains a more profound understanding of how to transform the issue of lacking information on the topic into a systematic one” (ibid, p. 80). In addition, this study uses descriptive analysis based on a survey distributed to a sample of the Lebanese population.

Sampling and Sample Size

A probabilistic sampling approach was used to select a sample from a large population. Using Adam’s (2020)[1] adjusted Yamane’s (1967) [75] formula, “with a selected error margin being 5%, and for a population larger than one million persons, the optimum sample size is 267 individuals” (p. 95). Out of 350 questionnaires distributed, 307 valid ones were gathered. The response rate received was 87.71%. However this sample size is above the recommended value by Adam (2020) [1], hence statistical analysis may be performed. Moreover, further credibility analysis of this sample size was employed with a sample size of 307 and a population size exceeding one million. Referring to several researchers’ approaches [8,19,56,61, 26,27,28], an approximation reliability error value was calculated based on findings by Hardwick’s Research (2022) [22]. Results show that with a 1 million+ population, a standard error of 5% and a sample size of 307 leads to a reliability margin of error of $\pm 5.8\%$. This suggests that if the survey is conducted 100 times, in 94.2 of those instances, the results will differ by no more than 5.8%. This reliability error is quite suitable for proceeding with this exploratory research.

Survey Design

The survey constitutes two sections. Section one covers fourteen demographic questions using dyadic and multiple-choice styles. Section two consists of thirty-eight questions about wellness, health conditions, and preventive medical checkups. An open-ended question is added at the end to allow participants’ comments about the subject. Sections one and two are designed to use multiple-choice (MC) questions and a 5-level Likert scale statements assessment. These questions assessed and evaluated respondents’ awareness, attitudes, and habits concerning health wellness and preventive health practices.

Validity

The design of the paper improves external validity, facilitates more authentic participant responses, and guarantees that the data corresponds with the results. Three experts reviewed the contents and verified the correctness of the evaluation’s material. The primary claims are distinctly expressed, allowing no opportunity for discussion, and adhere to research guidelines. The validity of the questionnaire is guaranteed as it was developed based on information from the literature review. Nonetheless, specialists suggested particular modifications, and following a trial of the survey on twenty participants (not included in the sample), the definitive version of the survey was established.

Ethical Considerations

To avoid and prevent any ethical violations, participants were informed of a set of guidelines in the initial survey instructions. Participants were informed on the subject and content of the research survey. They were told that their participation was voluntary, could quit at any time, no personal medical records were solicited, and they were assured confidentiality in identity (no names or personal data were requested). Additionally, the participants were guaranteed confidentiality, that their information and identities would be kept anonymous, and that the findings would solely be utilized for academic research purposes.

Data Analysis

Hejase et al. (2012) [25] assert that it is essential to make informed, impartial decisions based on factual information and statistics which are authentic, practically correct, and up-to-date. Additionally, Hejase & Hejase (2013) [23] posit that “descriptive statistics employ simple figures or graphics to analyze a dataset” (p. 272). Result tables present averages, standard deviations, counts, and proportions for better understanding. Data analysis was performed utilizing the IBM SPSS

version 26.0 software package, known as Statistical Product and Service Solutions. Other statistical methods comprise cross-tabulation analysis.

Results, Findings, and Discussion

Demographics

Participants were 46.9% females and 53.1% males. Also, 48.2% were married (147 out of 305), 45.2% were single (138 out of 305), and 6.5% (20 respondents) were divorced, widowed, separated, or cohabited. The average age of the 283 respondents who agreed to declare their ages is 38.25 years (std. dev. = 16.01 years) and a median of 33 years. The minimum respondent’s age was 18 years old and the eldest was 96 years old. As for the respondents’ geographical location, the capital Beirut and its southern suburbs accounted for the majority of respondents 58.63% (Beirut: 41.4% and Dahieh: 17.4%). The rest of the five Lebanese regions shown in **Table 1**, accounted for 41.1% of the respondents (125 respondents). This agrees with the figures issued by the United Nations Agency for Human Settlements [68], mainly, that the Lebanese population lives in large concentrations mostly in the city of Beirut and its surrounding suburbs (Dahieh).

Table 1: Distribution of respondents per geographical area

Region	Frequency	Respondents, %
Beirut	127	41.37
Dahieh	53	17.26
Mt. Lebanon	50	16.3
South Lebanon	33	10.75
Shouf	20	6.51
North Lebanon	15	4.88
East Lebanon (Bekaa)	9	2.93

The participants’ educational background was distributed as follows: 40.5% earned a university education, 37.9% earned a master’s and/or doctorate, 11.8% have a high school education, 6.5% reached middle high school education, 2.9% had primary schooling, and 0.3% had no school education at all (see **Table 2**). Having a total of 78.43% of the participants with university and graduate studies education indicates that the selected sample is highly prepared, educated, and able to provide accurate and precise information. In addition, 66.4% (202 out of 304) own their houses, 21.7% (66 out of 304) rented houses, and

11.8% (36 out of 304) indicated that they neither own nor rent houses but live in other places. Moreover, out of 302 who declared their working status, 61.9% worked for others, 8.1% had their own business, 6.5% were housewives, 14.3% were students, 4.2% were retired, 4.6% were unemployed, and 0.3% were unable to work. Furthermore, 39% earned less than 1000 USD per month, 19% earned between 1000 and 2000 USD, 11% earned between 2000 and 4000 USD, and 3% earned more than 4000 USD monthly. **Figure 1** illustrates a more detailed monthly salary distribution.

Table 2: Educational background

Degree	Frequency	Respondents, %
No Schooling	01	0.33
Primary Education	09	2.94
Middle High School	20	6.54
High School	36	11.76
University Education	124	40.52
Graduate Studies	116	37.91
Total	306	99.9

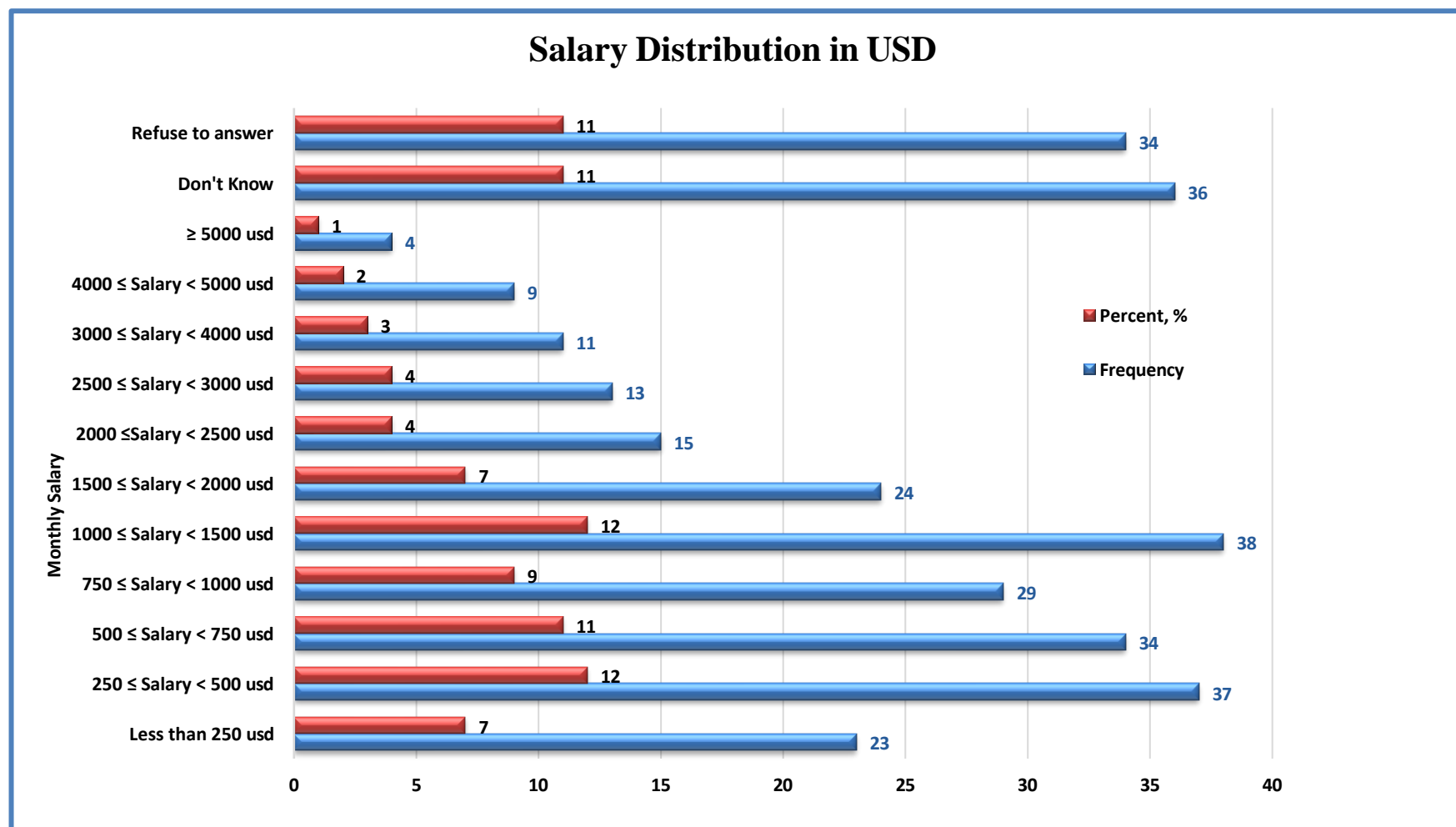


Figure 1: Respondents' monthly income distribution

Two more physical characteristics were recorded. The first is the respondents' body weight (measured without wearing shoes) whereby 276 participants volunteered the data, results show an average sample mean of 74.65 kg (std dev of 16 kg), a minimum weight of 58.65 Kg, and a maximum weight of 90.65 kg. The second is the respondents' height (measured without wearing shoes) with 287 participants providing the data. The sample mean was 170.03 cm (std dev of 9.35 cm), with a minimum stature of 160.68 cm, and a maximum stature of 179.38 cm.

Finally, when participants were asked about what plan of health insurance they own, a total of 77.3% of the respondents had acquired some plan of insurance including 13.7% who bought their insurance plan from a private insurer. However, there was 17.76% of respondents who got no insurance at all. Nevertheless, amid Lebanon's crises, more problems are occurring affecting both private

and public insurers and consequently the Lebanese population's chances for better healthcare. According to El-Jardali, Masri, & Sleem (2023)[18], "The depreciation of the national currency has resulted in higher medical expenses and inflation, creating difficulties for insurers and affecting access to private health insurance. Private insurers have shifted to accepting only USD payments, restricting access to those from higher socioeconomic backgrounds, whereas public insurance funds still allow subscriptions in the swiftly depreciating Lebanese pound (the lira), leading to constrained coverage for beneficiaries' medical expenses" (para 10). Table 3 presents the correspondent insurance figures. Worth mentioning that the United States offers an advanced combination of private and public insurance services, Masterson & Louis (2024) [40] report that "89.1% of adults (between 18 to 64 years old) had health insurance at some point in 2023, while 7.6% of Americans of all ages did not" (para 3).

Table 3: Distribution of health insurance ownership

Region	Frequency	Respondents, %
Insured at work	92	30.26
Governmental insurance/Social Security Insurance	90	29.61
Acquired personal insurance	42	13.82
Armed Forces Insurance	11	03.62
No insurance at all	54	17.76
No answer	15	04.93
Total	304	100.00

Body Mass Index (BMI)

Khanna et al. (2022) [34] informs that “Body mass index (BMI), a calculation derived from an individual's height and weight, enables the categorization of people into groups like obese or overweight. Through these classifications, we can evaluate the risk for hypertension, diabetes, cancer, high cholesterol, and various other chronic illnesses” (p. 1). Ricciotti & Hur (2016) [58] assert that “BMI is a pretty reliable way to determine whether one has too much body fat” (para 1). “BMI therefore provides an inexpensive screening method for determining whether a person is underweight, healthy, overweight, or obese; the four general weight categories used by

physicians and epidemiologists” [63]. According to Ricciotti & Hur (2016), [58] “BMI is calculated by dividing an adult's weight in kilograms by their height in meters squared.” For example, a body weight of 87 kg and height of 1.78 m, provides a BMI of $87 \div (1.78)^2 = 27.46 \text{ kg/m}^2$, i.e., the person has a BMI of 27.46 kg/m^2 and is considered to be overweight. Body mass index is one way to look at whether a person is at a healthy weight. In general, the higher the number, the more body fat a person has. Exhibit 2 presents a “BMI scale to interpret BMI values” [11,70].

Exhibit 2: Body Mass Index scale

Description	Range
Underweight	Less than 18.5 kg/m ²
Optimum range	18.5 to 24.9 kg/m ²
Overweight	25 to 29.9 kg/m ²
Class I obesity	30 to 34.9 kg/m ²
Class II obesity	35 to 39.9 kg/m ²
Class III obesity	More than 40 kg/m ²

Source: Cleveland Clinic, 2022; Weir & Jan, 2023.

Table 4, presents the BMI descriptive statistics for the valid 272 respondents who reported their body weights and heights. It is noticed that the median BMI is 25.16 kg/m² and a mean of around 25.76 kg/m² with a 95% confidence interval between 25.20 and 26.3 kg/m². When these numbers are compared to the reported BMI figures in Exhibit 2 ranges (A normal BMI is between 18.5 and 24.9 kg/m²), it can be

concluded that the majority of the respondents suffer from a non-healthy weight. Consequently, according to the National Heart, Lung, and Blood Institute (2024) [49], “Persons with irregular body weights are candidates who have higher risk for certain diseases such as heart disease, high blood pressure, type 2 diabetes, gallstones, breathing problems, and certain cancers.”

Table 4: Descriptive statistics for the respondents' BMIs

		Statistic	Std. Error
Mean		25.7558	0.28187
95% Confidence Interval for Mean	Lower Bound	25.2009	
	Upper Bound	26.3107	
5% Trimmed Mean		25.4868	
Median		25.1618	
Variance		21.610	
Std. Deviation		4.64870	
Minimum		17.36	
Maximum		49.15	
Range		31.80	
Interquartile Range		5.55	
Skewness		1.082	0.148
Kurtosis		2.362	0.294

Furthermore, according to Silverman & Lipscombe (2022) [64], “It is worth mentioning that BMI, is one of the most widely discussed and utilized risk factors in medicine and public health, given the increasing obesity worldwide and its relation to metabolic diseases.” **Figure 2** presents the histogram for the respondents' BMIs where the positive skewness to the right is identified indicating a tendency towards obesity. This can be easily proved by performing the

Kolmogorov-Smirnov test of normality. For our BMI data, the Kolmogorov-Smirnov statistic takes a value of 0.077 (degrees of freedom = 272). The p-value provided by SPSS (quoted under Sig. for Kolmogorov-Smirnov) is 0.001. Therefore, there is statistically significant evidence to reject the null hypothesis that the variable follows a normal distribution; Hence, BMIs tend to indicate obesity.

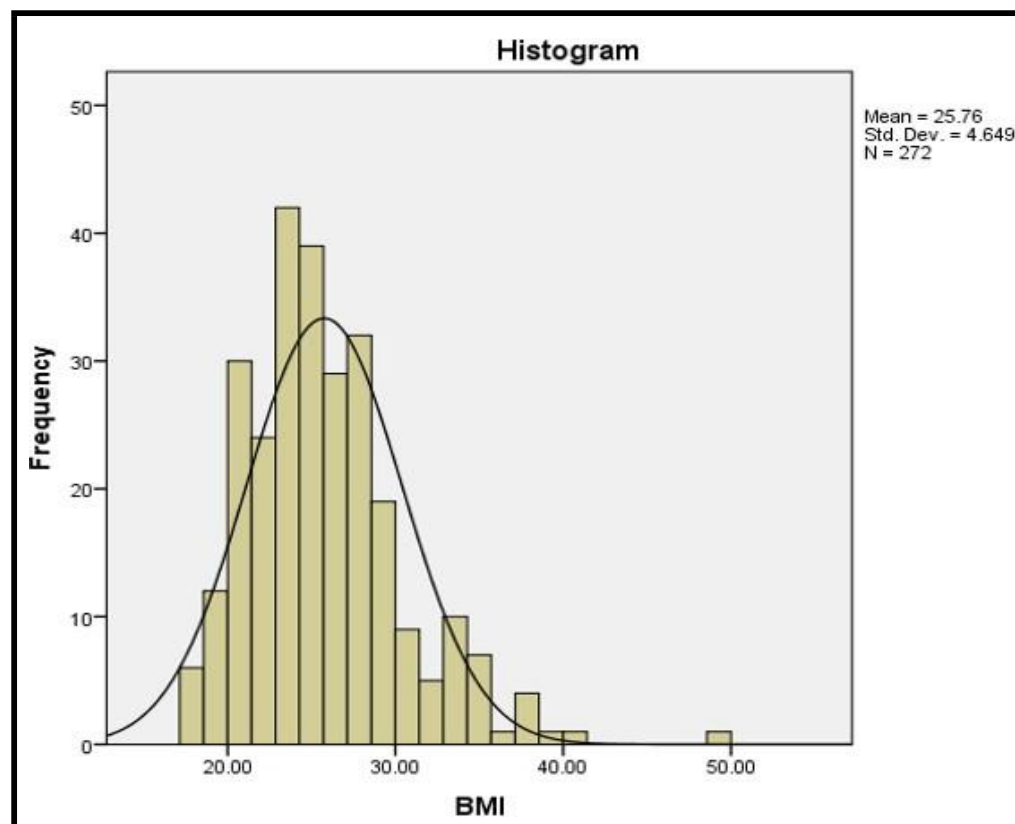


Figure 2: The histogram of the respondents' BMIs.

The main outcome of all the aforementioned results is that our sample of respondents suffers from a high risk of being affected by metabolic diseases.

Health Status

Health status reflects how individuals view their health. According to the National Center for Health Statistics (2024) [47], “reported health

status is a predictor of important health outcomes including mortality, morbidity, and functional status.” Results from **Figure 3** show that a grand majority or 97.4% of respondents whose average and median ages are 38.25 and 33 years, respectively, report good health status (ranging from acceptable to excellent). Only 2.6% of them report poor health status, which is a relatively low percentage due to the relatively low age central tendency statistics.

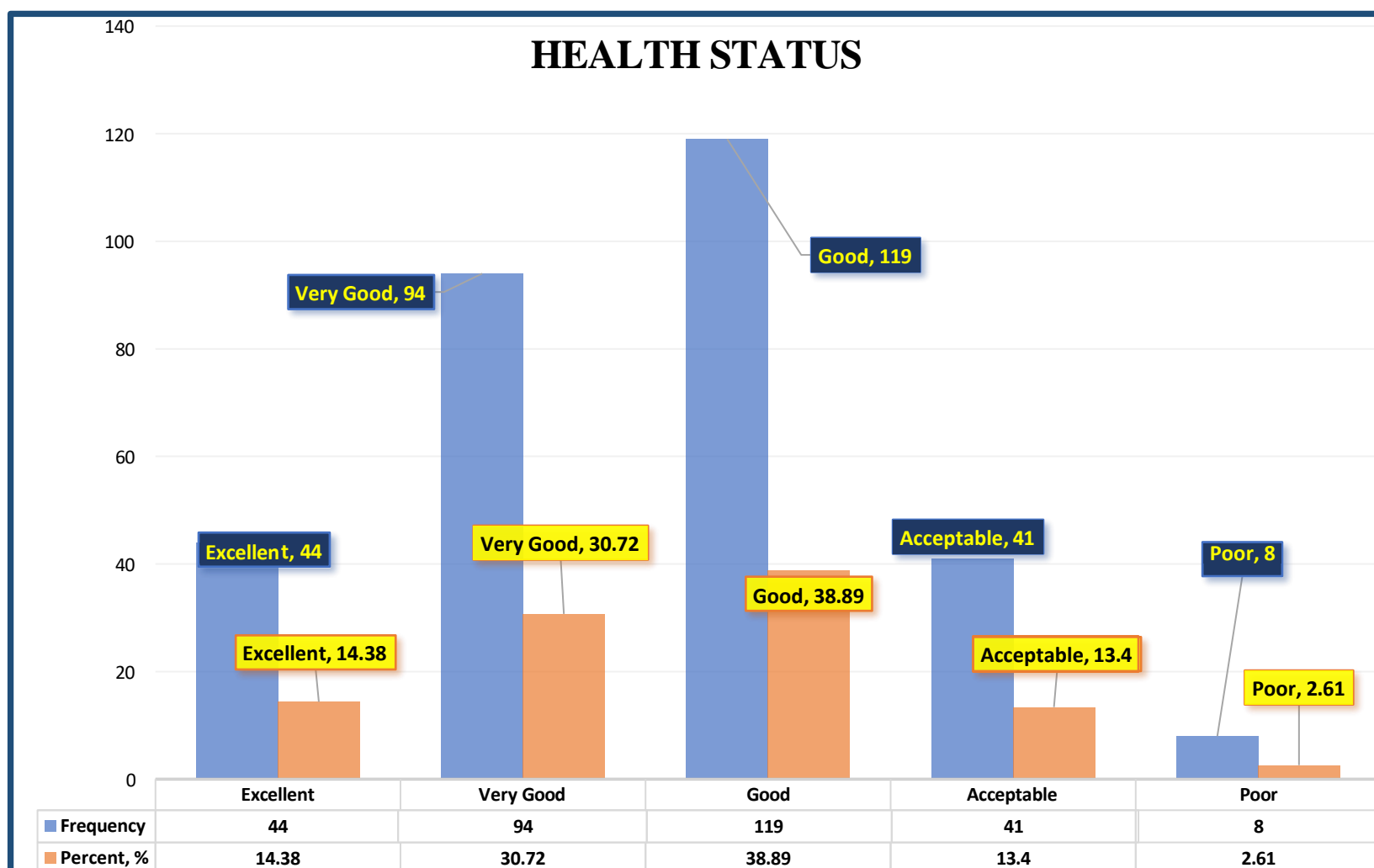


Figure 3: The health status of 306 respondents.

Another indicator that could support the low percentage of individuals with poor health status is the night hours of sleep. It has been reported by Olson (2023) [53] that “for adults, getting less than seven hours of sleep a night regularly is linked with poor health.” Results for this indicator show a nearly normal distribution of respondents’ sleeping time with the median and average times being 7 and 6.98 hours, respectively; these figures lead to a positive health status (well-being) of the respondents.

However, based on the subjective perception of how healthy the respondents feel, one may be easily driven to deduce that the sample recognizes their health and well-being. “Self-perceived health defined as the perception of an individual's health in general, even if it is a subjective health indicator, is significantly associated with objective health and quality of life” (Maniscalco, Miceli, Bono, & Matranga, 2020) in the general population. Nonetheless, the BMI outcomes point in the opposite direction. Along this line, Costello, Heelan, Mowry, et al. (2010) [13] assert that “The majority of soft drinks contain a lot of calories but fail to create a sense of satiety; as a result, people often raise their daily caloric consumption when drinking soft drinks, potentially resulting in heightened body fat” (p. 190). Confirming this point, Hejase & Hejase (2024) [24] report that “Lebanese participants consume an average of 45.5 liters per person per year. In addition, 82.3% were aware of the health damages caused by soft drinks and 17.7% were unaware of health damages. Moreover, 17.1% of the participants declared that they would never quit consuming soft drinks, and 15.1% informed that they do not consume soft drinks” (p. 8). Hence, the previously mentioned contradiction,

sleeping time versus BMI effects, is supported by the fact that Lebanese are aware of the health damage of soft drinks, increasing body fat -consequently higher BMI, but “there is still a 17.1% who will never quit and another 29% they are not sure they will quit” (ibid, 2024, p. 8).

Preventive Health Maintenance

Preventive health care aids the human body in remaining healthy, identifying health issues early, finding the best treatments, and avoiding specific diseases. Preventive services encompass medical check-ups, vaccinations, laboratory tests, and health screenings. Thus, the survey respondents were asked a multitude of questions related to the aforementioned preventive measures. Next, survey statistical outcomes of their responses are presented and discussed.

Physician Visitations

Respondents were addressed with the following question: How long since you have paid a visit to a physician?

Table 5 illustrates that 59.3% of the respondents visited a physician during a time interval of one year. The most common advice is that, if a person is in good health and does not have chronic conditions to manage or acute events to handle, an annual checkup with a doctor is sufficient when age is above 50 years [54]. Results show that respondents exercise poor preventive body maintenance. For those whose age is below 50 years, 43.1% did not visit any physician during the past year interval; moreover, for those whose age is 50 years or older, 33.8% never saw their healthcare physician during the past year.

Table 5: Responses related to the last time a physician was seen.

			The last time I visited a physician		Total
			A year or less than a year	More than a year	
Age Category	Age < 50 years	Count	119	90	209
		% within Age Category	56.9%	43.1%	100.0%
	Age ≥ 50 years	Count	47	24	71
		% within Age Category	66.2%	33.8%	100.0%
Total		Count	166	114	280
		% within Age Category	59.3%	40.7%	100.0%

Female Mammogram and Cervical Cancer Screening Tests

Zeb (2024) [76] reports that “The American College of Radiology recommends annual screening mammograms for all women over 40, regardless of symptoms or family history.” Figure 4 shows that only 14.7% (21 out of 143) of the female respondents reported they have had a mammogram sometime during the past twelve months. Results show 6.98% of females older than 40 reported having had a mammogram during the past 12 months, and only 12.8% during the

past 24 months. Those results indicate poor preventive body health maintenance among the female community.

The situation escalated further when women participants were asked: “Have you done a cervical cancer screening?” For all female respondents, only 17.40% reported that they had done the screening. “Under the National Cervical Screening Program, women aged 25 to 74 who have ever been sexually active are recommended to have a Cervical screening test every five years” [5].

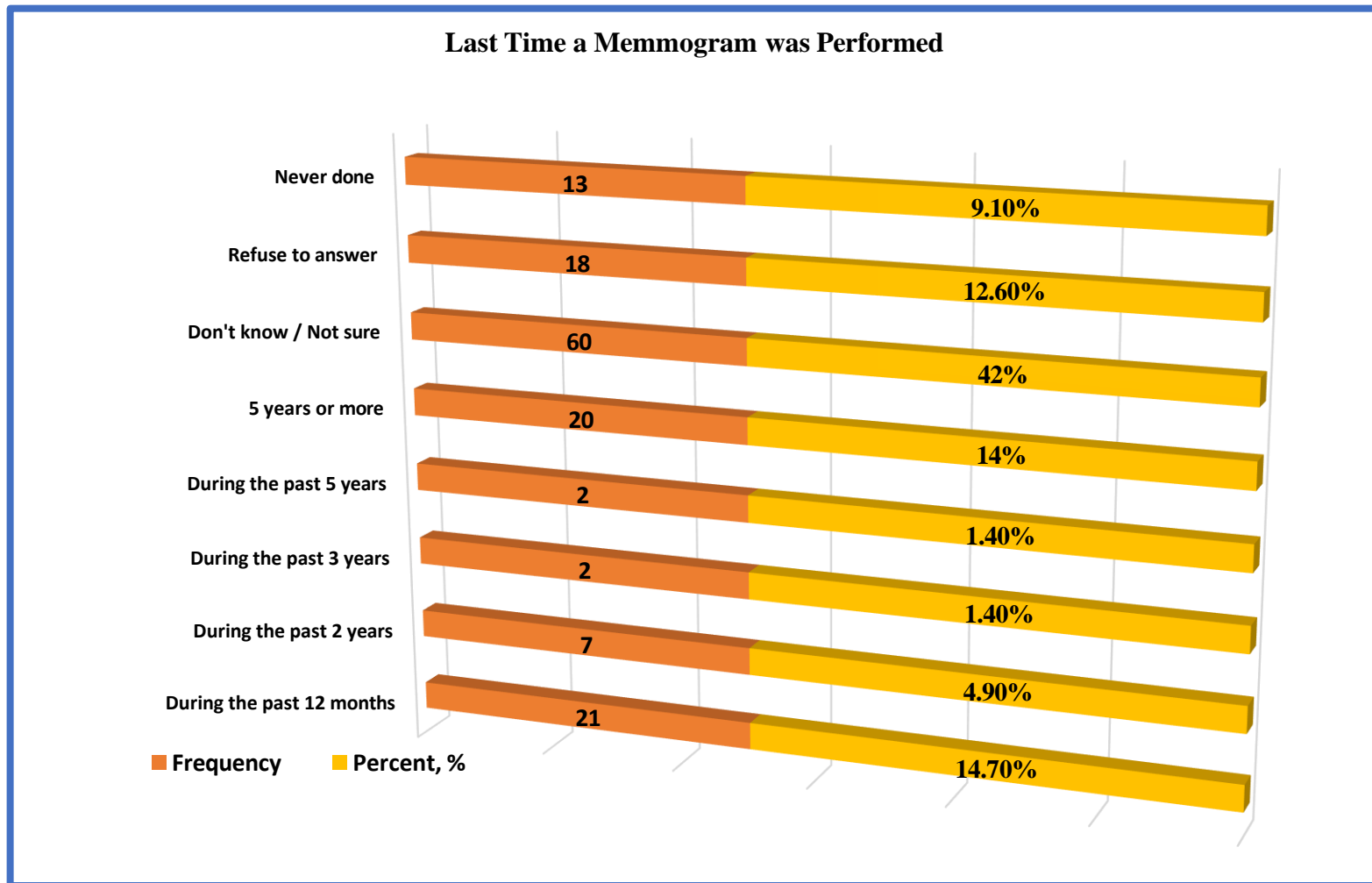


Figure 4: Responses related to the last time a mammogram test was performed.

More Preventive Health Care Questions

Looking at Table 6, one can easily detect the high percentages of poor preventive body and health maintenance. The respondents were asked a variety of questions as presented in Table 6 where unfortunately most of the answers were negative pointing to the fact that very few undergo preventive tests or vaccines. One must recall that preventive

care benefits, according to Cigna Healthcare (2023) [10], include “Early detection of medical problems, illnesses, and diseases that helps one’s doctor provide proactive care and treatment. Routine care can help individuals stay focused on their health goals” (para 4).

Table 6: Responses related to various preventive health maintenance questions.

Preventive Health Maintenance Question	Percentage of “NO” respondents
Have you done Colonoscopy and/or Sigmoidoscopy	78.7%
Have you done any Colorectal Cancer (CRC) tests like Fecal Immunochemical test (FIT)/Cologuard/Others?	88.7%
Have you done any Computed Tomography (CT) or Colonography (CTC)?	87.2%
Have you done any stool tests like FIT?	72.4%
Have you done a Computerized Tomography (CT) scan of your chest?	64.9%
Have you done a CT scan for chest cancer?	93.1%
During the last 12 months, did you get a flu vaccine?	87.6%
During the last 12 months, did you get a tetanus vaccine?	80.5%

Dentists Visitations

Respondents were asked, “When was the last time you visited a dentist?” Table 7 presents the respondents' answers. As for dental care, 52.9% of the respondents visited a dentist during the past 12 months. We emphasize here that it is a reasonable goal to visit the

dentist at least once a year for an oral health checkup as emphasized by Delta Dental (2024)[15]. The overall outlook here leads to poor preventive dental care.

Table 7: Responses related to the last time a dentist was visited

	Frequency	Percent
Within the last year	162	52.9
Within the last two years	45	14.7
Within the last 5 years	36	11.8
5 years or more	19	6.2
Not sure / Don't know	20	6.5
I never visited a dentist	20	6.5
Refuse to answer	4	1.3
Total answers	306	100.0

Diabetes Tests

One of the American Diabetes Association (ADA) recommendations for diabetes screening is “Anyone older than age 35 is advised to get an initial blood sugar screening. If the results are normal, they should be screened every three years after that” [41]. When respondents were asked about the last time they did a diabetes test, 40.7% of them had never done a diabetes test and 38.1% confirmed they did. As for those

respondents whose ages were 35 or more (135 respondents) 27.4% of them (37 respondents) never did the test and those who did the test during the past year interval were 56.30% (76 respondents). Consequently, **Table 8** and **Figure 5** present that the frequency of diabetes tests by the participants indicates a poor preventive healthcare habit.

Table 8: Responses related to when was the last time you did a diabetes test?

	Frequency	Percent
During the past 12 months	117	38.1
During the last 2 years	18	5.9
During the last 3 years	11	3.6
During the last 5 years	6	2.0
During the last 10 years	5	1.6
10 years or more	4	1.3
Never done the test	125	40.7
Don't know / Not sure	21	6.8
Total	307	100.0

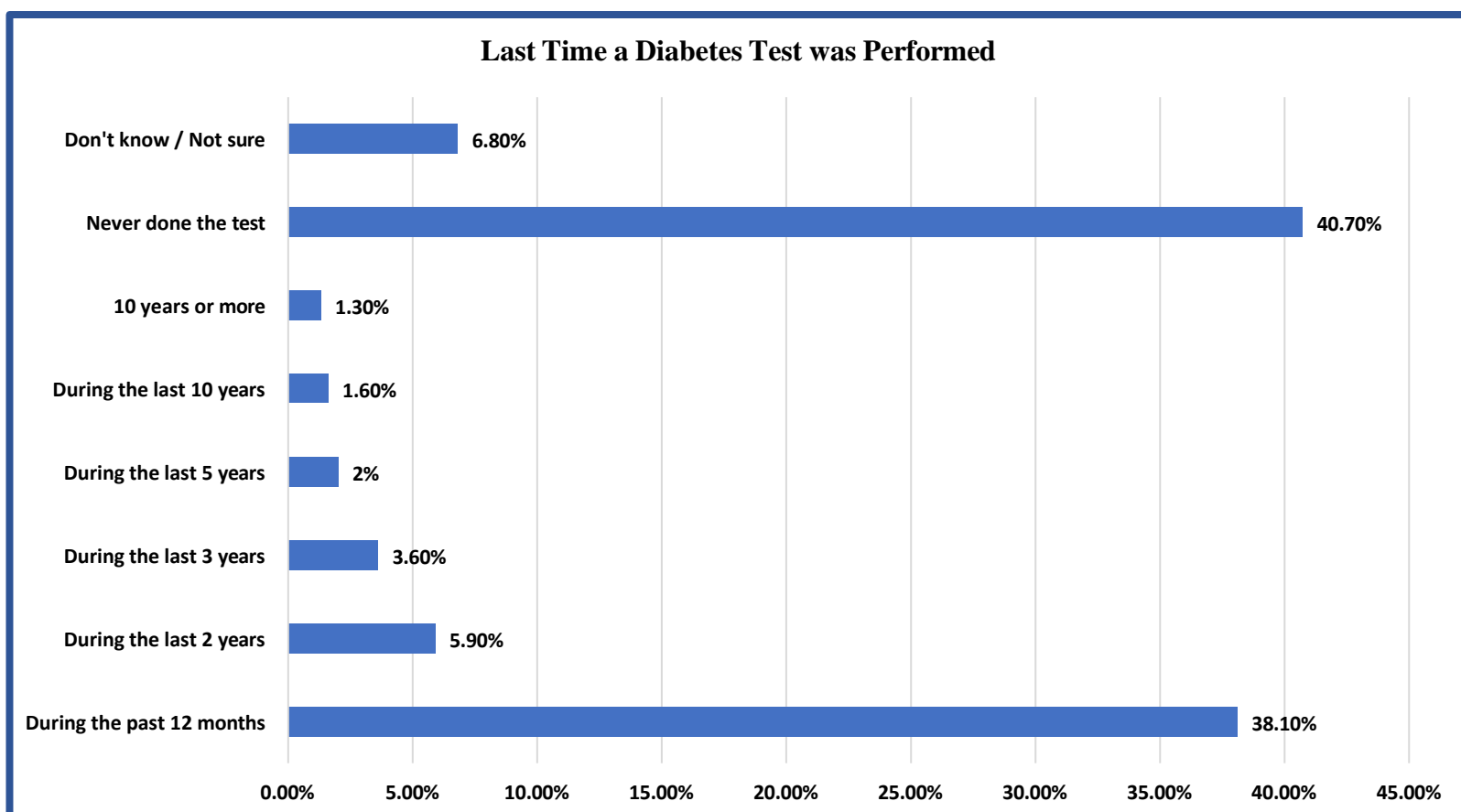


Figure 5: Responses related to the last time participants did a diabetes test

Eye Exam and Vision Testing Basics

The National Eye Institute (2021) [48] states that "A dilated eye exam is important for an individual eye health. It's the only way to check for eye diseases early on, when they're easier to treat — and before they cause vision loss. The exam is simple and painless. The eye doctor will check for vision problems like being nearsighted or farsighted. Then he/she will use eye drops to dilate (widen) the pupil and check for eye diseases. Since many eye diseases have no symptoms or warning signs. Even if individuals think their eyes are healthy, getting a dilated eye exam is the only way to know for sure" (para 1-3).

On the other hand, according to Cleveland Clinic (2023)[12], "Retinal imaging is a diagnostic test that creates high-quality digital images of the inner, back surface of one's eye. It allows the diagnosis of many eye conditions like diabetes-related retinopathy, glaucoma, and macular degeneration" (para 1). Moreover, the American Academy of Ophthalmology (2024) [2] recommends that "adults get a complete eye examination at age 40." Unfortunately, among this research's 307 respondents, 41.4% (127 respondents) have never done a dilated eye exam; and 57.3% have never taken a photo of the back of the eye to show the optic and blood vessels. For those who are 40 or older, 38.5% of the respondents have never done a dilated eye exam, and 57.0% have never taken a photo of the back of the eye. Once more, those findings demonstrate alarming percentages that point clearly towards low preventive health care.

Current Health Status

Finally, respondents were asked to describe their current health condition. Results show that 14.4% of the respondents assess they have excellent health status, 31% of them rate it as very good, 38.9% rate it as good, 13.1% rate it as acceptable, and a few of them said it is poor (2.6%). Therefore, from an overall perspective, 84.3% (258 out of 306 respondents) declared that their current health condition is above a good level. At least this is what they believe!

It is worth mentioning that 18.4% of the respondents admitted that in the last 12 months, they could not see a doctor because of monetary issues. Moreover, 38.1% (117 out of 307) of the respondents declared that they continuously are thinking of their economic condition. Only 10.7% declared that they never think of their economic condition. It is not surprising to have the abovementioned concerns since Lebanon is under high socioeconomic pressures due to its poor economic and financial conditions and not even having accessibility to bank accounts and savings [3,29,33,59,60]. Lebanon is a special case when compared to Australia. Even affluent Australians are reducing the number of visits to the doctor because of the high cost of living. McLeod (2024) [42] posits that "The percentage of individuals in New South Wales (NSW) postponing a general practitioner (GP) or local doctor appointment due to financial reasons has risen by 246% in the last four years. Also, individuals with limited income continue to face challenges in accessing medical care, with a 301% rise in the

number of people in this group who postponed or skipped a visit to the doctor because of financial reasons from 2020 to 2024" (para 1-3).

Conclusion and Recommendations

The purpose of this study was to look into how a sample of Lebanese residents, ages 18 to 96, felt about adopting preventive healthcare practices. This study is the first cross-sectional study of its kind to examine the preventative services and practices of Lebanese citizens. This study is justified based on the continuous flow of reports and studies addressing the importance of having a healthy community based on the UN Sustainable Development Goal (SDG 3) stating: "Ensure healthy lives and promote well-being for all at all ages" [67]. Motivating, generating, raising, and maintaining the Lebanese population's awareness of the significant advantages of preventive healthcare testing to avert chronic illnesses is a further advantage of the current research.

The results of this study align with the research goals. A significant number of earlier works reported, monitored, investigated, and measured the issue of preventive services [10,16,17,21,30,39,57] among others. Kruk et al. (2018) [35] posit that "The prevention and early detection of diseases, including through recommended screenings, is an important function of high-quality health systems." Not practicing preventive healthcare services leads to unknown dimensions of health damages up to chronic health conditions that may increase substantially out-of-pocket (OOP) health costs. Hence, becoming a factor that may incite more poverty. According to [62], "Prior studies indicate that individuals with lower incomes are less inclined to receive preventive care services like cancer screenings, blood pressure checks, and cholesterol screenings compared to those with higher incomes."

This research capitalizes on the current findings, first in the context of Lebanon, in addition to adding new facts toward the global attitude concerning the reduction of poverty through better health wellness [67]. Feltovic (2022) [20] asserts that "Standard SDG 3 calls for global efforts to good health and well-being for all ages." Therefore, the results of this paper contribute to alleviating the lack of information regarding Lebanon and the surrounding area, particularly given that Lebanon's recent crises are deemed unique in comparison to those of other countries. Researchers and relevant specialists in healthcare and poverty could gain from these findings and expand upon them to conduct additional research focusing on at least two aspects: assessing a representative sample of the Lebanese population's views on preventive services and examining healthcare policymakers' perspectives during crises.

Final words

WHO (2014) [72] affirms that "Individuals, communities, and societies at large can profit from prevention in the short and long term,

making it a prudent investment." Furthermore, [38] Mallender (2022) stated that "the health and social care sector receives a return of £14 to £15 for every £1 spent on preventative healthcare and that the productivity of preventive health spending is three to four times that of health treatment spending."

Limitations

The study is limited by the small sample size, the exclusion of healthcare specialists, experts, and government agency managers for comparison, and the challenge of attracting more participants due to the sensitive topic. Hence, the findings may not be universally applicable, but they can act as a catalyst and offer a perspective on the circumstances in Lebanon or a comparable nation during challenging economic and financial difficulties.

Future Research

There is an ongoing and pressing necessity to initiate widespread campaigns that help educate Lebanese citizens regarding preventive healthcare services and the associated risk factors of neglecting preventive care. Therefore, a well-informed background must be

present. Such need necessitates that researchers, professionals, NGOs, higher education institutions, and government agencies collaborate on a national level to profile the Lebanese population throughout Lebanon necessitating further educational awareness. Consequently, create a national consortium constituting medical providers, NGOs, wellness and healthcare clinics, and funding bodies that empower citizens' harsh conditions besides the typical Ministry of Health awareness campaigns.

There is a need for further research to collect a much broader database to monitor the healthcare needs of citizens. This study offers a starting point and provides a clear view of the current Lebanese citizens' views and attitudes towards preventive services practices. Hence, enriching the ongoing health education of various community groups (e.g., NGOs and family associations) that may assist in developing local preventive screening protocols, as well as incorporating them into health provider training programs. The Ministry of Health must establish a community consortium to respond proactively to the emerging trends in sustainable development and global goals.

References

1. Adam A. M (2020) Sample Size Determination in Survey Research. *Journal of Scientific Research and Reports*. 26(5): 90-97.
2. American Academy of Ophthalmology. (2024) Eye Exams and Vision Testing Basics.
3. Amnesty International. (2023) Lebanon: The Government Must Ensure medication is available.
4. Benksim A, Ait Addi R, Cherkaoui M (2020) Vulnerability and Fragility Expose Older Adults to the Potential Dangers of COVID-19 Pandemic. *Iran J Public Health*. 49(Suppl 1): 122-124.
5. Cancer Council Victoria. (2024) Cervical screening.
6. CDC. (2024) Older Adults. US Centers for Disease Control and Prevention (CDC).
7. Charles A. Dana Center. (2018) Structure, Function, and Information Processing Body Systems, Subsystems and Interactions. The University of Texas at Austin.
8. Chehimi G.M, Hejase, H.J (2024) Exploring the Impact of Bilingualism in Early Life on Foreign Language Learning for University Students in Lebanon Theoretical Foundations: Part I. *Journal for the Study of English Linguistics*. 12(1): 1-31.
9. Christoffersen N.B, Nilou F.E, Thilsing T, Larsen L.B, Østergaard J.N, et al. (2023) Exploring targeted preventive health check interventions – a realist synthesis. *BMC Public Health*. 23(1928): 1-17.
10. Cigna Healthcare. (2023) What is Preventive Care?.
11. Cleveland Clinic (2022) Body Mass Index (BMI).
12. Cleveland Clinic. (2023) Retinal Imaging.
13. Costello M.M, Heelan K.A, Mowry D.A, Abbey B (2010) The Association between Soft Drink Consumption and Body Fat in Females Age 16 to 24. *Int J Exerc Sci*. 3(4): 189-196.
14. Culberson J.W, Kopel J, Sehar U, Hemachandra Reddy P (2023) Urgent needs of caregiving in aging populations with Alzheimer's disease and other chronic conditions: Support our loved ones. *Ageing Research Reviews*. 90: 102001.
15. Delta Dental. (2024) How often should I see my dentist? Delta Dental Plans Association.
16. Dominicus D.A, Akamatsu T (1990) The Role of Preventive Medicine in Developing Countries. *Keio J Med*. 39(4): 265-269.
17. Economics by Design - EBD. (2024) Value of Prevention.
18. El-Jardali F, Masri R, Sleem Z (2023) Rethinking Lebanon's Healthcare System Amid the Economic Crisis. The Lebanese Center for Policy Studies (LCPS).
19. El Takach A, Nassour F, Hejase H.J (2022) Digital Transformation of Media Companies in Lebanon from Traditional to Multiplatform Production: An Assessment of Lebanese Journalists' Adaptation to the New Digital Era. *Žurnalistikos Tyrimai*. 16: 152–173.
20. Feltovic M (2022) The UN's Sustainable Development Goals in the Middle East [The Olive Press Blog] ANERA.
21. Greco L (2021) Why Do We Provide Better Preventative Maintenance for our Cars Than We do For Ourselves? [Blog] The Gypsy Nurse.
22. Hardwick Research (2022) Determining Sample Size. Hardwick Research Resources.

23. Hejase A.J, Hejase H.J (2013) Research methods: A practical approach for business students (2nd Ed.). Philadelphia, PA, USA: Masadir Inc.
24. Hejase A.J, Hejase H.J (2024) Highlighting Soft Drinks Consumption in Lebanon. *Asian Journal of Social Science Studies*. 9(2): 1-14.
25. Hejase H.J, Hejase A.J, Hejase H.A.N.J (2012) *Quantitative Methods for Decision Makers: Management Approach*. Dar Sader Publishers, Beirut.
26. Hejase H.J, Fayyad-Kazan H, Hejase A.J, Moukadem I, Danach K (2023) Needed MIS Competencies to the Job Market: Students' Perspective. *British Journal of Multidisciplinary and Advanced Studies: Business and Management Sciences*. 4(5): 120-162.
27. Hejase H.J, El Dirani A, Haidar Z, Alawieh L, Ahmad A.A, et al. (2024) The Impact of Employee Well-Being on Organizational Effectiveness: Context of Lebanon. *International Journal of Human Resource Studies*. 14(2): 15-54.
28. Hejase H.J, Hamdar B, Hejase A.J, Raad H, Kobeissi K (2024) Factors that influence the attitude of young people to participate in crowdfunding campaigns. *Asian Journal of Social Sciences and Management Studies*. 11(4): 107–132.
29. Hubbard B (2021) Collapse: Inside Lebanon's Worst Economic Meltdown in More Than a Century. *New York Times*, published August 4, 2021.
30. IONC. (2024) The Benefits of Preventative & Corrective Maintenance for the Body [Blog].
31. Ipsos (2023) Socioeconomic and Political Landscape of Lebanon. Konrad Adenauer Stiftung Foundation.
32. Johns Hopkins Medicine (2024) Routine Screenings.
33. Khalife D, Yammine J, El Bazi T (2022) How to Put the Collapsed Lebanese Banking Sector on the Right Track?. *Arab Economic and Business Journal*. 14(1): 31-46.
34. Khanna D, Peltzer C, Kahar P, Parmar M.S (2022) Body Mass Index (BMI): A Screening Tool Analysis. *Cureus*, 14(2): e22119.
35. Kruk ME, Gage AD, Arsenault C, Jordan K, Leslie HH, et al. (2018) High-quality health systems in the Sustainable Development Goals era: Time for a revolution. *Lancet Glob Health*. 6(11): e1196-e1252.
36. LibreTexts Libraries. (2024) Biology.
37. Luijten N (2010) When Do the Advantages of Preventive Healthcare Overcome the Disadvantages? (Master's Thesis), ANR: 444689, Organization and Strategy Healthcare Supply Chain, Universiteit van Tilburg, Netherlands. 7: 2024.
38. Mallender J (2022) *Economics of Public Health*.
39. Maniscalco L, Miceli S, Bono F, Matranga D (2020) Self-Perceived Health, Objective Health, and Quality of Life among People Aged 50 and Over: Interrelationship among Health Indicators in Italy, Spain, and Greece. *Int. J. Environ. Res. Public Health*. 17(7): 2414.
40. Masterson L, Louis P (2024) Health Insurance Facts and Statistics 2024. *Forbes*.
41. Mayo Clinic. (2024) Diabetes: Diagnosis.
42. McLeod C (2024) Even wealthy Australians avoid GP visits as the cost of living hurts access to healthcare. *The Guardian*.
43. MedlinePlus (2023) Medical Encyclopedia.
44. MedlinePlus. (2024a) Health screenings for men ages 40 to 64. *Medical Encyclopedia*.
45. MedlinePlus. (2024b) Health screenings for women ages 40 to 64. *Medical Encyclopedia*.
46. My Life Elsewhere. (2024) Quality Life Comparison.
47. National Center for Health Statistics. (2024) Health Status. (C. C. Epidemiology, Producer).
48. National Eye Institute. (2021) Healthy Vision: Get a Dilated Eye Exam.
49. National Heart, Lung and Blood Institute. (2024) Assessing Your Weight and Health Risk. *Healthy Weight*.
50. NCI Dictionaries. (n.d.). Degenerative Disease. In *National Cancer Institute.com dictionary*.
51. Nguyen V, Konings K.D, Wright E.P, Luu H.N, Scherpbier A, et al. (2019) Working in preventive medicine or not? Flawed perceptions decrease the chance of retaining students for the profession. *Hum. Resour. Health*. 17(1): 31.
52. Nursing Hero, (2024) Boundless Microbiology: Pathogenicity. *Learneo, Inc. Business*.
53. Olson E (2023) Healthy Lifestyle: How many hours of sleep are enough for good health? *Mayo Clinic*.
54. OSF Healthcare (2024) When is the Right Time for a Checkup? *OSF HealthCare*.
55. Rajput A, Noyes E (2024) Parkinson's Disease (PD). *MSD Manuals: Merck & Co, Inc.*
56. Rammal H, Hejase H.J, Hazimeh H (2024) Metaverse Technology and Its Impact on the Evolving Landscape of Communication and Media: A Future Outlook for Lebanese Satellite Channels. *Saudi J. Humanities Soc Sci*. 9(3): 92-117.
57. Rasmussen S.R, Thomsen J.L, Kilsmark J, Hvenegaard A, Engberg M, et al. (2007) Preventive health screenings and health consultations in primary care increase life expectancy without increasing costs. *Scand J Public Health*, 35(4): 365-372.
58. Ricciotti H, Hur H-C (2016) Is body mass index (BMI) still the best measure of body fat? *Harvard Health Publishing, Harvard Medical School*.
59. Rkein H.I, Hejase H.J, Rkein A, Hejase A.J, Fayyad-Kazan H (2022a) The Use of Banks' Financial Statements by Depositors and the Impact on Their Decision-Making: A Case from Lebanon. *International Journal of Business and Social Science*. 13(3): 1-11.
60. Rkein A, Hejase H.J, Rkein H, Fayyad-Kazan H (2022b) Bank's Financial Statements as a Source for Investors' Decision-making: A Case from Lebanon. *Academy of Accounting and Financial Studies Journal*. 26(6): 1-14.

61. Rkein H.I, Hejase H.J, Rkein A, Bassam Hamdar B, Shehade M (2024) Future Graduate Competencies: Perception of Lebanese Accounting Graduates, Academics, and Employers. *Asian Business Research*. 9(2): 1-30.
62. Ross J.S, Bernheim S.M, Bradley E.H, Teng H.M, Gallo W.T (2007) Use of preventive care by the working poor in the United States. *Prev Med*. 44(3): 254-9.
63. Silverman M.P (2019) Crowd-sourced Sampling of a Composite Random Variable: Analysis, Simulation, and Experimental Test. *Open Journal of Statistics*. 9: 494-529.
64. Silverman M.P, Lipscombe T.C (2022) Exact Statistical Distribution of the Body Mass Index (BMI): Analysis and Experimental Confirmation. *Open Journal of Statistics*. 12(3).
65. Synlab (2024) Understanding Degenerative Diseases: causes, symptoms, and prevention [Blog].
66. The National Academy of Sciences. (2024) Public Health in Developing Nations.
67. United Nations. (2023) Goal 3: Ensure healthy lives and promote well-being for all at all ages.
68. UN-Habitat. (2011) Lebanon Urban Profile: A Desk Review Report, October 2011.
69. Wajngarten M, Silva G.S (2019) Hypertension and Stroke: Update on Treatment. *Eur Cardiol*. 14(2): 111-115.
70. Weir C.B, Jan A (2023) BMI Classification Percentile and Cut-Off Points. National Library of Medicine.
71. Wels-Maug C (2024) "Our Future Health": Shifting from curative to preventive care. *Healthcare in Europe*.
72. WHO. (2014) The Case for Investing in Public Health.
73. World Health Organization - WHO. (2024) Aging and health.
74. Worldometer (2024) Lebanon Demographics.
75. Yamane T (1967) *Statistics: An Introductory Analysis*. (2nd Edn.). New York, NY: Harper and Row.
76. Zeb S (2024) 6 Mammogram Myths. Retrieved October 29, 2024, from Johns Hopkins Medicine.