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Prevalence and Determinants of Uncontrolled Blood Pressure among Hypertensive Patients at Governmental Primary Health Centers in the Gaza Strip

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Prevalence and Determinants of Uncontrolled Blood Pressure among Hypertensive Patients at Governmental Primary Health Centers in the Gaza Strip

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Dedication

To the spirit of my father (May Allah grant him amongst the highest levels of Jannah) for his prayers for me and unconditional love.

To my great mother, for her continuous love and support whom I owe my success in life for.

To my husband Mohammed, who always supports me, helps me, and provides me with love and positive energy.

To my precious baby girl Sally.

To my beloved brothers and sisters who always encourage me.

To my husband family for their love and care.

To my best friends, and work colleagues.

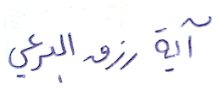
I dedicate the research for all of them.

Aya Riziq Ibrahim Alboraey

Declaration

I certify that this thesis submitted for the degree of master, is the result of my own research, otherwise acknowledged, and that this thesis or any of its parts has not been submitted for higher degree to any other universities or institutions.

Signed



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This thesis wouldn't be feasible without the assistance and guidance of many individuals who supported me to complete my study to the fullest.

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Aya Riziq Ibrahim Alboraey

Abstract

Introduction: Hypertension is a leading cause of premature death worldwide and the burden of hypertension is higher in low- and middle-income countries, where two-thirds of cases are reported, primarily due to increased risk factors. Globally, the magnitude of uncontrolled blood pressure is becoming of public health importance in developing countries.

Aim: The overall aim of this study was to assess the prevalence and determinants of uncontrolled blood pressure among hypertensive patients at governmental primary health centers in the Gaza Strip.

Methods: This study is a mixed methods study that involves both collecting quantitative and qualitative data. The quantitative data is a descriptive-analytical cross-sectional design. The quantitative data were collected from patients who utilize the health services within the study settings. In total, 400 patients participated in the study (213 males and 187 females who utilized the health services among governmental primary health centers in the Gaza Strip. The qualitative data were collected through in-depth interviews with healthcare providers and health experts from the Ministry of Health in the Gaza Strip. Analysis of quantitative data was conducted using the SPSS program, the analysis involved conducting frequency distribution, cross-tabulation, general scores, mean percentages, chi-square, and logistic regression tests were used. For qualitative data, an open coding thematic analysis method was used.

Findings: The results of the study showed that about one-third of the study participants have uncontrolled blood pressure (36.3%). The percentage of uncontrolled blood pressure was higher among male participants (55.8%) compared to female participants (44.2%). The findings of the study have shown that there was a significant association between uncontrolled blood pressure and demographic and socioeconomic factors such as having a high BMI (Body Mass Index) (25-29.9) and (≥30). Disease-related factors have a significant association with uncontrolled BP such as shorter duration of high blood pressure and participants who missed taking their medication over the past two weeks for any reason. Low general psychological health has a significant association with uncontrolled blood pressure. Additionally, not having enough knowledge about hypertension is significantly associated with uncontrolled blood pressure.

Conclusion: Uncontrolled blood pressure is a real problem for hypertensive patients in the Gaza Strip, More studies are needed to evaluate the determinants of controlling status of blood pressure on a larger, more diverse, and representative group of participants.

There is a need to develop unified national guidelines for the treatment of hypertension. The guidelines should include a description of the treatment modalities, including lifestyle modification as part of the treatment plan by the health care providers. Additionally, patients particularly those who have uncontrolled BP, it is highly recommended that the MoH (Ministry of Health) develop follow-up management plans for them to ensure a higher level of compliance. The management plan should include a multi-disciplinary team that involves physicians, nurses, nutritionists, and psychologists. Finally, more studies are needed to evaluate the determinants of controlling status of blood pressure on a larger, more diverse, and representative group of participants.

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List of Abbreviations

AHA	American Heart Association
ACE	Angiotensin Converting Enzyme Inhibitors
ARBs	Angiotensin Receptor Blockers
BMI	Body Mass Index
CCB	Calcium Channel Blocker
CDC	Centers for Disease Control and Prevention
CKD	Chronic Kidney Disease
CVD	Cardiovascular Disease
DBP	Diastolic Blood Pressure
GS	Gaza Strip
GHQ	General Health Questionnaire
GPA	Global Physical Activity
HL	Health Literacy
HTN	Hypertension
LMICs	Low and Middle Income Countries
MoH	Ministry of Health
NCDs	Non- Communicable Diseases
NGO	Non-Governmental Organizations
NHANES	National Health and Nutrition Examination Survey
OSA	Obstructive Sleep Apnea
PCBS	Palestinian Central Bureau of Statistics
PEACE	Patient- Centered Evaluative Assessment of Cardiac Events
PHC	Primary Health Care
SBP	Systolic Blood Pressure
TIA	A Transient Ischemic Attack
UBP	Uncontrolled Blood Pressure
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
WB	West Bank
WHO	World Health Organization

Chapter One

Introduction

1.1 Background

High blood pressure, which is also known as Hypertension (HTN), is a chronic medical condition that if untreated have negative health consequences as it is a main risk factor for heart, brain, kidneys diseases. HTN is defined is having Systolic Blood Pressure (SBP) ≥140 mm Hg or Diastolic Blood Pressure (DBP) ≥90 mm Hg, and SBP ≥130 mm Hg or DBP ≥80 mm Hg according to the new American College of Cardiology (ACC) and AHA guidelines (AHA, 2020). HTN affects more than one billion people worldwide (World Health Organization -WHO-, 2019).

HTN occurs when the blood vessels have consistently high pressure than normal. Each time the heart beats, blood is pumped into the arteries, which transport blood from the heart to all body organs (WHO, 2019). HTN is a major driver to early mortality globally, and the burden of HTN is greater in low- and middle-income countries, where two-thirds of cases are documented, because of increasing risk factors in those populations in recent decades. (WHO, 2019).

HTN progressively elevates the pressure of blood flowing through the arteries. It can cause aneurysms and damages the cells that line the inner walls of the arteries. It can also weaken the heart muscle, resulting in coronary artery disease, heart failure and enlarged left heart (Mayo Clinic, 2022).

High blood pressure can be controlled with treatment and lifestyle modifications, in order to lowering the risk of life-threatening outcomes (Mayo Clinic, 2022). Consequently, uncontrolled blood pressure (UBP) can result in disability, a reduced quality of life, or even a fatal heart attack, or stroke.

The consequences of UBP affect the brain, the heart, the kidney, the arteries and the sexual organs of the human body. The brain is impacted in the following ways, including a Transient Ischemic Attack (TIA) which is a temporary disruption of the blood supply to the brain, a stroke is when part of the brain does not receive enough oxygen and nutrients, causing brain cells to die, and dementia is when blood flow to the brain is interrupted, which

can cause vascular dementia and mild cognitive impairment (American Heart Association – AHA-, 2018).

High blood pressure can cause kidney scarring (glomerulosclerosis), which occurs when tiny blood vessels within the kidney become scarred and unable to effectively filter fluid and waste from the blood, as well as kidney failure, as high blood pressure is one of the most common causes of kidney failure. Damaged blood arteries make it difficult for the kidneys to filter waste from the blood (Mayo Clinic, 2022).

Uncontrolled blood pressure can also harm the tiny, fragile blood arteries that carry blood to the eyes, resulting in damage to the retinal blood vessels causing hypertension retinopathy, damage to the blood vessels in the light-sensitive tissue at the back of the eye (retina) which can result in eye hemorrhage, impaired vision, total vision loss, and nerve damage, restricted blood flow can injure the optic nerve, causing bleeding or visual loss (AHA, 2022). Finally, males are more likely to develop erectile dysfunction as a result of high blood pressure, but women may also experience sexual dysfunction as a result of high blood pressure since lower blood supply to the vagina can lead to a decrease in sexual desire (Mayo Clinic, 2022).

With an estimated 10.4 million deaths in 2017 directly attributed to increased systolic blood pressure, HTN is the main cause of mortality worldwide. It also poses a risk factor for Cardiovascular Diseases (CVDs), ischemic heart diseases, stable and unstable angina, myocardial infarction, sudden cardiac death, ischemic stroke, hemorrhagic stroke, and kidney disease have all been linked positively to elevated blood pressure (Aune et al., 2021). Edwards and Colleagues (2022) stated that medical evidence shows that blood pressure reduction significantly reduces cardiovascular problems, this advantage is cost-effective even in low- to middle-income nations and vastly surpasses the treatment risk, including potential pharmacologic side effects.

1.2 Problem Statement

UBP is a serious public health concern among hypertension patients in both developed and developing nations. Despite the availability of treatment, the uncontrolled HTN prevalence remains high. Globally, more than billion people worldwide have UBP, including those who are hypertensive and take anti-hypertension medication. UBP is associated with increased

mortality and morbidity in individuals with HTN. Adequate antihypertensive therapy can lower the risk of the heart attacks, strokes, heart failure, and chronic kidney disease. (Gebremichael et al., 2018).

According to Sarfo and Others (2018) Health systems in Low- and Middle-Income Countries (LMICs) are inadequately equipped to offer treatment for Non-Communicable Diseases (NCDs), including HTN. Awareness of HTN management and the necessity for ongoing therapy is inadequate among LMIC countries. Many other factors contribute to poor blood pressure control, including improper resource allocation, a lack of expertise in HTN therapy among many professionals, and low health literacy among patients. In these conditions, these variables have collaborated to generate an impending epidemic of CVDs (Sarfo et al., 2018).

In the Gaza Strip (GS) limited research studies have been undertaken to identify the risk factors for HTN, Moreover, no studies have been conducted to identify the determinants and prevalence of UBP among clients of the primary health care centers in the GS. Thus, limited information is available about the prevalence and determinants of uncontrolled blood pressure among hypertensive patients in in the GS. This study will be the among the first study to study such public health concern and will fill in current knowledge gap

1.3 Purpose of the study

1.3.1 Study Aim:

This study aims to assess the prevalence and determinants of UBP in the Gaza Strip among clients attending primary health care centers in order to improve HTN controlling status, thus, reducing morbidity and mortality burden, improving the overall well-being of hypertensive patients, and reducing the financial burden associated with it.

1.3.2 Specific objectives:

1. To assess the prevalence of UBP among hypertensive patients in the GS.
2. To identify the main determinants associated with UBP among hypertensive patients in GS, from both providers and clients' perspectives.
3. To determine the commonly encountered comorbidities associated with UBP patients in the GS.
4. To suggest possible recommendations to reduce the prevalence of uncontrolled blood pressure among the hypertensive patients in the GS.

1.4 Justification of the study:

This mixed methods study will be the first to examine the UBP prevalence in the GS. This study will identify the causes of the UBP and its prevalence. The findings of this study will be used by policymakers to plan and implement policies and programs to lower the rate of UBP and the potentially negative effects associated with it. The findings of the study will also support healthcare providers at both the primary and secondary healthcare levels to provide high quality services through focusing on by identifying the key modifiable risk factor associated with uncontrolled HTN and ways to control HNT.

The Researcher herself is a healthcare service provider and she is interested in this field and mostly she will conduct other studies related to NCDs in the Gaza Strip. Finally, overall, the findings of this study might be applied to increase the efficiency of hypertension management and health-care utilization.

1.5 Context of the study:

1.5.1 Demographic Context: Gaza Strip

The Gaza Strip is incredibly congested with over 2.1 million Palestinians living in a total area of 365 km^2 The Gaza Strip is divided into five governorates: North Gaza, Gaza City, the Middle Zone, Khan Younis, and Rafah, containing fourteen villages and eight refugee camps (Palestinian Central Bureau of Statistics -PCBS-, 2019).

According to PCBS, it was expected to be around 14.3 million Palestinians in the globe by mid-2022, with approximately 5.35 million in the State of Palestine; 2.72 million men and 2.63 million females. The West Bank's (WB) population was expected to be 3.19 million people (1.62 million males and 1.57 million females). In the same year, the Gaza Strip's estimated population was 2.17 million (1.10 million males and 1.07 million females) (PCBS, 2022).

The population pyramid of Palestinians revealed that it is a youthful society with one-third of the entire population is under the age of 15, with 35.8% in the WB and 40.9% in the GS. Individuals aged 65 and over made up 3.4% of the population (Palestinian MoH, 2021).

The prevalence of HTN in GS increased by 15% from 211.4/ 100,000 population in 2020 to 236.5/100,000 population in 2021. The prevalence of HTN among females over the age of 18 years was 60% of all hypertension patients; the disease prevalence among females was 5.7 per 100 females and 3.6 per 100 males (MoH, 2022).

According the Palestinian MoH in 2022, the highest prevalence of HTN in GS was in Middle Zone governorate, with 62 per1000 population while the lowest prevalence was in the Northern governorate, with 40.8 per1000 population (MoH, 2022).

The death rate in the GS for patients with high blood pressure was 8.3 per 1000 patients. Females accounted for 52% of all deaths, and the death rate was 84% among adults aged 60 and above of the total deaths, and more than 84% of the total deaths (MoH, 2022).

1.5.2 Socioeconomic Factors

According to PCBS (2020), the GS's economic state is marked by high poverty and low income. The unemployment rate in Gaza is 53.3%which is one of the highest in the world (PCBS, 2020).

The political and economic situation in the GS have deteriorated as a result of Israel's continuous occupation and siege, and border closures that restrict goods from being imported and exported into the Strip.

The continuing conflict, which has lasted more than seven decades, has had a severe impact on the main socioeconomic and environmental determinants of health for the entire Gaza’s population. This includes a 17-year blockade and economic collapse, which has exacerbated health-related risks. In the setting of occupation, poverty, significant mental distress, and restricted access to health treatments, Gaza has a high NCD burden. Nearly half of Gaza's homes are food insecure, and 80% of the population is highly dependent on outside aid, especially food (Abu Hamad et al., 2022).

While poverty in the WB dropped by 22%, it increased significantly the GS. The poverty gap and poverty severity indexes have reflected a comparable, but larger, increase poverty in the GS. This was not the case in the WB, where deep poverty declined from 7.6 % in 2011 to 5.8 % in 2017. As a result, while Gaza remains significantly poorer than the WB, the poor's status in the GS has deteriorated in comparison to the WB (PCBS, 2018).

1.5.3 Health Care system

The healthcare system in Gaza is significantly fragmented, poorly governed, and under-funded, with the MoH, the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA), nongovernmental organizations, and private for-profit operators providing a mix of public, private, and humanitarian services (Abu Hamad et al., 2022).

The Palestinian MoH offers primary, secondary, and tertiary health care services. UNRWA exclusively provides primary care to refugees and purchases secondary care services for those in need. NGOs and the private for-profit sector provide primary, secondary, and some tertiary services through a network of primary health care centers and specialized hospitals (MoH, 2019).

Despite high overage (more than 90% of households), health insurance does not fully fulfill people's requirements as most of the time medications and consumables are not fully available. People may normally get basic health treatments, however access becomes restricted during recurrent outbreaks of wars, and access to specialized treatments outside Gaza, such as radiation and neurosurgery remains limited. Despite limited resources, inefficiencies in the health care system persist, and resources are being spent unnecessarily as a result of duplication, fragmentation, and inadequate coordination, including insufficient referral mechanisms among service providers (Abu Hamad et al., 2022).

1.5.4 Primary Health Care Centers

According to Alma Ata declaration (1978), Primary Health Care (PHC) is considered an essential health care component where empowering individuals and communities and ensuring participation in planning and implementing health intervention is a core character of PHC services. PHC promotes the principles of social justice, fairness, solidarity, and community participation. It is based on the concept that having the highest health potential is one of the fundamental rights of all human beings. (WHO, 2021).

PHC is a whole-of-society strategy to efficiently organizing and strengthening national health systems in order to bring health and well-being services closer to communities. It consists of three components: integrated health services to fulfill people's health requirements throughout their lives, targeting the larger determinants of health via multi-

sectorial policy and action, and enabling individuals, families, and communities to take charge of their own health (WHO, 2022).

PHC allows health systems to meet a person's health requirements, including illness prevention, treatment, rehabilitation, palliative care, and other services. This method also guarantees that health care is provided in a manner that is focused on the needs of the people and respects their preferences. The most inclusive, egalitarian, and cost-effective means to attain universal health coverage is usually recognized as PHC. It is also critical for enhancing health-care systems' resilience to plan for, respond to, and recover from crises and shocks (WHO, 2022).

There are 159 PCHS in the GS, with 52 centers belonging to the MoH (32.7%), 22 centers belonging to UNRWA (13.8%), and 80 centers belonging to NGOs, with 19 centers providing primary health care services according to the MoH criteria with a percentage of (12%) and the others (62 centers) providing specialized medical services, with 5 centers belonging to the military of medical services (3.1%). In GS, the average person-per-center ratio was 41,078. (MoH, 2021).

According to the Palestinian MoH, PHC centers provided health services to 1.8 million persons in 2021. According MoH, the average number of visits to specialize clinics was about 559,000, and treatment services were offered to almost 342,000 persons (MoH, 2021).

PHC centers offers health services to prevent and treat HTN, such as conducting health education programs on a healthy lifestyle, including proper nutrition; smoking cessation; and regular medical check-ups for people over the age of 40 (WHO, 2022).

1.6 Operational definitions and definition of terms

Uncontrolled HTN is defined as an average (SBP) ≥140 mmHg or an average (DBP) ≥90 mmHg, among those who are under anti-hypertensive treatment (Centers for Disease Control and Prevention –CDC-, 2012). We will use two readings for the patient in the same visit, 5 minutes apart, if the BP still ≥ 140/90 mm Hg then it’s confirmed that the patient has uncontrolled BP.

Health literacy is defined as individual’s skill of accessing, understanding, and using medical knowledge to protect and sustain health (Selçuk et al., 2018).

Chapter Two

Conceptual framework

The researcher has identified the primary factors of UBP among the patients with hypertension who will be studied in this study. Figure (2.1) illustrates the determinants of factors that may influence the controlling status of BP among hypertensive patients.

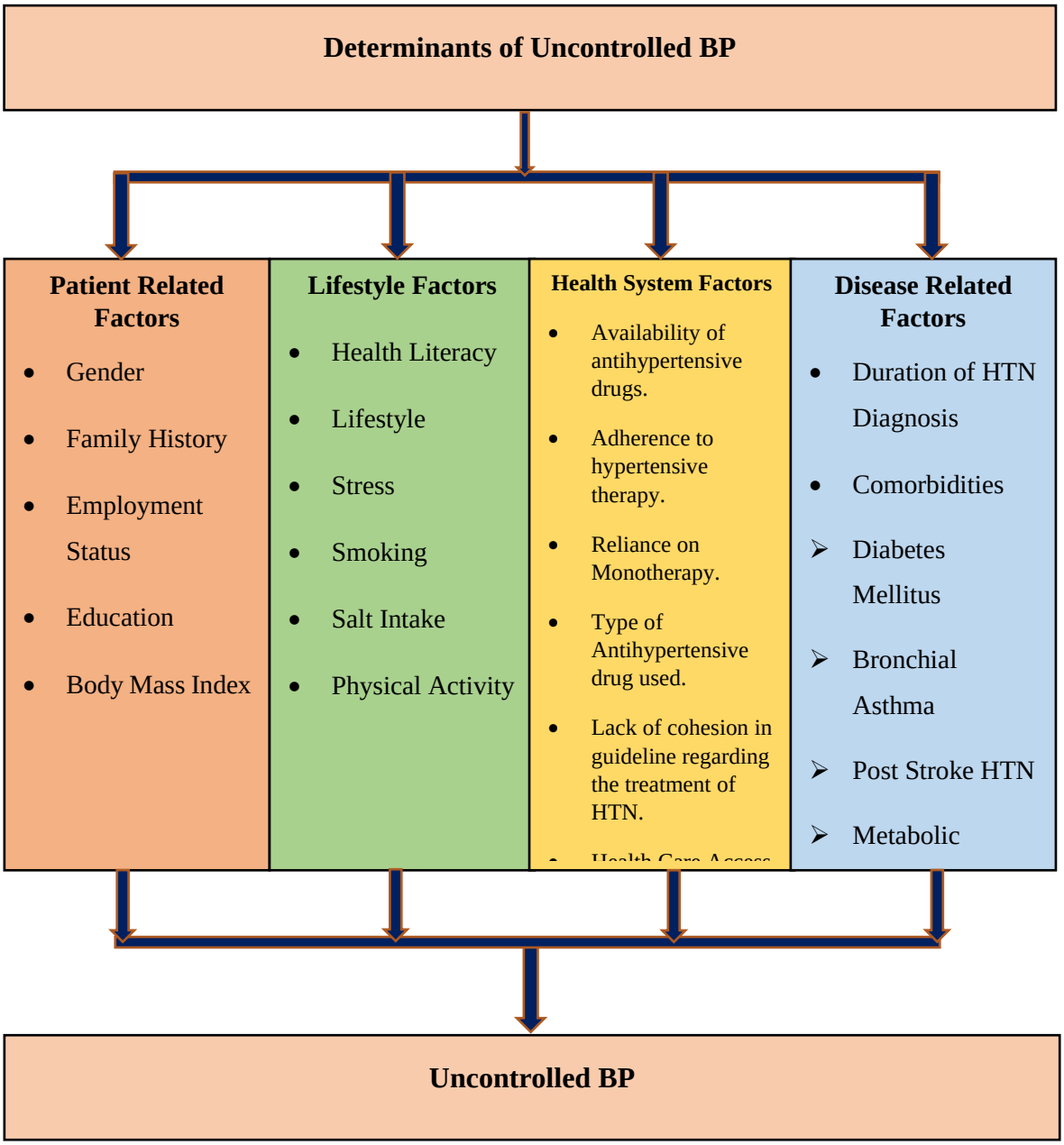

Figure (2.1): Conceptual Framework for determinants of uncontrolled BP

- Patients' related factors that might associate with the controlling status of UBP include gender, family history, genetic factors of high blood pressure, employment status, monthly income per household, years of schooling and Body Mass Index. The Researcher thinks that all the above-mentioned factors are factors that could have impact on the controlling status of high BP.
- Lifestyle related factors that may be associated with the UBP are health literacy, lifestyle, stress, salt intake, smoking status and low physical activity. The Researcher thinks that all the above-mentioned factors are factors that could have impact on the controlling status of high BP.
- Health system factors that may be linked to UBP include the availability of anti-hypertensive drugs, adherence to drugs, the kind of antihypertensive drugs, healthcare access and use, dependence on monotherapy, and a lack of coherence in HTN treatment recommendations. The Researcher thinks that all the above-mentioned factors are factors that could have impact on the controlling status of high BP.
- Disease-related factors that might be associated with UBP are the duration of HTN and presence of comorbidities such as Bronchial Asthma, Diabetes Mellitus, post stroke HTN and metabolic syndrome and the link between them and the UBP. The Researcher thinks that all the above-mentioned factors are factors that could have impact on the controlling status of high BP.

2.1 Literature Review

2.1.1 Definition of uncontrolled Blood Pressure

Uncontrolled HTN is defined as an average SBP ≥140 mmHg or an average DBP ≥90 mmHg, among those who are under anti-hypertensive treatment (CDC, 2012).

According to UNRWA technical instructions, uncontrolled HTN is detected when a lipid profile below normal levels and no target organ damage and equals ≥ 140/90 mmHg, while on anti-hypertensive therapy (UNRWA, 2020).

2.1.2 Prevalence of uncontrolled blood pressure

Mitra and Wulandari (2019) found that the prevalence of hypertension rises with age. One-half of persons aged 60 to 69 have hypertension, and this rises to 70% of those over 70. Many epidemiological investigations undertaken in the United States and Europe showed that hypertension prevalence among the elderly ranged between 53% and 72%. Arterial stress (a loss in arterial wall adherence) is seen as an unavoidable consequence of aging, resulting in high blood pressure levels. Endothelial cell damage rises with systolic blood pressure in hypertensive elderly adults, and fibrinogen levels reflect a prothrombotic state. The disease reveals that uncontrolled hypertension in the elderly causes' organ damage. (Mitra & Wulandari, 2019).

When compared to other parts of the world, the Arab world had a higher crude prevalence of HTN (29.5%) than Sub-Saharan Africa (27.6%) and the United States (28%). Lebanon, a tiny middle-income Arab country, was shown to have greater HTN prevalence rates than neighboring countries such as Palestine and Egypt. According to current research in Lebanon, HTN affects one-third of the Lebanese population, with an additional 30% pre-hypertensive (Noubani et al., 2018).

According to Khader and Others (2019) in Jordan, the prevalence of hypertension increased in both men and women dramatically with age. 57.7% of men and 62.5% of women with hypertension were aware of their condition. Only 30.7% of men and 35.1% of women using antihypertensive medications had their BP controlled. Men and women's rates of HTN awareness and management increased dramatically with age (Khader et al., 2019).

HTN affects more males than females in the Palestinian community, where the prevalence is 27.6%. To identify the related risk factors and enhance HTN control in the Palestinian community, there is a lack of research that focuses exclusively on patients with uncontrolled HTN (Alawneh et al., 2022).

One of the primary sustainable development objectives set by the World Health Assembly in 2013 was to reduce the prevalence of high blood pressure by 25% by 2025. Improving hypertension management and control will need a knowledge of the elements that influence blood pressure control. Although there have been some efforts to identify the causes of UBP in low-income countries, the literature is weak and many aspects have still to be explored. (Gebremichael et al., 2018).

UBP predisposes individuals to cardiovascular, cerebrovascular, and renal problems. It is an independent risk factor for cardiovascular and cerebrovascular disorders, as well as three-fourths of all strokes. Elevated blood pressure was thought to be responsible for 62% of cerebrovascular disease and around half of ischemic heart disease worldwide. The scale of UBP is becoming a public health concern in developing nations. (Abegaz et al., 2018).

2.1.3 Determinants of uncontrolled blood pressure

2.1.3.1 Patient Related Factors

According to Essayagh and Others (2019) gender, family history, employment status, education, and BMI are factors relating to patients that contribute to UBP and make its management difficult. Among these factors are socio demographic factors such as being males is more likely to be associated with UBP, unemployment and low monthly income, low education level, and family history or genetic factors of hypertension are all factors associated with UBP. This finding is comparable to those reported by Sub-Saharan African countries. (Essayagh et al., 2019).

In individuals with HTN who have been taking their medication for three months or longer, education is a predictor of UBP levels. Blood pressure control is negatively associated with education. Patients with HTN who have completed secondary school or above can control their BP. This might be attributed to patients with high educational levels are being able to adhere to doctors' advice on behavioral practice, medication adherence, and understanding health care provider messaging. Better health care professionals deliver a personalized message to patients based on their educational level in order to achieve their targeted blood pressure (Fentaw et al., 2022).

Patients with HTN who have a neck circumference over than 35.75 cm (in men) or 32.75 cm (in women) are also more likely to have UBP. (Meelab et al., 2019).

It has also been found in Chinese research concerning the association between neck circumference and HTN. People with larger neck circumference frequently have more subcutaneous fat, which may release more free fatty acids, produce more oxygen free radicals, and boost the oxidative stress response, which in turn causes vascular endothelial dysfunction and, ultimately, higher BP (Zhang et al., 2020).

According to Abu Hamad and Others (2022) in Gaza, the undiagnosed population with hypertension of Gaza is primarily younger, male, non-refugees who are physically inactive, fat, and have poor mental health. These categories should be prioritized in screening programs and health-seeking behavior measures (Abu Hamad et al., 2022).

According to Rahman and Others (2017) in Bangladesh, a higher education was associated with higher level of HTN awareness. However, the observed positive effect of greater education on higher antihypertensive medication usage and better HTN management was largely statistically insignificant. It should be noted that the frequency of secondary or higher education was quite low, one-tenth among males and roughly 4% among females. It was found that the wealthier group, regardless of gender, had poorer BP management. In Bangladesh, the highest two wealth quintiles had higher rates of HTN and diabetes. Wealthier persons are more prone to be overweight/obese and to live sedentary lifestyles with little physical work. However, the NCD burden among low-income persons may provide a serious problem in the near future due to observed reduced intake of fruits and vegetables and poor hypertension awareness as well as inadequate treatment adherence in Bangladesh (Rahman et al., 2017).

According to Okai and Others (2020) in Ghana, sex, education, and the presence of comorbidities were all significantly associated with blood pressure control. Females achieved better blood pressure management than males, which is consistent with recent research from Ghana. This enhanced control among females might be attributed to higher levels of hypertension knowledge and treatment among females than males.
It is, however, a concerning observation given that the greater prevalence of stroke among was Ghanaian males than girls. Although awareness of hypertension in this study was much lower than existing estimates, it is inconsistent with findings of poor hypertension knowledge among Ghanaians. Nonetheless, these low levels of knowledge are comparable to those documented in South Africa, where just 0.3% of respondents were found to have good knowledge (Okai et al., 2020).

Blood pressure control was shown to be more positively associated with junior high and secondary education than with no formal education in this study. In contrast to prior district-level findings in

Ghana, these data suggested that patients with at least junior secondary education is indicative to have access to health education (Okai et al., 2020).

2.1.3.2 Lifestyle factors

Essayagh and Others (2019) reported that Lifestyle factors are adjustable behaviors that can have a significant impact on general health and well-being. Stress, for example, may surely result in undesirable behaviors such as excessive alcohol intake, smoking or binge eating, or even neglecting to take medicine, which increases blood pressure and compromises efforts to manage blood pressure. Overweight and obesity have been identified as risk factors for UBP in several studies. Each ten kilos beyond the optimal weight leads in a 3 mmHg increase in systolic blood pressure and a 2 mmHg increase in diastolic blood pressure. (Essayagh et al., 2019).

It was proven that high amount of salt intake increased the incidence of UBP nearly six times as compared to optimal dose. The WHO advocates the importance of reducing dietary salt intake to lower incidence of non-communicable diseases burden and called nations to take action to reduce population wide dietary salt intake especially among elderly patients that are more salt sensitive (Abegaz et al., 2018).

A Turkish study by Selçuk and Others (2018) found that individuals' abilities to understand their own health condition, use health-care services, participate in treatment processes, and manage chronic illnesses improved as a result of HL (Health Literacy), which is defined as an individual's skill in accessing, understanding, and applying medical knowledge to protect and sustain health. It empowers people to take care of their own health. According to the research, persons with low HL utilize health-care services less frequently and have greater problems due to insufficient illness management. It was also discovered in this study that patients with lower general HL levels had poor BP management, and that lower HL level was a modifiable risk factor for uncontrolled BP. This conclusion reinforces the findings of previous studies. (Selçuk et al., 2018).

Shen and Others (2020) found that medication literacy was found to be positively connected with medication adherence in hypertension patients. After adjusting for socio-demographic and clinical characteristics, hierarchical regression analysis revealed that medication literacy was an independent predictor of medication adherence. The explanation for this might be that individuals with better medication literacy are more likely to make right medication selections based on acquired knowledge. In contrast, low medication literacy may lead to misinterpretation of medication-related information or unfavorable attitudes toward taking hypertension medicines, resulting in poor adherence to antihypertensive drug treatment (Shen et al., 2020).

According to a study conducted in Bangladesh by Fottrell and Colleagues (2018) poor blood pressure control was observed in the rich population, regardless of gender. In Bangladesh, socioeconomic

disparities in hyperglycemia, hypertension, and NCD risk factors have been established. In rural areas, people ranked in the bottom of-wealth quintile have a higher burden of NCDs than richer individuals do in urban areas. Furthermore, evidence suggests that higher wealth and educational levels are linked to an increased risk of hypertension and hyperglycemia, and also that people with diabetes and hypertension who are from low economic classes are less likely to be diagnosed, receive treatment, or preserve blood pressure control (Fottrell et al., 2018).

2.1.3.3 Health system factors

Low adherence to antihypertensive medication is one of the main factors that has been linked with a significant risk of uncontrolled BP in the three South Asian nations of Bangladesh, Pakistan, and Sri Lanka. Furthermore, the majority of people in each of the three nations were only using one antihypertensive drug. Many (LMICs) confront a similar issue. According to data from China's PEACE Million Persons Project (Patient-centered Evaluative Assessment of Cardiac Events), the great majority (81%) of patients with poor blood pressure management (70% of hypertensive patients) were taking only one medication (Jafar et al., 2018).

According to epidemiological evidence from large clinical trials, it takes 2-3 antihypertensive drugs to regulate blood pressure to 140/90 mmHg. The overall hypertension control rate in the United States grew from 29% in the National Health and Nutrition Examination Survey (NHANES) 2001-2002 to 47% in the NHANES 2009-2010. During this time, the proportion of patients receiving various classes of antihypertensive medicine climbed from 37% to 48%. Taken together, these data suggest that a lack of appropriate titration of the number of antihypertensive drugs is a main obstacle to hypertension control in rural South Asia. (Jafar et al., 2018).

A study of South African by Owolabi and Others (2018) found that adults reported a significant prevalence of UBP (62.4%) among the participants. BP control in Africa is inadequate because of many of factors, include limitations in healthcare infrastructure, Patient noncompliance to medication programs, and physicians' reluctance to improve hypertension treatment. Many studies have observed anti - hypertensive medicine shortages, as well as patients' non-adherence to clinic visits due to transportation and time constraints. Also poor management outcomes have been widely documented. In comparison, the rates of hypertension control in the United States and Canada were 64.8%

and 66%, respectively. This is not surprising since hypertension medication is costly due to its chronic nature. High-income countries have had greater success in lowering the burden of hypertension and other non-communicable diseases (Owolabi et al., 2018).

According to an Australian study, the one most important factor contributing to poor rates of hypertension control is dependence on monotherapy. Physician attitudes and benefits assessment for hypertension patients, particularly the elderly and those with comorbidities, can have an impact on their prescription decisions. Furthermore, due to a lack of coherence in guidelines for treating hypertension in the aged patents, clinicians find it difficult to implement evidence-based advice into their everyday clinical practice. Along with these considerations, the expense of medicine or clinical inertia, as well as patient expectations, might influence prescriber decisions. (Chowdhury et al., 2020).

A study conducted in Egypt revealed that types of drugs use, both beta blockers and Angiotensin-Converting Enzyme Inhibitors, Angiotensin Receptor Blockers (ACEI/ARBs) protected against poor blood pressure control while diuretics raised the risk of poor medication adherence and hence poor blood pressure control. Diuretics are known to cause a variety of adverse effects, including electrolyte imbalance and social embracement in the form of frequent micturition. Perceiving lifestyle and hereditary factors as causes of hypertension increased the patient's likelihood of poor management since the patient believed that having the disease was inevitable. While viewing it as a result of poor lifestyle choices, patients felt empowered. Changes in lifestyle are also difficult. The perception of the need for lifestyle adjustments and subsequent modifications may appear as barriers to poor control but not adherence. Both, however, prevent poor medication adherence. (Abdallah et al., 2021).

Medication adherence is one of the most important indicators of high blood pressure management in hypertensive patients. One of the fundamental aims of blood pressure regulation is medication adherence. Patients who fail to take their prescribed dose will not achieve the fundamental aims of antihypertensive medication. Patients with poor medication adherence may take traditional medicine, which may cause blood pressure to rise. Based on the reasons for each patient, health care professionals should give whatever methods of improvement for poorly adherent patients (Fentaw et al., 2022).

It is worth mentioning that controlling hypertension is the result of several factors, including individual, environmental, and health-care-related factors, and that it necessitates deliberate multifaceted actions at multiple levels. These include enhancing service quality, improving patient adherence to treatments, including pharmaceutical and non-pharmaceutical techniques focused at lifestyle modifications, and providing enough follow-up and monitoring (Abu Hamad et al., 2022).

In Greater Beirut Area, Lebanon a study conducted by Noubani and Others (2018) reported that it was shown that healthcare availability and use have a significant impact in raising hypertension awareness. According to several studies, gender inequalities in disease understanding in healthcare are one of the primary contributors to disparities in disease awareness. Being females, for example, are more likely to seek treatment from health practitioners, particularly for gynecological services; also, heteronormative masculinity scripts instruct men to be strong and not seek help when they are in need. They were unable to uncover any predictor of hypertension management in treated conscious hypertensive individuals. The management of hypertension is based on changes in lifestyle choices as well as pharmacologic therapy. (Noubani et al., 2018).

Assessing adherence and exploring barriers to hypertension treatment regimens in hypertensive patients is important in order to identify potential solutions to overcome these obstacles, thereby improving treatment adherence in this group of patients. This will be reflected in lowering the number and severity of related problems, the number and length of hospitalizations, and their impact on patient quality of life and healthcare-associated expenditures. As a result, the purpose of this study was to analyze the level of adherence and barriers to hypertension treatment regimens among hypertensive patients residing in Gaza, Palestine (Abu-El-Noor et al., 2020).

2.1.3.4 Disease related factors (Comorbidities, duration of hypertension)

Fekadu and Others (2020) reported that the duration of hypertension diagnosis was linked to uncontrolled blood pressure; clients who had been diagnosed with hypertension for more than ten years were two times more likely to have uncontrolled blood pressure as those who had been diagnosed for less than five years. Patients who have been on therapy for a long time, on the other hand, have good blood pressure control. This might be related to an

increase in anti-hypertensive medication, knowledge and adherence when the patient continues on treatment for extended periods of time. (Fekadu et al., 2020).

Medication adherence is defined as a patient's desire to work with health care specialists and take their prescriptions precisely as recommended. It is an effective process that develops over time and is a critical component of therapeutic improvement. It is critical in order to avoid the consequences of linked morbidities and fatalities. Inadequate adherence to medication therapy is one of the primary reasons of poor blood pressure control in patients with hypertension. Poor adherence reduces the maximal clinical benefit and the maximum therapeutic effect. According to WHO, patient adherence to hypertension medication ranges from 43 to 88%. (Fekadu et al., 2020).

The presence of bronchial asthma in people with hypertension might aggravate the patient's condition. Asthma was shown to be strongly and independently linked with blood pressure management. Asthmatic hypertension patients were 67% less likely than non-asthmatic hypertensive patients to achieve adequate blood pressure control. This might be due to the fact that some anti-asthmatic drugs have a beta agonist impact on the heart (raising heart rate and power of contraction), which causes a rise in blood pressure. (Teshome et al., 2018).

A Thai study by Sakboonyara and Colleagues (2019) found that Diabetes was linked to blood pressure control in hypertensive individuals. This finding was consistent with European research that revealed diabetes to be associated with an increased likelihood of poor blood pressure control. Insulin resistance and endothelial dysfunction may have contributed to this outcome, raising blood pressure. Many researches have shown similar results to this one, revealing a link between BMI and regulated blood pressure.

The study revealed that individuals with hypertension who had a BMI more than 25 kg/m2 were more likely to have uncontrolled blood pressure. Patients with a BMI greater than 35 kg/m2 were 1.7 times more likely than those with a BMI less than 25 kg/m2. This conclusion might be attributed to the fact that the majority of patients had a BMI of 30 or above, indicating obesity. The most of obese individuals have a high degree of adiposity, and the majority of obese patients have high adiposity levels. Adipocytes operate as a medium for leptin production, causing higher leptin levels and sympathetic nerve stimulation, both of these lead to elevated blood pressure. (Sakboonyara et al., 2019).

In a Korean study by Kwon and Colleagues (2020) found that Stroke was found to be a risk factor for uncontrolled systolic blood pressure in hypertensive individuals with strong medication adherence. Previous research studies have revealed that many people with post-stroke hypertension have uncontrolled blood pressure. More than half of the individuals (52.9%) in a cross-sectional research for a cohort with recent stroke had uncontrolled SBP 2.5 months after stroke. Moreover, both moderate-to-severe hypertension and resistant hypertension are linked to stroke development. In this context, it is reasonable to assume that hypertensive individuals who have had a stroke have trouble managing their blood pressure. Because uncontrolled blood pressure is the most major risk factor for stroke, blood pressure in hypertensive individuals who have had a stroke must be adequately managed to prevent subsequent stroke. (Kwon et al., 2020).

In a study that was conducted in Japan, the study they concluded that hypertension is often associated with obesity, type 2 diabetes (DM), and dyslipidemia, known as the metabolic syndrome. Hypertension with and without metabolic disorders is associated with a higher risk of cardiovascular events. Therefore, hypertension risk stratification is based on the number and severity of metabolic risk factors. Several guidelines, including the Japanese blood pressure guideline JSH 201, for the treatment of high blood pressure, use obesity, metabolic syndrome, DM, and dyslipidemia to risk-stratify hypertensive patients. In hypertensive individuals with multiple metabolic disorders, immediate initiation and intensification of antihypertensive therapy is highly recommended (Tanaka & Itoh, 2019).

In both developing and developed countries, HTN is one of the most prevalent cardiovascular conditions, contributing to mortality and morbidity. It has been identified as a major risk factor for health loss and death, accounting for 13% of mortality and 6% of disability worldwide. It is responsible for at least 45% of heart disease fatalities and 51% of stroke deaths. Poorly controlled HTN causes ventricular remodeling, complicated ventricular arrhythmias, re-polarization anomalies, and autonomic dysfunction (Sheleme et al., 2022).

2.1.3.5 Ways to improve BP controlling status

HTN has become an important chronic non-communicable disease with rising trends in developing countries, uncontrolled BP can lead to life-threatening consequences. As a result, understanding the BP control status of hypertension patients is critical for policymakers and

clinicians responsible for developing suitable measures for better hypertensive patient management (Animut et al., 2018).

According to the WHO, nearly one billion people worldwide have uncontrolled HTN. Many studies from throughout the world reveal that uncontrolled blood pressure is a regular occurrence among hypertensive patients on medication. Thus, less than half of hypertensive patients in Japan, 31.7% in Turkey, and 48.3% in Malaysia had their blood pressure under control. Controlling blood pressure is very challenging in Africa; only 47.7% of hypertensive patients on follow-up in Tanzania, 35.9% in Uganda, 32.8% in Zimbabwe, 33.4% in Kenya, and 40.1% in Addis Ababa, Ethiopia achieved BP control (Animut et al., 2018).

Social support is a component that contributes to blood pressure management in hypertensive patients who have been taking medications for three months or longer. People with HTN who lack social support are more likely to have UBP than patients on antihypertensive medication. The most frequent condition in the COVID-19 pandemic is a lack of social support, which carries a high load of stress, loneliness, and depression (Fentaw et al., 2022).

Stress causes an immediate sympathetic stimulation with a vasomotor response, which causes blood pressure to rise. These elements have hormonal impacts on the level of blood pressure in hypertensive patients since one of the key causes of HTN is hormonal factors that are activated by various events (Fentaw et al., 2022).

The use of blended learning education programs to teach patients how to manage their blood pressure by altering their lifestyle and participating in intervention programs as volunteers supervised by volunteer leaders may be a long-term method to decreasing blood pressure in the community (Islam et al., 2021).

Comprising a variety of characteristics such as available health-related information resources and an individual's intellectual, emotional, social, and personal qualities. Health literacy provides people with the knowledge and skills they need to enhance their health and well-being. Evidence suggests that low health literacy is linked to lower health outcomes and greater health-care expenditures at both the individual and system levels (Islam et al., 2021).

Improved health literacy has been linked to a reduction in risk behaviors for chronic illness. These illnesses, however, provide patients with a high and upward learning curve concerning risks, therapies, and self-care due to their prolonged and frequently asymptomatic start and the need for continued management (Islam et al., 2021).

Chapter Three

Methodology

The Methodology Chapter underlines the study design, study settings, study population, study period, sample and sampling method, and eligibility criteria of the study participants. Additionally, it highlights the data collection tools, data collection, piloting, and data analysis. Finally, the Chapter identifies the ethical consideration for the study and the main limitations.

3.1 Study design

The design of this study is a mixed method approach, entailing collecting quantitative and qualitative data. The quantitative data were from hypertensive patients of the selected governmental primary health centers through a well-structured questionnaire and collected qualitative data from health care service providers and key informants from the MoH.

Mixed methods research is commonly used in the behavioral, health, and social sciences, particularly in multidisciplinary contexts and complex situational or societal issues. (George, 2021).

The quantitative part was conducted using a cross sectional design. Cross- sectional designs, have often been used to assess the prevalence of a disease in a clinical research, this type of studies is relatively quick, affordable to carry out, useful for developing hypotheses and may give information on the prevalence of exposures and outcomes that guide the design of additional studies. On the other hand, it cannot be easily used to assess a causal inference, as is no way to analyze the temporal link between outcomes and risk variables, making relationships difficult to be evaluated, s (Wang & Cheng, 2020).

The qualitative data collection was conducted by conducting in-depth interviews with key informants from health care service providers. In total, five in-depth interviews were conducted with key informants.

3.2 Study Population

3.2.1 Quantitative part

The study population includes all HNT patients who used PHC services in GS during the research period. In 2021, the estimated number of clients is14,409 patients.

3.2.2 Qualitative part

Purposive sample of five healthcare service providers was selected to reflect the diversity of the workplace, academic background, area of expertise, and gender.

3.3 Sample Frame

3.3.1 Sample Size and Sampling: Quantitative part

According to the MoH, the total number of patients with HNT who received services at HPCs is 14,409 patients. The sample size was calculated to be 374 patients, with CI of 95% and a margin of error of 5% accepted. **(Annex 3)**. The sample size was expanded to 400 patients. The participants in the research were randomly selected using the simple random technique. The table below (3.1) shows the proportionate distribution of the study sample according to the number of hypertensive clients per clinic

Participants in the study included both male and female patients with high blood pressure who received treatment at PHCs in the GS, mainly 13 PHCs that have management information system. In all, the total is 14,409 patients who had hypertension. It is worth mentioning that the Researcher has randomly selected five PHCs through simple random technique

Table (3.1): Distribution of sample per governorate

No	Health centers	HTN patients	Sample size	Questionnaire distribution quota
1	Gaza	7041	48.86%	195
2	North Gaza	1688	11.7%	47
3	Middle Zone	1219	8.45%	34
4	Rafah	1200	8.3%	33
5	Khan Younis	3261	22.6%	91
Total		14409 patients	100%	400

3.3.2 Qualitative part

The Researcher has purposefully selected five key informants from the MoH to be interviewed. The key informants were selected based on their expertise in managing hypertension and understanding the healthcare system.

3.4 Period of the study

The study has started after obtaining the administrative approval from the university and obtaining the ethical approval from Helsinki committee to conduct the study. The study was completed in November 2022. The Pilot study was done in December 2021, then data collection started February 2022. Data entry and cleaning were done in April 2022. In August 2022, data analysis was completed. The study final report is completed written in November 2022.

3.5 Eligibility criteria

3.5.1 Inclusion criteria

- **Quantitative part**

  - Male and female diagnosed by HNT have been receiving treatment at the MoH-PHCs. The HNT was defined as (BP ≥140/90).
  - Patients with HNT who aged more than 18 years.
  - Patients who have had hypertension for more than one year.

➢ **Qualitative part**

Health care workers in NCDs (Non-Communicable Diseases) and key informants who were at least 5 years work experienced.

3.5.2 Exclusion criteria

➢ **Quantitative part**

- Clients with HNT who aged less than 18 years.
- Patients who have had their HNT for less than a year.
- Clients who have been diagnosed with secondary HNT.

➢ **Qualitative Part**

- Health care workers in NCDs who were less than 5 years' work experienced.

3.6 Study instrument

3.6.1 Quantitative part

A data collecting tool was developed to collect data for this study. The tool includes all of the information required to identify risk factors for uncontrolled blood pressure. In this study, a face-to-face interview questionnaire was employed **(Annex 4)**. The questionnaire was developed according the specific objectives and was reviewed and modified by experts to increase the validity of the content. The following components was included in the questionnaire:

- Patient related factors: gender, place of living, family income, family history of hypertension, employment status, education and BMI.
- Lifestyle factors: Health literacy, the hypertension- knowledge level questionnaire was used.

  Lifestyle assessment which was assessed by Lifestyle Assessment Short Form by American College of Lifestyle Medicine.
- Psychological health which was assessed by General Health Questionnaire (GHQ-12). Smoking and salt intake.

- Physical activity which was assessed by Global Physical Activity Questionnaire by WHO.
- Health system factors: Including the availability of Anti-HNT medicines, adherence to antihypertensive therapy, using monotherapy, and access to and usage of health care.
- Disease related factors: Including duration of HTN diagnosis and presence of comorbidities.

3.6.2 Qualitative part

Semi-structured in-depth interviews with key informants and health care professionals were conducted **(Annex 6)**.

The semi-structured interviews questions were covered different issues as the followings:

- Availability of policies and guidelines for the treatment of hypertension.
- Availability of the hypertension services.
- Methods of dealing with the uncontrolled hypertension patients.
- Means to reduce the uncontrolled hypertension among the hypertension patients.

3.6.3 Anthropometric Measurement

Anthropometric measurement was done, a weight balance measuring to nearest 0.5 kg (Kinlee type) was used. This scale was standardized and calibrated at the start of each measurement session. Participants were weighed in light clothes without shoes (after purses, coats, mobile phones, and other personal items were removed). With regard to measuring height, a suitable metallic meter scale measuring to the nearest 0.5 cm and fixed it to the wall. The respondents' heights were measured by being barefooted, taking into consideration that body parts are all close to the vertical wall surface, and a ruler was used horizontally to take the height. Finally, the BMI was calculated as weight in kg divided by the height in meters squared (kg/m2). BMI values were categorized as follows: underweight (BMI >18.5) normal weight (BMI 18.5-24.9), overweight (BMI 25–29.9), and obese (BMI ≥30) (CDC, 2022).

3.6.4 Blood pressure measurement

BP measurement was performed by a Researcher and her two assistants (well- trained nurses). BP was measured. After the participants had rested for 15 minutes, their blood pressure was measured using a standardized and well-calibrated mercury sphygmomanometer. Two blood pressure values were averaged to the closest 2 mmHg. Systolic BP was measured when the relevant sounds appeared (the first Korotkoff sounds), and diastolic BP was measured when the relevant sounds disappeared (fifth Korotkoff sounds).

3.7 Scientific rigor

Quantitative study

3.7.1 Reliability

(Taherdoost, 2018). To ensure instrument reliability, the Researcher assistants were trained in the same way on the stages of the interview and how to choose study participants, how to ask questions to ensure standardization of questionnaire completion, and how to measure the participant's weight and height. Finally, 5% of the data was re-entered after ending data entry to reduce the possibility of entry error.

3.7.2 Face validity

According to Taherdoost (2018), face validity refers to Researchers' subjectivity of assessments of the presentation and relevance of the measuring instrument as to whether the items in the instrument appear to be relevant, reasonable, unambiguous and clear. The Researcher designed the questionnaire in a way that would facilitate the data collection and data entry. Before the final edition, the questionnaire layout was examined and formatted multiple times during the validation process.

3.7.3 Content validity

Content validity measures the degree that the instruments used are relevant to and representative of the desired construct for a specific assessment purpose is known as content validity (Yusoff, 2019).

The content validity is usually assessed through expert's evaluating of the study tools. The questionnaire was evaluated by eleven specialists from various backgrounds. **(Annex 6).** The assessment aim was to analyze the relevance of each domain, to see if the questionnaire contents was acceptable for its intended purpose, and to meet the overall goal. Furthermore, the Researcher takes into account all expert feedback and suggestions, thus the final version generated, and interview questions matched all expert feedback. Finally, the Research assistants were well-trained to assure data collecting accuracy.

3.7.4 Pilot study

Before the data collection began, a pilot study was undertaken. Data were collected from 30 participants in order to analyze the validity of the research's questions, test the suitability of the study instrument, and enhance the study's validity and reliability. The piloting process is a small experiment designed to assist in identifying potential problems in the research design and revising the methods and logistics of data collection before beginning the actual fieldwork, in order to improve quality and efficacy. Additionally, piloting enables the Researcher to gain experience dealing with the data collection instrument

3.7.5 Trustworthiness: Qualitative study-in-depth interview

The trustworthiness was done through, firstly, credibility was addressed by activities such as prolonged engagement, persistent observation, and the data collection triangulation. Secondly, transferability was examined through providing descriptions to questions, so that those who asked to transfer the findings to their own site can judge transferability. Thirdly, the Researcher verified that the study method was rational, traceable, and thoroughly recorded, dependability was established. Fourth, confirmability was established when all of the criteria for credibility, transferability, and dependability were met. Finally, all transcripts and recordings were saved so that others may monitor the material at any time. (Audit trail) (Nowell et al., 2017).

3.8 Data collection

3.8.1 Quantitative Study

The data took almost two months to be completed. The data collection was started on February 1, 2022 and ended on April 10, 2022. Participants were informed that their participation is optional and that they have the right not to answer any questions after getting

complete information about the study's aims and objectives. After verbal approval, the Researcher and the two research assistants conducted face-to-face interviews to fill in the questionnaires. On average, each questionnaire required from 15 to 20 minutes to be completed and reviewed to make sure of no missing answers.

3.8.2 Qualitative Study

The Researcher and one of the assistants conducted all the in-depth interviews and the collection of qualitative data started on October 31, 2022 and ended on November 13, 2022. Regarding to the in-depth interviews, the average time for each interview was 20-25 minutes. The Researcher and her assistant recorded the interviews and took notes during the interview.

3.9 Response rate

The response rate of the study is 100%, all participants agreed to participate in the study.

3.10 Data Entry and Analysis

3.10.1 Quantitative part

- The Statistical Package for the Social Sciences (SPSS) application was used for data entry and analysis (version 25). SPSS was used to enter data, clean data, perform frequency and cross tabulations, and analyze data. The independent variable is a dichotomous one and different independent variables, including patient related factors, lifestyle factors, health system factors and disease related factors. Descriptive statistics tests were used to assess the characteristics of the study sample, cross tabulation for main findings as Chi square test to compare categorical variables. The prevalence of UBP was calculated.
- Independent Sample T- Test was used to study the relationship between continuous independent variables such as the duration of hypertension diagnosis, duration of experiencing hypertension complications, hypertension knowledge level, study participants' perspective about their level of health and waiting time regard receiving the health care services) and dependent variable which is controlling status of BP
- Multivariate logistic regression test was performed to predict which independent factors can influence the likelihood of developing uncontrolled blood pressure.

3.10.2 Qualitative part

Open coding theme analysis was used to analyze the qualitative data, taking notes during and after each interview, and then creating a data entry model that includes data cleaning, classification, and coding. In a quantitative method, coding is an analytical tool. The majority of coding must be separated into themes. Each theme is identified by a code. The quantitative and qualitative findings were then compared and merged in order to validate the findings and provide rich data.

3.11 Ethical consideration

- The Researcher gotten the administrative approval from Al-Quds University, since this research will improve the people of Gaza's health. Additionally, an ethical approval from Helsinki Committee was obtained **(Annex 8)**.
- An approval was also obtained from the Director General of MoH and the Director of PHC in the GS **(Annex 7)**.
- Clients who were chosen from the clinics were requested to sign a consent form to participate in the study.
- The Researcher has fully applied the patient safety principles to avoid exposing client to any physical, psychological, emotional harm. The information gathered were utilized just for the purposes of this study, with no further dissemination or distribution. **(Annex 9)**.
- Each patient was informed that any responses submitted would be kept strictly secret and would only be utilized for research purposes to improve the services offered to hypertension patients.

3.12 Study limitations

- Interviewer bias and recall bias.
- The study involved a sample from MoH clinics but other PHC clinics for UNRWA and NGOs were not included Number of patients visiting the primary health care centers was varied according to which day of the month was, the number was increasing at the beginning of the month and decreasing by mid of the month, this affected the data collection process.

Chapter Four

Results and Discussion

4.1 Introduction

This Chapter underlines the results of the statistical analysis of the collected data, including descriptive analysis that underlines the socio-demographic characteristics of the study sample. It also includes bivariate and multivariate statistical tests.

4.1.1 Demographic characteristics of study participants

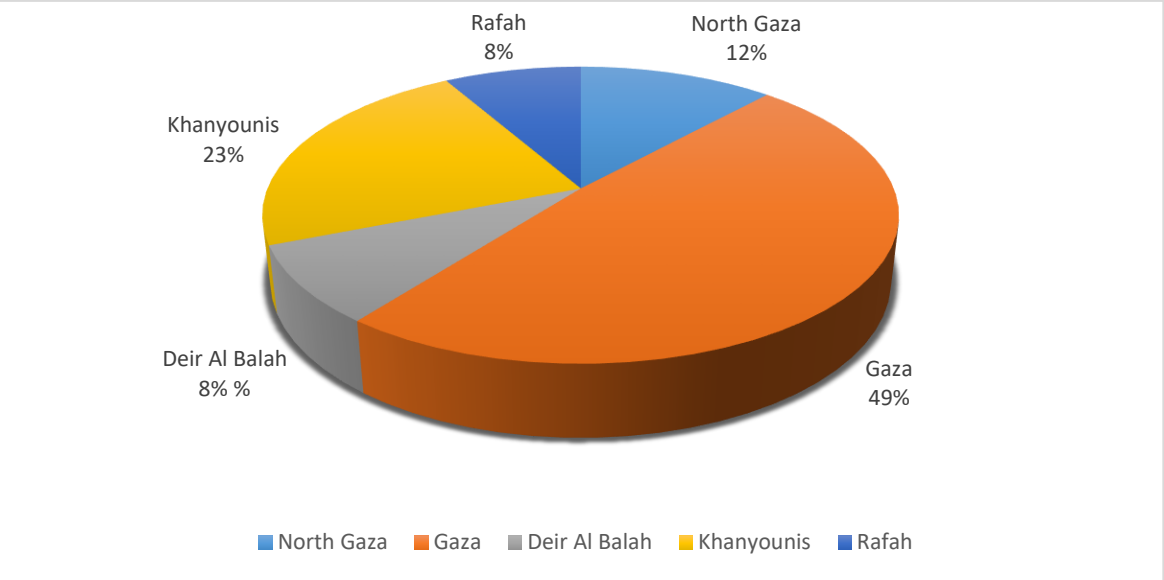

Figure (4.1): Distribution of study participants according to governorates

Figure (4.1) shows that of the total study participants, 12% were from Gaza North governorate; 49% were from Gaza governorate; 8.5% were from Deir Al- Balah governorate; 23% were from Khanyounis governorate, and 8.3% were from Rafah governorate.

4.1.2 Patient- Related Factors

Table (4.1) shows that 53.5% of the study participants were male patients and 46.8% were females. With regard to participants' age, the mean age of the study participants, in general, was 56.68 years with (SD+/- 11.4). The breakdown of study participants by age group shows that 8% of the study aged less than 40 years, 22.8 % aged between 41 to 50 years, and 31.3% aged between 51 and 60 years, and finally 38% are more than 60 years. This finding was consistent with MoH annual report (2021) which showed that about half of (48%) of hypertensive patients are 60 years old or more. More than two-thirds (81.7%) of the study participants were married at the time of data collection and (18.3%) of the study participants were unmarried during the time of data collection, including being widowed, single, or divorced. With regard to years of schooling, 78% of study participants had 12 years of schooling, with a mean of 10.06 years and 22% of study participants had more than 12 years of schooling. This finding is consistent with the findings of Abu- El-Noor (2020) who found that 64.9% of hypertensive patients in governmental primary health centers had at least 12 years of schooling (Abu-El-Noor et al., 2020).

With regard to years of schooling, (78%) of study participants had 12 years of schooling, and (22%) of study participants had more than 12 years of schooling. This finding is consistent with the findings of Abu- El-Noor (2020) who found that (64.9%) of hypertensive patients in governmental primary health centers had at least 12 years of schooling (Abu-El-Noor et al., 2020).

Table (4.1) reveals that less than one-third of the employed study participants were having professional jobs (27.3% of participants) and others worked as clerks, and sales and service workers with 19.3% of the study sample. Additionally, 13.6% of working participants had managerial positions. Finally, skilled workers, technicians and assistant of professionals, skilled workers in agriculture, forestry and fisheries, craftsmen and related professions, employees of armed robots, armed force and primary crafts summed up to (39.8%).

With regard to BMI, 84% of the study participants were either obese (43%) or overweight (41%). Only 15.3% of the study sample have normal weight.

These findings are consistent with Alawneh and Others (2022) who indicated the BMI of hypertensive patients in Nablus were either obese (36.2%) or overweight (49.1%) and 14.7% of the study participants had normal weight.

Table (4.1): Distribution of the study participants according to patient-related factors

Items	**Number**	**%**
Gender		
Male	213	53.5
Female	187	46.7
Total	400	100.0
Age		
Less than 40 Years	32	8
From 41 to 50 Years	91	22.8
From 51 to 60 Years	125	31.3
More than 60 Years	152	38
Total	400	100.0
Mean = 56.68 years, SD +/- 11.464		
Marital Status		
Unmarried	73	18.3
Married	327	81.7
Total	**400**	**100.0**
Years of schooling		
Primary	101	25.3
Preparatory	85	21.3
Secondary	126	31.5
University	88	22.0
Total	**400**	**100.0**
Mean = 10.06, SD +/- 4.089		
If yes, what do you work	**Number**	**%**
Managerial	12	13.6
Professional	24	27.3
Technicians and Assistants of Professionals	6	6.8
Clerks, sales and service workers	17	19.3
Skilled workers in agriculture, forestry and Fisheries	6	6.8
Craftsmen (artisans) and related professions.	4	4.5
Employees of armed robots	8	9.1
Primary crafts	6	6.8
Employees of armed forces	5	5.7
Total	**400**	**100.0**

Table (4.1): Continued

Body Mass Index		
Underweight (<18.5)	2	0.5
Normal Weight (18.5-24.9)	61	15.3
Overweight (25-29.9)	164	41.0
Obese (≥ 30)	173	43.3
Total	400	100.0
Obesity classes		
Obese class 1 (30-34.9)	105	26.3
Obese class 2 (35- 39.9)	46	11.5
Obese class 3 (≥ 40)	17	4.3
Total	168	42%
Do you have a family history of hypertension?		
Yes	308	77.0
No	81	20.3
I don't Know	11	2.8
Total	400	100.0
If yes, to whom?		
Father	47	15.3
Mother	81	26.3
Both	171	55.5
Brother	8	2.6
Sister	1	0.3
Total	308	100.0

As shown in figure (4.2), about two-thirds of the study participants were unemployed at the time of data collection 65.8%, and only 22%were employed. Finally, 12.3% of the study participants were retired. The breakdown of employment status by gender reveals that 35.7% of men were employed at the time of data collection compared to only 6.4% of females. Conversely, less than half of male study participants (44.1%) were unemployed compared to 90.4% of unemployed women. This finding is consistent with the findings of the PCBs as the current unemployment rate is about (40.2%) among males and inconsistent with number among females (61%) in the Gaza Strip (PCBS, 2021).

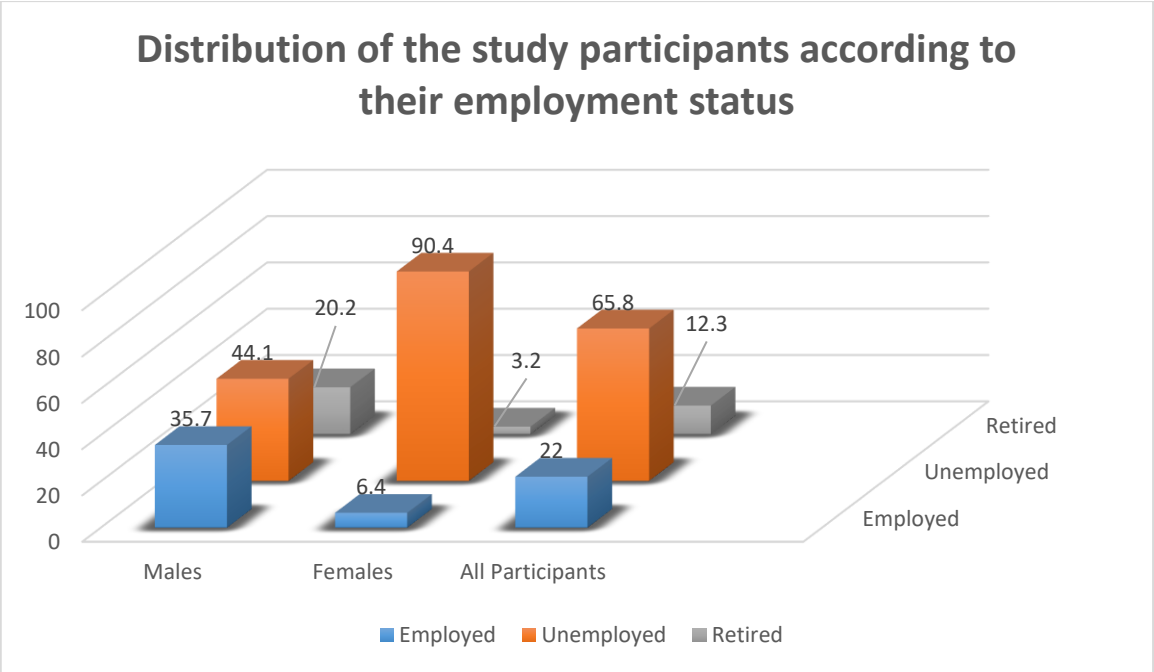

Figure (4.2): Distribution of the study participants according to their employment status

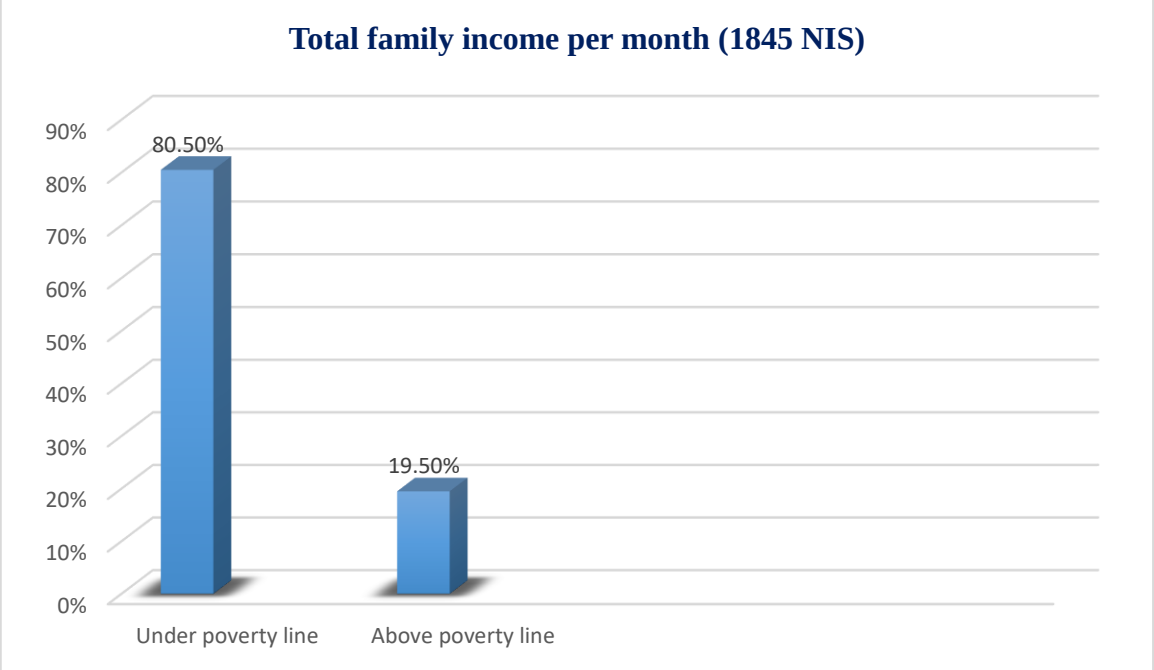

Figure (4.3): Distribution of participants according to their income status

The mean monthly income for the household was 1179.74 ILS, with (SD+/-797.232). In 2017, the poverty line and deep poverty line for a household of five individuals were 2,470 NIS and 1,974 ILS, respectively (PCBS, 2020). Figure 4.3 shows that only 19.5 % of the study participants have an average of monthly income that is above the poverty line. On

contrary, 80.5% of the study participants have a monthly income that is under the poverty line. This finding is consistent with the general deterioration and collapse in Gaza's economy due to the ongoing 17 years of blockage and occupation. It is also reflecting the current high rate of poverty in the Gaza Strip (53%) (PCBS, 2020).

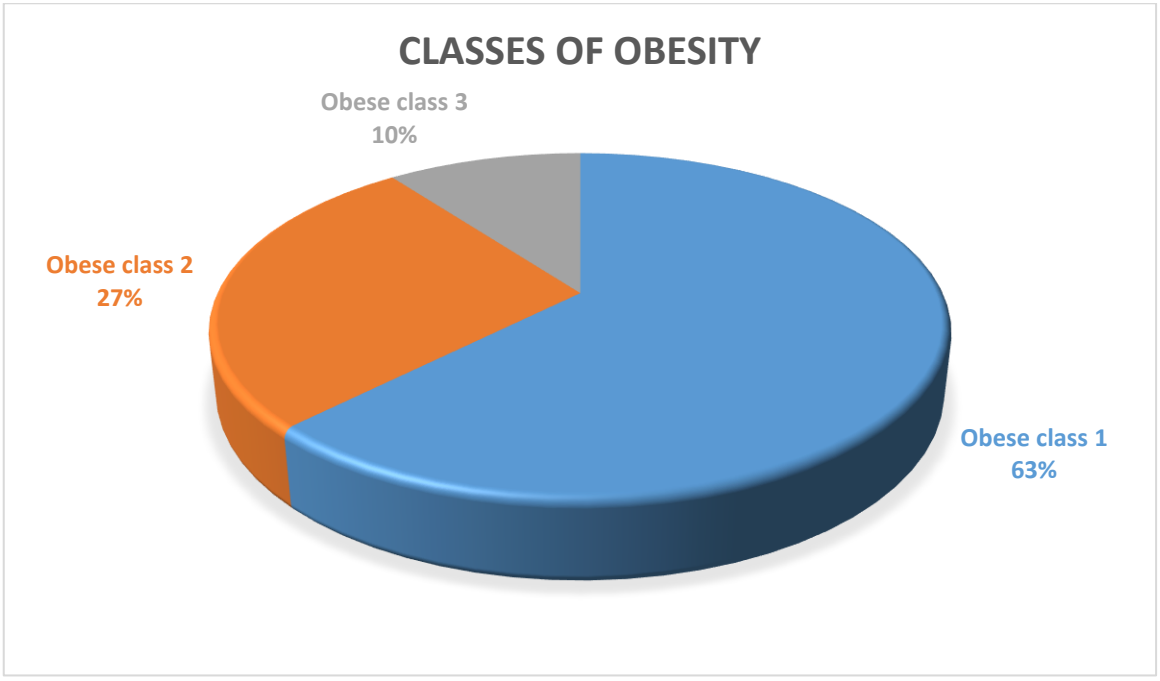

Figure (4.4): Distribution of participants according to the classification of obesity

As shown in figure (4.4) among the study participants whose BMI are ≥ 30, 63% of obese participants categorized as obese class 1 with (BMI =30-34.9), and 37% of the obese participants were categorized as class 2 with (BMI 35- 39.9) and class 3 with (BMI ≥40))

With regard to family history of hypertension, 77%of the participants have a positive history of hypertension, and only 20.3% have a negative history of hypertension. This finding is consistent with the findings of Abed (2013) who found that 85.8% of hypertensive patients attending Clients utilizing UNRWA health services have a positive family history of hypertension (Abed, 2013). Interestingly, more than half of the study participants (55.5%) reported hypertension history to both father and mother, (26.3%) reported history to the mother's side, and (15.3%) reported history to the father's side.

Table (4.2): Distribution of the study participants according to selected disease-related factors

Duration since being diagnosed with hypertension	**Number**	**%**
Less than 5 years	158	39.5
6 to 10 years	152	38.0
Above 10 year	90	22.5
Total	**400**	**100.0**
Mean = 7.65, SD +/ 6.45		
Having any complications related to hypertension		
Yes	137	34.4
No	263	65.8
Total	**400**	**100.0**
Complications		
Cardiovascular	63	46.0
Ophthalmic	46	33.6
Renal	20	14.6
Neurological	5	3.6
Cerebrovascular	3	2.2
Total	**137**	**100.0**
Duration since having experience these complications		
2 years and less	56	40.9
3 to 5 years	37	27.0
Above 5 years	44	32.1
Total	**400**	**100.0**
Mean = 4.63, SD +/-3.92		
Having other chronic diseases		
Yes	195	48.8
No	205	51.3
Total	**400**	**100.0**
Chronic diseases		
D.M	154	79.0
Bronchial Asthma	15	7.7
Heart Disease	11	5.6
Other	15	7.7
Total	**195**	**100.0**

As shown in table (4.2), the mean duration of having hypertension since diagnosis was 7.65years, with (SD +/-6.45), in which 39.5% of study participants had hypertension for 5 years or less, 38% of study participants had hypertension from 6 to 10 years, and 22.5% of study participants had hypertension for more than 10 years. These results were consistent

with Abu El-Noor's (2020) study results which revealed that the mean hypertension duration was 9.77 years (Abu-El-Noor et al., 2020).

Among the study participants, 34.4% reported that they had complications from hypertension. 40.9% of them had these complications for 2 years or less, 27% had those from 3 to 5 years and 32.1% had them for above 5 years. On the other hand (65.8%) reported they hadn't any complications. It's recommended to conduct screening programs in order to early detect cases with complications and allow disease regression with adequate therapy.

As shown in table (4.2) There are (46%) of the study participants have cardiovascular complications, (33.6%) have ophthalmic complications, (14.6%) have renal complications, (3.6%) have neurological complications and (2.2%) have cerebrovascular complications.

- **Co-morbidities**

Table (4.2) shows that 48.8% of the study participants have co-morbidities along with hypertension. As expected, the most frequent comorbidity was D.M, with 75.9% of the total study participants who have co-morbidities. This finding is consistent with the findings of Hammad (2019) who found that 75% of adults with DM also have hypertension (Hammad, 2019). Bronchial asthma represented 7.7% and heart diseases represented 5.6% of the total study participants.

As in Table (4.3) Among 154 D.M patients, only 4 patients have normal HA1C, 127 patients have abnormal HA1C according to what their treating physicians informed them and 23 patients didn't know their readings.

Table (4.3): Distribution of the study participants according to selected disease-related factors

Last HbA1C reading for hypertensive clients who have DM	**Number**	**%**
Normal	4	2.61
Abnormal	127	82.46
Don't know	23	14.93
Total	**154**	**100.0**
What is the current treatment do you receive to treat hypertension		
Medicine	203	50.8
Both: Medicine and lifestyle changes	197	49.3
Total	**400**	**100.0**

It’s recommended that ministry of health should facilitate involvement of HA1C test in the governmental primary health centers in order to assess the control status of diabetic patients since it’s not done there.

As shown above, 50.8% of the study participants use only medicines without lifestyle changes like doing exercises or diet modifications, and (49.3%) use both medicines and lifestyle changes.

It’s recommended to incorporate lifestyle modification as part of the treatment plan by the health care providers.

Table (4.4): Distribution of the study participants according to selected disease-related factors

Antihypertensive drug groups	**Number**	**%**
Aldosterone Antagonists	2	0.3
Alpha-2 adrenergic agonist	8	1.5
Calcium Channel Blocker (CCB)	265	50
Beta Blockers	58	11
Angiotensin Receptor Blockers (ARBs)	88	16.6
Angiotensin Converting Enzymes Inhibitors (ACE)	58	11
Loop Diuretics	35	6.6
(ARBs+ CCB)	9	1.7
Thiazide Diuretics	7	1.3
Total	**530**	**100.0**
Taking all medication yesterday		
Yes	361	90.3
No	39	9.8
Total	**400**	**100.0**
Any days you did not take your medicine for any reason		
Yes	148	37.0
No	252	63.0
Total	**400**	**100.0**
Reasons for not taking medicine		
Ignorance	37	25.0
Forgetfulness	84	56.8
Feel more worse	1	0.7
Taste of the drugs is not accepted	24	16.2
I don’t have enough money to buy the medicines	2	1.4
Total	**148**	**100.0**

Table (4.4): Continued

When you feel like your symptoms are under control, do you sometimes stop taking your medicine		
Yes	90	22.5
No	310	77.5
Total	**400**	**100.0**
When you travel or leave home, sometimes forget to bring along your medicine		
Yes	**117**	**29.3**
No	**283**	**70.8**
Total	**400**	**100.0**
Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan		
Yes	**174**	**43.5**
No	**226**	**56.5**
Total	**400**	**100.0**

As shown in table (4.4), the most used drug group among hypertensive patients is Calcium Channel Blocker (CCB) group, as suggested by the WHO pharmacological guide in the treatment of hypertension in adults: the most suitable for imitation without testing compared to the diuretics or Angiotensin Converting Enzymes Inhibitors (ACE) inhibitors are (CCB) groups (WHO, 2021).

Among the study participants, 63% were adherent to their treatment during the last two weeks of the data collection time. On the other hand, among the 37% of the study sample who weren't adherent to their treatment, the most common reason for not being adherent was forgetfulness to take the medication which was reported by 56.8% of the study participants.

Additionally, 22.5% of the study participants stopped taking their medications when they felt their symptoms are under control, 29.3% forgot to carry their medications with them when they leave their homes, and 43.5% felt hassled about sticking to their treatment plan.

4.1.3 Lifestyle Factors

Concerning lifestyle factors, 316 of the study participants (79 %) consume salt in their daily food and the vast majority of participants (99.7%) used ordinary table salt, Sodium chloride.

Regarding smoking status, a total of 59 (32.8%) of the male participants have been smoking cigarettes, and only 2 of the female participants (1.3%) have been smoking cigarettes. The mean number of participants who smoked cigarettes per day was 10.15 cigarettes. Of the male participants who smoke, 28.8% of them smoke 10 cigarettes and more per day. Among the Ex- smokers 18 (64.3%) of the participants have been smoking for 20 years and above.

This is consistent with the PCBS survey of smoking and tobacco consumption (2021), in which 33.3% of men adults were tobacco smokers and 0.5% of females were tobacco smokers in the Gaza Strip (PCBs, 2022).

Table (4.5) shows that most of the study participants (95.5%), were not water pipe smokers, while 4.5 % of the participants were water pipe smokers.

Table (4.5): Distribution of the study participants according to their lifestyle factors

Items	**Number**	**%**
Taking salt with food		
Yes	316	79.0
No	84	21.0
Total	**400**	**100.0**
Number of meals in which you eat salty food		
None	84	21.0
One Meal	131	32.8
Two Meals	71	17.8
Three Meals	100	25.0
Four Meals	5	1.3
Five Meals	9	2.3
Total	**400**	**100.0**
Type of the used salt		
Table Salt	315	99.7
Himalayan Salt	1	0.1
Total	**316**	**100.0**
Cigarette smoking status (Males)		
Not smoker	94	52.2
Ex-smoker	27	15
Current smoker	59	32.8
Total	**180**	**100.0**
Cigarette smoking status (Females)		
Not smoker	148	**98**
Ex-smoker	1	**0.7**
Current smoker	2	**1.3**
Total	**151**	**100.0**

Table (4.5): Continued

If current smoker, the number of cigarettes you smoke per day (Males)		
5 and less	22	37.3
6 to 10	20	33.9
More than 10	17	28.8
Total	59	100.0
Mean = 10.15, SD=+\- 6.60		
If Ex-smoker, the number of years have you been on smoking		
10 years and less	3	10.7
11 to 19 years	7	25
20 and above	18	64.3
Total	**28**	**100.0**
Smoking water pipes		
Yes	18	4.5
No	382	95.5
Total	**400**	**100.0**

4.1.4 Physical activity characteristics

Table (4.6) shows that only 3.8% of study participants had work that involved vigorous-intensity activity like carrying heavy loads, digging, or construction work. Of those who did that involved vigorous-intensity activity, 42.9% worked for less than 5 days per week, 28.6% worked for 5 days and 28.6% worked more than 5 days per week.

Regarding the duration of doing intensity vigorous-intensity activities, 50% of the vigorous-intensity activities from 3 to 4 hours per day, 35.7% did 2 hours and less and 14.3% did above 4 hours per day.

When study participants were asked whether they engaged in moderate-intensity activities, such as brisk walking or carrying light loads for 10 minutes or longer continuously, 92.1% said they never engaged in moderate-intensity activity, more than half (57.7%) did less than five days a week, and 42.3% of study participants did more than five days a week.

With regard to the number of minutes of doing moderate - intense activities at work per day, 61.5% of participants did moderate - intense activities for more than 60 minutes and 38.5% of participants did moderate - intense activities for less than 60 minutes. The mean number of minutes for doing moderate-intensity activities at work per day was 132.69 minutes, (SD +/- 90.66).

By asking the study participants if they walked or cycled for at least 10 minutes continuously to get to and from places, fortunately, the below Table shows that three third of the study participants (84.8%) have walked or used a bicycle for at least 10 minutes continuously to get to and from places.

Regarding the number of days of walking or cycling per week. As shown in table (4.6), among the study participants who walked or cycled for at least 10 minutes continuously to get to and from places, more than half of the participants (53.7%) walked or cycled for 5 days and less per week. While 46.3% of the study participants walked or cycled more than 5 days weekly. As shown in the below table. The mean number of days of walking or cycling per week was 5.14 days, with (SD +\-1.88).

With regard to the number of minutes of walking or cycling per day, 38.1% of study participants walked or cycled for 30 minutes or more per day. A total of 34.2% of study participants walked or cycled for 30 minutes per day. Finally, 27.7% of study participants walked or cycled for less than 30 minutes a day. As shown in the table below, the mean number of minutes of walking or cycling per day was 41.71 minutes (SD +/-31.92). Concerning the number of minutes per day of doing intense vigorous-intensity sports or recreational activities as shown in table (4.6), the mean number of minutes of doing vigorous-intensity sports or recreational activities per day for 10 minutes continuously was 1.96 minutes with (SD +/-0.2). Fifty percent of study participants who engaged in vigorous-intensity sports or recreational activities did it for 4 days or less per week, the other half exercised 4 days or more per week, and 53.3% exercised for 30 minutes or more each day. Finally, a total of 41.7% of participants did it for less than 30 minutes per day.

By asking the study participants if they did any moderate-intensity sports or recreational activities like cycling, swimming, and volleyball for at least 10 minutes continuously, table (4.6) shows that more than two-thirds (79.8%) of the study participants indicated that they have never done any moderate-intensity sports or recreational activities, while 20.3% of the study participants have indicated that they did moderate-intensity sports or recreational activities.

Regarding the number of days doing moderate-intensity sports or recreational activities per week, table (4.6) reveals that the mean number of days of doing moderate-intensity sports or recreational activities per week was 3.43 days, with (SD +/-1.81). A total of 35.8% of the

study participants who do moderate-intensity sports or recreational activities do it for 2 days or less per week, while 33.3% of them do it for 3 days per week. Additionally, 30.9% of the participants do it for more than 3 days per week.

With regard to the number of minutes of doing moderate-intensity sports or recreational activities per day, as shown in table (4.6), the mean number of minutes of doing vigorous - intensity sports or recreational activities per day was 42.90 minutes, with (SD +/-39.11). About (37%) of the study participants do moderate-intensity sports or recreational activities for more than 30 minutes per day, followed by, 32.1% doing it for less than 30 minutes per day. Finally, 30.9% of them do it for 30 minutes per day.

Finally, regarding the number of minutes sitting or reclining per day, the mean number of minutes sitting or reclining per day was 327.61, median= 300 minutes, (SD +/-209.51). Approximately (48.8%) of study participants spent between 151 and 400 minutes per day sitting or reclining, followed by 30% spent more than 400 minutes sitting or reclining, and finally, 21.3% spent less than 150 minutes per day sitting and reclining per day.

Those findings are consistent with Islam (2021) who found that about 47% among study participants of adult hypertensive patients in Bangladesh sat per day with a median number of minutes= 300 minutes.

Table (4.6): Summary of physical activity involved working, traveling to and from places, recreational activities and sedentary behavior

Items	**Total**	
	Number	**%**
Physical Activity		
vigorous-intensity activity involved working like carrying heavy loads, digging or construction work		
Yes	15	3.8
No	385	96.3
Total	**400**	**100.0**

Table (4.6): Continued

Number of days involved doing vigorous intensity activities as part of your work per week		
Less than 5 days	6	42.9
5 days	4	28.6
More than 5 days	4	28.6
Total	14	100.0
Mean = 4.71, SD = +/- 1.68		
Duration for doing vigorous-intensity activities at work per day		
2 Hours and less	5	35.7
3 to 4 hours	7	50.0
More than 4 Hours	2	14.3
Total	**14**	**100.0**
Mean = 212.14 minutes, SD = +\-168.26		
Moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking or carrying light loads for at least 10 minutes continuously		
Yes	26	7.9
No	304	92.1
Total	**330**	**100.0**
Number of days for doing moderate intensity activities as part of your work per week		
5 days and less	15	57.7
More than 5 days	11	42.3
Total	**26**	**100.0**
Mean = 5.27, SD = +\- 1.21		
Duration for doing moderate-intensity activities at work per day		
60 minutes and less	10	38.5
More than 60 minutes	16	61.5
Total	**26**	**100.0**
Mean = 132.69, SD= +\- 90.66		
Travel to and from places		
Walking or bicycling for at least 10 minute continuously to get to and from places		
Yes	339	84.8
No	61	15.3
Total	**400**	**100.0**
Number of days you walk or bicycle for at least 10 minutes continuously to get to and from places per week		
Five and less	182	53.7
More than five	157	46.3
Total	**339**	**100.0**
Mean = 5.14, SD = +\- 1.88		
Duration for walking or bicycling for travel per day- minutes		
Less than 30 Min.	94	27.7
30 min.	116	34.2
Above 30 Min.	129	38.1
Total	**339**	**100.0**

Table (4.6): Continued

Mean = 41.71, SD = +\- 31.92		
Recreational activities		
Doing vigorous-intensity sports, or recreational activities like running or football for at least 10 minutes continuously		
Yes	**12**	**3.5**
No	**327**	**96.5**
Total	**339**	**100.0**
Mean= 1.96, SD= +\- 0.2		
Number of days of doing vigorous intensity sports, or recreational activities per week		
4 days and less	6	50.0
More than 4 days	6	50.0
Total	**12**	**100.0**
Mean = 4.67, SD= +\- 1.61		
Duration of doing vigorous-intensity sports, fitness or recreational activities per day		
Less than 30 minutes	5	41.7
30 minutes and more	7	53.3
Total	**12**	**100.0**
Mean = 32.50, SD = +\- 31.15		
Doing moderate-intensity sports, or recreational activities like brisk walking, cycling, swimming, and volleyball for at least 10 minutes continuously		
Yes	81	20.3
No	319	79.8
Total	**400**	**100.0**
Number of days of doing moderate-intensity sports or recreational activities per week		
2 days and less	29	35.8
3 days	27	33.3
Above 3 days	25	30.9
Total	**81**	**100.0**
Mean = 3.43, SD = +\- 1.81		
Duration of doing moderate-intensity sports, fitness or recreational activities per day		
Less than 30 minutes	26	32.1
30 minutes	25	30.9
More than 30 minutes	30	37.0
Total	**81**	**100.0**
Mean = 42.90, SD= +\-39.11		
Sedentary behavior		
Duration of sitting or reclining per day		
150 Min and less	85	21.3
151 to 400 Min.	195	48.8
More than 400 Min.	120	30.0
Total	**400**	**100.0**
Mean = 327.61, MD= 300.00, SD = +\- 209.51		

4.1.5 General Health Questionnaire

According to the Palestinian context scoring below 6 is considered abnormal. As shown in figure (4.5) 14.1% of males' participants have abnormal scores while 29.8% of female participants have abnormal scores and require further psychological consultation.

These findings are consistent with Al-Zahrani and Colleagues (2021) who found after using GHQ that women were 1.5 times psychologically distressed more than men which are rooted in variations in biological sex rather than in external factors such as culture, eating patterns, education level, and many other social and economic causes that are potentially confusing.

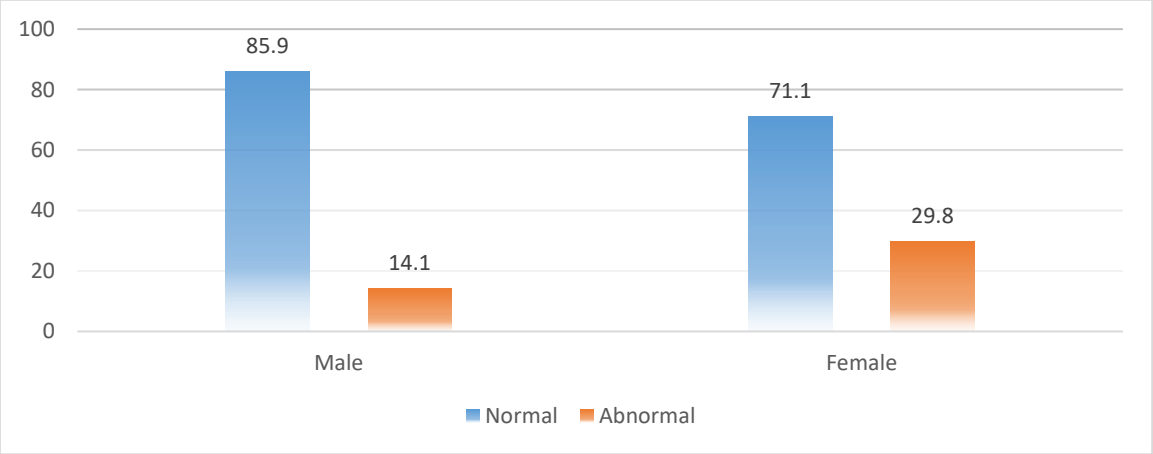

Figure (4.5): GHQ-12 score result among males and females participants

Table (4.7): Distribution of the study participants according to General Health Questionnaire (GHQ)

Items	Yes		No		Total	
	Number	%	Number	%	Number	%
Have you recently been able to concentrate on whatever you're doing	321	80.2	79	19.8	400	100.0
Have you recently felt that you were playing a useful part in things	369	92.3	31	7.8	400	100.0

Table (4.7): Continued

Items	**Yes**		**No**		**Total**	
	Number	**%**	**Number**	**%**	**Number**	**%**
Have you recently felt capable of making decisions about things?	379	94.8	21	5.3	400	100.0
Have you recently been able to enjoy your normal day-to-day activities?	255	63.8	145	36.2	400	100.0
Have you been able to face up to your problems	353	88.3	47	11.8	400	100.0
Have you recently been feeling reasonably happy, all things considered	246	61.5	154	38.5	400	100.0
Have you recently lost much sleep over worry	196	49.0	204	51.0	400	100.0
Have you recently felt constantly under strain	204	51.0	196	49.0	400	100.0
Have you recently felt you couldn’t overcome your difficulties?	104	26.0	296	74.0	400	100.0
Have you recently been feeling unhappy or depressed	207	51.8	193	48.3	400	100.0
Have you recently been losing confidence in yourself	57	14.3	343	85.7	400	100.0
Have you recently been thinking of yourself as a worthless person	29	7.3	371	92.8	400	100.0
Mean = 3.185, SD= +\- 2.89						

4.1.6 Distribution of the study participants according to the level of knowledge level about hypertension

As shown in the below table (4.8), a large proportion of participants have an acceptable level of knowledge about hypertension, including its definition and treatment. A total of 58.3% of the participants knew that increased diastolic blood pressure indicates increased blood pressure and 43.8% stated that both high diastolic and high systolic blood pressure indicates increased blood pressure.

Regarding drug compliance, among the participants in our study, those who believed that there is a need to change their lifestyle in addition to taking their drugs for increased blood pressure 83.3%. Those who believed that treatment for increased blood pressure is necessary and it's not a result of aging was 81.8%.

It is worth noting that 79.5 % of hypertensive participants knew that hypertension medication should be taken for life -long while only 12% believed medication should only be taken when they feel ill. These results were consistent with a Palestinian study done among hypertensive patients in the West Bank, in which, (83.1%) reported that hypertension treatment is life-long and (12.1%) believed that medication for high blood pressure should only be taken when feeling ill (Al Zabadi et al., 2018).

With regard to questions about hypertension complications, the majority of the participants were aware that hypertension can cause strokes, heart attacks, premature death, visual disturbance, and kidney failure if left untreated.

Table (4.8): Distribution of the study participants according to the hypertension knowledge level

Items	Correct		Incorrect		I Don't Know		Total	
	Number	%	Number	%	Number	%	Number	%
Definition: High diastolic or systolic blood pressure indicates increased blood pressure	175	43.8	24	6.0	201	50.3	400	100.0
Increased diastolic blood pressure also indicates increased blood pressure	233	58.3	6	1.5	161	40.3	400	100.0
Mean = 51.00, SD = +\- 43.34								
Drug Compliance: Increased blood pressure is the result of aging, so treatment is unnecessary	34	8.5	327	81.8	39	9.8	400	100.0
If the medication for increased blood pressure can control blood pressure, there is no need to change lifestyles	41	10.3	335	83.8	24	6.0	400	100.0
If individuals with increased blood pressure change their lifestyles, there is no need for treatment	63	15.8	316	79.0	21	5.3	400	100.0
Individuals with increased blood pressure can eat salty foods as long as they take their drugs regularly	81	20.3	311	77.8	8	2.0	400	100.0
Mean = 13.6, SD =+\- 24.30								
Medical Treatment: Individuals with increased blood pressure must take their medication in a manner that makes them feel good	36	9.0	349	87.3	15	3.8	400	100.0

Table (4.8): Continued

Drugs for increased blood pressure must be taken every day.	360	90.0	32	8.0	8	2.0	400	100.0
Individuals with increased blood pressure must take their medication only when they feel ill	48	12.0	349	87.3	3	0.8	400	100.0
Individuals with increased blood pressure must take their medication throughout their life	318	79.5	27	6.8	55	13.8	400	100.0
Mean = 47.63, SD = +\- 15.65								
Complications : Increased blood pressure can cause strokes if left untreated	394	98.5	1	0.3	5	1.3	400	100.0
Increased blood pressure can cause heart disease such as heart attack if left untreated	391	97.8	1	0.3	8	2.0	400	100.0
Increased blood pressure can cause premature death if left untreated	374	93.5	2	0.5	24	6.0	400	100.0
Increased blood pressure can cause kidney failure if left untreated	372	93.0	2	0.5	26	6.5	400	100.0
Increased blood pressure can cause visual disturbances if left untreated	365	91.3	4	1.0	31	7.8	400	100.0
Mean = 94.80, SD= +\- 17.60								
Overall knowledge Level Mean = 54.75, SD= +\-11.25								

4.1.7 Lifestyle Assessment

As shown in the table (4.9), the current overall health scale ranges from (0) very poor health to excellent health (10), the mean score for our study participants was 6.31, with (SD +/- 1.80).

For the average of sleeping hours during the last two weeks of the data collection time, at total of 21.6% of the participants had 7 to 8 hours of sleep. The recommended hours to sleep per day for adults is 7 or more hours per night (CDC, 2022). While 40.3% have had 6 hours sleeping per night.

For those who felt tired or have difficulty staying awake during routine tasks in the day in the last two weeks of data collection time, 48.5% reported they didn't at all and 34.3% reported they felt tired or had difficulty to staying awake during daily routine tasks.

When asking about the opinion of study participants about their current weight, only 40.8%stated that they were happy about their current weight, and 54.5%stated they wanted to lose weight.

With regard to the consumption of fast food such as sugary drinks or packaged foods, 41.5%of the study participants reported they had them several days during the previous two weeks of the data collection and 47.5% reported they didn't have them at all. This finding is consistent with Akparbour and Colleagues (2018) result which reported that 41.06% of the adult hypertensive patients in Iran had more than 2 times per week soft sweet drinks and 22.01% had more than 2 times per week fast food.

The number of study participants who had between 4 to 5 servings of whole fruits and vegetables per day as it's the recommended amount by the (AHA) was 18.3% and those who had 2-3 servings were 48.8%. This finding is consistent with Akparbour and Colleagues (2018) results who reported that (28.17%) and (33.04%) had more than 2 servings per day of fruits and vegetables respectively.

For those who exercise at a moderate to strenuous intensity over the last two weeks of the data collection time, 73.5% of the study participants exercise less than once per week and 17% of them exercise once to twice per week. The average session they exercise at a moderate to strenuous intensity, was less than 10 minutes, as expressed by (77.5%) of the participants, while 18.3% of the study participants exercise from 10-29 minutes.

Table (4.9): Distribution of the study participants according to their lifestyle assessment

Items	**Total**	
	Number	**%**
The current overall level of health, on a scale from 1 to 10, how do you rate your health?		
1 (very poor health)	1	.3
2	10	2.5
3	23	5.8
4	35	8.8
5	52	13.0
6	68	17.0

Table (4.9): Continued

7	102	25.5
8	72	18.0
9	33	8.3
10 (excellent health)	4	1.0
Total	**400**	**100.0**
Mean = 6.31, Med = 7.00, SD= +\- 1.80		
The number of hours of sleep you in average had in a 24-hour period over the last two weeks		
Less than 4 hours	42	10.5
4-5 hours	87	21.8
6 hours	161	40.3
7-8 hours	86	21.5
9 or more hours	24	6.0
Total	**400**	**100.0**
Feeling tired or have difficulty staying awake during routine tasks in the day over the last two weeks		
Not at all	194	48.5
Several days	137	34.3
More than half the days	35	8.8
Nearly every day	34	8.5
Total	**400**	**100.0**
Your thoughts about your current weight		
Gain a lot of weight	2	0.5
Gain a little weight	17	4.3
happy with my weight	163	40.8
Lose a little weight	118	29.5
Lose a lot weight	100	25.0
Total	**400**	**100.0**
Number of times you had fast food, sugary drinks or packaged foods over the last two weeks		
Not at all	190	47.5
Several days	166	41.5
More than half the days	19	4.8
Nearly every day	25	6.3
Total	**400**	**100.0**
The number of servings of whole fruits and vegetables you eat on the average day		
Less than 2 servings	107	26.8
2-3 servings	195	48.8
4-5 servings	73	18.3
More than 5 servings	25	6.3
Total	**400**	**100.0**

Table (4.9): Continued

The number of days you exercised at a moderate to strenuous intensity over the last two weeks		
Less than 1 time per week	294	73.5
1-2 times per week	68	17.0
3-4 times per week	26	6.5
5 or more times per week	12	3.0
Total	**400**	**100.0**
The number of minutes you exercise at a moderate to strenuous intensity during an average session		
Less than 10 minutes	310	77.5
10-29 minutes	73	18.3
30-49 minutes	13	3.3
50 minutes or more	4	1.0
Total	**400**	**100.0**

4.1.8 Healthcare system factors Accessibility of hypertension health services

Physical accessibility of hypertension health services

Table (4.10) shows that 96.8% of study participants had a regular source of health care services while 2.5% reported they didn't. A total of 83% of participants said that it was simple to get to the health care facility and use the provided services for hypertension patients. In contrast 17% of research participants stated that getting to the health center to obtain hypertension health care was difficult. The most common reasons given by research participants who stated that access was difficult were transportation costs (reported by 47.1% of study participants), followed by extensive walking distances (referenced by 38.2% of study participants).

This study's findings were consistent with Hammad (2019), in which transportation costs are identified as a barrier to healthcare usage in the GS (Hammad, 2019).

The GS's high poverty rates and declining economic conditions are affecting access to health care services, with 8.7% of participants in the research citing transportation expenses as a barrier to using health services. The high number of 89.5% participants who identified very good physical and financial accessibility, on the other hand, reflects the accessibility and affordability of government health care.

Accessibility of hypertension health services by persons with disabilities

Approximately 70% of research participants believe the health facility is accessible to people with disabilities.

Time accessibility of hypertension health services

As shown in table (4.10) from the study participant's point of view, the mean waiting time to receive services to control blood pressure from health care provider was 21.03 minutes, with (SD +/-12.41), 85.7% of study participants waited less than 30 minutes and 14.3% of study participants waited 30 minutes or more.

The average time for participants to obtain all services, from arrival to the health facility to leave, was 36.34 minutes. With (SD +/-18.65). In total, 79.5% of study participants spent less than 59 minutes and 20.5% of the study participants spent equal or more than 60 minutes

The majority of the spent time was waiting to receive hypertension services from healthcare providers. The mean time was 7.59 minutes spent as contact time with health providers, 53.3% of the participants spent less than 5 minutes with their primary doctor while 47.7% spent more than 5 minutes, this finding is consistent with Surbakti & Sari (2018) which reported that the average length of the consultation was (6.9-12.4l) minutes and higher communication effectiveness is often linked with increased patient satisfaction with consultation time (Surbakti & Sari, 2018).

Availability of health services for persons with high blood pressure

More than half (69.2%) of study participants stated that hypertension health treatments are always provided in public health centers. On the contrary, only 30.8% mentioned that health services were either sometimes or not available at all, whereas the unavailable hypertension services were antihypertensive drugs.

About 86% of the study participants visit the clinic by themselves while 14% asked someone else to bring their medications for them.

Hypertension follow-up visits

About 76% of the study participants conducted follow up visits regularly, while the 24% didn't.

The most frequent barriers to conduct follow up visits regularly in governmental health centers were uneasy movement as indicated by 44.8% of the study participants, followed by not having enough time- work issues- leave as reported by 20.8% of the study participants, as shown in Figure (4.6).

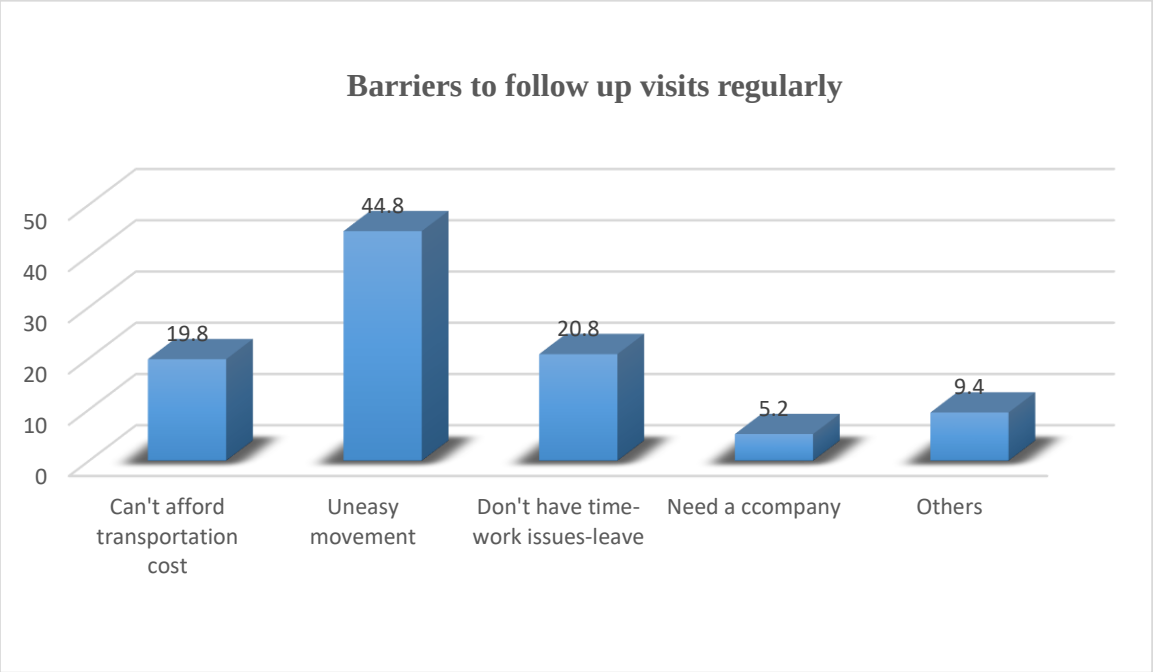

Figure (4.6): Barriers to follow up visits regularly

The most frequent barriers to receiving hypertension health services in governmental health centers were unavailable medicines as indicated by 80.6% of the study participants, followed by over crowdedness of health centers as reported by 7.3% of the study participants as shown above in the below Table (4.10)

Receiving hypertension health education materials inside the center

As shown in Table (4.10), 79.8% of participants did not receive hypertension health education materials from the health center, and only 20.2% have received health education

materials about controlling blood pressure such as diet, physical activity, and quitting smoking.

The health care providers should develop more strategies to provide hospital-based home-based health education material regarding lifestyle modification to chronic patients such as hypertensive patients.

As shown above in Table (4.10) 60% of the study participants didn't use home remedies to control hypertension while the other 40% used home remedies in addition to the anti-hypertensive drugs to control their hypertension.

Receiving services from other service providers

More than two-thirds of the study participants (74.3%) exclusively use services from government health clinics. In contrast, 25.7% of research participants use health services from alternative service providers in addition to governmental health services. Additionally, Table (4.10), participants utilize services mainly from UNRWA health centers, followed by private providers, and non-governmental centers.

Table (4.10): Distribution of the study participants according to access to health care center

Items	**Number**	**%**
Have a regular source of health care, that is, a doctor or clinic		
Yes	387	96.8
No	10	2.5
Sometimes	3	0.8
Total	**400**	**100.0**
Feasibility to reach the health care clinic		
Yes	332	83.0
No	68	17.0
Total	**400**	**100.0**
If no, what is the reason		
I need long time to reach the clinic by walking	26	38.2
I use public transportation and I don't have enough money available for that	32	47.1
Other	10	14.7
Total	**68**	**100.0**
The public transportation is costly affordable		
Yes	365	91.3
No	35	8.7
Total	**400**	**100.0**

Table (4.10): Continued

The health center adapted for people with disabilities		
Yes	280	70.0
No	120	30.0
Total	**400**	**100.0**
The number of minutes generally you wait to receive hypertension services from your health care provider		
15 Min. and less	193	48.2
16 to 30 Min.	150	37.5
Above 30 Min.	57	14.3
Total	**400**	**100.0**
Mean = 21.03, SD =+\- 12.413		
The number of minutes it generally takes you to receive the services		
Less than 30 min.	156	39.0
30-59 minutes	162	40.5
60 min and more	82	20.5
Total	**400**	**100.0**
Mean = 36.34, SD = +\- 18.652		
The number of minutes you generally spend with your doctor during the visit		
5 Min. and less	213	53.3
More than 5 Min.	187	46.7
Total	**400**	**100.0**
Mean = 7.59, SD = +\- 3.05		
Hypertension services availability at the health center		
Yes	277	69.2
No (Anti-hypertensive drugs)	71	17.8
Sometimes	52	13.0
Total	**400**	**100.0**
The way you get your medicines		
I visit the clinic by myself	344	86.0
Someone else brings the medicines for me	56	14.0
Total	**400**	**100.0**
Conducting follow up visits regularly		
Yes	304	76.0
No	96	24.0
Total	**400**	**100.0**
Returning home without receiving the services you came to receive In the past year		
Yes	124	31.0
No	276	69.0
Total	**400**	**100.0**

Table (4.10): Continued

If yes, indicate why		
Crowdedness of the center	9	7.3
Incorrect appointment	6	4.8
Unavailable health providers	3	2.4
Unavailable medicines	100	80.6
Other	6	4.8
Total	**124**	**100.0**
Receiving any health educational materials about hypertension during your visits to this health center in the last year		
Yes	81	20.3
No	319	79.8
Total	**400**	**100.0**
Using any home remedies to manage your hypertension		
Yes	160	40.0
No	240	60.0
Total	**400**	**100.0**
Receiving services from other clinics other than this one		
Yes	103	25.7
No	297	74.3
Total	**400**	**100.0**
If yes, from where		
UNRWA	46	44.7
Private	38	36.9
NGO's	16	15.5
Other	3	2.9
Total	**103**	**100.0**

4.2 Inferential analysis

4.2.1 Socio-economic characteristics of study participants and controlling status of BP

Table (4.11) reveals that the percentage of uncontrolled BP was higher among Deir Al-Balah governorate participants (61.8%) compared to Rafah governorate participants (27.3%), with (X^2=13.14, P=0.011).

Regarding the relationship between the family history of hypertension and the controlling status of BP, the below Table shows that those who have a positive family history of hypertension were at higher risk of having uncontrolled BP (39%) compared to (27.2 %) of

those who do not have a positive family history of hypertension, with (X^2=4.259, P=0.025), All the other variables in table (4.11) were statistically not significant.

Table (4.11): Relationship between selected socio-economic characteristics of study participants and controlled status of blood pressure

Items	Controlled BP		Uncontrolled BP	Total	X^2	Sig.
Gender						
Male	**No.**	132	81	213	0.623	0.430
	%	62%	38%	100%		
Female	**No.**	123	64	187		
	%	65.8%	34.2%	100%		
Total	**No.**	**255**	**145**	**400**		
	%	**63.7%**	**36.3%**	**100%**		
Marital Status						
Not Married	**No**	43	30	73	0.907	0.206
	%	58.9	41.1%	100%		
Married	**No.**	212	115	327		
	%	64.8%	35.2%	100%		
Total	**No.**	**255**	**145**	**400**		
	%	**63.7%**	**36.3%**	**100%**		
Age						
Less than 40 Years	**No.**	27	5	32	6.75	0.080
	%	84.4%	15.6%	100%		
41-50 Years	**No.**	58	33	91		
	%	63.7%	36.3%	100%		
51-60 Years	**No.**	75	50	125		
	%	60%	40%	100%		
More than 60 Years	No.	95	57	152		
	%	62.5%	37.5%	100%		
Total	**No.**	**255**	**145**	**400**		
	%	**63.7%**	**36.3%**	**100%**		
Place of residence						
North Gaza	No.	29	18	47	13.14	0.011
	%	61.7%	38.3%	100%		
Gaza	No.	124	71	195		
	%	63.6%	36.4%	100%		
Deir Al-Balah	No.	13	21	34		
	%	38.2%	61.8%	100%		
Khanyounis	No.	65	26	91		
	%	71.4%	28.6%	100%		
Rafah	No.	24	9	33		
	%	72.7%	27.3%	100%		
Total	**No.**	**255**	**145**	**400**		
	%	**63.7%**	**36.3%**	**100%**		

Table (4.11): Continued

Current working status						
Working	No.	56	32	88	4.097	0.129
	%	63.6%	36.4%	100%		
Not Working	No.	174	89	263		
	%	66.2%	33.8%	100%		
Retired	No.	25	24	49		
	%	51%	49%	100%		
Total	**No.**	**255**	**145**	**400**		
	%	**63.7%**	**36.7%**	**100%**		
Total family income per month (1845 ILS)						
Under Poverty Line	No.	206	108	314	2.827	0.062
	%	65.6%	34.4%	100%		
Above Poverty Line	No.	42	34	76		
	%	49.4%	50.6%	100%		
Total	**No.**	**248**	**142**	**390**		
	%	**63.6%**	**36.4%**	**100%**		
Mean = 1179.74 MD= 1000.00, SD= +\- 797.232						
Do you have a family history of hypertension?						
Yes	No.	188	120	308	4.259	0.025
	%	61.0%	39.0%	100%		
No	No.	67	25	92		
	%	72.8%	27.2%	100%		
Total	**No.**	**255**	**145**	**400**		
	%	**63.7%**	**36.3%**	**100%**		

*P value < 0.05 is statistically significant

The independent samples t-test revealed that there are no statistically significant differences between the mean of the age among the study participants who have controlled BP compared to study participants who have uncontrolled BP, with (t= 1.199, p = 0.231). The findings of this study are inconsistent with Aberhe and Colleagues study (2020), in which they studied the control status of BP among adult hypertensive patients at Northern Ethiopia, and they revealed that the less the age was the more controlled the BP status (Aberhe et al., 2020).

With regard to years of schooling, there are no statically significant differences between the mean number of years of schooling among study participants who have controlled BP and study participants who have uncontrolled BP, with (t= 0.449, p = 0.654). The findings of this study are inconsistent with Selçuk and Colleagues (2018) in which they studied prevalence of uncontrolled blood pressure, associated factors of it, and evaluated if health literacy is a

risk factor among adult patients in Turkey. The study findings they revealed that higher the years of education increase the likelihood of BP being controlled (Selçuk et al., 2018).

For the BMI, there are statistically significant differences between the mean of the BMI among the study participants that have controlled BP compared to study participants who have uncontrolled BP, with (p=0.004, t= 3.272), the findings of this study are consistent with Rahimi and Colleagues study (2020) in which they studied the determinants of uncontrolled hypertension among hypertensive patients in Afghanistan and revealed that lower BMI is statistically significant with the controlled status of BP (Rahimi et al., 2020).

As in Table (4.12), the family income was statistically not significant.

Table (4.12): Relationship between BP controlling status and selected demographic factors: age, education, income, and BMI

Item	BP	N	Mean	SD	t test	Sig
Age	Controlled	255	56.2	+/- 12.0	1.199	0.231
	Uncontrolled	145	57.6	+/- 10.4		
Years of schooling	Controlled	255	10.0	+/- 4.2	0.449	0.654
	Uncontrolled	145	10.2	+/- 3.9		
Family income	Controlled	248	1130.7	+/- 749.3	1.611	0.108
	Uncontrolled	142	1265.5	+/- 870.8		
BMI	Controlled	255	39.12	+/- 5.110	3.272	0.004
	Uncontrolled	145	31.23	+/- 6.735		

*P value < 0.05 is statistically significant

4.2.2 Disease related factors and controlling status of BP

Regarding the presence of comorbidities, the below table (4.13) shows that there's a statistically significant relationship between presence of other comorbidities with regard to the controlling status of BP. The uncontrolled status among study participants who have other comorbidities (55.9%) is higher than among the participants that do not have (44.1%) comorbidities. The differences are statistically significant, with (X^2 =4.605, p= 0.021), The study findings are consistent with Selçuk and Colleagues (2018) who found that the presence of comorbidities increases the risks of being uncontrolled and that may be associated with multiple drug use, side effects of drugs, or no adherence to treatment (Selçuk et al., 2018).

Regarding adherence to taking anti-hypertensive medications, study participants who took their medications the day before the data collection was done had a higher percentage of controlled BP (95.7%) while study participants who didn't take their medications the day before (4.3%) had controlled BP, compared to study participants who took their medication the day before the data collection was done (80.7%) had a higher percentage of uncontrolled BP, while study participants who didn't take their medication the day before (19.3%) had uncontrolled BP. The differences are statistically significant, with (X^2= 23.626, p= 0.001).

For study participants who were adherent to taking anti- hypertensive medication before two weeks from the data collection was done, study participants who missed taking their medication during any day that time (49%) had a higher percentage of uncontrolled BP, while study participants who didn't miss taking their medications (51%) had uncontrolled BP, compared to study participants who missed taking their medication during any day that time (30.2%) had controlled BP, while study participants who didn't miss taking their medications (69.8%) had a higher percentage of controlled BP. The differences are statistically significant, with(X^2= 13.970, p= 0.001).

Study participants who stopped taking their medication when their symptoms were under control (33.8%) had uncontrolled BP, while study participants who didn't stop taking their medication (66.2%) had a higher percentage of uncontrolled BP, compared to study participants who stopped taking their medication when their symptoms were under control (16.1%) had controlled BP, while study participants who didn't stop taking their medication (83.9%) had a higher percentage of controlled BP. The differences are highly statistically significant, with(X^2= 16.635, p= 0.001).

Study participants who forgot to bring their medication with them when leaving home or travelling (35.9%) had uncontrolled BP while study participants who didn't forget bringing their medication with them (64.1%) had a higher percentage of uncontrolled BP, compared to study participants who forgot to bring their medication with them when leaving home or travelling (25.5%) had controlled BP, while study participants who didn't forget bringing their medication with them (74.5%) had a higher percentage of controlled BP. The differences are statistically significant, with (X^2= 4.805, p= 0.019).

Study participants who felt hassled about sticking to their treatment plan (51.7%) had a higher percentage of uncontrolled BP while study participants who were committed to their treatment plan (48.3%) had uncontrolled BP, compared to study participants who felt hassled about sticking to their treatment plan (38.8%) had controlled BP while study participants who were committed to their treatment plan (61.2%) had a higher percentage of controlled BP. The differences are statistically significant with controlled status of BP, with (X^2= 5.259, p= 0.008).

All the other variables in table (4.13) were statistically not significant.

4.2.3 Uncontrolled hypertension is a real problem for hypertension patients in the GS

The findings of the qualitative data revealed that, from the participant's point of view, uncontrolled hypertension is a multi-faceted health problem that is caused by many factors.

First, the patient-related factors include sedentary behavior, unhealthy diet, non-compliance to anti-hypertension medications, obesity, and bad socioeconomic status.

Second, the health system factors include the unavailability of hypertension medications and lack of unified treatment guidelines for hypertension among the government's primary health care centers.

Uncontrolled hypertension is considered a modifiable risk factor and it's considered a burden for both the patient and the health system. For the patient, it can cause many health problems like stroke, myocardial infarction, renal failure, hypertensive retinopathy, and eventually multiple organ damage which can lead to premature death.

For the healthcare systems, it increases the financial burden and the healthcare providers' effort as a result of increasing the hospitalized patients as a result of the bad health complications that occurred to receive the needed health care in the hospitals.

These findings are consistent with Pillay and Colleagues (2021) who found that HTN continues to have a significant role in early death. With Africa having the largest prevalence of HTN among adults globally, it is estimated that low- and middle-income nations face more than 80% of the burden associated with HTN today. More deaths worldwide are caused by high blood pressure and HTN than by any other cardiovascular risk factor like smoking, obesity and dyslipidemia (Pillay et al., 2021).

Table (4.13): Relationship between BP controlling status and selected disease related factors

Items	Controlled BP		Uncontrolled BP		Total		X^2	Sig.
	No.	%	No.	%	No.	%		
Having any complications related to hypertension								
Yes	83	32.5	54	37.2	137	34.2	0.904	0.200
No	172	67.5	91	62.8	263	65.8		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100**		
Having other chronic diseases								
Yes	114	44.7	81	55.9	195	48.8	4.605	0.021
No	141	55.3	64	44.1	205	51.2		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100**		
What is the current treatment do you receive to treat hypertension								
Medicine	124	48.6	79	54.5	203	50.7	1.268	0.153
Both	131	51.4	66	45.5	197	49.3		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100**		
Did you take all your medicine yesterday								
Yes	244	95.7	117	80.7	361	90.2	23.626	0.001
No	11	4.3	28	19.3	39	9.8		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100**		
People sometimes miss taking their medications. Thinking over the past two weeks, were there any days when you did not take your medicine for any reason?								
Yes	77	30.2	71	49.0	148	37.0	13.97	0.001
No	178	69.8	74	51.0	252	63.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100**		
When you feel like your symptoms are under control, do you sometimes stop taking your medicine								
Yes	41	16.1	49	33.8	90	22.5	16.63	0.001
No	214	83.9	96	66.2	310	77.5		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100**		
When you travel or leave home, do you sometimes forget to bring along your medicine								
Yes	**65**	**25.5**	**52**	**35.9**	**117**	**29.2**	4.805	0.019
No	**190**	**74.5**	**93**	**64.1**	**283**	**70.8**		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100**		
Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan								
Yes	**99**	**38.8**	**75**	**51.7**	**174**	**43.5**	5.259	0.008
No	**156**	**61.2**	**70**	**48.3**	**226**	**56.5**		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100**		

*P value < 0.05 is statistically significant

As shown in table (4.14) an independent samples t-test was conducted to examine whether there was a significant difference between participants controlling status of BP with regard to their duration of diagnosis with hypertension and the duration of experiencing hypertension complications. The t-test revealed a no statistically significant differences between the mean years of diagnosis with hypertension among the study participants who have controlled BP to study participants who have uncontrolled BP, with (t = 2.375, p= 0.206). This finding isn't consistent with Sarfo and Colleagues study (2018) in which they studied factors associated with uncontrolled blood pressure among Ghanaians and found that longer duration of diagnosis with hypertension is highly statistically significant with the uncontrolled status of BP (Sarfo et al., 2018).

Regarding the duration of experiencing hypertension complications and its relationship with the controlling status of BP, t-test revealed no statistically significant differences between the mean years of experiencing complications of hypertension among the study participants who have controlled BP to study participants who have uncontrolled BP groups, with (t= 0.092, p= 0.559).

Table (4.14): Relationship between BP controlled status and the duration of hypertension diagnosis and how long they experience the hypertension complications

Items	BP	N	Mean	SD	t-test	Sig
Duration of diagnoses with hypertension	Controlled	255	7.05	+/- 5.910	2.375	0.206
	Uncontrolled	145	8.72	+/- 7.211		
Duration of experiencing hypertension complications	Controlled	83	4.60	+/- 3.83	0.092	0.559
	Uncontrolled	54	4.67	+/- 4.08		

*P value < 0.05 is statistically significant

4.2.4 Lifestyle factors and controlling status of BP

As shown in the below table (4.15) study participants who consumed one meal in which it contained salty food had the highest percentage of controlled BP (36.1%) followed by study participants who didn't consume any salty food in their meals (22.7%) while study participants who had three meals in which it contained salty food had a percentage of controlled BP (19.6%), compared to study participants who had three meals in which it contained salty food had the highest percentage of

uncontrolled BP (34.5%) followed by study participants who had one meal in which it contained salty food in their meals had a percentage of uncontrolled BP (26.9%), while study participants who didn't consume any salty food in their meals had a percentage of uncontrolled BP (17.9%), the differences are statistically significant, with controlled status of BP with ($X^2 = 16.835$, $p = 0.005$).

These findings are consistent with Sarfo and Colleagues study (2018) in which they found that reducing salt intake in the diet among the Ghanaian hypertensive patients improved the controlled status of their BP with highly statically significant relationship (Sarfo et al., 2018). All the other variables in table (4.15) were statistically not significant.

Table (4.15): Relationship between BP controlled status and selected lifestyle factors

Items	**Controlled BP**		**Uncontrolled BP**		**Total**		**X^2**	**Sig.**
	No.	**%**	**No.**	**%**	**No.**	**%**		
Taking salt with food								
Yes	197	77.3	119	82.1	316	79.0	1.291	0.157
No	58	22.7	26	17.9	84	21.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Number of meals in which you eat salty food								
None	58	22.7	26	17.9	84	21.0	16.835	0.005
One Meal	92	36.1	39	26.9	131	32.8		
Two Meals	49	19.2	22	15.2	71	17.8		
Three Meals	50	19.6	50	34.5	100	25.0		
Fourth Meals	1	0.4	4	2.8	5	1.3		
Fifth Meals	5	2.0	4	2.8	9	2.3		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Cigarette smoking status (Males)								
Not smoker	79	59.4	34	42.0	113	52.8	6.890	0.075
Ex-smoker	18	13.5	14	17.3	32	15		
Current smoker	36	27.1	33	40.7	69	32.2		
Total	**133**	**100.0**	**81**	**100.0**	**214**	**100.0**		
Do you smoke water pipes?								
Yes	8	3.1	10	6.9	18	4.5	3.040	0.070
No	247	96.9	135	93.1	382	95.5		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		

*P value < 0.05 is statistically significant

4.2.5 Physical activity and controlling status of BP

Regarding the physical activity and its relationship with the controlling status of BP, the below table (4.16) shows that 11% of study participants who did moderate- intensity activities for at least 10 minutes continuously had controlled BP while 89% of study participants who didn't do moderate- intensity activities had a higher percentage of controlled BP, compared to study participants who did moderate- intensity activities (5.5%) had uncontrolled BP, while study participants who didn't do moderate- intensity activities for (94.5%) had a higher percentage of uncontrolled BP, with statistically significant difference (X^2= 3.369, p=0.046).

With regard to travelling to and from places, study participants who walked or used bicycle for at least 10 minutes continuously to get to and from places had a higher percentage of controlled BP (87.8%) while study participants who didn't walk or used bicycle for at least 10 minutes continuously (12.2%) had controlled BP, compared to study participants who walked or used bicycle for at least 10 minutes continuously to get to and from places (79.3%) had a higher percentage of uncontrolled BP, while study participants who didn't walk or use bicycle for at least 10 minutes continuously (20.7%) had uncontrolled BP, with statistically significant difference (X^2= 5.207, p=0.017).

Regard the duration of walking or bicycling to and from places, study participants who walked or used bicycle for 30 minutes per day had the highest percentage of controlled BP (39.3%) followed by study participants who walked or used bicycle more than 30 minutes had a percentage of controlled BP (37.1%) compared to study participants who walked or used bicycle for more than 30 minutes had the highest percentage of uncontrolled BP (40%) followed by those who walked or used bicycle for less than 30 minutes had a percentage of uncontrolled BP (35.7%), with statistically significant difference (X^2= 9.069, p=0.011). With regard to the duration of doing vigorous-intensity sports, fitness or recreational activities per day, study participants who did them for more than 30 minutes and above per day had a high percentage of controlled BP (77.8%) followed by study participants who did them for less than 30 minutes had a percentage of controlled BP (22.8%), compared to study participants who did them less than 30 minutes per day had a percentage of uncontrolled BP (22.2%) with statistically significant difference (X^2= 5.600, p=0.046).

Concerning the sedentary behaviors of the study participants, study participants who spent about 151-400 minutes sitting or reclining per day had a high percentage of controlled BP (51.8%) followed by study participants who spent more than 400 minutes sitting or reclining per day had a percentage of controlled BP (25.1%), compared to study participants who spent about 151-400 minutes sitting or reclining per day had a high percentage of uncontrolled BP (43.4%) followed by study participants who spent more than 400 minutes sitting or reclining per day had a percentage of uncontrolled BP (38.6%), with statistically significant difference (X^2= 8.125, p=0.017).

All the other variables in table (4.16) were statistically not significant.

Table (4.16): Relationship between BP controlling status and physical activity

Items	**Controlled**		**Uncontrolled**		**Total**		**X^2**	**Sig.**
	No.	**%**	**No.**	**%**	**No.**	**%**		
Physical Activity								
Vigorous-intensity activity involved working like carrying heavy loads, digging or construction								
Yes	10	3.9	5	3.4	15	3.7	0.057	0.523
No	245	96.1	140	96.6	385	96.3		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Number of days involved doing vigorous intensity activities as part of your work per week								
2 Hours and less	3	33.3	2	40.0	5	35.7	1.307	0.520
3 to 4 hours	4	44.4	3	60.0	7	50.0		
Above 4 Hours	2	22.2	0	0.0	2	14.3		
Total	**9**	**100.0**	**5**	**100.0**	**14**	**100.0**		
Mean = 4.71, SD = +/- 1.68								
Moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking or carrying light loads for at least 10 minutes continuously								
Yes	28	11.0	8	5.5	36	9.0	3.369	0.046
No	227	89.0	137	94.5	364	91.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Number of days for doing moderate intensity activities as part of your work per week								
5 days and less	14	53.8	5	71.4	19	57.6	0.698	0.341
Above 5 days	12	46.2	2	28.6	14	42.4		
Total	26	100.0	7	100.0	33	100.0		
Mean = 5.27, SD = +\- 1.21								
Duration for doing moderate-intensity activities at work per day								
60 minutes less	12	46.2	2	28.6	14	42.4	0.698	0.341
Above 60 minutes	14	53.8	5	71.4	19	57.6		
Total	**26**	**100.0**	**7**	**100.0**	**33**	**100.0**		

Table (4.16): Continued

Mean = 132.69, SD= +\- 90.66								
Travel to and from places								
Walking or bicycling for at least 10 minutes continuously to get to and from places								
Yes	224	87.8	115	79.3	339	84.7	5.207	0.017
No	31	12.2	30	20.7	61	15.3		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Number of days you walk or bicycle for at least 10 minutes continuously to get to and from places per week								
Five days and less	**120**	**53.6**	**62**	**53.9**	**182**	**53.7**	0.004	0.522
More than 5 days	**104**	**46.4**	**53**	**46.1**	**157**	**46.3**		
Total	**224**	**100.0**	**115**	**100.0**	**339**	**100.0**		
Mean = 5.14, SD = +\- 1.88								
Duration for walking or bicycling for travel per day- minutes								
Less than 30 Min.	**53**	**23.7**	**41**	**35.7**	**94**	**27.7**	9.069	0.011
30 min.	**88**	**39.3**	**28**	**24.3**	**116**	**34.2**		
Above 30 Min.	**83**	**37.0**	**46**	**40.0**	**129**	**38.1**		
Total	**224**	**100.0**	**115**	**100.0**	**339**	**100.0**		
Mean = 41.71, SD = +\- 31.92								
Recreational activities								
Doing vigorous-intensity sports, or recreational activities like running or football for at least 10 minutes continuously								
Yes	**9**	**4**	**2**	**2.6**	**12**	**3.5**	0.470	0.365
No	**214**	**96.0**	**113**	**97.4**	**327**	**96.5**		
Total	**223**	**100.0**	**116**	**100.0**	**339**	**100.0**		
Number of days of doing vigorous intensity sports, or recreational activities per week								
4 days and less	**5**	**55.6**	**1**	**33.3**	**6**	**50.0**	0.444	0.500
Above 4 days	**4**	**44.4**	**2**	**66.7**	**6**	**50.0**		
Total	**9**	**100.0**	**3**	**100.0**	**12**	**100.0**		
Mean = 4.67, SD= +\- 1.61								
Duration of doing vigorous-intensity sports, fitness or recreational activities per day								
Less than 30 minutes	**2**	**22.2**	**3**	**100.0**	**5**	**41.7**	5.600	0.046
30 minutes and above	**7**	**77.8**	**0**	**0.0**	**7**	**53.3**		
Total	**9**	**100.0**	**3**	**100.0**	**12**	**100.0**		
Mean = 32.50, SD = +\- 31.15								
Doing moderate-intensity sports, or recreational activities like brisk walking, cycling, swimming, and volleyball for at least 10 minutes continuously								
Yes	50	19.6	31	21.4	81	20.2	0.180	0.382
No	205	80.4	114	78.6	319	79.8		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		

Table (4.16): Continued

Number of days of doing moderate-intensity sports or recreational activities per week								
2 days and less	18	36.0	11	35.5	29	35.8	3.738	0.154
3 days	20	40.0	7	22.6	27	33.3		
Above 3 days	12	24.0	13	41.9	25	30.9		
Total	**50**	**100.0**	**31**	**100.0**	**81**	**100.0**		
Mean = 3.43, SD = +\- 1.81								
Duration of doing moderate-intensity sports, fitness or recreational activities per day								
Less than 30 minutes	14	28.0	12	38.7	26	32.1	1.838	0.399
30 minutes	18	36.0	7	22.6	25	30.9		
Above 30 minutes	18	36.0	12	38.7	30	37.0		
Total	**50**	**100.0**	**31**	**100.0**	**81**	**100.0**		
Mean = 42.90, SD= +\-39.11								
Sedentary behavior								
Duration of sitting or reclining per day								
150 Min and less	**59**	**23.1**	**26**	**17.9**	**85**	**21.3**	8.125	0.017
151 to 400 Min.	**132**	**51.8**	**63**	**43.4**	**195**	**48.7**		
Above 400 Min.	**64**	**25.1**	**56**	**38.6**	**120**	**30.0**		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Mean = 327.61, SD = +\- 209.51								

*P value < 0.05 is statistically significant

4.2.6 General Health Questionnaire

Regarding the General Health Questionnaire and its relationship with the controlling status of BP, study participants who lost much sleep over worry had a 45.1% of controlled BP while those who didn't had controlled BP (54.9%), compared to study participants who lost much sleep over worry had a percentage of uncontrolled BP (55.9%) while those who didn't had a percentage of uncontrolled BP (44.1%) with statistically significant difference (X^2= 4.286, p=0.025). All the other variables in table (4.17) were statistically not significant.

Table (4.17): Relationship between BP controlling status and General Health Questionnaire

Items	Controlled BP		Uncontrolled BP		Total		X^2	Sig.
	No.	%	No.	%	No.	%		
Have you recently been able to concentrate on whatever you're doing								
Yes	211	82.7	110	75.9	321	80.3	2.763	0.064
No	44	17.3	35	24.1	79	19.8		
Have you recently felt that you were playing a useful part in things								
Yes	238	93.3	131	90.3	369	92.3	1.155	0.189
No	17	6.7	14	9.7	31	7.8		
Have you recently felt capable of making decisions about things?								
Yes	245	96.1	134	92.4	379	94.8	2.496	0.091
No	10	3.9	11	7.6	21	5.3		
Have you recently been able to enjoy your normal day-to-day activities?								
Yes	168	65.9	87	60.0	255	63.8	1.384	0.143
No	87	34.1	58	40.0	145	36.2		
Have you been able to face up to your problems								
Yes	228	89.4	125	86.2	353	88.3	0.916	0.212
No	27	10.6	20	13.8	47	11.8		
Have you recently been feeling reasonably happy, all things considered								
Yes	163	63.9	83	57.2	246	61.5	1.742	0.113
No	92	36.1	62	42.8	154	38.5		
Have you recently lost much sleep over worry								
Yes	115	45.1	81	55.9	196	49.0	4.286	0.025
No	140	54.9	64	44.1	204	51.0		
Have you recently felt constantly under strain								
Yes	124	48.6	80	55.2	204	51.0	1.585	0.124
No	131	51.4	65	44.8	196	49.0		
Have you recently felt you couldn't overcome your difficulties?								
Yes	65	25.5	39	26.9	104	26.0	0.095	0.423
No	19	74.5	106	73.1	296	74.0		
Have you recently been feeling unhappy or depressed								
Yes	134	52.5	73	50.3	207	51.8	0.180	0.374
No	121	47.5	72	49.7	193	48.3		
Have you recently been losing confidence in yourself								
Yes	33	12.9	24	16.6	57	14.3	0.986	0.199
No	222	87.1	121	83.4	343	85.7		
Have you recently been thinking of yourself as a worthless person								
Yes	16	6.3	13	9.0	29	7.3	0.995	0.211
No	239	93.7	132	91.0	371	92.8		
GHQ-12 Score								
Normal (0-5)	206	80.8	110	75.9	316	79.0	1.350	0.151
Abnormal (6-12)	49	19.2	35	24.1	84	21.0		

4.2.7 Hypertension knowledge level- Scale

As shown in table (4.18), an independent samples t-test was conducted to examine whether there was a significant difference between the mean score of hypertension knowledge level among study participants who have controlled BP to study participants who have uncontrolled BP. Regarding the hypertension definition section which clarifies that high diastolic or high systolic blood pressure indicates increased blood pressure, the test revealed that there are highly statistically significant differences between the mean score of the hypertension definition section, among the study participants who have controlled BP compared to study participants who have uncontrolled BP, with (p= 0.000, t= 3.794). Regarding the importance of medical treatment and changing the lifestyle for treatment of increased blood pressure, the test revealed that there are highly statistically significant differences between the mean score of the drug compliance section among the study participants who have controlled BP compared to study participants who have uncontrolled BP, with (p= 0.002, t= 3.094). Regarding the importance of committing to medical treatment for the treatment of increased BP, the test revealed that there is a statistically significant difference between the mean score of the medical treatment section among the study participants that have controlled BP compared to study participants who have uncontrolled BP, with (p=0.022, t=2.301). Finally, the t-test revealed a highly statistically significant difference between the mean score of hypertension knowledge level as a whole among the study participants that have controlled BP compared to study participants who have uncontrolled BP with (p = 0.000, t= 4.226).

Table (4.18): Relationship between BP controlling status and hypertension knowledge level

Knowledge	**BP**	**N**	**Mean**	**SD**	**t-test**	**Sig**
Definition	Controlled	255	44.90	+/- 43.17	3.794	0.000
	Uncontrolled	145	61.72	+/- 41.67		
Drug compliance	Controlled	255	10.88	+/- 21.09	3.094	0.002
	Uncontrolled	145	18.62	+/- 28.53		
Medical treatment	Controlled	255	46.27	+/- 14.58	2.301	0.022
	Uncontrolled	145	50.00	+/- 17.18		
Presence of complication	Controlled	255	95.29	+/- 16.16	0.744	0.457
	Uncontrolled	145	93.93	+/- 19.91		
Hypertension knowledge level Score	**Controlled**	**255**	**52.99**	+/- **10.04**	**4.226**	**0.000**
	Uncontrolled	**145**	**57.84**	+/- **12.57**		

*P value < 0.05 is statistically significant

4.2.8 Lifestyle Assessment and controlling status of BP

Concerning the daily routine activities and its relationship with the controlling status of BP, as shown in the below table (4.19) study participants who didn't find difficulties to stay awake during the routine task in the day over the last two weeks of the data collection time had the highest percentage of controlled BP (55.7%) followed by study participants who felt tired or have difficulty several days staying awake during routine tasks in the day over the last two weeks of data collection time had a percentage of controlled BP (30.2%), compared to study participants who found difficulties to stay awake during routine tasks several days over the last two weeks of the data collection, had the highest percentage of uncontrolled BP (41.4%) followed by study participants who didn't find difficulties to stay awake during the routine task in the day over the last two weeks of the data collection, had a percentage of uncontrolled BP (35.9%), with statistically significant difference (X^2=21.811, p=0.001).

Regarding the opinions of the study participants about their current weight, those who were happy with their weight had the highest percentage of controlled BP (46.3%) followed by study participants who wanted to lose a little weight with a percentage of controlled BP (28.2%), compared to study participants who wanted to lose either a little or a lot of weight had an equal percentage of uncontrolled BP (31.7%) followed by those who were happy with their weight has percentage of uncontrolled BP (31%) with statistically significant difference (X^2=11.760, p= 0.019).

Regarding the number of times the study participants had fast food, sugary drinks or packaged foods over the last two weeks of the data collection time, study participants who hadn't them at all had the highest percentage of controlled BP (53.7%) followed by study participants who had them several days (36.5%) compared to study participants who had fast food, sugary drinks or packaged foods several days had a high percentage of uncontrolled BP (50.3%) followed by study participants who hadn't them at all had had a percentage of uncontrolled BP (36.6%) with statistically significant difference, with (X^2=10.959, p= 0.012).

With regard to the number of days the study participants exercised at a moderate to strenuous intensity over the last two weeks of the data collection time, study participants who exercised less than one time per week had the highest percentage of controlled BP (73.7%), followed by study participants who exercised 1-2 times per week had a percentage of controlled BP

(19.6%), compared to study participants who exercised less than one time per week had the highest percentage of uncontrolled BP (73.1%) followed by study participants who exercised 1-2 times, had a percentage of uncontrolled BP (12.4%) with statistically significant difference (X^2=14.743, p= 0.002). All the other variables in Table (4.19) were statistically not significant.

Table (4.19): Relationship between BP controlling status and lifestyle assessment

Items	Controlled		Uncontrolled		Total		X^2	Sig.
	No.	%	No.	%	No.	%		
The number of hours of sleep you in average had in a 24-hour period over the last two weeks								
Less than 4 hours	21	8.2	21	14.5	42	10.5	5.483	0.241
4-5 hours	57	22.4	30	20.7	87	21.8		
6 hours	110	43.1	51	35.1	161	40.2		
7-8 hours	53	20.8	33	22.8	86	21.5		
9 or more hours	14	5.5	10	6.9	24	6.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Feeling tired or have difficulty staying awake during routine tasks in the day over the last two weeks								
Not at all	142	55.7	52	35.9	194	48.5	21.811	0.001
Several days	77	30.2	60	41.4	137	34.3		
More than half the days	13	5.1	22	15.1	35	8.7		
Nearly every day	23	9.0	11	7.6	34	8.5		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Your thoughts about your current weight								
I want to gain a lot of weight	2	0.8	0	0	2	0.5	11.760	0.019
I want to gain a little weight	9	3.5	8	5.5	17	4.3		
I am happy with my weight	118	46.3	45	31.0	163	40.7		
I want to lose a little weight	72	28.2	46	31.7	118	29.5		
I want to lose a lot weight	54	21.2	46	31.7	100	25.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		

Table (4.19): Continued

Number of times you had fast food, sugary drinks or packaged foods over the last two weeks								
Not at all	137	53.7	53	36.6	190	47.5	10.959	0.012
Several days	93	36.5	73	50.3	166	41.5		
More than half the days	11	4.3	8	5.5	19	4.8		
Nearly every day	14	5.5	11	7.6	25	6.2		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
The number of servings of whole fruits and vegetables you eat on the average day								
Less than 2 servings	64	25.1	43	29.7	107	26.8	5.167	0.160
2-3 servings	120	47.1	75	51.7	195	48.8		
4-5 servings	51	20.0	22	15.2	73	18.3		
More than 5 servings	20	7.8	5	3.4	25	6.2		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
The number of days you exercised at a moderate to strenuous intensity over the last two weeks								
Less than 1 time per week	188	73.7	106	73.1	294	73.5	14.743	0.002
1-2 times per week	50	19.6	18	12.4	68	17.0		
3-4 times per week	15	5.9	11	7.6	26	6.5		
5 or more times per week	2	0.8	10	6.9	12	3.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
The number of minutes you exercise at a moderate to strenuous intensity during an average session								
Less than 10 minutes	199	78.0	111	76.6	310	77.5	5.456	0.141
10-29 minutes	44	17.3	29	20.0	73	18.2		
30-49 minutes	11	4.3	2	1.4	13	3.3		
50 minutes or more	1	0.4	3	2.0	4	1.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		

*P value < 0.05 is statistically significant

As shown in the below Table (4.20) an independent samples t-test was conducted to examine whether there was a significant difference between the mean score of study participants' perspective about their level of health from 0 to 10 among the study participants who have controlled BP to study participants who have uncontrolled BP, the test revealed no statistically significant difference between the mean score of level of health among the two groups (t= 1.521, p = 0.129).

Table (4.20): Differences between BP controlled status and study participants' perspective about their level of health

BP	N	Mean	SD	t-test	Sig
Controlled	255	6.42	+/- 1.88	1.521	0.129
Uncontrolled	145	6.13	+/- 1.66		

*P value < 0.05 is statistically significant

4.2.9 Access to health care center and controlling status of BP

Concerning the relationship between the number of minutes of waiting to receive hypertension services from health care provider and the controlling status of BP, the below table (4.21) shows that study participants who waited 15 minutes and less to receive hypertension services from health care provider had the highest percentage of controlled BP (49.4%) followed by study participants who waited 16 to 30 minutes, had a percentage of controlled BP (39.6%) compared to study participants who waited 15 minutes and less to receive hypertension services from health care provider had the highest percentage of uncontrolled BP (46.2%) followed by study participants who waited 16 to 30 minutes had a percentage of uncontrolled BP (33.8%) with statistically significant difference, with (X^2=6.307, p= 0.043).

With regard to the number of minutes it generally takes to receive the hypertension services from the clinic and its relationship with the controlling status of BP, the below Table shows that study participants who waited less than 30 minutes to receive the hypertension services from the clinic had the highest percentage of controlled BP (42.7%) followed by study participants who waited to receive the hypertension services from 30- 59 minutes had a percentage of controlled BP (41.2%), compared to study participants who waited to receive the hypertension services from 30-59 minutes had the highest percentage of uncontrolled BP (39.3%) followed by study participants who waited less than 30 minutes to receive the hypertension services from the clinic had a percentage of uncontrolled BP (32.4%) with statistically significant difference, with (X^2=9.318, p= 0.009).

Concerning the number of minutes the study participants spent with the doctor during the visit and its relationship with the controlling status of BP, the below table (4.21) shows that study participants who spent 5 minutes and less had a percentage of controlled BP (56.9%) followed by study participants who spent more than 5 minutes with the doctor had a percentage of controlled BP (43.1%), compared to study participants who spent more than 5 minutes with the doctor had a percentage of uncontrolled BP (53.1%) followed by study participants who spent 5 minutes and less had a percentage of uncontrolled BP (46.9%) with statistically significant difference, with (X^2=3.688, p= 0.035).

Regarding receiving health education materials about hypertension and its relationship with the controlling status of BP, study participants who received health educational materials about hypertension had a percentage of controlled BP (16.9%) while study participants who didn't receive any health educational materials had a higher percentage of controlled BP (83.1%) , compared to study participants who received health educational materials about hypertension had a percentage of uncontrolled BP (26.2%) while study participants who didn't receive any health educational materials had a percentage of uncontrolled BP (73.8%) with statistically significant difference (X^2=4.998, p= 0.018).

Concerning receiving services from other sources and clinics than the governmental clinics and the controlling status of BP, study participants who only focused on governmental clinics to receive services had a percentage of controlled BP (79.2%) while study participants who received services from many sources had controlled BP (20.8%), compared to study participants who only focused on governmental clinics to receive services had a percentage of uncontrolled BP (65.5%) while study participants who received services from many sources had uncontrolled BP (34.5%) with statistically significant difference (X^2=9.072, p= 0.002). All the other variables in table (4.21) were statistically not significant.

4.2.10 Availability of hypertension services

from the providers' perspective, the qualitative data have revealed that the hypertension services are relatively good, the family physicians are well-trained in high blood pressure management, and nurses are qualified nurses and competent to provide the health services. On the contrary, participants of the in-depth interviews indicated that there is a drug shortage of "anti-hypertension" in the government's primary health centers. Additionally, previously, there was cooperation between the NGOs pharmacies and the governmental main pharmacy

to cover the shortage they face in the primary centers, but nowadays the patients go to private pharmacies to buy the needed medications and some can't buy them because it's considered a heavy financial burden for them to endure its high price.

These findings are consistent with Meiqari and Colleagues (2019) who found that in Vietnam, in the public sector, patients seeking medicine encountered two issues. First, the prescription of medicine at various levels is not fully coordinated, as the system suffers from fragmentation and inconsistencies. For instance, doctors at higher levels may recommend more advanced newer drugs that are not covered by health insurance, if patients wish to continue taking these drugs, they must go back to the higher-level facilities or pay for them out of pocket. The majority of basic HTN medications are inexpensive, although subsequent generations of anti-hypertensive could be more expensive (Meiqari et al., 2019).

4.2.11 Availability of guidelines

According to the in-depth interviews, all the participants reported that there were no written guidelines available for the treatment of hypertension in the PHCs, nor sufficient evidence-based research concerning treating hypertension patients, which affected the management of hypertension of the patients. These results are consistent with those of Chowdhury and Others (2020), who discovered that a lack of cohesion in guidelines for the treatment of hypertension in the aged people, physicians find it challenging to implement evidence-based advice into their everyday clinical practice (Chowdhury et al., 2020).

Recently two months ago; new guidelines and protocols have been prepared and established by the NCDs staff in the MoH and got validated by the health ministry director in Gaza Dr. Yousef Abu Al-Reesh. The healthcare providers' staff will be trained to use these guidelines by specialists in internal medicine, and the new guidelines will be printed and published in all primary governmental centers.

Table (4.21): Relationship between BP controlling status and accessibility to healthcare center

Items	Controlled BP		Uncontrolled BP		Total		X^2	Sig.
	No.	%	No.	%	No.	%		
Have a regular source of health care, that is, a doctor or clinic								
Yes	246	96.5	141	97.2	387	96.7	2.349	0.309
No	8	3.1	2	1.4	10	2.5		
Sometimes	1	0.4	2	1.4	3	0.8		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Feasibility to reach the health care clinic								
Yes	210	82.4	122	84.1	332	83.0	0.209	0.378
No	45	17.6	23	15.9	68	17.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
The public transportation is costly affordable								
Yes	231	90.6	134	92.4	365	91.3	0.386	0.335
No	24	9.4	11	7.6	35	8.7		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Is the health center adapted for people with disabilities?								
Yes	177	69.4	103	71.0	280	70.0	0.116	0.412
No	78	30.6	42	29.0	120	30.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
The number of minutes generally you wait to receive hypertension services from your health care provider								
15 Min. and less	126	49.4	67	46.2	193	48.3	6.307	0.043
16 to 30 Min.	101	39.6	49	33.8	150	37.5		
Above 30 Min.	28	11.0	29	20.0	57	14.2		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Mean = 21.03, , SD = +\- 12.413								
The number of minutes it generally takes you to receive the services								
Less than 30 min.	109	42.7	47	32.4	156	39.0	9.318	0.009
30-59 minutes	105	41.2	57	39.3	162	40.5		
60 min and more	41	16.1	41	28.3	82	20.5		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Mean = 36.34, SD = +\- 18.652								
The number of minutes you generally spend with your doctor during the visit								
5 Min. and less	145	56.9	68	46.9	213	53.3	3.688	0.055
Above 5 Min.	110	43.1	77	53.1	187	46.7		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		

Table (4.21): Continued

Mean = 7.59, , SD = +\- 3.05								
The way you get your medicines								
I visit the clinic by myself	225	88.2	119	82.1	344	86.0	2.919	0.061
Someone else brings the medicines for me	30	11.8	26	17.9	56	14.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Conducting follow up visits regularly								
Yes	196	76.9	108	74.5	304	76.0	0.287	0.338
No	59	23.1	37	25.5	96	24.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Returning home without receiving the services you came to receive In the past year								
Yes	79	31.0	45	31.0	124	31.0	0.000	0.539
No	176	69.0	100	69.0	276	69.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Receiving any health educational materials about hypertension during your visits to this health center in the last year								
Yes	43	16.9	38	26.2	81	20.2	4.998	0.018
No	212	83.1	107	73.8	319	79.8		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Using any home remedies to manage your hypertension								
Yes	106	41.6	54	37.2	160	40.0	0.721	0.229
No	149	58.4	91	62.8	240	60.0		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		
Receiving services from other clinics other than this one								
Yes	53	20.8	50	34.5	103	25.8	9.072	0.002
No	202	79.2	95	65.5	297	74.2		
Total	**255**	**100.0**	**145**	**100.0**	**400**	**100.0**		

*P value < 0.05 is statistically significant

As shown in table (4.22) an independent samples t-test was conducted to examine whether there was a significant difference between the mean of waiting time regard receiving the health care services among the study participants who have controlled BP to study participants who have uncontrolled BP, the test revealed a statistically significant difference between the mean time of waiting to receive hypertension services from health care provider among the study participants who have controlled BP (19.94) to study participants who have uncontrolled BP (22.93 minutes), with ($t = 2.329$, $p = 0.020$).

With regard to the number of minutes it generally takes to receive the hypertension services from the clinic, the test revealed a high statically significant difference between the mean time of waiting to receive the hypertension services from the clinic among the study participants who have controlled BP to study participants who have uncontrolled BP, with (t = 3.893, p= 0.000).

Table (4.22): Relationship between BP controlling status and time of waiting regard receiving the health care services

Item	BP	N	Mean	SD	t- test	Sig
The number of minutes generally you wait to receive hypertension services from your health care provider	Controlled	255	19.94	+/-11.59	2.329	0.020
	Uncontrolled	145	22.93	+/- 13.57		
The number of minutes it generally takes you to receive the services	Controlled	255	33.65	+/- 15.54	3.893	0.000
	Uncontrolled	145	41.07	+/- 22.42		
The number of minutes you generally spend with your doctor during the visit	Controlled	255	7.43	+/- 3.10	1.395	0.387
	Uncontrolled	145	7.87	+/- 2.94		

*P value < 0.05 is statistically significant

4.3 Multivariate analysis

4.3.1 Determinants of controlling status of blood pressure

Table (4.23) shows the results of the Multivariate Logistic Regression Analysis that identifies the main determinants of controlling the status of BP. Table (4.23) shows that obesity, overweight, the current state of mental health as measured by the General Health Questionnaire, level of hypertension knowledge about HTN, and missing taking anti-

hypertension medication for the past two weeks were associated with BP uncontrolled status at p-value < 0.05.

As shown in table (4.23), the odds of having controlled BP were 61% less among study participants who were overweight compared to those who were underweight, with (OR=0.392, p= 0.009). Regarding obesity, the odds of having controlled BP were about 49% less among study participants who were obese compared to those who were underweight, with (OR=0.516, p= 0.010). These findings are consistent with Sakboonyarat and Colleagues (2019) study that identified overweight and obesity as risk factors for uncontrolled BP (Sakboonyarat et al., 2019).

Regarding the duration of diagnosis with hypertension, the odds of having controlled BP was about 4% more among study participants who have longer duration of diagnoses with HTN, with (OR=1.045, p=0.033).

Regarding the current state of mental health, the odds of having controlled BP was about 14% more among study participants who scored 6 or below on the General Health Questionnaire compared to those who had abnormal score (more than 6), with (OR=1.140, p= 0.013).

Regard hypertension level of knowledge, the odds of having controlled BP was about 4% more among study participants who had good knowledge about hypertension compared to those who hadn't good knowledge, with (OR=1.041, p= 0.001). Finally, regarding committing to regularly taking their anti- hypertension medications, the odds of having controlled BP was about 52% less among study participants who missed taking their medication over the past two weeks for any reason compared to those who were committed to their anti- hypertension medications, with (OR= 0.486, p= 0.003).

Table (4.23): Determinants of BP controlling status

Inde1pendent Variables	B Coefficient	SE	P-value	Odds Ratio (95% confidence interval)
Patient's gender- Ref Female	-0.330	0.251	0.190	0.719 (0.439-1.177)
Family's income	0.000	0.000	0.225	1.000 (1.000-1.000)
BMI-Ref: underweight			0.029	
Normal weight	-0.464	1.573	0.768	0.629 (0.29-13.732)
Overweight	-0.935	0.355	0.009	0.392 (0.196-0.788)
Obese	-0.661	0.257	0.010	0.516 (0.312-0.855)
Duration of diagnoses with hypertension	0.044	0.021	0.033	1.045 (1.003-1.087)
Doing moderate-intensity exercise for at least 10 minutes continuously: Ref: Yes	-0.102	0.275	0.710	0.903 (0.527-1.547)
General Health Ref: (0-6)	0.131	0.053	0.013	1.140 (0.823-2.418)
Hypertension knowledge level	0.040	0.012	0.001	1.041 (1.016-1.065)
Having any complications related to hypertension: Ref: No	0.368	0.272	0.176	1.444 (0.848-2.461)
Miss taking their medications for any reason: Ref: Yes	-0.721	0.242	0.003	0.486 (0.303-0.781)
Cigarette smoking status: Ref: Yes	0.079	0.109	0.466	1.083 (0.874-1.341)
Conduct follow up visits regularly: Ref: Yes	0.086	0.272	0.751	1.090 (0.640-1.858)
Patient's age	0.003	0.012	1.003	1.003 (0.979-1.027)
Taking salt with food	-0.153	0.297	0.605	0.858 (0.480-1.534)

The dependent variable is the controlling status of BP, N=400, Prob > chi2=0.00, Log likelihood=- 453.311. This model is correctly specified and did not have omitted relevant variables. Also, there is no multicollinearity between the independent variables. *Significant at $p < .05$; ** highly significant at $p < 0.01$.

Chapter Five

Conclusion and Recommendations

5.1 Conclusion

Uncontrolled Blood Pressure ((UBP) is a serious public health issue among individuals diagnosed with hypertension in both developed and developing nations. UBP can cause disability, a worse quality of life, or possibly a deadly heart attack or stroke. High blood pressure can be managed with therapy and lifestyle changes, minimizing the chance of life-threatening effects. This cross-sectional study aimed to assess the determinants and prevalence of uncontrolled BP among hypertensive patients at governmental primary health care centers in the Gaza Strip in order to enhance hypertension control status among hypertensive patients who follow up at primary care clinics, which will decrease the mortality and morbidity burden, improve the overall wellbeing of hypertensive clients, and reduce the financial burden from the healthcare cost services. The Researcher utilized a sample of 400 male and female patients who were diagnosed with high blood pressure and receive services at governmental primary health centers facilities in the GS mainly 13 primary health centers which use the computerized system.

The findings of this study revealed that the prevalence of uncontrolled BP was (36.3%) among hypertensive patients at governmental primary health centers, and the percentage of uncontrolled BP was higher among male participants (55.8%) compared to female participants (44.2%).

With regard to the patient related factors, uncontrolled BP is significantly associated with higher BMI (overweight and obesity). On the other hand, gender, family history and education were not significantly associated with uncontrolled BP. Regarding lifestyle factors, uncontrolled BP was significantly associated with health literacy and stress. On the other hand, smoking, physical activity and salt intake were not significantly associated with uncontrolled BP.

Regarding disease related factors, controlled BP was significantly associated with longer duration of diagnosis with hypertension and wasn’t significantly associated with presence of comorbidities. Finally, regarding health system factors, uncontrolled BP was significantly

associated with the patients who missed taking their medication over the past two weeks and wasn't significantly associated with type of antihypertensive drug used and health care access & utilization.

From the providers' perspective, the qualitative data have revealed that the hypertension services are relatively good, the family physicians are well-trained in high blood pressure management, and nurses are qualified nurses and competent to provide the health services. On the contrary, participants of the in-depth interviews indicated that there is a drug shortage of "anti-hypertension" in the government's primary health centers. Additionally, previously, there was cooperation between the NGOs pharmacies and the governmental main pharmacy to cover the shortage they face in the primary centers, but nowadays the patients go to private pharmacies to buy the needed medications and some can't buy them because it's considered a heavy financial burden for them to endure its high price.

All the participants reported that there were no written guidelines available for the treatment of hypertension in the PHCs, nor sufficient evidence-based research concerning treating hypertension patients, which affected the management of hypertension of the patients.

Recently two months ago; new guidelines and protocols have been prepared and established by the NCDs staff in the MoH and got validated by the health ministry director in Gaza Dr. Yousef Abu Al-Reesh. The healthcare providers' staff will be trained to use these guidelines by specialists in internal medicine, and the new guidelines will be printed and published in all primary governmental centers.

5.2 General recommendations

- There is a need to develop unified national guidelines for the treatment of hypertension. The guidelines should include a description of the treatment modalities, including lifestyle factors.
- The MoH should ensure the availability of HA1C testing in the government's PHCs to assess the control status of diabetic patients.
- Healthcare service providers should incorporate lifestyle modifications as part of the treatment plan, not relying on the medical part.
- Healthcare providers' skills and knowledge about the treatment of uncontrolled high blood pressure should be enhanced through training programs and on-the-job training

- The MoH and other service providers need to invest in more activities that aim to increase clients' awareness levels.
- Given the fragmentation of the healthcare system, there is a need to strengthen the coordination among service providers. The MoH should be the lead agency for the coordination activities.
- The MoH should ensure the availability of antihypertensive drugs and should ensure implement intervention that increases clients' adherence to treatment
- For uncontrolled clients, it is highly recommended that the MoH develop follow-up management plans for them to ensure a higher level of compliance. The management plan should include a multi-disciplinary team that involves physicians, nurses, nutritionists, and psychologists.

5.3 Recommendations for further research

- Conduct more research studies, including both qualitative and quantitative methods, to deeply explore hypertension services utilization and factors influencing it.
- There is a need to conduct mixed methods studies to assess the quality of services provided within the MoH PHCs.
- It is also recommended for the same study but with a larger scale involving clients from and other service providers.

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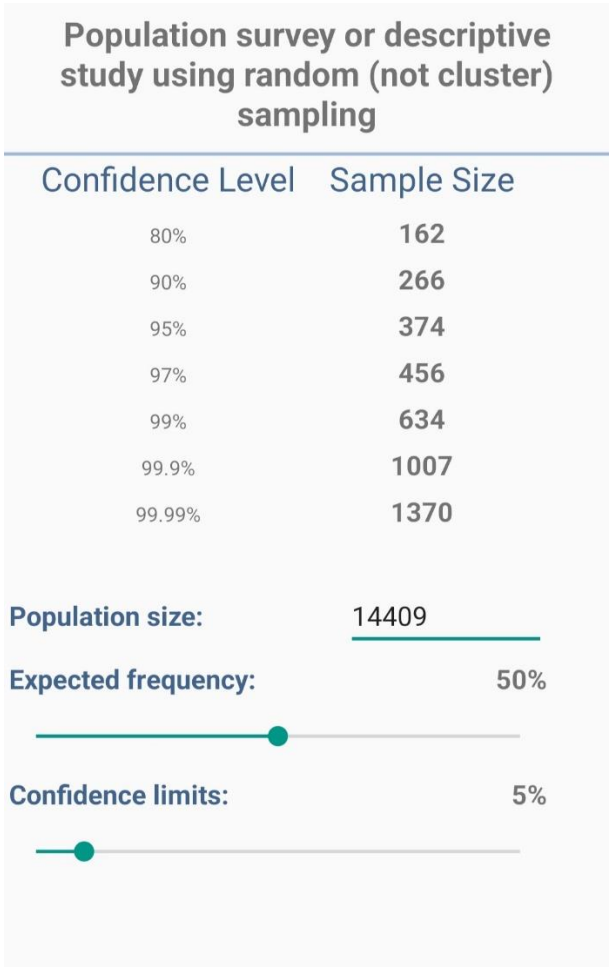
Annexes

Annex (1): Palestine map

Annex (2): Gaza Strip map

Annex (3): Sample Size Calculation



Annex (4): Questionnaire (Arabic and English version)

هذه الاستبانة تهدف إلى دراسة مدى انتشار ومحددات ضغط الدم غير المنضبط لدى مرضى ضغط الدم المرتفع في مراكز الصحة الأولية الحكومية في قطاع غزة.

	المعلومات الشخصية والاجتماعية	
	الرقم المتسلسل	
	قراءة الضغط الأولى: ..... **قراءة الضغط الثانية: .....**	
1	**اسم العيادة**	**.....**
2	**الجنس**	**□ ذكر □ أنثى**
3	**العمر**	**..... سنة**
4	**الحالة الاجتماعية**	**□ أعزب/ آنسة** **□ متزوج/ ة** **□ مطلق/ة** **□ أرمل/ ة** **□ منفصل/ة**
5	**عدد سنوات التعليم**	**..... سنة**
6	**مكان الإقامة**	**□ شمال غزة** **□ غزة** **□ دير البلح** **□ خانيونس** **□ رفح**
7	**ما هي حالة العمل لديك؟**	**□ أعمل** **□ لا أعمل** **□ متقاعد**
8	**إذا كانت الإجابة نعم. ما هو عملك الحالي؟**	**□ إداري** **□ مهني** **□ فني أو مساعد اختصاص** **□ كاتب** **□ عامل في البيع والخدمات** **□ عامل في الزراعة والصيد** **□ عامل في الحِرف والمهن ذات الصلة** **□ مشّغل ومجمّع الآلات والمعدات** **□ المهن الأولية** **□ عامل في القوات المسلحة**

9	متوسط الدخل الشهري للأسرة	..... شيكل
10	الطول بالمتر	.....
11	الوزن بالكيلو	.....
12	هل يوجد لديك تاريخ مرضي في العائلة لارتفاع ضغط الدم	□ نعم □ لا □ لا أدري
13	إذا كانت الإجابة نعم. فمن؟	□ الأب □ الأم □ كلاهما □ الأخ □ الأخت أخرى. حدد .....
	معلومات الملف الطبي	
14	منذ متى تم تشخيصك بمرض ارتفاع ضغط الدم؟	..... سنة
15	هل عانيت من أي مضاعفات من مرض ارتفاع ضغط الدم؟	□ نعم □ لا ذا كانت الإجابة لا، اذهب إلى سؤال رقم 18
16	ما هي هذه المضاعفات؟	□ أمراض القلب والأوعية الدموية □ أمراض العيون □ أمراض الكلى □ أمراض الجهاز العصبي □ الأمراض الدماغية الوعائية □ أخرى
17	ما هي المدة التي شعرت فيها بهذه المضاعفات؟	.....
18	هل يوجد لديك أمراض مزمنة أخرى؟	□ نعم □ لا
19	إذا كانت الإجابة نعم. اذكرها	□ السكري □ الربو □ أمراض القلب □أخرى. حدد .....
20	إذا كان لديك مرض السكري. ما هي آخر قراءة لقيمة مخزون السكر لديك ؟	.....

21	ما هو العلاج الحالي الذي تستعمله لعلاج ارتفاع ضغط الدم ؟	□ الأدوية □ تغيير في نمط الحياة بما في ذلك التحكم في الوزن الزائد، التمارين البدنية المنتظمة، التقليل من تناول الملح وزيادة تناول الفاكهة والخضروات وتجنب أو الاقلاع عن التدخين. □ كلاهما □ لا شيء
22	إذا كنت تتناول الأدوية، ما هي أسماء هذه الأدوية ؟	....
23	هل تناولت كل أدويتك بالأمس ؟	□ نعم □ لا
24	في بعض الأحيان لا يتناول الناس أدويتهم ، بالتفكير خلال الأسبوعين الماضيين، هل كانت هناك أيام لم تتناول فيها دوائك لأي سبب من الأسباب؟	□ نعم □ لا إذا كانت الإجابة لا، اذهب إلى سؤال رقم 26
25	إذا كانت الإجابة نعم، ما هي الأسباب؟	□ التجاهل □ النسيان □ شعرت بسوء □ طعم الأدوية غير مقبول □ لا أملك المال لشراء الدواء. الكافي □ أخرى
26	عندما تشعر بأن أعراضك تحت السيطرة، هل تتوقف أحياناً عن تناول دوائك؟	□ نعم □ لا
27	عندما تسافر أو تغادر المنزل، هل تنسى أحياناً إحضار الأدوية الخاصة بك معك؟	□ نعم □ لا
28	يعتبر تناول الدواء كل يوم مصدر إزعاج حقيقي لبعض الناس. هل شعرت يوماً بالإرهاق حيال الالتزام بخطة العلاج الخاصة بك؟	□ نعم □ لا

عوامل نمط الحياة		
29	**هل تتناول الملح مع الطعام؟**	**□ نعم □ لا**
30	**كم مرة في العادة تتناول الطعام المالح؟**	**.....**
31	**إذا كانت الإجابة نعم. ما نوع الملح الذي تستعمله ؟**	**.....**
32	**هل تُدّخن ؟**	**□ لم أدخن أبداً □ تارك للدخان (مُدّخن سابق) □ مُدّخن حالي □ مُدّخن سلبي**
33	**إذا كنت مُدّخن حالي، كم عدد السجائر التي تُدّخنها باليوم؟**	**.....**
34	**إذا كنت مُدّخن سابق، منذ متى وأنت تُدّخن ؟**	**□ نعم □ لا**
35	**هل تُدّخن الشيشة ؟**	**□ نعم □ لا**
النشاط البدني		
36	**هل يتضمن عملك نشاطاً شديد القوة يسبب زيادة كبيرة في التنفس أو معدل ضربات القلب (حمل أو رفع الأحمال الثقيلة، أو أعمال الحفر أو أعمال البناء) لمدة 10 دقائق على الأقل بشكل متواصل ؟**	**□ نعم □ لا إذا كانت الإجابة لا، اذهب إلى السؤال رقم 39**
37	**في الأسبوع العادي، كم عدد الأيام التي تمارس فيها أنشطة مكثفة كجزء من عملك ؟**	**عدد الأيام .....**
38	**ما هو الوقت الذي تقضيه في ممارسة الأنشطة عالية الشدة في العمل في يوم عادي ؟**	**ساعات ..... دقائق .....**
39	**هل يتضمن عملك نشاطاً متوسط الشدة يسبب زيادة طفيفة في التنفس أو معدل ضربات القلب مثل المشي السريع أو حمل الأحمال الخفيفة لمدة 10 دقائق على الأقل بشكل متواصل؟**	**□ نعم □ لا إذا كانت الإجابة لا، اذهب إلى السؤال رقم 42**
40	**في الأسبوع العادي، كم عدد الأيام التي تمارس فيها أنشطة متوسطة الشدة كجزء من عملك؟**	**عدد الأيام .....**
41	**كم من الوقت تقضيه في ممارسة الأنشطة متوسطة الشدة في العمل في يوم عادي ؟**	**ساعات ..... دقائق .....**

تستثني الأسئلة التالية الأنشطة البدنية في العمل التي ذكرتها سابقاً. الآن أود أن أسألك عن الطريقة المعتادة للتنقل من وإلى الأماكن .على سبيل المثال الذهاب للعمل والتسوق والسوق وأماكن العبادة		
42	**هل تمشي أو تستعمل الدراجة لمدة 10 دقائق متواصلة على الأقل للوصول من وإلى الأماكن ؟**	**□ نعم □ لا إذا كانت الإجابة لا، اذهب إلى السؤال رقم 48**
43	**في الأسبوع العادي، كم عدد الأيام التي تمشي فيها أو تنطلق بالدراجة لمدة 10 دقائق متواصلة للوصول من وإلى الأماكن ؟**	**عدد الأيام .....**
44	**كم من الوقت تقضيه في المشي أو ركوب الدراجة للتنقل في يوم عادي؟**	**ساعات ..... دقائق .....**
تستثني الأسئلة التالية أنشطة العمل والتنقل التي ذكرتها سابقاً. الآن أود أن أسألك عن الرياضة واللياقة البدنية والأنشطة الترفيهية (أوقات الفراغ)		
45	**هل تمارس أي رياضة شديدة القوة أو لياقة بدنية أو أنشطة ترفيهية تسبب زيادة كبيرة في التنفس أو معدل ضربات القلب مثل (الجري أو لعب كرة القدم) لمدة 10 دقائق على الأقل بشكل متواصل؟**	**□ نعم □ لا**
46	**في الأسبوع العادي، كم عدد الأيام التي تمارس فيها الرياضات أوتمارين اللياقة البدنية أو الأنشطة الترفيهية معتدلة الشدة ؟**	**عدد الأيام .....**
47	**ما مقدار الوقت الذي تقضيه في ممارسة الرياضات الشديدة أو اللياقة البدنية أو الأنشطة الترفيهية في يوم عادي؟**	**ساعات ..... دقائق .....**
48	**هل تمارس أي رياضة أو لياقة بدنية أو أنشطة ترفيهية متوسطة الشدة تسبب زيادة طفيفة في التنفس أو معدل ضربات القلب مثل المشي السريع (وركوب الدراجات والسباحة وكرة الطائرة) لمدة 10 دقائق متواصلة على الأقل؟**	**□ نعم □ لا إذا كانت الإجابة لا، اذهب إلى السؤال رقم 51**
49	**في الأسبوع العادي، كم عدد الأيام التي تمارس فيها الرياضات متوسطة الشدة أو اللياقة البدنية أو الأنشطة الترفيهية؟**	**عدد الأيام .....**
50	**ما مقدار الوقت الذي تقضيه في ممارسة الرياضات متوسطة الشدة أو اللياقة البدنية أو الأنشطة الترفيهية في يوم عادي؟**	**ساعات ..... دقائق .....**
السؤال التالي يدور حول الجلوس أو الاتكاء في العمل أو المنزل أو الذهاب من وإلى الأماكن أو مع الأصدقاء بما في ذلك الوقت الذي تقضيه في الجلوس على المكتب أو الجلوس مع الأصدقاء أو السفر في السيارة أو الحافلة أو القطار أو القراءة أو لعب الورق أو مشاهدة التلفاز، ولكن لا يشمل الوقت الذي تقضيه في النوم		
51	**كم من الوقت تقضيه عادة في الجلوس أو الاتكاء في اليوم العادي؟**	**ساعات ..... دقائق .....**

استبيان الصحة العامة			
	الأسئلة	نعم	لا
52	هل تمكنت مؤخراً من التركيز فيما تفعله؟		
53	هل شعرت مؤخراً أنك تلعب دوراً مفيداً في فعل الأشياء؟		
54	هل شعرت مؤخراً بالقدرة على اتخاذ القرارات؟		
55	هل تمكنت مؤخراً من الاستمتاع بأنشطتك اليومية العادية؟		
56	هل تمكنت من مواجهة مشاكلك؟		
57	هل شعرت مؤخراً بسعادة معقولة مع مراعاة جميع الأمور؟		
58	هل فقدت الكثير من النوم مؤخراً بسبب القلق؟		
59	هل شعرت مؤخراً بالتوتر المستمر؟		
60	هل شعرت مؤخراً أنك لا تستطيع التغلب على الصعوبات التي تواجهها؟		
61	هل شعرت مؤخراً بالحزن أو الاكتئاب؟		
62	هل فقدت مؤخراً الثقة بنفسك ؟		
63	هل كنت تفكر مؤخراً بنفسك كشخص لا قيمة له؟		
مقياس مستوى المعرفة بارتفاع ضغط الدم: معرفة ما هو ارتفاع ضغط الدم، والعلاج الطبي، ومضاعفات ارتفاع ضغط الدم بين عامة السكان			
64	التعريف: يشير ارتفاع ضغط الدم الانقباضي أو الانبساطي إلى ارتفاع ضغط الدم.		□ صحيح □ غير صحيح □ لا أعلم
65	يشير ارتفاع ضغط الدم الانبساطي أيضاً إلى ارتفاع ضغط الدم.		□ صحيح □ غير صحيح □ لا أعلم
66	الالتزام بالدواء: ارتفاع ضغط الدم هو نتيجة الشيخوخة، لذلك يعتبر العلاج غير ضروري.		□ صحيح □ غير صحيح □ لا أعلم
67	إذا كان دواء ارتفاع ضغط الدم يمكن أن يتحكم في ارتفاع ضغط الدم، فلا يوجد داعي لتغيير أسلوب الحياة.		□ صحيح □ غير صحيح □ لا أعلم

68	إذا غيّر الأفراد المصابون بارتفاع ضغط الدم أسلوب حياتهم، فلا يوجد داعي لأخذ العلاج.	□ صحيح □ غير صحيح □ لا أعلم
69	يمكن للأفراد الذين يعانون من ارتفاع ضغط الدم تناول الأطعمة المالحة طالما أنهم يتناولون أدويتهم بانتظام.	□ صحيح □ غير صحيح □ لا أعلم
70	العلاج الطبي: يجب على الأفراد الذين يعانون من ارتفاع ضغط الدم تناول أدويتهم تِبعاً لرغبته الشخصية.	□ صحيح □ غير صحيح □ لا أعلم
71	يجب تناول أدوية ارتفاع ضغط الدم كل يوم.	□ صحيح □ غير صحيح □ لا أعلم
72	يجب على الأفراد الذين يعانون من ارتفاع ضغط الدم تناول أدويتهم فقط عندما يشعرون بالمرض.	□ صحيح □ غير صحيح □ لا أعلم
73	يجب على الأفراد الذين يعانون من ارتفاع ضغط الدم تناول أدويتهم طوال حياتهم.	□ صحيح □ غير صحيح □ لا أعلم
74	المضاعفات: يمكن أن يؤدي ارتفاع ضغط الدم إلى حدوث الجلطات الدماغية إذا تُرك بدون علاج.	□ صحيح □ غير صحيح □ لا أعلم
75	يمكن أن يؤدي ارتفاع ضغط الدم إلى حدوث أمراض في القلب مثل النوبة القلبية إذا تُرك بدون علاج.	□ صحيح □ غير صحيح □ لا أعلم
76	يمكن أن يؤدي ارتفاع ضغط الدم إلى الوفاة المبكرة إذا تُرك بدون علاج.	□ صحيح □ غير صحيح □ لا أعلم
77	يمكن أن يؤدي ارتفاع ضغط الدم إلى حدوث الفشل الكلوي إذا تُرك بدون علاج.	□ صحيح □ غير صحيح □ لا أعلم
78	يمكن أن يؤدي ارتفاع ضغط الدم إلى حدوث اضطرابات بصرية إذا تُرك بدون علاج.	□ صحيح □ غير صحيح □ لا أعلم

نموذج قصير لتقييم نمط الحياة

يساعد هذا النموذج الشخص على أن يكون على علم واستباقي بصحته، كما أنه يُعلّم كيف أن خيارات نمط الحياة تؤثر على النتائج الصحية

79	يرجى وضع دائرة حول مستواك الحالي العام للصحة	صحة سيئة للغاية – صحة ممتازة 0 □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 9 □ 10 □
80	على مدار الأسبوعين الماضيين، كم متوسط عدد ساعات نومك خلال فترة 24 ساعة؟	□ أقل من 4 ساعات □ 4-5 ساعات □ 6 ساعات □ 7-8 ساعات □ 9 ساعات أو أكثر
81	على مدار الأسبوعين الماضيين، كم مرة شعرت بالتعب أو بالصعوبة في البقاء مستيقظاً أثناء المهام الروتينية في اليوم؟	□ على الإطلاق □ عدة أيام □ أكثر من نصف الأيام □ تقريباً كل يوم
82	ما رأيك في وزنك الحالي؟	□ أرغب في اكتساب الكثير من الوزن. □ أرغب في اكتساب القليل من الوزن. □ أنا سعيد بوزني. □ أريد أن أفقد القليل من الوزن. □ أريد أن أفقد الكثير من الوزن.
83	على مدار الأسبوعين الماضيين، كم مرة تناولت وجبات سريعة ومشروبات سكرية مثل (المشروبات الغازية والمشروبات الرياضية والعصائر) أو الأطعمة المُعلبة مثل (رقائق البطاطس والحلوى والبسكويت) ؟	□ على الإطلاق □ عدة أيام □ أكثر من نصف الأيام □ تقريباً كل يوم
84	خلال الروتين اليومي، كم عدد حصص الفواكه والخضروات التي تتناولها؟ (الحصة الواحدة تُقارب الحَفنة ولا تشمل عصير الفواكه)	□ أقل من حصتين □ 2-3 حصص □ 4-5 حصص □ أكثر من 5 حصص
85	على مدار الأسبوعين الماضيين، كم عدد الأيام التي مارست فيها الرياضة بقوة متوسطة إلى شاقة (على سبيل المثال، المشي السريع أو الحركة الكافية لحدوث التعرق الخفيف) ؟	□ أقل من مرة واحدة في الأسبوع

		□ مرة- مرتان في الأسبوع □ 3-4 مرات في الأسبوع □ 5 مرات أو أكثر في الأسبوع
86	في متوسط الجلسة، كم عدد الدقائق التي تمارس فيها الرياضة بقوة متوسطة إلى شاقة (على سبيل المثال، المشي السريع أو الحركة الكافية لحدوث التعرق الخفيف) ؟	□ أقل من 10 دقائق □ 10-29 دقيقة □ 30-49 دقيقة □ 50 دقيقة أو أكثر
	الوصول إلى مركز الرعاية الصحية	
87	هل لديك مصدر منتظم للحصول على الرعاية الصحية، سواء كان طبيب أم عيادة؟	□ نعم □ لا □ أحياناً
88	هل يسهل عليك الوصول إلى مركز الرعاية الصحية؟	□ نعم □ لا إذا كانت الإجابة نعم، اذهب إلى سؤال رقم 92
89	إذا كانت الإجابة لا، فما هو السبب؟	□ أحتاج إلى وقت طويل للوصول إلى العيادة مشياً على الأقدام. □ أستخدم المواصلات العامة وليس لدي المال الكافي لذلك. □ غير ذلك، حدد .....
90	إذا كنت تستخدم وسائل المواصلات العامة، هل التكلفة معقولة بالنسبة لك؟	□ نعم □ لا
91	هل المركز الصحي مؤهل للأشخاص ذوي الاحتياجات الخاصة؟	□ نعم □ لا
92	بشكل عام، كم دقيقة تنتظر للحصول على الخدمة الصحية لمرضى الضغط من مقدمي الخدمة؟	..... دقيقة
93	بشكل عام، كم من الوقت تحتاج للحصول على الخدمة الصحية ككل (من دخولك المركز حتى خروجك منه)؟	..... دقيقة
94	بشكل عام، كم دقيقة تقضيها مع طبيبك أثناء الزيارة؟	..... دقيقة
95	هل خدمات ارتفاع ضغط الدم الصحية متوفرة دائماً في المركز الصحي؟	□ نعم □ لا □ أحياناً

96	إذا كانت الإجابة لا، عدد ما هي الخدمات غير المتاحة.	□ دواء معين (مثال) ..... □ خدمات معينة (مثال) ..... □ تحاليل معينة (مثال) ..... □ أسباب أخرى، حدد .....
97	كيف تحصل على علاجك؟	□ أزور العيادة بنفسي □ يقوم شخص آخر باحضاره لي
98	هل تقوم بإجراء زيارات متابعة منتظمة؟	□ نعم □ لا إذا كانت الإجابة نعم، اذهب إلى السؤال رقم 100
99	إذا كانت الإجابة لا، لماذا؟	□ المواصلات غالية الثمن. □ حركتي وخروجي من المنزل ليس بالسهل. □ لا أملك الوقت الكافي. □ غير مرحب بي في المركز الصحي. □ لا أثق بالموظفين بالمركز الصحي. □ الموظفون غير مؤهلين للتعامل مع حالتي. □ أحتاج إلى مرافق معي □ أسباب أخرى. حدد
100	خلال العام الماضي، هل عدت من المركز دون تلقي الخدمات التي جئت من أجلها؟	□ نعم □ لا إذا كانت الإجابة لا، اذهب إلى سؤال 102
101	إذا كانت الإجابة نعم، اذكر الأسباب	□ ازدحام المركز الصحي. □ الموعد غير صحيح.

		□ مقدمو الخدمات الصحية غير متوفرين. □ الأدوية غير متوفرة. □ أسباب أخرى.
102	هل تلقيت أي مواد تثقيفية صحية حول ارتفاع ضغط الدم أثناء زيارتك لهذا المركز الصحي خلال العام الماضي؟	□ نعم □ لا
103	هل تستخدم أي علاجات منزلية للتحكم في ارتفاع ضغط الدم لديك؟	□ نعم □ لا
104	هل تتلقى الخدمات الصحية من عيادات أخرى غير هذه العيادة؟	□ نعم □ لا
105	إذا كانت الإجابة نعم، فمن أين؟	□ وكالة الغوث □ خاص □ منظمة غير حكومية □ أخرى، حدد

This questionnaire is for assessing The Prevalence and Determinants of Uncontrolled Blood Pressure among Hypertensive Patients at Governmental Primary Health Centers in the Gaza Strip

Patient Related Factors		
Serial Number ……		
First BP reading ……		Second BP reading …….
1	Clinic Name	…….
2	Patient's gender	□ Male □ Female
3	Patient's age	…… Years
4	Marital Status	□ Single □ Married □ Divorced □ Widowed □ Separated
5	Completed years of schooling	……. Years
6	Place of residence	□ North Gaza □ Gaza □ Deir Al-Balah □ Khan Younis □ Rafah
7	Current working status	□ Working □ Not working □ Retired
8	If yes, what do you work?	□ Managerial □ Professional □ Technicians and Assistants of Professionals. □ Clerks, sales and service workers.

		□ Skilled workers in agriculture, forestry and Fisheries. □ Craftsmen (artisans) and related professions. □ Employees of armed robots. □ Primary crafts. □ Employees of armed forces.
9	Total family income per month	……. ILS
10	Height in Meter	…….
11	Weight in KG	…….
12	Do you have a family history of hypertension?	□Yes □ No □ I don't know
13	If yes, to whom?	□ Father □ Mother □ Both □ Brother □ Sister Other, specify ……
Disease Related Factors		
14	How long it has been since you were diagnosed with hypertension?	…… Years
15	Have you suffered from any complications of hypertension?	□ Yes □ No If no, go to Q 18
16	What are these complications?	□ Cardiovascular Diseases □ Ophthalmic □ Renal □ Neurological □ Cerebrovascular □ Others

17	For how long do you experience these complications?	……..
18	Do you have other chronic diseases?	□ Yes □ No
19	If yes, specify.	□ D.M □Bronchial Asthma □ Heart Disease Other, specify …….
20	If you have D.M, what is your last HbA1C reading?	HbA1C value ……..
21	What is the current treatment do you receive to treat hypertension?	□ Medicine □ Lifestyle measures including: Weight control, Regular dynamic physical exercise, Reduction of salt intake, Increased fruits and vegetables intake and Avoidance/cessation of smoking. □ Both □ Nothing
22	If you receive medicines to treat hypertension, what are their names?	…….
23	Did you take all your medicine yesterday?	□ Yes □ No
24	People sometimes miss taking their medications. Thinking over the past two weeks, were there any days when you did not take your medicine for any reason?	□ Yes □ No If no, go to Q 26

25	If yes, what are the reasons?	□ Ignorance □ Forgetfulness □ Feel more worse □ Taste of the drugs is not accepted □ I don't have enough money to buy the medicines □ Others
26	When you feel like your symptoms are under control, do you sometimes stop taking your medicine?	□ Yes □ No
27	When you travel or leave home, do you sometimes forget to bring along your medicine?	□ Yes □ No
28	Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	□ Yes □ No
Lifestyle Factors		
29	Do you take salt with food?	□ Yes □ No
30	How often do you eat salty food?	……
31	If yes, what type of salt do you use?	…….
32	Cigarette smoking status	□ Never smoked □ Ex-smoker □ Current smoker □ Passive smoker
33	If current smoker, what is the number of cigarettes you smoke per day?	……
34	If Ex-smoker, for how long in months have you been on smoking?	……
35	Do you smoke water pipes?	□ Yes □ No

Global Physical Activity Questionnaire		
36	Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging or construction work] for at least 10 minutes continuously?	□ Yes □ No If no, go to Q 39
37	In a typical week, on how many days do you do vigorous intensity activities as part of your work?	Number of days …….
38	How much time do you spend doing vigorous-intensity activities at work on a typical day?	Hours …. Minutes …..
39	Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking or carrying light loads for at least 10 minutes continuously?	□ Yes □ No If no, go to Q 42
40	In a typical week, on how many days do you do moderate intensity activities as part of your work?	Number of days …….
41	How much time do you spend doing moderate-intensity activities at work on a typical day?	Hours …. Minutes …..
The next questions exclude the physical activities at work that you have already mentioned. Now I would like to ask you about the usual way you travel to and from places. For example to work, for shopping, to market, to place of worship.		
42	Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?	□ Yes □ No If no, go to Q 48
43	In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?	Number of days …….
44	How much time do you spend walking or bicycling for travel on a typical day?	Hours …. Minutes …..
The next questions exclude the work and transport activities that you have already mentioned. Now I would like to ask you about sports, fitness and recreational activities (leisure).		
45	Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football] for at least 10 minutes continuously?	□ Yes □ No

46	In a typical week, on how many days do you do moderate intensity sports, fitness or recreational (leisure) activities?	Number of days …….
47	How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?	Hours …. Minutes …..
48	Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that cause a small increase in breathing or heart rate such as brisk walking, [cycling, swimming, and volleyball] for at least 10 minutes continuously?	□ Yes □ No If no, go to Q 51
49	In a typical week, on how many days do you do moderate intensity sports, fitness or recreational (leisure) activities?	Number of days …….
50	How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?	Hours …. Minutes …..
The following question is about sitting or reclining at work, at home, getting to and from places, or with friends including time spent sitting at a desk, sitting with friends, traveling in car, bus, train, reading, playing cards or watching television, but do not include time spent sleeping.		
51	How much time do you usually spend sitting or reclining on a typical day?	Hours …. Minutes …..

General Health Questionnaire (GHQ)

Questions		Yes	No
52	Have you recently been able to concentrate on whatever you're doing?		
53	Have you recently felt that you were playing a useful part in things?		
54	Have you recently felt capable of making decisions about things?		
55	Have you recently been able to enjoy your normal day-to-day activities?		
56	Have you been able to face up to your problems?		
57	Have you recently been feeling reasonably happy, all things considered?		
58	Have you recently lost much sleep over worry?		
59	Have you recently felt constantly under strain?		

60	Have you recently felt you couldn't overcome your difficulties?		
61	Have you recently been feeling unhappy or depressed?		
62	Have you recently been losing confidence in yourself?		
63	Have you recently been thinking of yourself as a worthless person?		
Hypertension knowledge level scale: Knowledge of hypertension definition, medical treatment, and hypertension complications among the general population.			
64	Definition: High diastolic or systolic blood pressure indicates increased blood pressure	□ Correct □ Incorrect □ I don't know	
65	Increased diastolic blood pressure also indicates increased blood pressure.	□ Correct □ Incorrect □ I don't know	
66	Drug Compliance: Increased blood pressure is the result of aging, so treatment is unnecessary	□ Correct □ Incorrect □ I don't know	
67	If the medication for increased blood pressure can control blood pressure, there is no need to change lifestyles.	□ Correct □ Incorrect □ I don't know	
68	If individuals with increased blood pressure change their lifestyles, there is no need for treatment.	□ Correct □ Incorrect □ I don't know	
69	Individuals with increased blood pressure can eat salty foods as long as they take their drugs regularly.	□ Correct □ Incorrect □ I don't know	
70	Medical Treatment: Individuals with increased blood pressure must take their medication in a manner that makes them feel good.	□ Correct □ Incorrect □ I don't know	
71	Drugs for increased blood pressure must be taken every day.	□ Correct □ Incorrect □ I don't know	
72	Individuals with increased blood pressure must take their medication only when they feel ill.	□ Correct □ Incorrect □ I don't know	

73	Individuals with increased blood pressure must take their medication throughout their life.	□ Correct □ Incorrect □ I don't know
74	Complications: Increased blood pressure can cause strokes if left untreated.	□ Correct □ Incorrect □ I don't know
75	Increased blood pressure can cause heart disease such as heart attack if left untreated.	□ Correct □ Incorrect □ I don't know
76	Increased blood pressure can cause premature death if left untreated.	□ Correct □ Incorrect □ I don't know
77	Increased blood pressure can cause kidney failure if left untreated.	□ Correct □ Incorrect □ I don't know
78	Increased blood pressure can cause visual disturbances if left untreated	□ Correct □ Incorrect □ I don't know
Lifestyle Assessment Short Form This form helps a person to be informed and proactive with their health, it teaches also how lifestyle choices impact health outcomes.		
79	Please circle your current overall level of health	Very poor health-Excellent health □ 0 □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 9 □ 10
80	Over the last two weeks, how many hours of sleep did you average in a 24-hour period?	□ Less than 4 hours □ 4-5 hours □ 6 hours □ 7-8 hours □ 9 or more hours

81	Over the last two weeks, how often did you feel tired or have difficulty staying awake during routine tasks in the day?	□ Not at all □ Several days □ More than half the days □ Nearly every day
82	What do you think about your current weight?	□ I want to gain a lot of weight □ I want to gain a little weight □ I am happy with my weight □ I want to lose a little weight □ I want to lose a lot weight
83	Over the last two weeks, how often have you eaten fast food, sugary drinks (e.g., soda, sports drinks, and juice) or packaged foods (e.g., chips, candy, crackers, and cookies)?	□ Not at all □ Several days □ More than half the days □ Nearly every day
84	On the average day, how many servings of whole fruits and vegetables do you eat (1 serving is about a handful and does not include fruit juice)?	□ Less than 2 servings □ 2-3 servings □ 4-5 servings □ More than 5 servings
85	Over the last two weeks, how many days did you exercise at a moderate to strenuous intensity (e.g., brisk walking or enough movement to break a light sweat)?	□ Less than 1 time per week □ 1-2 times per week □ 3-4 times per week □ 5 or more times per week
86	During an average session, how many minutes do you exercise at a moderate to strenuous intensity (e.g., brisk walking or enough movement to break a light sweat)?	□ Less than 10 minutes □ 10-29 minutes □ 30-49 minutes □ 50 minutes or more
Access to health care center		
87	Do you have a regular source of health care, that is, a doctor or clinic?	□ Yes □ No □Sometimes
88	Is it easy for you to reach the health care clinic?	□ Yes , If yes go to Q 90 □ No

89	If no, what is the reason?	A- □ I need long time to reach the clinic by walking B- □ I use public transportation and I don't have enough money available for that C- Other, specify …….
90	If you use public transportation, is the cost affordable for you?	□ Yes □ No
91	Is the health center adapted for people with disabilities?	□ Yes □ No
92	Generally, how many minutes do you wait to receive hypertension services from your health care provider?	…… Minutes
93	Generally, how many minutes it takes you to receive the services? (From the moment you enter the center until you received all the services you want)?	…… Minutes
94	Generally, how many minutes do you spend with your doctor during the visit?	…… Minutes
95	Do the hypertension services always available at the health center?	□ Yes □ No □ Sometimes
96	If no, list the unavailable services	□ Certain medicines …… □ Specialized services ……. □ Laboratory tests …… □ Other reasons, specify …….

97	How do you get your medicines?	A. □ I visit the clinic by myself. B. □ Someone else brings the medicines for me.
98	Do you regular conduct follow up visits?	□ Yes □ No If yes, go to Q 100
99	If no, why?	A. □ I cannot afford transportation cost. B. □ My movement is uneasy. C. □ I do not have time—work issues-leave. D. □ I am not welcomed by the staff. E. □ I do not trust my provider. F. □ The providers are not qualified enough to deal with my case. G. □ I need someone to accompany me. H. □ Others, specify……..
100	In the past year, have you been returned home without receiving the services you came to receive?	□ Yes □ No If no, go to Q 102
101	If yes, indicate why.	A. □ Crowdedness of the center B. □ Incorrect appointment C. □ Unavailable health providers D. □ Unavailable medicines E. □ Other
102	Have you received any health educational materials about hypertension during your visits to this health center in the last year?	□ Yes □ No

103	Do you use any home remedies to manage your hypertension?	□ Yes □ No
104	Do you receive services from other clinics other than this one?	□ Yes □ No
105	If yes, from where?	□ UNRWA □ Private □ NGO □ Other, specify …….

Annex (5): In depth interview questions

أسئلة المقابلات المعمقة مع مقدمين الخدمات الصحية في العيادات الحكومية الأولية في قطاع غزة:

السؤال الأول : بشكل عام، ما هي وجهة نظرك في الخدمات الصحية المقدمة لمرضى ضغط الدم في العيادات الحكومية الأولية في قطاع غزة؟

السؤال الثاني: من وجهة نظرك كمقدم للخدمة الصحية لمرضى ضغط الدم، ما هي أسباب ارتفاع ضغط الدم غير المتحكم به؟

Uncontrolled Hypertension: Defined as an average SBP ≥140 mmHg or an average DBP ≥90 mmHg, among those who are under anti-hypertensive treatment

السؤال الثالث : هل تعتقد أن ارتفاع ضغط الدم غير المتحكم به يشكل مشكلة حقيقية لمرضى ضغط الدم في قطاع غزة ؟

العواقب: (تأثيره على المرضى من حيث المضاعفات) والنظام الصحي

السؤال الرابع: ما هي الاجراءات التي يتم اتباعها مع حالات ارتفاع ضغط الدم غير المتحكم به؟

السؤال الخامس: ما رأيك بمدى توفر الأدوية الخافضة لضغط الدم في المراكز الصحية الأولية الحكومية في قطاع غزة؟

السؤال السادس: ما هي الأسس العلمية التي تعتمدون عليها للقيام بعلاج ارتفاع ضغط الدم؟

هل هي بناء على بروتوكولات
مكتوبة؟

هل هناك سياسات معتمدة؟

هل هناك كتيبات متوفرة؟

السؤال السابع : ما هي الإجراءات التي يمكن تنفيذها من أجل تقليل نسبة المرضى الذين يعانون من ارتفاع ضغط الدم غير المتحكم به؟

(الأدوية، نمط الحياة، المتابعة، التغذية، التوتر)

السؤال الثامن: هل تحب أن تضيف أي نقطة بخصوص هذا الموضوع؟

Annex (6): List of experts

No.	Name	Position
1.	Dr. Bassam Abu Hamad	Al-Quds university
2.	Dr. Yehia Abed	Al-Quds university
3.	Dr. Nuha Sharif	Al-Quds university
4.	Dr. Maysoon Abdul-Aziz	The Islamic University
5.	Dr. Mousa Abed	MoH
6.	Dr. Amal Zaqout	MoH
7.	Dr. Ola Al-Najjar	MoH
8.	Dr. Kalid Khaddoura	MoH
9.	Dr. Nohammed Abu Nada	MoH
10.	Mr. Jihad Okasha	MoH
11.	Mr. Yousef Abu Rahma	MoH

Annex (7): Director of MOH in Gaza approval

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2021/12/11

حضرة المهندس/ أسامة قاسم المحترم
الوكيل المساعد–وزارة الصحة

تحية طيبة وبعد،،،

الموضوع: مساعدة الطالبة آية رزق البرعي

نشكر لكم دعمكم الدائم لمسيرة العلم والتعليم وخصوصاً دعم كلية الصحة العامة وطلابها، ونود أعلامكم بأن الطالبة المذكورة أعلاه تقوم بعمل بحث كمتطلب للحصول على درجة الماجستير في الصحة العامة/مسار علم الأوبئة بعنوان:

"Prevalence and Determinants of Uncontrolled Blood Pressure among Hypertensive Patients at Governmental Primary Health Centers in the Gaza Strip"

وعليه نرجو من سيادتكم التكرم بالموافقة على تسهيل مهمة الطالبة في إنجاز هذا البحث حيث أن الفئه المستهدفة هم مرضى الضغط المتابعين لدى مراكز الرعاية الأولية. علماً بانه سيتم جمع المعلومات من خلال استبانة تم اعدادها وايضا بالاضافة إلى الاستعانة بالبيانات الموأرشفة في مراكز الرعاية الأولية التابعة لوزارتكم الموقرة .

و اقبلوا فائق التحية و الاحترام،،،

د. بسام أبو حمد
منسق عام برامج الصحة العامة
فرع غزة

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فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-264420-2644210
ص.ب. 51000 القدس

Annex (8): Helsinki approval

المجلس الفلسطيني للبحث الصحي

Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال مأسسة استخدام المعلومات البحثية في صنع القرار

Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee

For Ethical Approval

Date: 2021/08/02 **Number:** PHRC/HC/939/21

Name: Aya R. Alboraey الاسم:

We would like to inform you that the committee had discussed the proposal of your study about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

Prevalence and Determinants of Uncontrolled Blood Pressure among Hypertensive Patients at Governmental Primary Health Centers in the Gaza Strip

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/939/21 in its meeting on 2021/08/02

و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

Signature

Member Nasser R Abu Shaban **Member** Dr. Yehia Abed

For **Chairman**

Genral Conditions:-

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:-

E-Mail:pal.phrc@gmail.com

Gaza - Palestine غزة - فلسطين

شارع النصر - مفترق العيون

Annex (9): Participation approval letter

نموذج موافقة

عزيزي المشارك/ عزيزتي المشاركة

تحية تقدير واحترام وبعد،

أنا الباحثة آية رزق البرعي، طالبة ماجستير بجامعة القدس كلية الدراسات العليا- برنامج الصحة العامة تخصص علم الأوبئة. أقوم بإجراء هذا البحث كمتطلب رئيسي من متطلبات الحصول على شهادة الماجستير، حيث أن هذه الدراسة تهدف إلى دراسة **مدى انتشار ومحددات ضغط الدم غير المنضبط لدى مرضى ضغط الدم المرتفع في مراكز الصحة الأولية الحكومية في قطاع غزة.**

هذه الدراسة ستساهم في دراسة مدى انتشار ومحددات ضغط الدم غير المنضبط من أجل تحسين حالة التحكم في ارتفاع ضغط الدم بين مرضى ضغط الدم المرتفع المتابعين في مراكز الصحة الأولية وبالتالي تقليل معدلات المراضة والوفيات وتحسين الرفاهية العامة لمرضى ضغط الدم المرتفع وتقليل العبء المالي جراء تكلفة خدمات الرعاية الصحية. لقد تم اختيارك للمشاركة في هذا البحث لمطابقتك لشروط البحث العلمي. إن إجراء هذا البحث لا يتطلب عمل أي تحاليل مخبرية أو تناول أي نوع من الأدوية. هذه المشاركة اختيارية ونحن نقدر مشاركتك في هذه الدراسة، لذلك يمكنك رفض المشاركة أو إيقاف المقابلة أو التقييم أو تخطي الأسئلة أو الانسحاب من الاستبيان في أي وقت تريده. سيتم الاحتفاظ بإجاباتك في سرية تامة ولن يتم تحديد أي فرد في أي تقرير يستند إلى الدراسة. قد يستغرق الاستبيان والتقييم 15 دقيقة من وقتك. الرجاء الإجابة على جميع الأسئلة قدر الإمكان ولا تتردد في طلب أي توضيح بخصوص هذا الاستبيان.

مع جزيل الشكر والتقدير لسيادتكم
آية رزق البرعي

Abstract in Arabic

عنوان الدراسة: مدى انتشار ومحددات ضغط الدم غير المنضبط لدى مرضى ضغط الدم المرتفع في مراكز الصحة الأولية الحكومية في قطاع غزة.

إعداد: آية رزق إبراهيم البرعي

إشراف: د. ختام أبو حمد

المقدمة:

ارتفاع ضغط الدم هو السبب الرئيسي للوفاة المبكرة في جميع أنحاء العالم ، وعبء ارتفاع ضغط الدم أصبح ظاهراً في الغالب في البلدان منخفضة ومتوسطة الدخل ، حيث يتم الإبلاغ عن ثلثي الحالات ، ويرجع ذلك أساسًا إلى عوامل الخطر المتزايدة في تلك المجموعات السكانية في العقود الأخيرة. ، أصبح حجم ضغط الدم غير المنضبط ذا أهمية للصحة العامة في البلدان النامية.

الهدف من الدراسة:

دراسة مدى انتشار ومحددات ضغط الدم غير المنضبط بين مرضى ضغط الدم المرتفع في المراكز الصحية الأولية في قطاع غزة.

منهجية الدراسة:

تعتبر هذه الدراسة وصفية تحليلية كمية شملت كل من البيانات الكمية والنوعية، تم جمع البيانات الكمية من المرضى الذين أتوا للاستفادة من الخدمات الصحية من المراكز الصحية الأولية في قطاع غزة. شارك في الدراسة 400 مريض (213 ذكر و 187 أنثى) وقد تم جمع البيانات النوعية من خلال إجراء مقابلات معمقة مع مقدمي خدمات الرعاية الصحية وصُنّاع القرار.

وقد تم تحليل البيانات باستخدام الحزمة الإحصائية للعلوم الاجتماعية حيث أجريت التوزيعات ، الترددات ، النسب المئوية و الجداول، كما تم حساب النسب المتوسطة و العامة و الجداول المتقاطعة و استخدام اختبار مربع كاي و اختبار الانحدار اللوجيستي لإيجاد العلاقة بين المتغيرات. في حين تم استخدام طريقة الترميز المفتوح لتحليل البيانات النوعية.

أهم النتائج:

أظهرت نتائج الدراسة أن حوالي ثلث المشاركين في الدراسة يعانون من ضغط الدم غير المنضبط (36.3 ٪). كانت نسبة ضغط الدم غير المنضبط أعلى بين المشاركين الذكور (55.8%) مقارنة بالإناث (44.2٪).

أظهرت نتائج الدراسة أن هناك ارتباطًا كبيرًا بين ضغط الدم غير المنضبط والعوامل الديموغرافية والاجتماعية والاقتصادية مثل ارتفاع مؤشر كتلة الجسم إلى (25-29.9) و ≤ (30).

ترتبط العوامل المرتبطة بالأمراض ارتباطًا وثيقًا بضغط الدم غير المنضبط مثل قصر المدة الزمنية لتشخيص ارتفاع ضغط الدم والمرضى الذين فاتهم تناول أدويتهم خلال الأسبوعين الماضيين لأي سبب من الأسباب. الصحة النفسية المنخفضة لها ارتباط كبير مع ضغط الدم غير المنضبط. بالإضافة إلى ذلك، يرتبط انخفاض مستوى المعرفة حول ارتفاع ضغط الدم بشكل كبير مع ضغط الدم غير المنضبط.

الخلاصة:

يعد ضغط الدم غير المنضبط مشكلة حقيقية لمرضى ارتفاع ضغط الدم في قطاع غزة، وهناك حاجة إلى مزيد من الدراسات لتقييم محددات التحكم بضغط الدم على مجموعة أكبر وأكثر تمثيلاً من المشاركين.

هناك حاجة لتطوير دلائل إرشادية وطنية موحدة لعلاج ارتفاع ضغط الدم. يجب أن تتضمن الدلائل الإرشادية وصفاً لطريق العلاج، بما في ذلك تعديل نمط الحياة كجزء من خطة العلاج من قبل مقدمي الرعاية الصحية. بالإضافة إلى ذلك، يُوصى بشدة أن تقوم وزارة الصحة بوضع خطة إدارة متابعة خاصة لمرضى ضغط الدم غير المتحكم به لضمان مستوى أعلى من الالتزام ، ويجب أن تتضمن خطة الإدارة فريقاً متعدد التخصصات يضم أطباء وممرضين وأخصائيين تغذية وأخصائيين علم نفس.

أخيراً هناك حاجة إلى مزيد من الدراسات لتقييم محددات التحكم في ضغط الدم على مجموعة أكبر وأكثر تمثيلاً من المشاركين.