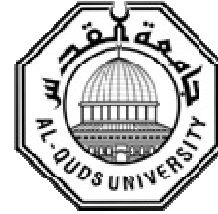


Deanship of Graduate Studies

Al-Quds University



**Factors affecting compliance to anti-hypertensive drug
treatment and lifestyle modification among patients
attending primary health care clinics in Bethlehem
district**

Amal Mahmoud Younis Al azzeh

M. Sc, Thesis

Jerusalem – Palestine

1435/2014

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treatment and lifestyle modification among patients
attending primary health care clinics in Bethlehem district

Prepared by:

Amal Mahmoud Younis Al azzeh

Supervisor:

Dr. Mohammad Shaheen

A thesis Submitted in Partial fulfillment of requirement for
the degree of Master in Health Policy and Management/

School of PublicHealth-Al-Quds University

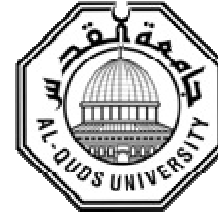
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Thesis approval

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Registration number:

Supervisor: Dr. Mohammad Shaheen

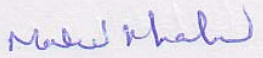
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The names and the signature of the examining committee members are as follows:

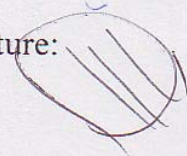
Head of the committee: Dr. Mohammad Shaheen

Internal examiner: Dr. Motasem Hamdan

External examiner: Dr. Umayyeh Khammash

signature: 

signature: 

signature: 

Jerusalem- Palestine

1435/2014

Dedication

To the soul of my mother and father

To my husband Shibli Al Qaisi

To my children Mai, Nadeem, Nader and Samer

To my brothers and sisters

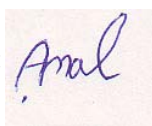
Amal Mahmoud Younis Al Azzeh

Declaration

I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged and that this thesis has not been submitted for a higher degree to any other university or institution.

Amal Mahmoud Younis Al Azzeh

Date: May 2014

Signed: 

Acknowledgements

I want to take this opportunity to thank the following persons for supporting and helping me in this thesis. I am very grateful to my research supervisor Dr. Mohammad Shaheen for his continuous support from the initial to the final stage of this thesis.

I would like to show my gratitude to all of my teachers at the school of public health, Dr. Asma Al Emam, Dr. Motasem Hamdan, Dr. Khaldoun Bader, Dr. Nuha Al Sharif and Ms. Sameha Mohsen.

My gratitude to Dr. Umyah Khammash, Dr. Mahmoud Al Whoosh, Dr. Faisal Abdaltif, and to my colleagues Mrs Nurah Ayesh.

Many thanks to all health workers and nurses at UNRWA, Government and NGO clinics who helped me in filling the questionnaire, especially Nadia.

I am grateful to Mr. Mohammad Zwahreh the statistician who analyzed the data and to Dr. Shibli Al Azzeh for his important comments.

My warmest grateful to Amy Taylor the teacher who helped me in English editing of the thesis.

I owe a big thank to my family especially my husband Shibli Al Qaisi for supporting and encouragement, to my daughter Mai and to my sons, my brothers and sisters.

List of Abbreviations

HT	Hypertension
NGO	Non-Governmental Organization
UNRWA	United Nation Relief Work Agency
WHO	World Health Organization
MOH	Ministry of Health
PHC	Primary Health Care
HBM	Health Belief Model
BP	Blood Pressure
BMI	Body mass index

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Abstract

Antihypertensive treatment is an important challenge and public health issue, compliance to treatment of hypertension is one of the important factors that affect blood pressure control, no enough studies had been done about this issue in Palestine. In this study compliance to drug and lifestyle modification treatment were investigated.

The aim of this study was to assess the factors affecting compliance to antihypertensive drug treatment and recommended lifestyle modifications among hypertensive Palestinian patients attending primary health care clinics in Bethlehem district.

A descriptive cross sectional design was applied on systematic random sampling, sample of 300 hypertension participant at UNRWA, Government, and Non-Governmental clinic, using an interviewer administrated close ended questionnaire which depended on Health Belief Model. The questionnaires were filled face to face, the response rate was 100% in all clinics, Data analysis was done using (SPSS) version 19 to measure compliance on a 4-point Likert scale.

The most important findings were (65.6%) of the participants were female, and (34.3%) were male, participants had a range age of (28-80). Among the total respondents (32.6%) didn't had any complications, (67.1%) had one problems or more related to hypertension, the majority of the respondents took one to three medication (96%), (0.7%) didn't had any medications. (99.1%) took one to three doses of medication per day, (69.3%) of the total respondents didn't skip any dose and (30.7%) skipped one or more dose.

And there was a strong significant association between doses skipped per day (p-value = 0.000) perception of severity (p-value = 0.003), perception of barriers (p-value = 0.000) and internal factors (p-value = 0.001) of total respondents and treatment compliance. For

UNRWA respondents there was significant relationship between gender (p-value =0.035), doses skipped in the last three days (p-value =0.035), perception of barriers (p-value =0.001), internal factors (p-value = 0.011) and treatment compliance. For the government respondents there was significant association between doses skipped in the last three days (p-value = 0.000) and body mass index (p-value = 0.013), perception of severity (p-value = 0.039), perception of barriers (p-value = 0.008), cues to action (p-value = 0.019) and treatment compliance. For the NGO there was association between educational status(p-value = 0.037)and occupational status (p-value = 0.03), perception of barriers (p-value =0.024), internal factors(p-value = 0.008) and treatment compliance.

The best predictor variables for treatment compliance were perception of barriers, perception of internal factors and perception of severity of total respondents. For UNRWA respondents the best predictor variables were perception of barriers and perception of internal factors. For Government respondents the best predictive variables were perception of barriers and cues to action. For NGOs the best predictive variables were internal factors and perception of barriers.

This study concluded that the most important factors affected treatment compliance of the respondents were doses skipped, gender, body mass index, educational status, occupational status, perception of severity, perception of barriers, cues to action and internal factors.

This study concluded that the total respondents were compliance to their drug treatment and lifestyle modification, NGOs respondent were more compliant than UNRWA and Government respondents in drug treatment while Government and UNRWA were more compliant than NGOs in lifestyle modification

Key words:

Compliance; hypertension; lifestyle modification; drug treatment

CHAPTER 1

INTRODUCTION

1.1 Introduction

Compliance to treatment is one of the most important factors in controlling high blood pressure and preventing and reducing cardiovascular diseases. Many factors affect compliance to drug treatment and lifestyle modification.

This quantitative, descriptive, co- relational study focuses on identifying and explaining factors associated with compliance to anti-hypertension drug treatment and life style modifications among diagnosed hypertensive patients attending UNRWA, Governments, and NGOs primary health care clinics in the Bethlehem district. This chapter outlines the research problem, research justifications, aim and objectives of the research, research questions, study limitations, definitions of the key concepts, description of study setting and the conclusion of the chapter.

1.2 Background

Hypertension is one of the chronic non-communicable diseases (NCD). Hypertension is known as silent killer because it's often asymptomatic. Hypertension is divided into essential

hypertension in which case no clear cause is found, and secondary hypertension which is attributed to causes such as renal or adrenal disease and various other reasons.

40% of adults aged 25 and over had raised blood pressure in 2008, 17.3 million People died from cardiovascular diseases in 2008. Hypertension leads to nine million deaths every year, half of all deaths due to heart disease and stroke. High blood pressure is responsible for 13% of deaths globally in 2009. 80% of NCD deaths occur in low- and middle-income countries, and one in three adults has high blood pressure (Cardiovascular diseases (cvds), 2013).

Any delay in detection and management of hypertension leads to damage to body organs and many complications. Hypertension is one of the important and major public health issues in Palestine and internationally. Hypertension is estimated to cause 7.1 million premature deaths and constitutes (Cardiovascular diseases, 2013).

Incidence rates of hypertension range between 3% and 18%, depending on the age, gender, ethnicity, and body size of the population studied (Cardiovascular diseases, 2013).

Morbidity, mortality and disability attributed to chronic, non-communicable diseases caused 60% of all deaths. This percentage increased to 79% in developing countries, and made up 47% of the global disease burden in 2001. These percentages are expected to rise to 73% of the global deaths and 60% of the global disease burden by 2020 (Cardiovascular diseases, 2013).

Failure of disease prevention, diagnosis and management of common preventable biological risk factors such as high blood pressure, high levels of cholesterol, obesity and related behavioral risks such as unhealthy diets, physical inactivity and tobacco use lead to four major conditions: cardiovascular disease, cancers, chronic obstructive pulmonary disease and type 2 diabetes (Global status report, 2010).

1.3 Research problem

Hypertension or high blood pressure is a serious disease and causes many complications. It increases the risk of overall cardiovascular disease two to three fold and the risk of ischemic heart disease three to four fold (Sabaté, 2003).

The incidence of stroke is nearly eight fold in hypertension patients, three- fold in patients at borderline, and forty percent of myocardial infraction or stroke is attributed to hypertension (Sabaté, 2003).

Controlling high blood pressure prevents those complications and reduces the risk of heart diseases as well as reduces the direct and indirect economic burden of those complications.

One of the main factors affecting blood pressure control is compliance to drug treatment and life style modifications which will be studied in this research.

1.4 Justification

Patients with chronic cases of hypertension need special care and management. Noncompliance to drug treatment and modifications in lifestyle are main problems of managing this disease and the main cause of uncontrolled hypertension. It's very important to study the factors affecting compliance to treatment in order to improve the overall hypertensive patient's health. Therefore, mismanagement of this disease leads to serious problems and complications for the patients, so it's worth studying the factors that affect the compliance of the hypertensive patients to their treatment (of both medication and lifestyle modification).

Through reading about this topic, there is a lack of published researches found about the compliance of hypertension patients among Palestinians.

1.5 Aim of study

The aim of the study is to determine the factors affecting compliance to anti-hypertensive drug treatment and recommended lifestyle modifications among hypertensive Palestinian patients in the Bethlehem district.

1.6 Study objectives

1- To assess the compliance of the hypertension patients of UNRWA, Governments and NGOs to their hypertension treatment (drug treatment and lifestyle modifications).

2- To assess the relationship between compliance to treatment of both the lifestyle modification and anti-hypertensive drug treatment variety and the following factors: socio-demographic factors (age, gender, marital status, educational status, work status, household income) and physiological factors (weight status, duration of illness).

3- To assess the relationship between treatment compliance and the perception of severity; perception of risk; perception of benefits; perception of barriers; internal factors; health care provider factors.

4- To assess the predictor variables for treatment compliance.

1.7 Research question

1- How compliant are the respondents with their hypertension drug treatment?

2- How compliant are the respondents with their lifestyle modifications?

3- What is the relationship between the treatment compliance and the socio-demographic factors?

4-What is the relationship between treatment compliance and the perception of severity; perception of risk; perception of benefits; perception of barriers; internal factors; health care provider factors; cues to action?

5-Which of the following variables are predictor variables for treatment compliance: socio-demographic variables; perception of severity; perception of risk; perception of benefits; perception of barriers; internal factors; health care provider factors; and cues to action.

1.8 Study limitations

1-The sample size is small because of the limited time of the study.

2-Some of the patients who don't come regularly to the clinic may not be included in the study even though those patients are very important to the study because they are not compliant with their treatment.

3-The sample is not representative of all of the population because it is small and has been done in only in the Bethlehem district.

1.9 Operational Definitions

1.9.1: Blood pressure: Blood pressure is the force of blood pushing against the walls of arteries as it flows through them. Arteries are the blood vessels that carry oxygenated blood from the heart to the body's tissues.

1.9.2: Drug treatment: A drug is a medicine or other substance which has a physiological effect when ingested or otherwise introduced into the body (Drug, 2013). Treatment is defined as “medical care for an illness or injury” (Treatment, 2013). In this study, drug treatment is defined

as the use of an approved pharmacologically active medicinal substance for the purpose of controlling hypertension.

1.9.3: Compliance and adherence: WHO defines adherence as the extent to which a person's behaviour, taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider (Sabaté, 2003).

Compliance is the extent to which a person's behaviour, in terms of keeping appointments, taking medications, and lifestyle changes, coincides with medical advice ("Management of patient," 1982).

J. Urquhart at the European heart of hypertension defined compliance as "the extent to correspondence" which the patient's actual history of drug administration corresponds to the prescribed regimen. For the purpose of this study, compliance and adherence are used interchangeably (Urquhart, 1996).

1.9.4: Compliance with prescribed anti-hypertensive drug treatment:

Compliance with prescribed anti-hypertensive drugs was measured with compliance to Medication Regimen Instrument developed specifically for this study. The instrument contained 14 closed-ended items on a four point Likert type scale. The mean score for the 14 items was calculated. A mean score of 3 was designated as the cut-off point. Respondents with a score below 3 were categorized as non-compliant while respondents with a score of 3 and above were categorized as compliant with the medication regimen.

1.9.5: Compliance with life style modifications

Compliance with lifestyle modifications aimed at lowering blood pressure includes regular exercise (at least 30 minutes three times per week), eating salt and fat free diets, cessation of smoking, and a reduction in the daily alcohol consumption to less than 20g of ethanol for men and less than 10g of ethanol for women. Compliance with lifestyle modifications were measured with compliance to Lifestyle Modification Instrument developed specifically for this study. The instrument contained 11 closed-ended items on a four point Likert type scale. The mean score for the 11 items was calculated. A mean score of 3 was designated as the cut-off point. The respondents with a score below 3 were categorized as non-compliant while respondents with a score of 3 and above were categorized as compliant with the lifestyle modification regimen

1.9.6: Hypertension:

Hypertension is high blood pressure. For the purpose of this study Hypertension is defined as systolic blood pressure (SBP) of 140 mm Hg or greater, diastolic blood pressure (DBP) of 90 mm Hg or greater or taking antihypertensive medication(WHO, 2007)

1.9.7: Lifestyle factors: those attitudes, habits and behaviours of hypertension patients that influence the development and course of the disease

1.9.8: Modification: a change (adjustment) in lifestyle, namely attitudes, habits and behaviours necessary for controlling hypertension.

1.9.9: Patient: a person diagnosed with hypertension and receiving medical treatment

1.9.10:Overweight and obesity: abnormal or excessive fat accumulation that presents a risk to health.

1.9.11:Body mass index (BMI): a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of the height in meters (kg/m²). A person with a BMI of 25 or more is considered by WHO to be overweight while obesity is defined as having a BMI of 30 or more. Overweight and obesity are potent risk factors for cardiovascular diseases and type 2-diabetes and are major contributors to premature deaths (WHO, 2007).

1.9.12: Physical activity: any bodily movement produced by skeletal muscles that require energy expenditure. Physical inactivity (lack of physical activity) has been identified as the fourth leading risk factor for global mortality (6% of deaths globally). Moreover, physical inactivity is estimated to be the main cause for approximately 21–25% of breast and colon cancers, 27% of diabetes and approximately 30% of ischemic heart disease burden. (WHO, 2007)

1.10 Summary

This thesis consists of six chapters. In the first chapter, I discussed the aim of this study, specific objectives, research questions, problem statement, justification and limitations of the study. The next chapter presents the literature review of previous studies nationally and globally. In the third chapter, theoretical and conceptual frame work is discussed while in chapter four the study methodology, study setting, study population, study design, data collection tool, data analysis and ethical considerations are presented. In chapter five, study findings are presented in tables and figures while in the last chapter, chapter six, the results and finding are discussed, and recommendations and the conclusion of the study are presented.

Chapter 2

Literature review

2.1 Introduction

In this chapter, the researcher focuses on the definition of hypertension, types, prevalence, causes, complications, and treatment of hypertension. In the second part of this chapter, compliance of drug treatment and lifestyle modifications is discussed; factors affecting compliance to hypertension treatment also are discussed in this chapter.

2.2 Definition of Hypertension

2.2.1: What is raised blood pressure (hypertension)?

Hypertension, high or raised blood pressure, is a condition in which the blood vessels have persistently raised pressure. Blood is carried from the heart to all parts of the body in the vessels. Each time the heart beats, it pumps blood into the vessels. Blood pressure is created by the force of blood pushing against the walls of blood vessels, arteries, as it is pumped by the heart. The higher the pressure the harder the heart has to pump.

Normal adult blood pressure is defined as a blood pressure of 120 mm Hg¹ when the heart beats (systolic) and a blood pressure of 80 mm Hg when the heart relaxes (diastolic). When systolic blood pressure is equal to or above 140 mm Hg and/or a diastolic blood pressure equal to or above 90 mm Hg the blood pressure is considered to be raised or high.

Hypertension is defined as systolic blood pressure (SBP) of 140 mm Hg or greater, diastolic blood pressure (DBP) of 90 mm Hg or greater or taking antihypertensive medication (The sixth report, 1997). The seventh report of the Joint National Committee made some changes in the classifications of hypertension as in the following (table 2.1).

Table 2.1: classifications of blood pressure for adults aged ≥ 18 years

Blood pressure classification	Systolic blood pressure	Diastolic blood pressure
Normal	< 120 and	<80
Pre-hypertension	120-139 or	80-90
Stage 1 hypertension	140-159 or	90-99
Stage 2 hypertension	>160 or	≥ 100

The European classification of blood pressure is provided by the European society of hypertension and the society of Cardiology as shown in (Table 2.2).

Table 2.2: classification of blood pressure for adults

Category	Systolic blood pressure(mmHg)	Diastolic blood pressure(mmHg)
Optimal	<120	<80
Normal	120-129	80-84
High normal	130-139	85-89
Grade1 hypertension	140-159	90-99
Grade2 hypertension	160-179	100-109
Grade3 hypertension	≥ 180	≥ 110
Isolated systolic hypertension	≥ 140	<90

2.2.2. Causes of hypertension:

Hypertension is divided into two types. Primary or essential hypertension results from deregulation of normal homeostatic control of blood pressure mechanism in the absence of known causes and represents 95% of all cases of hypertension.

Secondary hypertension results from a disorder of the body such as renal dysfunction or endocrine problems and represents <5%, both systolic and diastolic raised.

Systolic hypertension results from increased cardiac output, rigidity of aorta, and iatrogenic hypertension.

2.2.3 Prevalence of hypertension:

The overall prevalence of hypertension was 27.6%, with a higher percentage among men (29.2 vs. 26.4%) among Palestinian adult aged 25 years and over. Hypertension increased with age in both men and women, prevalence of hypertension was slightly higher in urban than in rural areas(Khdour, Shaeen, Jarab& Al-shahed, 2013). In Gaza strip, the prevalence rate of hypertension was 17% (Abed & Abu-Haddaf, 2013).

The prevalence of hypertension in the United States according to Census Bureau in 2007-2008 was 28-30 % in 18 year olds and older. Obesity was the major cause of this high percentage. In Canada, the percentage was 28% and in the European countries the percentage increased to 44 % (Sung, Burt, Louis & Carroll, 2012).

According to the UNRWA annual health report in 2011, the prevalence of diagnosed hypertension among the served population 40 years of age or older was 17.5 % in all UNRWA

fields which depicts an increase compared to 2010 when percentage was a slightly lower 17.3%. The highest rate was reported in the Gaza Strip where the percentage went as high as 19.2% followed by Lebanon with a percentage of 19.0%, Syria at 16.9 %, the West Bank at 17.3%,and finally Jordan at 16.3%. The above data is based on the refugees who attended the UNRWA clinics (The annual report," 2012).

2.2.4 Complication of hypertension:

There are many complications developed because of hypertension involving cardiovascular, cerebrovascular, renal and ocular systems if the disease isn't treated in the proper way.

Cardiovascular disease

High blood pressure can cause many different diseases of the heart and blood vessels. These diseases are medically known as cardiovascular diseases including: Stroke, which occurs when the blood supply to part of the brain is cut off, heart attack, which happens when the supply of blood to the heart is suddenly blocked, embolism, which occurs when a blood clot or air bubble blocks the flow of blood in vessel, and aneurism, which occurs when a blood vessel wall bursts causing internal bleeding(Cardiovascular diseases, 2013).

Complications affecting the heart

Hypertensive heart disease is the result of structural and functional adaptations leading to left ventricular hypertrophy, diastolic dysfunction, and abnormalities of blood flow due to atherosclerotic coronary artery disease and micro-vascular disease and cardiac arrhythmias. Individuals with left ventricular hypertrophy are at risk for stroke and sudden death(Cardiovascular diseases, 2013).

Complications affecting the brain

Hypertension is an important risk factor for brain infraction and haemorrhage. Approximately 85% of strokes are due to infraction, and the remainder are due to haemorrhage. The incidences of stroke rise progressively with increasing blood pressure levels, particularly systolic blood pressure in individuals > 65 years. Treatment of hypertension decreases the incidences of both ischemic and haemorrhage strokes (Cardiovascular diseases, 2013).

Complications affecting the eye

Hypertension retinopathy is a condition characterized by a spectrum of retinal signs in people with elevated blood pressure. When blood pressure is elevated, circulation undergoes serious pathophysiological changes. Clinically, the vasoconstrictive stage is the initial stage of narrowing retinal arterioles followed by the sclerotic stage of more severe and more narrowing of the arterial and venular junctions. This is followed by the exudative stage in which there is an exudation of blood and lipids and retinal ischemia

Complication affecting the kidneys:]

Hypertension is a risk factor for renal injury;renal risk is more closely related to systolic than to diastolic pressure. High blood pressure can also damage the small blood vessels in the kidneys and stop them from working properly. This can cause a number of symptoms, including: tiredness, swollen ankles due to water retention, shortness of breath, blood in urine and itching skin.

2.2.5 Treatment of hypertension:

All individuals with blood pressure at or above 160/100 mm Hg, or a lesser degree of raised blood pressure with target organ damage should have drug treatment and specific lifestyle modification advice to lower their blood pressure and consequently lower their risk of cardiovascular disease.

Individuals with persistent blood pressure \geq 130/80 should be given one of the following drugs to reduce blood pressure and lower the risk of cardiovascular disease: thiazide like-diuretic, ACE inhibitor, calcium channel blocker, and beta-blocker. This is recommended the first line therapy.

Individuals with persistent blood pressure \geq 140/90 mmHg who are unable to lower blood pressure through lifestyle strategies with professional assistance within 4-6 months should be given one of the following drugs to reduce blood pressure and lower the risk of cardiovascular disease: thiazide like diuretic, ACE inhibitor, calcium channel blocker, and beta-blocker.

Individuals with persistent blood pressure \geq 140/90 mmHg should continue lifestyle strategies to lower blood pressure and reduce cardiovascular risk and be reassessed annually depending on clinical bases and resource availability.

2.3 Compliance

When a patient adheres to a prescribed medical regimen, he is said to be compliant. Webster's dictionary defines compliance as "acquiescence to a wish, request, or demand" or "a disposition or tendency to yield to the will of others." Thus, compliant behavior may be defined as a class of behaviors resulting from a specific set of cues and consequences. Some of these cues may be related to a request by a physical therapist while others relate to physical symptoms, time, and occasion e.g., patient takes prescribed medication or follows prescribed diet. The consequences may be the relief of symptoms such as lessened angina symptoms, a sense of well-being, personal satisfaction such as achieving weight loss or fitness goals, or avoidance of disease

resulting in a lower morbidity or mortality rate. Although behaviors may look alike, a cardiac patient who exercises is termed compliant if the type, frequency, intensity, and duration criteria are appropriate for the level of recovery and physical capabilities of that patient. Running five miles two weeks after a massive anterior myocardial infarction is not compliant behavior. Training at 80% to 90% of the low level exercise test heart rate in an ECG-monitored rehabilitation program would be compliant behavior for this patient. Thus, compliance reflects an action in the present that is chosen to benefit the future (Randolph, 1985).

J. Urquhart at the European heart of hypertension defined compliance as “the extent to correspondence” which the patient's actual history of drug administration corresponds to the prescribed regimen(Urquhart, 1996).

This definition includes both quantity and timing of doses. Thus, this definition puts the measurement of compliance into terms that allow a pharmacometric interpretation (Urquhart, 1996).

WHO defines adherence as the extent to which a person’s behaviour, taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider. (Sabaté, 2003) Beyond that definition, adherence can be understood in three categories

1. Initiation: when the patient takes the first dose of a prescribed medication
2. Execution: the extent to which a patient’s actual dosing corresponds to the prescribed dosing regimen from initiation until the last dose

3. Discontinuation: when the patient stops taking the prescribed medication for whatever reason(s) (Sabaté, 2003).

Researchers have used the terms compliance and persistence amongst others in the past, but the term adherence is now widely accepted (Ascertaining barriers for, 2012).

2.3.1 Factors affecting compliance:

According to WHO publications about adherence to long term therapy, adherence is a multidimensional phenomenon determined by five dimensions: social / economic factors, health system factors, therapy-related factors, condition-related factors, and patient-related factors. The published literature suggests that people are more accurate in reporting non-adherence when asked simple questions about recent behaviour (Sabaté, 2003).

Social and economic factors

Low socioeconomic status has been found as an important and independent predictor of adherence. In developing countries, the most important include the demand to their initial requirements such as the needs of children. Poor socioeconomic status, poverty, illiteracy, low level of education, unemployment, lack of effective social support networks, unstable living conditions, proximity to treatment centre, high cost of transport, high cost of medication, changing environmental situations, culture and beliefs about illness and treatment, and family dysfunction are reported to have significant effect on compliance (Sabaté, 2003).

Gender

A study done in Ethiopia (2012) found that there was a significant association between sex and compliance level; men were found to be less adherent than women. This finding is similar to the

finding of a study done in India where men had almost threefold increase in risk of non-adherence compared to women(DessieAmbaw, AsresAlemie, Solomon & BirhanuMengesha, 2012).

In Finland, a study done about compliance found that 14% of the males and 13% females were reported non-compliance with anti-hypertensive medication, the prevalence rates of reported non-compliance for men were as follows 17% (55 years), 18% (55-64years), 9% (65-74years) and 13% (75years). The respective prevalence rates for women were 15%, 17%, 13% and 19% ((Jokisalo, Kumpusalo, Enlund, Halonen&Takala, 2002).

Another study found that compliance appears to be similar among men and women(O'Hanrahan& O'Malley, 1981).

Nationally, a study about the rate of compliance among patients with Diabetes and Hypertension in North Palestine was done by Waleed Sweileh and others from Al-Najah University. The results show that there is no significant relationship between gender and the rate of compliance based on the contingency test results (Sweileh, Aker & Hamooz, 2005).

In a study done about compliance with anti-hypertensive treatment among the patients attending the PHC clinics in Hebron, Mohammad Wridat from Al-Quds University measures compliance as well. In his study, males were non-compliant 1.591 times more than females(wridat, 2012).

A study was done by Sa'ed H. Zyoyd from Al Najah University and others about the health-related quality of life associated with treatment adherence in patients with hypertension. A cross-sectional study design was used to address the research goals, and the study was conducted in the outpatients' clinics at Al-Makhfyah Primary Health Care Clinic and at Alwatani Hospital in Nablus, Palestine. A convenience sample of 410 hypertensive outpatients was identified between

July and October 2012. In this study, the female gender was associated with a higher Morisky eight-item Medication Adherence Scale (MMAS) score (Zyoud, Al-Jabi , Waleed M, Aysha H, Hanan M , Hayat A , Mohammad A &Rahmat , 2013).

Age

Many elderly patients have chronic diseases and require complex long-term therapy treatment, so compliance to treatment is essential to improve the wellness of those patients, the failure to adhere to the recommended treatment has been found to increase the likelihood of treatment failure and unnecessary complications like disability and early death. Poor adherence or compliance affects all age groups, and the prevalence of cognitive and functional impairments in elderly patients increases their risk of poor adherence (Sabaté, 2003).

According to (WHO 2003a:29) elderly patients tend to have poor compliance because of memory loss and reduction in functional capabilities such as eyesight loss and the decreased ability of the hands to do activities such as bottle opening.

Sa'ed H. Zyoyd's study revealed that patients over the age of 68 years had a lower median MMAS score than those less than 68 years (Zyoud, Al-Jabi , Waleed M, Aysha H, Hanan M , Hayat A , Mohammad A &Rahmat , 2013).

Education

Socioeconomic factors such as illiteracy are risk factors of poor adherence (Sabaté, 2003)another study signifies that non-compliance was less prevalent among the more highly educated than among the less educated ((Jokisalo, Kumpusalo, Enlund, Halonen&Takala, 2002).

In Japan, a study done about compliance showed the compliance rate was significantly higher in patients who graduated from university or college than in patients who did not (Mizuno, Fujimoto, Uesugi, Danno, Maeda, Kanno, Matsumura & Fujimoto, 2002).

Nationally, Wridate's thesis indicates that education didn't affect compliance with treatment regimen. (Wridat, 2012) Sa'ed H. Zyoyd's study found that the MMAS score increased as the educational level of patients increased. (Zyoud, Al-Jabi, Waleed M, Aysha H, Hanan M, Hayat A, Mohammad A & Rahmat, 2013).

Employment

A socioeconomic factor such as unemployment is a risk factor of poor adherence (Sabaté, 2003). The compliance rate was studied in a research paper about the influence of living style on taking anti-hypertensive agents in patients. The compliance rate for patients with essential hypertension was significantly lower in patients with an occupation than in those who were unemployed (Mizuno, Fujimoto, Uesugi, Danno, Maeda, Kanno, Matsumura & Fujimoto, 2008).

In patients with an occupation, the compliance rate was significantly lower in patients engaged in physical labour than in patients engaged in office work and was significantly lower in patients working for a shifted time during the day than in patients working for a fixed time (Mizuno, Fujimoto, Uesugi, Danno, Maeda, Kanno, Matsumura & Fujimoto, 2008).

Marital status

The World Health Organization issued a report about adherence to therapy of long term diseases; one of these diseases was hypertension. The report reviewed many studies and summarizes the factors affecting adherence. The report showed that two important factors contributing to poor

adherence were the silent nature of the disease (asymptomatic) and the longevity of the disease. Other factors or determinants that may be related to compliance are: demographic factors such as age, gender, and education, the patient's understanding and perception of hypertension; the relationships between patients and health care professionals; health systems influences and complex antihypertensive drug regimens(Sabaté, 2003).

Nationally, Wridate's thesis indicates that marital status didn't affect compliance with a treatment regimen(wridat, 2012).

Duration of illness

In Japan, a study done about compliance showed the compliance rate was not different between patients with duration of ≥ 10 years and those with that of <10 years. (Mizuno,Fujimoto, Uesugi, Danno, Maeda, Kanno, Matsumura & Fujimoto, 2008).

A study done in Turkey found that the patients suffering from hypertension for 11 years or more generally took their medicine as prescribed, but the difference between groups on this factor was insignificant(Karakurt&Kasikci, 2012).In Finland, a study about compliance of treatment with hypertensive drugs showed that the duration of illness (<5 years, 5-9, ≥ 10 years) was non-significant (Jokisalo, Kumpusalo, Enlund, Halonen&Takala, 2002).

Nationally, Wridate's thesis indicates that the patients with 10-20 years duration of illness were less compliant than those with <10 years (wridat, 2012).

Number of medication

In a review of WHO studies, mono-therapies and fewer changes in antihypertensive medications (less treatment turbulence) have all been associated with better adherence (Sabaté, 2003).

In the Japanese study, the compliance rate was significantly lower in patients taking a twice or more a day regimen than in patients taking medications once a day (Mizuno, Fujimoto, Uesugi, Danno, Maeda, Kanno, Matsumura & Fujimoto, 2008).

In Finland, the study showed non-compliance was less prevalent in the group with two drugs than in the one with one drug (Jokisalo, Kumpusalo, Enlund, Halonen & Takala, 2002).

Wridat's thesis indicates that the patients who took two drugs were less compliant than those who were taking only one drug, and those who were taking three drugs were less compliant than those who were taking only one drug (Wridat, 2012).

Sa'ed H. Zyoyd's study found that the MMAS score decreased as the total number of medications increased (Zyoud, Al-Jabi, Waleed M, Aysha H, Hanan M, Hayat A, Mohammad A & Rahmat, 2013).

Doses of medication

The WHO report indicates that simple dosing schedules have positive effects on adherence, and fewer daily doses of antihypertensive therapies have all been associated with better adherence (Sabaté, 2003).

In the Japanese study, compliance rates were significantly lower in patients taking a twice or more a day regimen than in patients taking medications only once a day (Mizuno, Fujimoto, Uesugi, Danno, Maeda, Kanno, Matsumura & Fujimoto, 2008).

In A Hashmi study, an inverse relationship was observed between adherence and number of pills prescribed. Patients on mono-therapy had a mean adherence of 79% compared to 90% for those on three drugs or more. A meta-analysis of eight studies reports that the average adherence for

once-daily dosing was significantly higher than for multiple daily dosing, 91.4% vs 83.2% respectively (Hashmi, Afridi, Abbas & Sajwani, 2007).

Daily dosing in Wridate's study was not significant and didn't affect the compliance of the patients with their treatment regimen (wridat, 2012).

Sa'ed H. Zyoyd's study revealed the low significance of MMAS score in participants receiving combination therapy as hypertension treatment (Zyoyd, Al-Jabi, Waleed M, Aysha H, Hanan M, Hayat A, Mohammad A & Rahmat, 2013).

Health care system related factors

With regards to the WHO report, the factors related to health care provision such as the lack of knowledge and training for health care providers on managing chronic diseases, inadequate relationships between health care provider and patient, lack of knowledge, inadequate time for consultations, and lack of incentives and feedback on performance have negative effects on adherence for hypertension treatment while good relationships between patients and physicians have positive effects on adherence to hypertension treatment (Sabaté, 2003).

A study was conducted in Finland to study the association of factors related to the health care system, and the patients self-reported about non-compliance with medication in primary health care. 88% of the patients reported having one or more perceived health care system-related problems ((Jokisalo, Kumpusalo, Enlund, Halonen & Takala, 2002).

The proportion of non-compliant patients increased significantly along with the increasing number of perceived health care system-related problems from 5% to 24% while the proportion of non-compliance in patient-related problems increased from 5% to 21%. Those with a high

level of perceived health-care related problems were almost four times more likely to be non-compliant, and those with a high level of patient-related problems were two times more non-compliant ((Jokisalo, Kumpusalo, Enlund, Halonen&Takala, 2002).

Locally, Wridate's thesis displays that the patients number of visits for follow up and drug prescription was significantly tied with compliance; patients who visit their doctors every three months were 2.886 less compliant when compared to those who visited the doctor regularly every month(wridat, 2012).

Therapy related factors:

WHO reports indicate that mono-therapy with simple dosing schedules, less frequent doses, fewer changes in anti-hypertensive medications, and newer classes of drugs such as angiotensin II antagonists, angiotensin converting enzyme inhibitors, and calcium channel blockers have positive effects on adherence to hypertension treatment while complex treatment regimen, duration of treatment, low drug tolerability, and adverse effects of treatment have negative effects on adherence to hypertension treatment (Sabaté, 2003).

In the Japanese study, the compliance rate was lower in patients taking two or more kinds of antihypertensive agents than patients taking a single kind, but it was not significant. Compliance rates were not different among kinds of anti-hypertensive agents. When patients were divided into three groups according to the level of satisfaction with the present treatment with antihypertensive agents,satisfied, dissatisfied, and neither, the compliance rate was lowest in patients with dissatisfaction and highest in patients with satisfaction (Mizuno, Fujimoto, Uesugi, Danno, Maeda, Kanno, Matsumura & Fujimoto, 2008).

Condition or disease related factors:

WHO reports showed that understanding and perceptions about hypertension have positive effects on adherence to hypertension treatment(Sabaté, 2003).

In a study done about factors associated with adherence to anti-hypertensive treatment in Pakistan in 2007 by Hashmi and others, the adherence rates were calculated as "pills taken over a specific period of time, divided by pills prescribed for that specific period of time." The study concludes that the overall level of awareness about hypertension and its treatment was very low, and a very small proportion of patients were aware of the risk factors for hypertension. An even smaller proportion knew about the complications. Greater awareness was associated with higher adherence (Hashmi, Afridi, Abbas &Sajwani, 2007).

Patients related factors:

WHO reports showed that perception of the health risk related to the disease, active participation in monitoring, and participation in management of the disease all have positive effects on adherence to hypertension treatment. On the other hand, inadequate knowledge and skill in managing the disease symptoms and treatment, no awareness of the costs and benefits of treatment, and non-acceptance of monitoring all have negative effects on adherence to hypertension treatment (Sabaté, 2003).

A study conducted in Finland to assess the association of patient related problems with compliance revealed that 92% have patient-related problems. The proportion of non-compliance in patient-related problems increased from 5% to 21% compared to those with a high level of perceived health-care related problems.

Locally, Wridate's thesis displays that the patient's perception of hypertension as a serious problem revealed an overall significant effect on the blood pressure treatment adherence. Those who answered that hypertension is sometimes or rarely a serious problem were less compliant than those who considered hypertension as always a serious condition(Sweileh, Aker & Hamooz, 2005).

The factors that affected HBM are the perception of susceptibility, perception of the severity of hypertension, perception of benefits, perception of barriers, modifying variables, self-efficacy, and cues to action. All of which will be fully discussed in chapter three in the conceptual frame work of the model.

2.3.2 Measuring Compliance:

In order to manage the patient's compliance to the hypertension treatment, compliance should be measured accurately and effectively. The following methods could be used to measure compliance.

Monitoring Attendance

Monitoring attendance at appointments is critical because up to 50% of hypertensive patients drop out of care within 1 year of beginning. Because many primary health care providers do not follow up appointments of the patient's appointment attendance is not evidence of a patient's compliance. However, the studies show about one-third of patients who remain in care fail to follow the prescribed treatment (Haynes, 1982).

Clinical Judgment

Clinical judgement is the most common method of assessing medication compliance. It's attractive to clinicians and easily applied, but clinicians cannot reliably predict the compliance of their patients because they depend on subjective impressions in monitoring compliance (Haynes, 1982).

Patient Self-Reports

Patients tend to overestimate the amount of medication they are taking. About half of non-compliant patients will admit missing at least some medication, and the ease with which this information can be obtained makes it very valuable. It is one of the few ways that can distinguish between the pattern and the quantity of the medical quantity consumed(Haynes, 1982).

Pill Counts

Pill count's is a quantitative estimation of compliance over a period of time. It is reliable if it is done at the patient's home, but it is not practical.Pill counts give higher estimates of compliance than biological essays and lower compliance levels than patient self-reports (Haynes, 1982).

Drug Level Measurement

Drug level measurement can be useful for drugs that have a sufficiently long half-life; however, drug level assessments are not routinely available for anti-hypertensive drugs.(28)

Biological Effects Assessment

The biological effects of drugs have not been found to correlate well with compliance(Haynes, 1982).

Patient Reactivity

Reactivity occurs if patients become aware of the purpose of the assessment. In this case, they may change their compliance in a favourable direction which seems to be a clinically useful phenomenon (Haynes, 1982).

2.4 Summary:

In this chapter, hypertension and its different definitions,, causes, treatment complications, prevalence of hypertension and its definitions were all discussed as well as the factors related to compliance with regards to HBM. Social and economic factors such as gender, age, education, marital status, duration of illness, number of medication, doses of medication, health care system related factors, therapy related factors, Condition or disease related factors and patients related factors were all discussed as well.

The factors that affected HBM were the perception of susceptibility, perception of the severity of hypertension, perception of benefits, perception of barriers, modifying variables, self-efficacy, Cues to action, and the method of measuring compliance.

Chapter Three

Conceptual Framework

3.1 Introduction

In this chapter, we will discuss the models related to explaining health behaviors such as compliance to treatment. We will focus on the health belief model, which is used in this study as a conceptual framework, its origin development, components and the ethical considerations related to compliance behavior.

3.2 Theories of compliance

Educational Model

The basis of the educational model is that the patients lack sufficient knowledge of their illness and treatment, but the studies ("Management of patient," 1982) show that this is more suitable for short-term treatments, less than 2 weeks in duration, and, therefore, has very limited value for chronic disease regimens.

Emotional Drive Model

The Emotional Drive Model is a mixture of the health belief and educational model. In order to achieve compliance, the patients receive information and knowledge about the illness

(educational model) and threat messages meant to arouse fear in the patient about the consequences of non-adherence to treatment. Most of the studies have shown that this model effects short-term compliance more than long-term compliance ("Management of patient," 1982).

Behavioral Learning Model

The Behavioral Learning Model explains the compliance depending on the Operant ("Management of patient," 1982) learning theory by Skinner which states that behavior is solely the result of environmental cues and rewards. First, this model holds that the individual's interpretation of the environment determines what is reinforcing and what is not. Second, it uses modeling to teach people how and when to respond without rewards for performing the response ("Management of patient," 1982).

Self-Regulation Model

The Self-Regulation Model describes the role and method of an individual acting with health advice. 1) Extracting information from the environment.

2) Generating a representation of the illness' danger to oneself.

3) Planning and acting, that involves imagining response alternatives to deal with the problem and taking selected actions to achieve specific effects.

4) Monitoring how one's coping reactions affect the problem and oneself (Management of patient, 1982).

Health Belief Model (motivational model)

The Health Belief Model (Figure 3.1) is the most common "motivational model" of compliance.

It holds that an individual's cooperation with health advice depends on the extent of the person's perception and susceptibility to the seriousness of the disease, treatment efficacy, and how to

overcome barriers to compliance. Cues to action are added to the model to study the influence of external factors.

This model has predictive value for at least some preventive and short-term therapeutic health actions, but the magnitude of its predictive value is modest at best. Communications that influence health attitudes may have no observable effect on compliance which makes the model of less interest from a clinical perspective ("Management of patient," 1982).

The Health Belief Model (HBM) was used in this study as a theoretical framework. The questionnaire and the interpretation and discussion were deepened on this model and it served as the conceptual framework of this study.

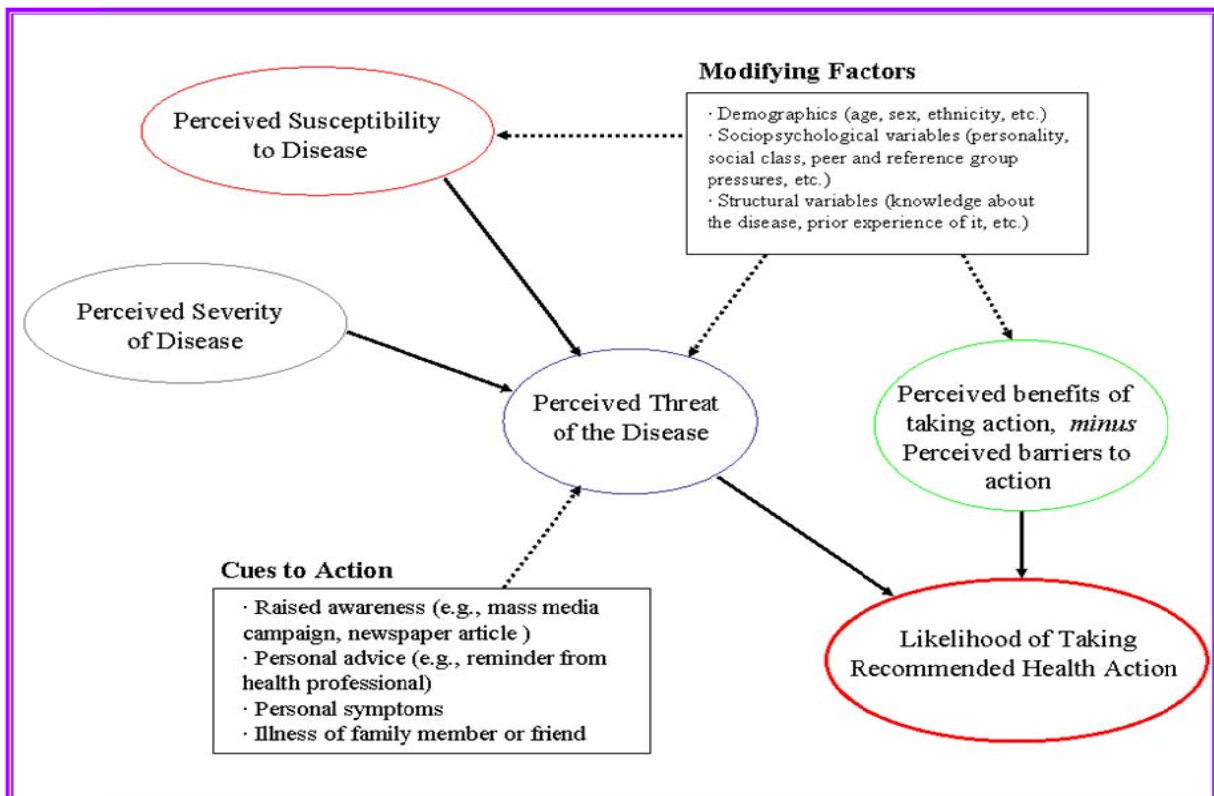


Figure 3.1 Health Belief Model

3.3 History and origin of the Health Belief Model

HBM was developed in the 1950s by social psychologists to explain the failure of the tuberculosis screening program in the United States. Becker modified this model in 1974 to predict participation in health detection and prevention programs (Samuel, Gangne&kasper, 1994).

The four main perceptions of the HBM are the perception of susceptibility (risk), perception of severity, perception of benefits, and perception of barriers. The model was modified in 1988 to include self-efficacy and cues to action.

Becker explains that for a patient to take an action to prevent a disease, that patient must believe that they are susceptible to a that specific disease, believe in the serious consequences of the disease, believe that the actions taken have benefit and believe that the barriers involved with making the change are not too great and can be successfully overcome(Samuel, Gangne&kasper, 1994).

3.3.1 Components of the conceptual model:

Health behaviors are influenced by a person's desire to avoid illness or to get well and by their confidence that the recommended action will achieve this affect. The person's perception influences their behaviors. This approach associates health behavior and demographic factors such as social class, ethnicity, sex, age.

Description

In HBM, the likelihood that a person will follow a preventive behavior is influenced by their subjective weighing of the costs and benefits of the action.

Perception of susceptibility

A patient's perception of susceptibility refers to one's subjective perception of the risk of contracting a condition (K. Janz & Marshall, 1984).

Individuals vary widely in their feelings of personal vulnerability to a condition such as hypertension or the complications of uncontrolled hypertension such as heart attack or kidney failure, ocular complications or stroke. Since hypertension is asymptomatic disease, patients must believe that they are susceptible to develop the disease and its complications. This perception depends on the knowledge of the nature of the disease and the risk associated with compliance to treatment. In regards to the HBM, the patients who feel susceptible to hypertension and its complications would likely to be more compliant to their treatment than those who do not hold this belief.

Perception of severity of hypertension:

The perception of severity of hypertension is the patient's feelings concerning the seriousness of contracting an illness or of leaving it untreated. It also varies between person to person. This dimension includes both medical consequences (e.g., death, disability, and pain) and social consequences (e.g., effects of disease on work, family, life, and social relations) (K. Janz & Marshall, 1984). According to the HBM, persons who perceive hypertension to be a serious disease would be more compliant with their medication treatment and lifestyle modifications than those who don't hold this perception.

The individual perceptions of the HBM are the perception of severity and the perception of susceptibility which combined to make the perception of threat, or “the anticipation of harm that is based on the cognitive appraisal of an event or cue that is capable of eliciting the individual’s stress response. This perception is a cognitive component and depends on information. It doesn’t determine how the person will act but creates pressure to act and is influenced by the balance between the perceived efficacy and the cost of alternative course of action. Persons who believe that they are not susceptible to hypertension or deny the existence of the disease may not see the need to ingest their medications as prescribed or change their lifestyle.

Perception of benefits

Perception of benefits is the person’s opinion of the value or usefulness of a new behavior in decreasing the risk value of developing a disease (Samuel, Gangne&kasper, 1994).

Assessments of perceived benefits associated with the behavior have been reported to increase the explanatory power of the model. Rosenstock said that perception of threat may encourage the persons to take action depending on the benefits of this action (effectiveness of the behavior in reducing the threat of illness (Samuel, Gangne&kasper, 1994).

Perception of barriers

Perception of barriers refers to the obstacles or negative outcomes of treatment such as expense, pain, or inconvenience (Samuel, Gangne&kasper, 1994). In order to adopt a new behavior the patient has to overcome those obstacles or barriers and he has to believe that benefits of the new behavior outweigh the consequences of the old behavior. Perception of barriers is the most significant factor in determining behavior change (Samuel, Gangne&kasper, 1994).

Modifying variables

Self-efficacy

Self-efficacy is the belief in one's own ability to do something; in general, no one tries to do something new unless he or she believes that the new behavior is useful (perceived benefits), and also that he or she is capable of doing the new behavior (perceived barriers) (Samuel, Gangne & kasper, 1994).

Cues to action

Cues to action are events, people, or things that move people to change their behavior such as an illness of a family member, media reports, mass media campaigns, advice from others, reminder postcards from health provider, or health warning labels on products (Samuel, Gangne & kasper, 1994).

People must feel threatened by their current behavioral patterns (perceived susceptibility and severity) and believe that change of a specific kind will be beneficial by resulting in a valued outcome at an acceptable cost. They must also feel that they themselves are competent (self-efficacy) to implement that change (Samuel, Gangne & kasper, 1994).

Modifying factors influence individual's perceptions and compliance behavior. Various modifying factors include socio-demographic, socio-psychological and structural factors. All of which influence health behavior. Another modifying factors the social support of the family and friends that help patients manage their treatments, both social learning and self-regulation theories point to a number of complex ways that social support can enhance compliance (Haynes, 1982).

Clinician –Patient Relationship

Research on clinician-patient relationships are classified into four categories. The first category uses educational techniques to inform patients about their prescribed treatment. Studies show that greater provider explicitness regarding needed patient behaviors is associated with better patient follow-through (Haynes, 1982).

The second category of study addresses the extent to which clinicians and patients share the same expectations about their interactions and the effect of this on subsequent patient compliance (Haynes, 1982).

The third category includes investigations into patients' acceptance of responsibility. Compliance is better among patients who feel that they are actively involved in their own care (Haynes, 1982).

The last category concerns the affective tone of the patient-clinician encounter. Studies observed directly support the concept that approachability and friendliness of the clinician to the patient are positively correlated with compliance (Haynes, 1982).

3.3.2 Ethical Concerns in Applying Compliance Strategies:

While attempting to improve compliance in the medical practice, the following ethical issues should be considered. First, the diagnosis must be correct. Secondly, the efficacy of therapy should be examined. Subsequently, the patient must be an informed and willing partner in any attempts to alter his compliance behavior. Finally, the strategy employed to improve compliance must also be advantageous (Haynes, 1982).

Chapter four

Methodology

4.1 Introduction

This study aims to assess the factors affecting compliance to ant hypertension drug treatment and lifestyle modifications among patients attending primary health care clinics in the Bethlehem district. In this chapter, the research methodology including the study design, data collection tools, and data analysis will be presented. .

4.2 Study design

This study is quantitative (cross sectional) which is easily applicable and cost effective. This design was chosen to meet the objectives of the study to determine the factors that affect the compliance to hypertension treatment. It is a technique that enables the researcher to collect numerical data and answer the research question.

4.3 Study population

The study population is composed of the hypertension patients ages eighteen and over who are registered as hypertension patients and who have received curative and preventive health care

services for more than one year at Dehaishe UNRWA clinic, Bethlehem governmental clinic, and NGO's mobile clinic.

Eligibility

Members of the population who are included in the study

- diagnosed with hypertension.
- placed on treatment for at least one year prior to data collection.
- aged between 18 to 80 years.

Excluded Patients

- were too sick to be interviewed.
- could not give informed consent.
- couldn't reach the clinic because of serious diseases.
- Hypertensive patients with diabetes mellitus.
- were mentally unstable.

4.5 Sampling method

Systematic random sampling was used to select the participants from the three clinics. It's a way to select a probability – based sample from a directory or list. From the list, the researcher selected the starting point (kth) randomly and systematically picked every 4th subject until 300 subjects were gathered from all clinics.

Sampling interval (SI) = population list size (N) divided by a predetermined sample size (n).

$$K = 1100/300 = 3.6 = 4$$

The clinics which were included in the study include the following: Dehaishe clinic from UNRWA, Bethlehem health centre from governmental sector, and Al-Rbayah mobile clinic from the NGO's Medical Relief Society.

The three clinics were selected purposefully because the researcher believed them to be typical of the population he wished to study. Dehaishe clinic's hypertensive patients represent 439 subjects (165 male and 274 female), so it was easy to gather the exact number for the selected sample size.

Bethlehem government clinic contained nearly 300 patients. The number of patients who visited the Bethlehem governmental clinic before the separation of this clinic into three major clinics, Beit Sahour, Beit Jala, Al-Obadyeh, on February 2012 were 737 visitors while the number patients of who visited Bethlehem chronic clinic between January 2012-May 2012 was 246 visitors. However, the researcher selected a sample of 100 because the patients did not have a serial number and the exact number of the patients was not known.

At the NGO's mobile clinic, the researcher selected 100 patients. The total number of hypertensive patients was not known, so it is difficult to calculate the exact number of the sample size for the research at the NGO's mobile clinic.

4.6 Sample size

A representative systematic sample was used. The sample was calculated according to the known formula $n = \frac{N}{1+N(e)^2}$ after revising it with a statistical specialist, and after calculating the exact number of the patients at the specific clinics.

4.7 Study tool

A pre- used and standardized questionnaire was used to collect the data from the studying sample. The tool (prepared questionnaire) was borrowed from a South African study which had the same objectives. The South African study was conducted at South African University as a master thesis (Akpan Edo, T, 2009). The tool was adapted and translated before being reviewed by three PhD holders from the school of public health at Al-Quds University and two doctors from the UNRWA who were responsible for the non-communicable disease programs and held Master's degrees in public health. Their comments were taken into consideration.

A pilot study of 20 questionnaires was conducted at UNRWA clinic in order to test the questionnaire. After the pilot study, the question about ethnicity was excluded from the questionnaire, and a question about previous smoking was added.

The questionnaire consisted of ten sections including 114 items. The first section of biographical data consisted of 24 questions. Including demographic data such as age, gender, marital status, family monthly income, number of medication used per day, and number of skipped doses. The last part of this section referred to physiological measures such as weight, height, and blood pressure which were measured.

4.8 Data collection

The data was collected by an interviewer-administrated questionnaire which was conducted face to face by the researcher and by volunteers, students), who were trained to do administer the questionnaire. . All of these steps were completed after the patients signed the consent form and understood the aim of the study. In order to reduce bias, the questionnaire was administered by

trained students and not by the researcher in the UNRWA clinic because the researcher is an employee of that clinic. However, the researcher conducted the questionnaires in the MOH, and NGO's clinics. The response rate was 100%.

At the UNRWA and MOH clinics, the blood pressure was measured by qualified nurses using electronic devices which were calibrated by a specialist engineer. While at NGOs clinic, the device used to measure the blood pressure was the sphygmomanometer (mercury) because the electronic device was not available.

The weight and height of the respondents were taken by weighing and measuring using a weighing scale and height. The body mass indexes were calculated using the WHO prepared tables of BMI according to the following formula, BMI index = weight in kilograms / height squared in metres.

Study duration

UNRWA: from 11/04/2012 till 09/06/2012.

Government: from 12/5/2012 till 29/7/2012

NGO: from 05/11/2012 till 31/12/2012

Setting

Ministry of Health (MOH), UNRWA, NGOs, Palestinian Military Medical Services (PMMS) and private for profit are the main health providers of health services.

MOH carries the heaviest burden of the responsibilities of health services in Palestine.

In the West bank, there are 404 primary health care centers and 54 in the Gaza Strip.

The UNRWA currently runs 137 primary health care (PHC) centers and one hospital. In 2010, UNRWA medical officers in the PHC centers provided almost 10.4 million consultations, 101 consultations per physician per day (Global status report, 2010). UNRWA had 20 primary health care centers in eight refugee camps in the Gaza Strip and 41 centers in the West Bank (MOH report 2010).

The NGOs sector operates 206 primary health care centers and general clinics, 66 of them in the Gaza Strip. In the West Bank, they operate 140 primary health care centers where PMMS operate 23 primary health care centers and clinics, 7 of them in the Gaza Strip and 16 distributed through different districts in the West bank (MOH annual health report 2010).

The study was conducted in primary health care clinics including the Bethlehem Governmental clinic, UNRWA (Dehaishe clinic), and Al Rbayah mobile clinic run by the Palestinian Medical Relief Society.

UNRWA clinic (Dehaishe clinic) is one of the two UNRWA clinics in the Bethlehem district. The Dehaishe Camp's total population is almost 13,000 registered refugees.

The UNRWA clinic in the Dehaishe camp provides health services to the refugee population. One of these major services is the non-communicable disease programme. In this program, 899 patients are registered, 322 male and 577 female. The hypertensive patients represent 439 patients 165 male and 274 female, 433 of those patients are on medications and 6 of them are on lifestyle modification plans according to the clinic report at the end of 2010.

The NGOs Palestinian Medical Relief Society's mobile clinic's free program serves seven villages in the Bethlehem district. The biggest one is Al Rbayah and Shawawreh, but they also serve Jort Al Shamah, Rakhmah, Al-Uqban, Jub- Altheb, and Kesan. The daily program serves more than

seventy patients per day in each clinic. The mobile clinic does not keep separate files for hypertensive patients.

Bethlehem Governmental Health Clinic was chosen for this study as it is the primary health care server that provides health services for the non-communicable disease.

Bethlehem government clinic serves nearly 300 patients. 737 patients visited the Bethlehem Government clinic before the separation of the clinic into three major clinics (Beit Sahour, Beit Jala, and Al Obadyeh) in February 2012. 246 patients visited the Bethlehem chronic clinic between January 2012 and May 2012.

4.9 Ethical consideration

An official letter of approval was obtained from the director health officer of the West Bank and the field disease control officer to proceed in this research. An official letter from Al-Quds University was obtained and sent to the public health officer (MOH) and the chief health officer of the NGOs at Bethlehem. Each participant received a consent form that explained the study purpose and objectives

4.10 Data analysis

An Arabic version of the questionnaire was used to save time and to be clear to the participants; the questionnaire was distributed and collected by the researcher and other trained helpers. The structure of the interview consisted of ten sections; biographical data, compliance with lifestyle modification regimen, compliance with medication regimen, perception of severity, perception of risk, perception of benefits, perception of barriers, internal factors, health care provider factors, and cues to action. Cronbach (α) coefficient of all sections was 0.88.

Section A: Biographical data

Section A was composed of 24 items which reflected the demographical data (age, gender, marital status, smoking, duration of illness, education level, monthly income, number and dose of medication, body mass index (BMI) and other data.

Section B: compliance with the medication regimen

A 14-item section was used to measure compliance with the medication regimen. The questions used a 4- point Likert scale to measure the responses. The response options were always (4), frequently (3), rarely (2), never (1). Some questions were formulated in a negative format and the scoring was coded in reversed order for example "How often do forget to take your medicine?" was coded as follows: always(1), frequently(2), rarely(3) never(4)

The compliance score for each item was measured by the mean; a cut point of 3 divided the respondents into two groups compliant and non-compliant. Respondents with responses of 3 or more were categorized as compliant, and respondents with responses of less than 3 were categorized as non-compliant. This section had a total score of 14 to 56.

Section C: Compliance with the lifestyle modification regimen

An 11- item scale was used to measure compliance with the life style modification regimen by using 4- point Likert scale to measure the responses. The response options were always (4), frequently (3), rarely (2), never (1). Some questions were formulated in a negative format and the scoring was coded in reversed order for example (how often do eat a meal high in animal fat) was coded as follows always(1), frequently(2), rarely(3) never(4)

The compliance score for each item was measured by the mean; a cut point of 3 divided the respondents into two groups, compliant and non-compliant. Respondents with responses of 3 or more were categorized as compliant, and respondents with responses of less than 3 were categorized as non-compliant. The section had a total possible score of 11 to 44.

Section D: Perception of severity

A 4- item scale was used to measure the perception of severity of hypertension. A 4- point Likert scale was used to measure the responses. The response options were strongly agree(4),agree(3), disagree(2), strongly disagree(1). Some questions were formulated in a negative format and the scoring was coded in reversed order was coded as follows strongly agree(1),agree(2), disagree(3), strongly disagree(4)

The perception score for each item was measured by the mean. A cut point of 3 divided the respondent into two groups those having a high perception of severity with a score of 3 or more and those having a low perception of severity with a score of less than 3. The section had a total score range of 4 to 16.

Section E: Perception of risk

A 9- item scale was used to measure the perception of risk of hypertension that assessed the respondent's perception of having complications from hypertension. A 4-point Likert scale was used to measure the responses. The response options were strongly agree(4),agree(3), disagree(2), strongly disagree(1). The perception score for each item was measured by the mean, a cut point of 3 divided the respondents into two groups, those having a high perception of risk with a response of 3 or more and those having a low perception of risk with a response of less than 3. This section had a total score range of 9 to 36.

Section F: Perception of benefits

A 7- item scale was used to measure perception of benefits with anti- hypertension drug treatment. The responses were measured by using a 4-point Likret scale. The response options were extremely beneficial (4), beneficial (3), somewhat (2), not at all beneficial (1). The respondents with high perceptions of benefits would be more compliant to treatment than those with low perceptions of benefits. The perception score for each item was measured by the mean. A cut point of 3 divided the respondents into two groups, those who having a high perception of benefits with responses of 3 or more and those having a low perception of benefits with responses of less than 3 . The section had a total score range of 7 to 28.

Section G: Perception of barriers

A 7- item scale was used to measure the perception of barriers to anti- hypertension drug treatment. A 4-point Likret scale was used to measure the responses. The response options were high effect (4), medium effect (3), low effect (2), no effect (1), the barrier score for each item was obtained by calculating the mean. A cut point was 3 or more for those having a high perception of barriers and less than 3 for those having a low perception of barriers. This section had a total score range of 7 to 28.

Section H: internal factors

A 14 item section was used to measure the internal factors with anti-hypertension treatment, A 4- point Likret scale was used to measure the responses. The response options were strongly agree (4), agree (3), disagree (2), strongly disagree (1).

Question number 7 was calculated in reversed order; A cutoff point was set at 3. Respondents with 3 or more had high perceptions of internal factors while a low perception of internal factors had responses of less than three with the exception of question 7 which had a reverse scale in which respondents with responses of 3 or more had high perceptions of internal factors, and those respondents with responses of less than 3 had low perceptions of internal factors. The section had a total score range of 14 to 56.

Section I: Health care provider factors

A-12 item response was used to measure the health care provider factors that affect the compliance with medication and lifestyle modification regimen. A 4-point Likert scale was used to measure the responses. The response options were strongly agree (4), agree (3), disagree (2), strongly disagree (1). A cutoff point was set at 3. Respondents with responses of 3 or more had a high health care provider factor score, while a response of less than 3 had a low health care provider score with the exception of question 7 which had a reverse scale. The section had a total score range of 12 to 48.

Section J: Cues to action:

A-12 item response section was used to measure cues that motivate compliance to anti-hypertension treatment. A 4-point Likert scale was used to measure the responses. The response options were strongly agree (4), agree (3), disagree (2), strongly disagree (1).

A cutoff point was set at 3. Respondents with responses of 3 or more were determined to have high cues to action, while respondents with responses of less than 3 were determined to have low cues to action. The section had a total score range of 12 to 48.

4.11 Summary

The study used quantitative design in exploring the factors that affect compliance to anti-hypertension treatment by using pre used questionnaires. The researcher and the training helpers filled out the questionnaires face to face, and the data was analyzed by using version nineteen of the SPSS.

Chapter five

Research findings

5.1 Introduction

This quantitative descriptive-co relational study was conducted in the Bethlehem District at primary health care clinics (UNRWA, government, NGOs) using structured interviews of 300 respondents from the three clinics. The first section, biographical data, consisted of 24 questions on demographical data such as age, gender, marital status, smoking, duration of illness, education level, monthly income, number and dose of medication, body mass index (BMI) and other data. The information given was double checked with information from the patient's files.

5.2. Biographical Data

This section presents data about demographical data such as age, gender, educational status, marital status, employment status, duration of illness and physiological parameters of blood pressure, body mass index (weight (kg)/(Height in meter square)).

5.2.1 Gender of the respondent: N=300

The sample consists of 300 respondent, 103 male and 197 female (34.3%, 64%).100 respondent from each clinic, UNRWA, Government, NGO. The UNRWA sample was 36% male and64% female. The Government clinic sample was 31% male and 69% female. The NGO's clinic sample was 36% male 64% female as shown in the following Table (5.1).

Table 5.1: Sex of respondents

Sex	Total respondents%	UNRWA respondents %	Government respondents %	NGOs respondents%
Male	34.3%	36.0%	31.0%	36.0%
Female	65.7%	64.0%	69.0%	64.0%

5.2.2 Age of respondents:

Item A5 of the interview was about the age of the respondent as showed in table (5.2). The respondents were grouped into six categories for analysis. The majority of respondents from the UNRWA and government were from the age range 45-54 while the majority of respondents from the NGO were concentrated in the 55-64 age range. 97.7% of the respondent's from UNRWA, government, NGO, were aged 35-80as hypertension is mostly found in the adults.

Table 5.2: Age of respondents

Age	Total respondent%	UNRWA respondent %	Government respondent %	NGO respondent %
28-34	2.3%	3.0%	3.0%	1.0%
35-44	10.3%	8.0%	13.0%	10.0%
45-54	34.7%	49.0%	32.0%	23.0%
55-64	26.0%	22.0%	19.0%	37.0%
65-74	18.7%	9.0%	21.0%	26.0%
75-80	8.0%	9.0%	12.0%	3.0%

5.2.3 Marital status:

The marital status of the respondents is presented in the table below (5.3). The majority of all respondents, 77%, were married, followed by 18% of respondents who were widows. The majority of respondents for UNRWA, government, and NGOs are as follows respectively 81%, 70%, 80%.

Table 5.3: marital status of the respondents

Marital status	%Total respondents	UNRWA respondents	Government respondents	NGO respondents
Single	3.3%	1.0%	7.0%	2.0%
married	77.0%	81.0%	70.0%	80.0%
divorced	0.7%	0.0%	0.0%	2.0%
separated	1.0%	1.0%	0.0%	2.0%
widow	18.0%	17.0%	23.0%	14.0%

5.2.4 Educational status:

The majority of respondents table(5.4), 44%, had completed primary school, the majority of UNRWA and the government respondents completed primary school followed by secondary school, (42%, 46%, 44%) respectively.

Table 5.4: Level of education that have been completed

Educational status	Total respondent %	UNRWA respondent %	Government respondent %	NGO respondent %
No schooling	16.3%	10.0%	18.0%	21.0%
Just know reading	7.3%	5.0%	4.0%	13.0%
Primary school	44.0%	42.0%	46.0%	44.0%
Secondary school	20.0%	24.0%	19.0%	17.0%
diploma	5.7%	9.0%	8.0%	4.0%
Bachelors(BA)	6.3%	10.0%	1.0%	1.0%
Higher than BA	0.3%	0.0%	1.0%	0.0%

5.2.5 Employment status:

In this item the following table (5.5) represented the employment status of the respondent; the majority of them were un-employed (65%), most of them were females 56.7%.

Table 5.5: Employment status of the respondent

Employment status	Total respondents %		UNRWA respondents %		Government respondents%		NGO respondents %	
	Gender							
	M	F	M	F	M	F	M	F
Governmental employee	2.0%	3.3%	2.0%	5.0%	3.0%	5.0%	1.0%	0.0%
Non-governmental employee	26.0%	0.7%	2.0%	1.0%	1.0%	1.0%	5.0%	0.0%
Self employed	19.6%	4.3%	18.0%	7.0%	16.0%	1.0%	25.0%	5.0%
Retired	1.7%	0.7%	3.0%	2.0%	2.0%	0.0%	0.0%	0.0%
Un-employed	8.3%	56.7%	11.0%	49.0%	9.0%	62.0%	5.0%	59.0%

5.2.6 Monthly Income:

The majority, 69.6% of the average monthly income in shekels of the respondents was between 0-1999. 54% of UNRWA respondents' average monthly salary was between 0-1999. The majority, 74% of the governmental clinic's respondents' average monthly salary was between 0-1999, and the majority, 81% of the NGO's clinic's respondents' average monthly salary ranged between 0-1999.

Table 5.6: Average Monthly income

Monthly income in shekels	Total respondents%	UNRWA respondents%	Government respondent%	NGO respondent%
0-999	39.3	28.0	52.0	38.0
1000-1999	30.3	26.0	22.0	43.0
2000-2999	18.7%	26.0%	12.0%	18.0%
More than 3000	11.7%	20.0%	14.0%	1.0%

5.2.7 Blood pressure of respondent: (N=300)

Hypertension was defined as systolic blood pressure equal to or greater than 140 mm Hg or diastolic blood pressure equal to or greater than 90. The mean systolic blood pressure of total respondents for males was 139, and the mean diastolic was 82.2. For females, the mean systolic blood pressure was 133.6, and the mean diastolic was 79.7. For the UNRWA, the mean systolic blood pressure for males was 134.2, and the diastolic was 81.2. For females, the mean systolic blood pressure was 131.4, and the diastolic was 76.5. Government respondents showed that the systolic blood pressure for males and females was 139.8 and 129.43 respectively. The diastolic blood pressure for the government respondents was 81.5 for the males and 77.75 for the females. The NGO's mean systolic blood pressure was 145.1 for the males and 140.54 for the females. The diastolic blood pressure was 83.86 for the males and 84.81 for the females.

Table 5.7: Blood pressure of respondent: (N=300)

Blood pressure	Total respondents		UNRWA respondents		Government respondents		NGO respondents	
	M	F	M	F	M	F	M	F
Systolic blood pressure.	139	133.6	134.2	131.4	139.8	129.4	145.1	140.5
Diastolic blood pressure	82.2	79.7	81.2	76.5	81.5	77.78	83.86	84.81

5.2.8 Body mass index:

After measuring the weight in kilograms using a ground scale and then measuring the height in meters, tables of body mass index values were used to find the BMI of the patients. In table (5.8) 3.7 % of the total respondents' body mass indexes were a normal body weight. 26% were

overweight, and 70.3 % were obese, more than half of which were females. These results are interesting, since obesity plays an important role in blood pressure control.

Table 5.8: body mass index of respondents

BMI	Total Respondents		UNRWA Respondents		Government Respondents		NGOs Respondents	
	M	F	M	F	M	F	M	F
Normal body weight	1.7%	2.0%	2.0%	3.0%	2.0%	1.0%	1.0%	2.0%
Over weight	11.0%	15.0%	12.0%	11.0%	7.0%	12.0%	14.0%	22.0%
Obese	21.7%	48.6%	22.0%	50.0%	22.0%	56.0%	21.0%	40.0%

5.2.9 Duration of illness:

The majority, 57.3% of the respondents had been diagnosed with hypertension for five years or more. The UNRWA, Governmental, and NGO's respondents, 64%, 47%, 61%, had high blood pressure for five years or more showing that the majority of the respondents had been diagnosed with hypertension for five years or more.

Table 5.9: Duration of illness of the respondents

Duration of illness	Total respondent %	UNRWA respondent %	Government respondent %	NGO respondent %
More than 1 year	11.3	11	17	6
2 years and more	10.7	13	14	5
3 years and more	9.7	4	12	13
4 years and more	11	8	10	15
5 years and more	57.3	64	47	61

5.2.10 Reported health complications by respondent at time of the interview:

The total number of problems was 543 problems for the total respondents, 177 respondents have no complications (32.6%) as showed in table (5.10). The highest percentage of complications for the three sectors, UNRWA, Government, and NGO, was forswelling of the legs followed by heart problems. The patient's records were checked in order to check the validity of the patients' information while the governmental clinic's respondents' complications were checked through the doctors. However, the NGO's did not provide documented evidence about the respondents' complications because they do not keep separated files for hypertensive patients.

Table 5.10 Respondent's health complications at time of interview:

Health problems	Total respondent	UNRWA	Government	NGOs
None	32.6%	51.0%	28.8%	23.1%
Heart problems	11.6%	8.4%	11.4%	14.1%
Palpitation	7.4%	6.3%	8.5%	7.0%
Visual impairment	5.3%	3.5%	6.0%	6.0%
Swelling of the feet	7.9%	4.2%	8.5%	10.1%
Swelling of the legs	61.0%	3.5%	9.0%	5.0%
Angina	1.8%	2.0%	3.0%	1.0%
Kidney problems	2.4%	2.1%	3.0%	2.0%
Dyspnea on exertion	20.1%	16.0%	20.0%	23.1%
Dyspnea at rest	4.8%	3.5%	2.0%	8.5%
Paralysis	0.0%	0.0%	0.0%	0.0%
Total	100%	100%	100%	100%

5.3 Compliance with Anti-hypertension Drug Treatment

5.3.1 Number of medications which the total respondents were taking for hypertension:

The majority, 37.3 %, of respondents took one medication, 35.3%took two kinds, and the medical records of the patients at the UNRWA were checked for the type of medication in order to ascertain the validity of the reported data from the patients. The pharmacists were asked as well as an extra step of assurance. . At the government clinic the doctor and the nurse were asked to ensure the patients type of medicine regime, but at the NGO's clinic, the health workers and the doctors were asked to check the information.

Table 5.11: Number of medication taken for high blood pressure treatment

number of medication	Total respondent	UNRWA	Government	NGO
One	37.7%	24.0%	36.0%	53.0%
Two	35.3%	41.0%	33.0%	32.0%
Three	23.0%	31.0%	23.0%	15.0%
Four	2.7%	3.0%	5.0%	0.0%
More than four	0.7%	0.0%	2.0%	0.0%
No medication	0.7%	1.0%	1.0%	0.0%
total	100%	100%	100%	100%

5.3.2 Dosage of medications respondent were taking: (N=300)

The majority 48.7%, of the respondents took one dose, 43.7% took two doses and 0.7% of them didn't take any dose, all the respondents didn't take more than three doses.

Table 5.12: Dosage of medication taken per day

Dose of medication taken	Total respondent	UNRWA	Government	NGOs
One	48.7%	45.0%	49.0%	52.0%
Two	43.7%	49.0%	43.0%	39.0%
Three	6.7%	4.0%	7.0%	9.0%
Four	0.0%	0.0%	0.0%	0.0%
Five	0.0%	0.0%	0.0%	0.0%
More than five	0.3%	0.0%	0.0%	0.0%
Zero dose	0.7%	1.0%	1.0%	0.0%

5.3.3 Dosage skipped in the last three days:

On the question about the doses that were skipped during the last three days, the respondents divide into two groups. Those who didn't skip any dose of medication during the last three days were considered as compliant to the treatment and those who skipped one or more were considered as non-compliant. The majority, 69.3%, of the respondents didn't skip any doses, and 30.7% skipped one or more doses. 72% of the respondents at the UNRWA, 68% of the respondent's at the Government clinic, and 68% of the respondents at the NGO's clinic o didn't skip any doses while 28%, 32 percent, and 32%, respectively, skipped one dose or more.

Table 5.13: Dosage skipped in the last three days

Dose of medication skipped	Total respondent	UNRWA	Government	NGOs
Zero dose	69.3%	72.0%	68.0%	68.0%
One	17.0%	12.0%	16.0%	23.0%
Two	4.7%	6.0%	3.0%	5.0%
Three	5.3%	7.0%	5.0%	4.0%
Four	0.3%	0.0%	1.0%	0.0%
Five and more	3.3%	3.0%	7.0%	0.0%

5.3.4 Evidence of medication compliance in the last three appointments:

The patient's record shows no evidence about compliance to treatment in the three clinics, so it's difficult to compare our results with the recorded notes.

The first item in section B of the questionnaire asked about how often the respondent took their medication. The respondents separated into two groups. Those who took their medication always were considered compliant, and the others were considered non-compliant. This is because the hypertensive patient should take their medication on a daily basis. The majority of the respondents, 183 or 61%, always took their medication while the other, 117 or 39%, did not always take their medication. UNRWA, Government, NGOs, who took their medication on a daily basis ,61%, 54%, 68%,respectively, were compliant to their medication while the 39%, 46%, 32% who didn't taking their medication on daily basis were considered non-compliant.

Table 5.14 medication taking in daily basis

compliance	Total respondents%	UNRWA Respondents%	Government Respondents%	NGOs Respondents%
Compliant	61.0	61.0	54.0	68.0
Non-compliant	39.0	39.0	46.0	32.0

5.3.5 Compliance with clinic appointments and blood pressure monitoring:

In section B of the questionnaire item B13 asked how often the respondents showed up for clinic appointments as scheduled. The respondents were categorized into compliant and non-compliant groups based on their responses. The majority of respondents namely 87.3% were compliant with clinic appointments while 12.7% were non-compliant. The patients who were committed to their clinic appointments were considered to be compliant to their drug regimen treatment.

Honoring clinic appointments was considered to be an indicative variable of medication compliance.

The UNRWA respondents' clinic records were checked for their appointments. Most, 28.9%, of the respondents were coming on time while 4.4% didn't come on time. Each one had their patient's card which was used for the appointment system of every visit and also used to record their blood pressure.

Government and NGO's patients didn't have a patient card and there was not an appointment system being used. They visited the clinic only when their medication had run out. This meant 66.6% of respondents did not have a hypertension card.

Uncontrolled patients at the government clinic came every six months to visit a specialist doctor (internist) by appointment while there was not a specialist doctor at the NGO's clinics.

5.3.6 Compliance as measured on the compliance with medication regimen:

Section B of the questionnaire measured the compliance with antihypertensive drug treatment; descriptive statistics was used to measure the response on this scale. The majority of the respondents, 11.3%, stated that the main reason for not complying with their treatment regimen was failure to refill their prescriptions, forgetfulness (9.7%), carelessness (7.7%).

The majority of the respondents at the UNRWA clinic, 14.0%, stated that the main reason for not complying with their treatment regimen was failure to refill their prescriptions. The majority of the respondents at the Government clinic 15.0% stated that the main reason for not complying with their treatment regimen was because they felt better. The majority of the respondents at the

NGO clinic (10.0%) stated that the main reason for not complying with their treatment regimen was forgetfulness (Table 15.5).

Table 5.15: Reasons for non-compliance with anti-hypertension drug treatment of UNRWA, Government, NGOs and Total respondents (*No medication)

Reasons for not complying with medication	Agreement with reasons for not complying %				Disagreement with reason for non-complying %			
	UNRWA	Gov	NGO	Total	UNRWA	Gov	NGO	Total
Failure to refill your prescription	14	12	8	11	85*	87*	92	88
Forgetfulness	6	13	10	10	94	87	90	90
Carelessness	6	13	4	8	94	87	96	92
Because they are feeling better	5	15	0	7	95	85	100	93
Medication side effects	9	10	0	6	91	90	100	94
Fear of addiction	4	8	2	5	96	92	98	95
Believe that the medication are ineffective	5	7	1	4	95	93	99	96
Using of alternative remedies	3	7	0	3	97	93	100	97
Frequent change of medication type	2	5	0	2	98	95	100	98
Frequent change of medication dosage	1	3	0	1	99	97	100	99

Table 5.16 summarizes the values of central tendency on the compliance with the medication regimen scale of all respondents. As seen in Figure 5.1, the distribution was negatively skewed (distribution = -2.525). This indicates that most respondents scored high. Thus clustering of scores occurred towards the right which means that most of the respondents tended to be compliant with anti-hypertension medications. The mean score for this scale was 3.75 (SD = 0.37). Respondents with a mean score below 3 were considered non-compliant, and respondents with a mean score of 3 and above were considered compliant.

Table 5.16 summarizes the values of central tendency and dispersion on the compliance with the medication regimen scale of UNRWA, Government, NGOs respondents. As seen in table 5.16, the distribution was negatively skewed, this indicates that most respondents scored high; thus clustering of scores occurred towards the right which means that most of the respondents tended to be compliant with anti-hypertension medications. The mean score of UNRWA, Government, NGOs respondents was (3.69, 3.75, 3.87) respectively.

Table: 5.16 measures of total respondent's central tendency on the compliance with medication

Compliance with drug treatment	N	Mean	SD	Median	Range of scores	distribution	Interquartile range
Total	300	3.75	0.37	3.85	1.5-4.07	-2.525	0.36
UNRWA	100	3.69	0.34	3.78	1.5-4.0	-3.635	0.34
Government	100	3.69	0.48	3.85	2.07-4.07	-1.653	0.48
NGOs	100	3.87	0.36	3.92	2.93-4.07	-1.303	0.36

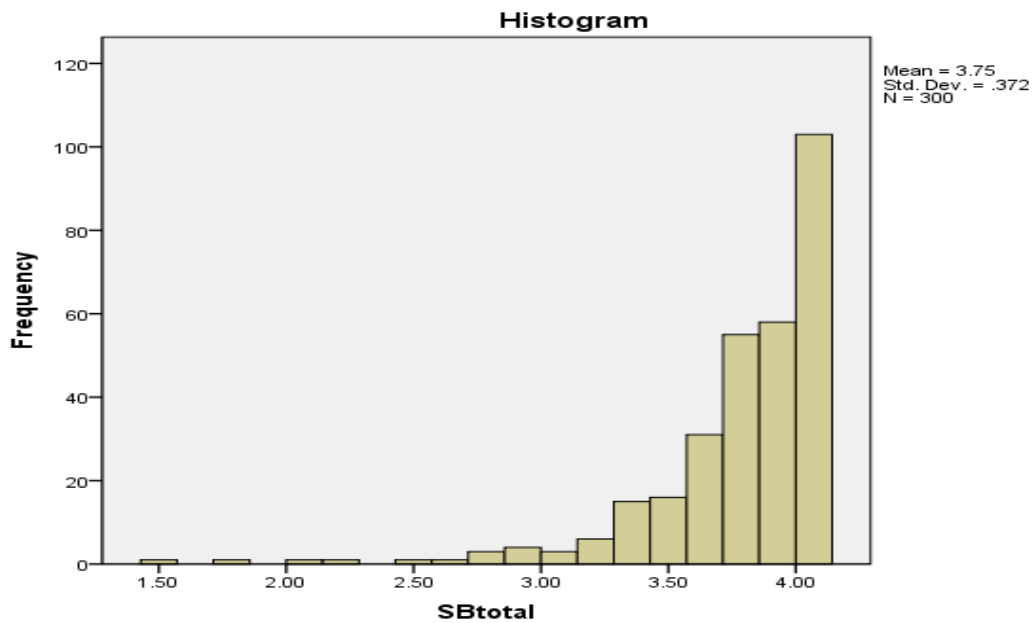


Figure 5.1 compliance with drug treatment of total respondents

5.4 Compliance with Lifestyle Modification

In this section, the researcher intends to answer the following research question: How compliant are the respondents with their lifestyle modifications regimen?

5.4.1 Frequency of smoking:

The majority of respondents, 249 or 83.7%, did not smoke at all. 16.3% were smokers, 13% of them were males and 3.3% were females. The majority of UNRWA, Government, and NGO's respondents (86%, 87%, 78%) didn't smoke as showed in table(5.17).

Table: 5.17 Frequency of smoking of total respondents, UNRWA, Government, NGO by gender

Do you smoke?	Total respondents		UNRWA respondent		Government respondent		NGOs respondents	
	M	F	M	F	M	F	M	F
YES	13	3.3	10	4	8	5	21	1
NO	21.3	62.3	26	60	23	64	15	63

Most of the respondents 9% were smoked more than twenty cigarettes; 8% of UNRWA respondents smoked more than twenty cigarettes, 10% of Government respondents smoked more than twenty cigarettes and 12% of NGO respondents smoked more than twenty cigarettes as showed in table (5.18)

Table 5.18: Number of cigarettes smoked per day of total respondents, UNRWA, Government, and NGO

Number of cigarettes/day	Total respondent		UNRWA respondent		Government respondent		NGOs respondent	
	N	%	N	%	N	%	N	%
1-4	3	1	0	0	3	3	0	0
5-9	3	1	1	1	2	2	0	0
10-14	10	3.3	4	4	2	2	4	4
15-19	8	2.7	1	1	1	1	6	6
≥ 20	27	9	8	8	5	5	12	12
Zero	249	83	86	86	87	87	76	76

5.4.2 Previous smoking:

The majority of respondents, 215 or 71.7%, did not smoke at all, 12% were previously smokers, the majority of the UNRWA, Government respondents 72%, didn't smoke previously while the NGO's respondents, 71%, didn't smoke previously as showed in table (5.19).

Table 5.19 Frequency of previous smoking of total respondents, UNRWA, Government, and NGO

Previous smoking	Total respondents		UNRWA respondents		Government respondents		NGOs respondents	
	N	%	N	%	N	%	N	%
Yes	36	12	14	14	15	15	7	7
No	216	71.2	72	72	72	72	71	71
Smoking now	49	16.3	14	14	13	12	22	22

5.4.3 Frequency of alcohol consuming:

The majority of respondents, 97.3%, never consumed alcohol, and 2.7% consumed alcohol with little quantity. The UNRWA and NGOs respondents didn't consume alcohol at all while the majority of the Governmental respondents 92% never consume alcohol. 8% of the Governmental respondents rarely drank alcohol (table 5.20), (table5.21).

Table 5.20 Frequency of alcohol consuming of total respondents, UNRWA, Government, and NGO

Do you consume alcohol?	Total respondent		UNRWA respondent		Government respondent		NGOs respondent	
	N	%	N	%	N	%	N	%
Yes	8	2.7	0	0	8	8	0	0
No	292	97.3	0	0	92	92	0	0

Table 5.21 Quantity of alcohol consumed of total respondents, UNRWA, Government, and NGO

Quantity of alcohol consumed	Total respondents		UNRWA respondents		Government respondents		NGOs respondents	
	N	%	N	%	N	%	N	%
little	2.0	0.7	0.0	0.0	2.0	2.0	0.0	0.0
rarely	6.0	2.0	0.0	0.0	6.0	6.0	0.0	0.0
not at all	292	97.3	0.0	0.0	92	92	0.0	0.0

5.4.4. Compliance with the lifestyle modification regimen:

The total items of section C measured the compliance to lifestyle modifications among respondents, the behaviors divided into two categories: 6 recommended and 5 non recommended behaviors as showed in tables (5.22-5.23).

Table 5.22: frequencies of responses on the compliance with life style modifications (recommended behaviors) of total respondents, UNRWA, Government, and NGO

How often do you?	UNRWA respondents %	Government respondents %	NGO respondents %	Total respondents %
	Compliant	Compliant	Compliant	Compliant
Eat vegetables	90.0	95.0	97.0	94.0
Eat fruits	90.0	78.0	85.0	84.4
Relax	74.0	85.0	79.0	79.3
Get enough sleep	72.0	63.0	86.0	73.7
Try to lose some weight	64.0	63.0	18.0	48.3
Doing physical exercise	70.0	24.0	9.0	21.0

Table 5.23 frequencies of responses on the compliance with life style modifications (non-recommended behaviors) of total respondents, UNRWA, Government, and NGO

How often do you?	UNRWA respondents%	Government respondents %	NGO respondents%	Total respondents%
	Compliant	Compliant	Compliant	Compliant
Drink alcohol	100.0	100.0	100.0	100.0
Smoke	89.0	90.0	80.0	86.3
Eat fast food	89.0	97.0	79.0	93.0
Sprinkle salt on your food	91.0	91.0	79.0	87.0
Eat a meal with high animal fat	69.0	82.0	74.0	75.0

The distribution of the respondent's score for this scale as plotted in figure 5.2 is negatively skewed (distribution = -0.664) indicating that most respondents had high scores on the scale. This indicates that the majority of the respondents tended to be compliant to lifestyle modifications. In table 5.24 below, the median was 3.18 for all respondents. The inter-quartile range was 0.36, and the mean score for this section was 3.15, Table (5.24.). The mean scale score of individual respondents' scores was used to categorise the respondents into compliant and non-compliant groups to facilitate correlational and inferential statistics. Respondents with a mean score of below 3 were considered non-compliant with recommended life style modifications, and respondents with a mean score of 3 and above were considered compliant. The least compliant group came from the NGO's clinic (3.04) (Table 5.24).

Table 5.24 Measures of central tendency and dispersion on the compliance with life style modification of total respondents, UNRWA, Government, and NGO.

Compliance with life style modifications	N	Mean	SD	Median	Range of scores	distribution	Interquartile range
Total	300	3.15	0.31	3.18	2.09-3.82	-0.664	0.36
UNRWA	100	3.18	0.356	3.2	2.18-3.82	-0.976	0.45
Government	100	3.22	0.255	3.18	2.64-3.82	-0.039	0.45
NGOs	100	3.04	0.285	3.09	2.09-3.55	-0.761	0.43

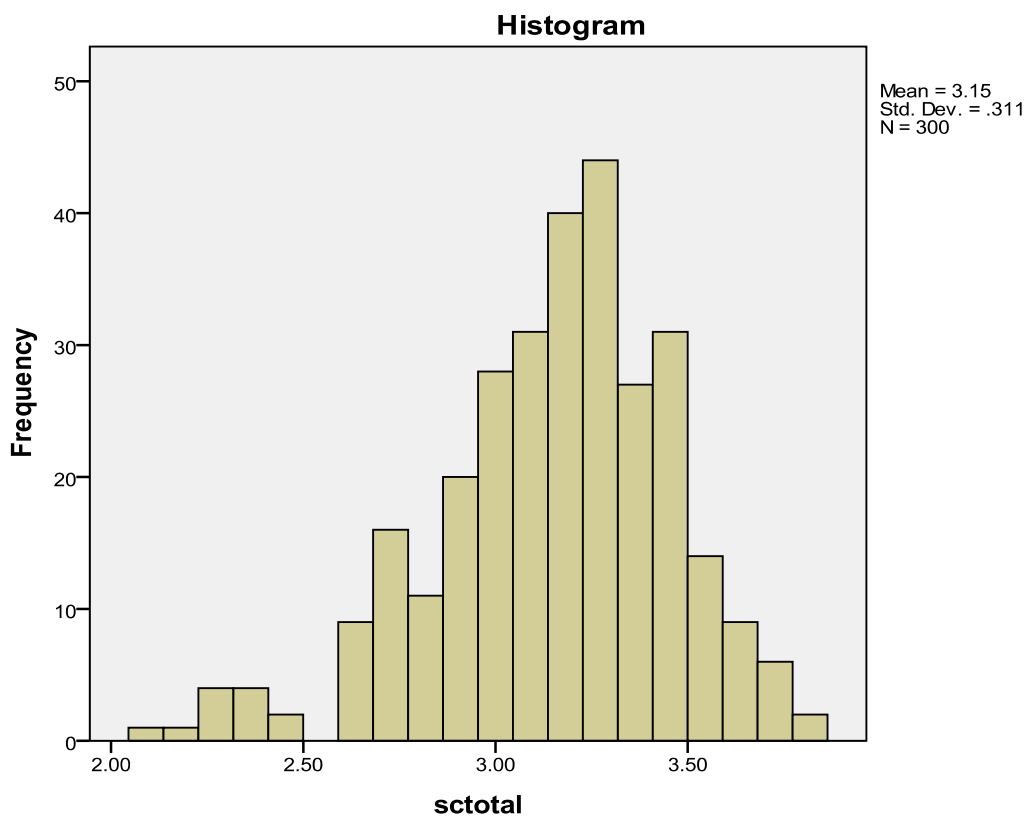


Figure 5.2 Compliance with life style modifications of total respondents

5.5 Respondent perception of severity of hypertension

The responses were collapsed into two categories: high and low perception of severity, the majority of total respondents, 88.6 %, consider their condition serious, as showed in table (5.25).

Table 5.25 perception of severity of total respondents, UNRWA, Government, and NGO

To what extent do you agree with the following statements?	UNRWA respondents	Government respondents	NGOs respondents	Total respondents
	High perception of severity%	High perception of severity%	High perception of severity%	High perception of severity
My blood pressure condition is serious.	91.0	85.0	90.0	88.6
I am not worried about my condition because I don't have any symptoms	79.0	79.0	81.0	79.0
I think I am cured because I don't have symptoms	76.0	79.0	79.0	78.6
I am worried about my blood pressure condition because I have symptoms.	62.0	58.0	72.0	67.4

The following Table (5.26) summarizes the central tendency values of the perception of severity.

The data was negatively skewed which indicates that the respondents score was high on the scale (distribution = -0.732). The median score was 3.0, and the mean was 2.93 which means that the respondents tend to be non-compliant with perception of severity.

Table 5.26 Measures of central tendency and dispersion on perception of severity of total respondents, UNRWA, Government, and NGO

	N	Mean	SD	Median	Interquartile range	distribution	Range of scores
Total	300	2.935	0.43	3	0.5	-0.732	1.25-4.0
UNRWA	100	2.937	0.41	3	0.5	-0.281	1.75-4.0
Government	100	2.935	0.5	3	0.5	-0.981	1.25-4.0
NGOs	100	2.932	0.37	3	0.25	-0.683	1.75-3.75

5.6 Respondents perception of their risk of developing hypertension

Section E measured the respondents' perception of their risk of developing complications, 86% of the total respondents were perceived to have a risk of stroke (Table 5.27).

Table 5.27 Perception of risks of total respondents, UNRWA, Government, and NGO

How do view your risk of?	UNRWA respondents	Government respondents	NGOs respondents	Total respondents
	High risk%	High risk%	High risk%	High risk%
Having stroke	82.0	86.0	90.0	86.0
Developing heart problems	78.0	81.0	93.0	84.0
Developing visual impairment	76.0	82.0	88.0	79.0
Affecting negatively family life	74.0	77.0	86.0	78.7
Becoming a burden for your family	72.0	76.0	83.0	77.3
Developing kidney problems	71.0	71.0	82.0	74.3
Developing paralysis	60.0	71.0	81.0	71.0
Affecting negatively social life	56.0	60.0	79.0	68.0
Affecting career negatively	40.0	20.0	44.0	34.7

The following Table (5.28) summarizes the values of the central tendency of the respondent's perception of risk and the distribution of data. The data was negatively skewed, which indicates that they tend to have a high perception of risk. The mean score was 3.26 indicating that the total respondents were compliant to perception of risk.

Table 5.28: Measurement of central tendency on perception of riskof total respondents of total respondents, UNRWA, Government, and NGO

central tendency perception of risk	N	Mean	SD	Median	Interquartile range	distribution	Rang of scores
Total	300	3.26	0.59	3.3	0.89	-0.0446	1.56-4.11
UNRWA	100	3.19	0.66	3.2	1.11	-0.286	1.56-3.44
Government	100	3.6	0.65	3.4	1.11	-0.665	1.5 - 3.43
NGOs	100	3.21	0.45	3.2	0.33	-0.45	2.0-4.11

5.7 Perception of benefits of ant hypertension treatment

In this section, perception of benefits of anti- hypertension treatment respondents was measured by using descriptive statistics. The responses were collapsed into two categories: positive and negative perception. The Table below (5.29) showed the positive and negative perceptions in order of importance. The most important benefits were avoiding added financial stress to treat complications (95.7%), followed by keeping blood pressure under control (93.7%), protecting from complication (93.6%), increasing life quality (93%), increasing the sense of wellbeing (89%), giving peace of mind (82%), and decreased chance of dying (44.7%).

Table 5.29 perceptions of benefits of total respondents, UNRWA, Government, and NGO

How do you view the benefits of complying with doctor's treatment?	UNRWA respondents	Government respondents	NGOs respondents	Total respondents
	Positively perception of benefits%	Positively perception of benefits%	Positively perception of benefits%	Positively perception of benefits%
Avoiding added financial to treat complication	97.0	96.0	96.0	95.7
Keeping my blood pressure under control	96.0	95.0	95.0	93.7
Protecting me from complication	96.0	93.0	95.0	93.6
Increasing my quality of life.	95.0	93.0	93.0	93.0
Increasing my sense of wellbeing.	89.0	91.0	91.0	89.0
Giving me peace of mind (Raht- bal).	86.0	88.0	77.0	82.0
Decreasing my chance of dying.	57.0	39.0	38.0	44.7

Table 5.30 summarizes the values of central tendency for the Perception of benefits. The data was negatively skewed, (distribution = -0.732). This indicates that the average score of most respondents was high on the scale which implies that they tend to have high perception of severity.

Table 5.30 Measures of central tendency and dispersion on perception of benefits of total respondents, UNRWA, Government, and NGO

central tendency of perception of benefits	N	Mean	SD	Median	Inter-quartile rang	distribution	Rang of scores
Total	300	3.24	0.53	3.28	0.86	-0.545	1.0-4.0
UNRWA	100	3.32	0.51	3.28	0.71	-0.53	1.47-4.0
Government	100	3.25	0.57	3.28	0.86	-.086	1-4
NGOs	100	3.14	0.51	3.00	0.86	-0.209	1.57-4.0

5.8 Perception of barriers to anti-hypertension treatment:

The responses were collapsed into high and low perception of barriers as shown in the following Table (5.31). The most prevalent barrier was the lack of motivation to be cured with 8.4%.

Table 5.31 perception of barriers of total respondents, UNRWA, Government, and NGO

Which aspects are problematic and preventing you from complying with your treatment?	UNRWA respondents	Government respondents	NGOs respondents	Total respondents
	High perception of barriers%	High perception of barriers%	High perception of barriers%	High perception of barriers%
Lack of motivation because I can't be cured.	5.0	12.0	12.0	8.4
Ineffectiveness of the medicine to stabilize my blood pressure.	7.0	6.0	6.0	6.0
Not having enough time to exercises.	6.0	1.0	1.0	3.6
Having sleeping problems	2.0	6.0	6.0	3.3
Lack of time to relax	2.0	3.0	3.0	2.3
Lack of discipline with the dietary regimen.	5.0	2.0	2.0	1.7
Lack to discipline to stop smoking.	2.0*	0.0*	0.0*	0.6

*31 didn't smoke of UNRWA, *87 didn't smoke of government, *32 of NGOs didn't smoke

Table 5.32 summarizes the values of central tendency for the Perception of Barriers Scale. The median was 1.57, and the interquartile range was 0.57. The distribution was positively skewed to the right which means respondents generally scored low on this scale; this means that the respondents tended to have low perceptions of the stated barriers.

Table 5.32 Measures of central tendency perception of barriers of total respondents, UNRWA, Government, and NGO

central tendency perception of barriers	N	Mean	SD	Median	Inter-quartile rang	distribution	Rang of scores
Total	300	1.45	0.41	1.57	0.57	0.986	1-3.14
UNRWA	100	1.34	0.42	1.14	0.57	1.20	1.0-3.0
Government	100	1.64	0.32	1.57	0.45	1.29	1-2.86
NGOs	100	1.37	0.42	1.21	0.68	1.516	1-3.14

5.9 Perception of internal factors related to treatment compliance

Section H of the questionnaire used to measure the extent to which internal factors affect respondent's compliance with anti-hypertension treatment. The responses collapsed into high and low internal factors scores for discussion purpose. The most important internal factors of the total respondents were that they were aware of how their body health feels (98.7%); their physical health was determined by what they did and did not (98.3%) as showed in Table (5.33).

Table 5.33- perception of internal factors of total respondents, UNRWA, Government, and NGO

To what extent do you agree with the following statements?	UNRWA respondents	Government respondents	NGOs respondents	Total respondents
	High score of internal%	High score of internal %	High score of internal%	High score of internal%
I am aware of how healthy my body feels	96.0	100.0	100.0	98.7
My physical health is determined largely by what I do and what I don't do.	96.0	91.0	100.0	98.3
I notice immediately when my body does not feel healthy.	97.0	100.0	97.0	98
I understand why it is necessary to take my medicine as prescribed.	99.0	97.0	97.0	97.7
I am in charge of my physical health	98.0	98.0	95.0	97
I understand how my medication works to keep my blood pressure under control.	96.0	100	99.0	96.3
I understand the nature of my condition.	96.0	91.0	95.0	94
I am primarily responsible for managing my hypertension.	78.0	88.0	98.0	90.6
I think that I can cure my hypertension with local herbs other than the prescribed medicine.	78.0	87.0	82.0	88.3
I understand what I can do to keep my blood pressure.	86.0	81.0	78.0	87.3
I understand what caused my blood pressure condition.	82.0	80.0	86.0	82.3
I understand the meaning of my blood pressure reading	79.0	71.0	79.0	76.3
I have the ability to manage my hypertension.	74.0	75.0	73.0	74
My doctor is primarily responsible to manage my hypertension.	54.0	55.0	67.0	59.6

Table 5.34 summarizes the values of central tendency for the Internal Factors Scale. The median was 3.28, and the interquartile range was 0.51. This indicates that the respondents scored low on this scale. The distribution is negatively skewed to the left which means that the respondents have high perception of internal factors. Except for the NGO's respondents, the distribution is positively skewed to the right which means that the respondents score low on this scale and the NGOs respondents tend to have low perception of internal factors.

Table 5.34 Measures of central tendency of internal factors of total respondents of total respondents, UNRWA, Government, and NGO

	N	Mean	SD	Median	Inter-quartile rang	distribution	Rang of scores
Total	300	3.30	0.338	3.28	0.50	-0.027	2.29-4.0
UNRWA	100	3.39	0.34	3.35	0.50	-0.406	2.29-4.0
Government	100	3.36	0.35	3.35	0.64	-0.255	2.43-4.0
NGOs	100	3.15	0.26	3.14	0.36	1.516	2.55-3.93

5.10 Perception of health care provider factors to hypertension treatment of total respondents, UNRWA, Government, and NGO

Section I measures the respondent's health care provider factors by using descriptive statistics. The responses collapsed into positive and negative perceptions. By referring to Table (5.35), the majority of respondents said that the doctors treated them with respect (98%), the doctor explained how they should manage their blood pressure (79.6%), and the waiting time was acceptable (76.7%).

Table 5.35 Health care provider's perceptions of total respondents UNRWA, Government, and NGO

To what extent do you agree with the following statements?	UNRWA respondents	Government respondents	NGOs respondents	Total respondents
	Positive perception%	Positive perception%	Positive perception%	Positive perception%
The doctors treat me with respect	95.0	99.0	100.0	98.0
The health care workers treat me with respect.	95.0	95	100.0	96.7
The doctor patient with me.	90.0	95.0	99.0	94.0
I have confidence in the doctor.	94.0	92.0	97.0	93.7
The doctor listens to my concerns.	94.0	93.0	91.0	92.7
The doctor who treats me at the clinic is experienced.	94.0	90.0	91.0	91.7
The medicine I receive at the clinic is effective.	87.0	94.0	94.0	91.7
The doctor understands my concerns.	91.0	93.0	91.0	91.0
The doctor explains my condition to me.	90.0	88.0	70.0	86.0
The medicine is available when I need it.	92.0	88.0	85.0	85.0
The doctor explains to me how I should manage my blood pressure condition.	87.0	87.0	80.0	79.6
The waiting time is acceptable.	77.0	80.0	73.0	76.7

Table 5.36 summarizes the values of central tendency of the Health Care Provider Scale. This score indicates that the respondents had positive perceptions of the health care provider factors. The median was 3.08, and the interquartile range was 0.67. The mean score for this scale was 3.197 (SD = 0.401) (refer to table 5.45). The mean scale score of individual respondents was used to categorize the respondents into positive and negative perceptions of health care provider factors. Respondents with a mean score below 3 were considered as having a negative perception of health care provider factors, and respondents with a mean score of 3 and above were considered as having a positive perception of health care provider factors.

Table 5.36 central tendency of respondent perception to health care provider of total respondents, UNRWA, Government, and NGO

Central tendency of perception to health care provider	N	Mean	SD	Median	Inter-quartile rang	distribution	Rang of scores
Total	300	3.197	0.401	3.08	0.67	0.22	2.17- 4.0
UNRWA	100	3.34	0.42	3.14	0.73	-0.355	2.17- 4.0
Government	100	3.23	0.43	3.12	0.75	0.048	2.25- 4.0
NGOs	100	3.02	0.326	3	0.25	0.983	2.25-4.0

5.11 Perception of the cues to action factors of total respondents of total respondents, UNRWA, Government, and NGO

This section uses descriptive statistics to measure what extent the stated cues motivated the compliance of anti-hypertension blood treatment. The responses collapsed into positive and negative motivations. Table (5.37) summarizes these findings.

An overwhelming majority of the respondents said the advice from the doctor (99%) and from health care workers (96.3%) motivated them to comply with their medications; advice from doctors was the most important cues to action which reflects the important rule of the doctors and the health care providers. Other important motivations included the respondent feeling unwell (97.9%),

Table 5.37 Perception of cues to action of total respondents, UNRWA, Government, and NGO

Which of the following motivates you to comply with your blood pressure?	UNRWA respondents	Government respondents	NGOs respondents	Total respondents
	Motivated%	Motivated%	Motivated%	Motivate%
Advice from doctor	98.0	99.0	100.0	99.0
When I feel unwell.	97.0	98.0	98.0	97.7
Advice from a health care worker other than doctor.	96.0	96.0	97.0	96.3
TV programs on high blood pressure	78.0	85.0	83.0	82.0
Advice from family member.	82.0	85.0	76.0	81.0
Health education leaflets given to me.	78.0	76.0	84.0	79.3
Newspaper or journal article.	76.0	73.0	67.0	72.0
Advice from my friends.	71.0	71.0	66.0	69.4
Death of a relation or friend due to high blood pressure.	65.0	65.0	73.0	67.6
Health posters displayed	79.0	81.0	30.0	63.3
Radio programs about blood pressure	66.0	74.0	44.0	61.3
Information from the internet.	67.0	54.0	26.0	48

Table (5.38) summarizes the values of central tendency of the Cues to Action Scale. This indicates that the respondents scored high on this scale. The median was 3.08, the mean is less than three which means that the respondents' perception have low score on the cues to action.

Table 5.38 measures of central tendency and dispersion of cues of action of total respondents, UNRWA, Government, and NGO

central tendency of cues of action	N	Mean	SD	Median	Inter-quartile rang	distribution	Rang of scores
Total	300	3.09	0.48	3.08	0.67	-0.205	1.42-4.08
UNRWA	100	3.18	0.46	3.12	0.75	-0.044	2.0-4.08
Government	100	3.21	0.48	3.16	0.65	-0.145	2.0-4.00
NGOs	100	2.9	0.44	2.92	0.42	0.079	1.42-4.0

5.12 Relations between the research variables

In this section, the relation between theoretical variables and the treatment compliance is discussed to investigate the co-relational and the inferential statistics.

Treatment compliance expressed both compliance with drug treatment and compliance with life style modifications. Treatment compliance was measured by combining section B and section C.

Referring to the health belief model, the relationship between the compliance and the following factors was investigated: socio-demographic factors, perception of severity, perception of risk, perception of benefits, perception of barriers, perception of internal factors, healthcare provider factors, and cues to action.

5.12.1 Relationships between the demographic characteristics and treatment compliance:

In this section, the relationship between the treatment compliance and the biographical variables were discussed.

What is the relationship between the treatment compliance and the following variables among patients diagnosed with hypertension; socio-demographic factors (age, gender, marital status, educational status, work status, monthly income); physiological factors (body mass index, duration of illness; number of medication prescribed; doses of medication took; doses of medication skipped; number of cigarettes smoked; number of cigarettes smoked previously; complications of the disease; and quantity of alcohol intake?

The chi square test was used to answer this question with 95% level of confidence. The findings were as follows: As shown in the table (5.39) below, of the total respondents, there was no significant relationship between the socio-demographic factors and the treatment compliance.

Age (chi-square= 4.71 P-value=0.452), gender (chi-square= 1.84 P-value=0.175), marital status (chi-square=0.890 p-value=0.926), educational status (chi-square=3.76 p-value=0.709), occupational status (chi-square=3.409 p-value=0.492), monthly income (chi-square=1.529 p-value=0.676).

With regards to physiological factors, there was a strong relationship between the doses skipped per day and the treatment compliance (chi-square=52.241 p= 0.00 as showed in table(5.40).

Analysis of variance (ANOVA) test was done to test for statistically significant differences between the means of compliant and non-compliant groups. Significant differences were found between the means of medication compliance and the doses skipped per day. The respondents who skipped one or more doses were less compliant than those who didn't skip any doses (13.8 p-value= 0.000).

Table 5.39 Socio-demographic factors of total respondents, UNRWA, Government, NGO and compliance

Variable	UNRWA respondents		Government respondents		NGOs respondents		Total respondents	
	p-value	significance	p-value	significance	p-value	significance	p-value	significance
Age	0.216	Not sig	0.681	Not sig	0.829	Not sig	0.452	Not sig
Gender	0.035	Sign	0.874	Not sig	0.677	Not sig	0.175	Not sig
Marital status	0.745	Not sig	0.677	Not sig	0.691	Not sig	0.926	Not sig
Educational status	0.099	Not sig	0.769	Not sig	0.037	Sig	0.709	Not sig
Occupational status	0.073	Not sig	0.537	Not sig	0.03	Sig	0.492	Not sig
Monthly income	0.274	Not sig	0.316	Not sig	0.577	Not sig	0.676	Not sig

Table 5.40 - Physiological factors of the total respondent, UNRWA, Government, NGO and compliance

Variable	UNRWA respondents		Government respondents		NGOs respondents		Total respondents	
	p-value	significance	p-value	significance	p-value	significance	p-value	significance
Body mass index	0.598	Not sig	0.013	Sig	0.899	Not sig	0.069	Not sig
Number of medication	0.43	Not sig	0.178	Not sig	0.114	Not sig	0.445	Not sig
Duration of illness	0.165	Not sig	0.767	Not sig	0.861	Not sig	0.791	Not sig
Dose skipped in the last three days	0.035	Sig	0.000	Sign	0.819	Not sig	0.00	sig
Number of cigarettes smoked per day	0.931	Not sig	0.354	Not sig	0.517	Not sig	0.299	Not sig
Number of cigarettes smoked previously	0.818	Not sig	0.95	Not sig	0.997	Not sig	0.979	Not sig
Number of years of smoking	0.645	Not sig	0.789	Not sig	0.789	Not sig	0.998	Not sig
Quantity of alcohol intake	constant	Not sig	0.727	Not sig	constant	Not sig	0.361	Not sig
complications of the disease	0.635	Not sig	0.563	Not sig	0.899	Not sig	0.602	Not sig

5.13 Relationship between the theoretical variables and the treatment

compliance of total respondents

In this section the following research question is discussed what is the relationship between the treatment compliance and the following variables among hypertension patients: perception of severity; perception of risk; perception of benefits; perception of barriers; internal factors; health care provider factors; cues to action?

Person's correlation analysis was used to assess the relationship between independent variables (perception of severity; perception of risk; perception of benefits; perception of barriers; internal factors; health care provider factors; cues to action) and treatment compliance (dependent variable). Significant relationship was found between the treatment compliance and the perception of severity, perception of barriers and internal factors (Table 5.41).

Table 5.41 relationships between Theoretical variables and treatment compliance of total respondents

Variable	r	p-value	significance
Perception of severity	0.173	0.003	Significance
perception of risk	0.062	0.285	not significance
perception of benefits	0.60	0.300	not significance
Perception of berries	-0.249	0.000	Significance
Perception of Internal factors	0.188	0.001	Significance
Perception of health care provider factors	0.017	0.772	not significance
cues to action	0.094	0.103	not significance

Relationship between the theoretical variables and the treatment compliance of UNRWA respondents:

Significant relationship was found between the treatment compliance and the perception of barriers and internal factors of the UNRWA respondents. The findings were as follows significant

relationship was noticed between treatment compliance and perception of barriers ($r = -0.323$ $p = 0.001$) Table (5.51).

Table 5.42 relationships between Theoretical variables and treatment compliance of UNRWA respondents

Variable	r	p-value	significance
Perception of severity	0.185	0.065	not significance
perception of risk	0.102	0.311	not significance
perception of benefits	0.041	0.685	not significance
Perception of berries	-0.323	0.001	significance
Perception of Internal factors	0.254	0.011	significance
Perception of health care provider factors	-0.0180	0.860	not significance
cues to action	0.060	0.552	not significance

Relationship between the theoretical variables and the treatment compliance of Government respondents

Significant relationship was found between the treatment compliance and the perception of barriers and perception severity of the Government respondents. The findings were as follows significant relationship was noticed between treatment compliance and perception of barriers ($r = 0.262$ $p = 0.008$), perception of severity ($r = 0.207$ $p = 0.039$), cues to action ($r = 0.234$ $p = 0.019$) (Table 5.43).

Table 5.43 relationships between Theoretical variables and treatment compliance of Government respondents.

Variable	R	p-value	significance
Perception of severity	0.207	0.039	significance
perception of risk	-0.036	0.724	not significance
perception of benefits	0.062	0.537	not significance
Perception of berries	-0.262	0.008	significance
Perception of Internal factors	0.155	0.124	not significance
Perception of health care provider factors	0.089	0.378	not significance
cues to action	0.234	0.019	significance

Relationship between the theoretical variables and the treatment compliance of NGOs respondents

Significant relationship was found between the treatment compliance and the perception of barriers and internal factors of the NGO's respondents. The findings were as follows table (5.44).

Table 5.44 Relationships between Theoretical variables and treatment compliance of NGO respondents.

Variable	R	p-value	significance
Perception of severity	0.089	0.377	not significance
perception of risk	-0.018	0.072	not significance
perception of benefits	0.120	0.234	not significance
Perception of berries	-0.225	0.024	significance
Perception of Internal factors	0.263	0.008	significance
Perception of health care provider factors	.031	0.763	not significance
cues to action	-0.002	0.982	not significance

Comparison of drug treatment and compliance between UNRWA, Government and NGO respondents:

One way Anova test was done to compare the mean compliance of drug treatment between UNRWA, Government and NGO. NGO respondents showed significant relationship between the three groups (Table5.45).

Table5.45 Relationship between treatment compliance between UNRWA, Government and NGO respondents

	sum of squares	df	Mean square	F	sig
Between groups	1.992	2	.996	7.500	.001
Within groups	39.445	297	.133		
total	41.437	299			

Multiple comparison LSD test was done to show that NGO group has more compliance of drug treatment than UNRWA and Government groups(table5.46).

Table 5.46 Mean difference between treatment compliance by clinics

Clinic	Mean difference		
	UNRWA	Government	NGO
UNRWA	-----		
Government	0.00143	-----	
NGO	0.17357	0.17214	-----

Comparison of lifestyle modifications and compliance between UNRWA, Government and NGO respondents:

One way Anova test was done to compare the mean compliance of lifestyle modifications between UNRWA, Government and NGO respondents, there is a significant relationship between both UNRWA and Government to NGO which means that UNRWA and Government were more compliant of lifestyle modifications than NGOs (Table5.47).

Table5.47 Relationship of lifestyle modification between UNRWA, Government and NGO respondents

	sum of squares	df	Mean square	F	sig
Between groups	1.853	2	10.157	10.157	0.000
Within groups	27.089	297			
total	28.942	299			

Multiple comparison LSD test was done to show that UNRWA and Government groups were more compliant of lifestyle modification than NGO group as showed in table (5.48)

Table 5.48 Mean difference between treatment compliance by clinic

Clinic	Mean difference		
	UNRWA	Government	NGO
UNRWA	-----		
Government	-.04182	-----	
NGO	.14182	-.18364	-----

5.14 Regression analysis between theoretical variables and treatment compliance

This section discusses the last research question: Which of the following variables are predictor variables for treatment compliance?

Socio-demographic variables; perception of severity, perception of risk; perception of benefits; perception of barriers; internal factors; health care provider factors and cues to action.

Stepwise multiple regression analysis was performed on the variables (perception of severity, perception of risk; perception of benefits; perception of barriers; internal factors; health care provider factors and cues to action), to predict the relative contribution of each variable to treatment compliance. Due to small sample size, subgroup analysis of the biographical variables couldn't be performed. The best predictive model involved the combination of three predictor variables: perception of barriers, perception of internal factors, and perception of severity (table5.49).

Table 5.49 Regression analysis summaries of predictor variables for treatment compliance of total respondents

Model	R	R Square	Adjusted R square	Std. Error of the Estimate	Change Statistics				
					R Square Chang	F Change	df1	df2	Sig F Chang
perception of barriers	.249	6.2%	.059	.25235	.062	19.752	1	298	.000
perception of internal factors	.304	9.2%	.086	.24868	.030	9.865	1	297	.002
perception of severity	.327	10.7%	.098	.24712	.014	4.763	1	296	.030

The best predictive model of UNRWA respondents involved the combination of perception of barriers and perception of internal factors. (Table 5.50)

Table 5.50 Regression analysis summaries of predictor variables for treatment compliance of UNRWA respondents

Model	R	R Square	Adjusted R square	Std. Error of the Estimate	Change Statistics				
					R Square Chang	F Change	df1	df2	Sig F Chang
perception of barriers	.323	10.5%	.095	.26454	.105	11.437	1	98	.001
perception of internal factors	.382	14.6%	.128	.25972	.041	4.668	1	97	.033

The best predictive model of Government respondents involved the combination of perception of barriers and perception of cues to action (Table 5.51).

Table 5.51 Regression analysis summaries of predictor variables for treatment compliance of Government respondents

Model	R	R Square	Adjusted R square	Std. Error of the Estimat	Change Statistics				
					R Square Chang	F Change	df1	df2	Sig. F Chang
perception of barriers	.262	6.9%	0.059	0.28520	0.069	7.230	1	98	0.008
perception of cues to action	.331	11.0%	0.091	0.28028	0.041	4.474	1	97	0.037

The best predictive model of NGO's respondents involved the combination of perception of internal factors and perception of barriers. (Table 5.52)

Table 5.52 Regression analysis summaries of predictor variables for treatment compliance NGOs respondents.

Model	R	R Square	Adjusted R square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
perception of internal factors	.263	6.9%	0.059	0.19387	0.069	7.256	1	98	0.008
perception of barriers	.351	12.3%	0.105	0.18912	0.054	5.974	1	97	0.016

Chapter six

Discussion

6.1 Introduction

In this chapter, the researcher summarizes and discusses the findings of the research which consists of five questions.

6.2 Compliance with Anti-hypertension Drug Treatment:

Question 1: How compliant are the respondents with their hypertension drug regimen?

The data obtained from the compliance with the medication regimen scale indicates that the total respondents were generally compliant with their medication regimens (mean 3.75); NGOs got the highest mean (mean 3.87) followed by UNRWA and Governments respondents (mean 3.69)

The researcher attributes this result to the type of health care provider, a mobile clinic, which provides the health service in fixed appointments and forces the NGO's patients to comply with their appointments. We can say that the NGO patients were not affected by frequent changes of the type or dose of their medications and medication side effects didn't affect their compliance.

UNRWA and Government clinics are fixed clinics, so the patients can reach them and get their medication at any time which may affect their compliance to their appointments and may give a feeling of safety for the patients as they can get their medication at any time which may possibly decrease their compliance to their appointments.

Most of UNRWA patients lived in the camp or close to the clinic, and that may decrease their compliance. UNRWA health care policy (open day clinic) provides the patients with their medications on a daily basis, keeping in mind that the UNRWA hypertension patients have their own appointment system where they can get their medications.

Government patients can get their medication when they finish their drugs since there is no appointment system for the hypertension patients at Government clinics except for the specialist every six months. These policies may decrease their compliance to drug treatments.

Medication side effects were the second highest reason for non-compliance among UNRWA respondents, but this is not supported with evidence from their records. These results agree with Sabate study that an adverse effect of treatment have negative effects on compliance to hypertension treatment. Another reason was forgetfulness; this may be due to the respondent's age since the elderly tend to have poor compliance because of memory loss and reduction in functional capabilities such as eyesight loss and decreased the ability of the hands to do activities such as bottle opening, these results agrees with Sabate study that the prevalence of cognitive and functional impairments in elderly patients increases their risk of poor adherence, also it agrees with Zyoud study which revealed that patients over the age of 68 years had lower median MMAS score than those less than 68 years.

Compliance with the medication regimen as reported by the UNRWA respondents was 72% who didn't skip any doses in the last three days. These respondents were more compliant to their medication regimen than respondents from the Governmental clinic (68%) and the NGO's respondents (68%). This result may be due to the management and follow up program of the UNRWA system because visiting your clinic and meeting your doctor or health care provider gives you the chance to share your needs and problems associated with disease and treatment and a way of detecting the early complications of hypertension to avoid the development of those complications. This result agrees with Wridate's study results that showed patients who visit their doctors every three months were (2.886) less compliant when compared to those who visited the doctor regularly every month (Wridat, 2012).

However, the above results differ from other studies such as WHO publications data about adherence to long term therapy of hypertension patients that varies between 50 and 70%. This variation is due to the use of different study methods.

In literature medication side effects was a significant reason of non-compliance with medication regimen which also agrees with our study.

6.3 Compliance with lifestyle modifications regimen

Question 2: How compliant are the respondent with their lifestyle modification regimen?

The data obtained from the compliance with lifestyle medication regimen (mean 3.15) of the total respondents indicates that the total respondents were generally compliant with lifestyle modifications. Government respondents got the highest mean (mean 3.22) followed by UNRWA (mean 3.18) while the less compliant were the NGOs respondents (3.04).

The researcher attributes this result to the culture of those patients who mostly live in the city and Bethlehem villages; however, they were more compliant to the recommended behaviors and the culture of losing weight is spread among them. The affordability of the physical clubs and dietitians may increase their compliance to those behaviors.

UNRWA respondents were compliant in physical exercise. Dehaisha camp located on main street encourages walking; besides, there is a women sport center in the camp.

The NGO's respondents were less compliant among the total respondents with lifestyle modifications; the researcher attributes this to their culture. They lived in urban area which was poor in physical activities and physical clubs.

The clinical records of the UNRWA respondents reflect the lifestyle commitments of the patients. The patient's records of Governments and NGOs do not have information about lifestyle modifications and concentrate on the drug regimen. This reflects the well-organized system of non-communicable diseases used by UNRWA according to WHO recommendations.

The above results reflect the awareness of the respondents about their disease which agrees with Hashmi study that awareness is associated with higher adherence. Sabate study said that inadequate knowledge and skill in managing the disease have negative effects on compliance to hypertension treatment.

6.4 Relationships between treatment compliance and socio-demographic factors

Question 3: What is the relationship between compliance and the socio-demographic factors (age, gender, marital status, educational status, work status, monthly income);

physiological factors (weight); duration of illness; number of medication prescribed; doses of medication skipped; and alcohol intake?

The results indicate that the total respondents who skipped one dose for more than three days were less compliant with their treatment medication (drug treatment and lifestyle modifications) than the respondents who skipped one dose for less than three days, so the hypertension patient who had skipped dosages were at risk of being inadequately compliant with their hypertension treatment.

This study showed that UNRWA males, 32, who skipped one dose for more than three days might be particularly at risk of being inadequately compliant with their treatment while UNRWA females, 63, were more compliant with their treatment medication. The researcher attributes this result to nature of the female. The female is afraid for her life more than the male. Additionally, most of the females were unemployed, so they had enough time to visit the clinic to take their medication. This result agrees with Wridat's study and Sa'ed H.Zyoyed's which showed that the female gender was associated with a higher Morisky eight-item Medication Adherence Scale (MMAS) score and agrees with the Dessie study in Ethiopia which found that there was a significant association between sex and compliance level; men were found to be less adherent than women, also this finding is similar to the finding of a study done in India where men had almost threefold increase in risk of non-adherence compared to women study but differs from Waleed Sweileh's which stated that there is no significant relationship between gender and rate of compliance. Another study found that compliance appears to be similar among men and women (O'Hanrahan & O'Malley).

Government respondents who were obese and who didn't skip any doses were more compliant to their treatment regimen. The researcher attributes this result to the fact that obese patients realize that obesity is an important factor related to high blood pressure.

43% of the NGOs respondents who had primary education and 21% who had no schooling and 17% of the respondents who had secondary education were more compliant with their treatment medication regimen. This is different from another local study that was done by Wridate and indicates that the education didn't affect the compliance. However, the al Najah study indicated that compliance increased as the level of education increased, also it agrees with Sabaté study which said that illiteracy is a risk factor of poor compliance; Mizuno Fujimoto study signifies that non-compliance was less prevalent among the more highly educated than among the less educated

The unemployed patients (63%) were more compliant with their treatment medication regime. However, this study indicates that the unemployed were mostly females (56.7%). Thus, unemployed females have more free time than employed people which can lead to them complying more with their medication regime. Moreover, they have the enough time to show up to their clinic appointments as scheduled. This result agrees with the Mizuno, Fujimoto study That the compliance rate for patients with essential hypertension was significantly lower in patients with an occupation than in those who were unemployed, the compliance rate was significantly lower in patients engaged in physical labour than in patients engaged in office work and was significantly lower in patients working for a shifted time during the day than in patients working for a fixed time. This differs from the Sabate study and WHO reports that claim unemployment is a risk factor of poor adherence.

6.5 Relationships between treatment compliance and perceptions:

Question 4: What is the relationship between treatment compliance and the following variables: perception of severity, perception of risk, perception of benefits, perception of barriers, internal factors, health care provider, and cues to action?

In this study, there was strong relationship between perception of barriers, internal factors and perception of severity with treatment compliance of the total respondents.

The data obtained of UNRWA and NGOs respondents in this study indicated that perception of barriers and perception of internal factors were significant with treatment compliance. Regarding UNRWA, NGOs, Governments respondents perception of barriers, the researcher attributes this result to the their belief that they can overcome those barriers and the benefits of complying to hypertension drug treatment and lifestyle modifications overweigh the consequence of non-compliance. Their knowledge of the nature of this disease as a lifelong and incurable disease encouraged them to comply with treatment and overcome the barriers. The education programs and the good relationship between the respondents and their doctorsand health staff encouraged them to comply with their treatment. Cost is one of the most important barriers to medication compliance, but for the total respondents of this study UNRWA provides free services to the Palestinian refugees. Government respondents have health insurance, and Palestinian Medical Relief Society provides NGO respondents free medications.

This result agrees with literature that the most important factor related to compliance is perception of barriers.

Perception of internal factors for UNRWA and NGO respondents was significant to compliance to treatment. The level of knowledge and the awareness of the disease are important in managing

it, UNRWA and NGOs clinics provides their clients with information through health education programs, brochures. The non-communicable disease program at UNRWA clinic concentrates on those patients and provides them with a lot of information about the disease and how to manage it. The nature of the UNRWA patients is that they can tolerate and take their own responsibility. Nearly half of UNRWA respondents and seventy percent of the NGO respondents believe that the doctor is primarily responsible to manage their hypertension which indicates that they don't understand the sharing responsibility of the doctors and the patients. The respondents are aware when their body feels well and when it's not healthy. Their health is determined by what they do and what they don't do. They are in charge of their health and know how their medication works to keep their blood pressure under control. Many of the respondents think that the herbs can't be replaced by their drug treatment while some think that herbs can replace their drug treatment. This is not so bad since the Palestinian culture believes in natural herbs as treatments. Also they faced problems in the management of hypertension, and the reading of blood pressure. This may be due to their old age.

In this study, there was a significant relationship between the Government respondent's compliance and perception of severity, perception of barriers, and cues to action, It's known that primary hypertension is asymptomatic and not curable (WHO 2003). This current research showed Government respondent's high perception of severity of their hypertension and belief about seriousness of the disease which was based on medical information or knowledge, so most of them believe that their condition is serious which makes them comply to their treatment even if there are no symptoms. If there are symptoms, the Government's respondents accepted the advice from health care providers. Feeling un-well encouraged the patients to be more compliant which indicates a fear of the severity of the disease. The information from the internet was the

least significant element in encouraging the respondents due to the non-availability of the internet. The death of relatives also didn't motivate the patients (65%), but this may be due to their religious culture.

The Government respondents perceived positively the cues to action. They accepted the advice from doctors, nurses, and health care providers which indicates the importance of the the patient-doctor (health care provider) relationship in complying with the treatment. The respondent feeling unwell was an important cue of action for complying with their treatment regimen, and may be this due to the natural fear of being ill and dying. On the other side, most of the government respondents were not affected by the death of friend or relatives but this may be due to religious considerations and believes.

6.6 Predictor variables of treatment compliance:

The simple regression analysis performed on all study variables of the total respondents demonstrated that the combination of perception of barriers, perception of internal factors and perception of severity formed the best predictive model of treatment compliance. In this study, perception of barriers was the most significant variable on compliance and predict 6.2% of variations on treatment compliance (drug and lifestyle modifications) followed by perception to internal factors which predict 3% of the variations, followed by perception of severity. The three predictor variables predict 10.7% of the total variance and the remaining variances due to other variables not concluded in the study.

Perception of barriers was the most significant predictor variable on compliance for UNRWA respondents which predict 10.5% of the variance followed by perception of internal factors which predict 14.6% of the variance.

Perception of barriers was the most significant predictor variable on compliance for Government respondents which predict 6.9% of the variance followed by perception cues to action which predict 11% of the variance.

Perception of internal factors was the most significant predictor for the NGOs respondents which predict 6.9% of the variance followed by perception of barriers which predict 12.3% of the variance.

In this study, the total respondents who believed in the seriousness of hypertension or in the seriousness of leaving it untreated and held low perception of stated barriers and believed in his own ability to manage hypertension would be more compliant with their medication treatment and lifestyle modifications than those who don't hold those perceptions.

UNRWA respondents who held low perception of barriers and believed in their ability to manage hypertension will be more compliant with their medication treatment.

Government respondents who held low perception of barriers in the presence of cues to action will be more compliant with their medication treatment.

NGOs respondents who believed in their ability to manage hypertension and held low perception of barriers will be more compliant with their medication treatment.

6.7 Conclusions

In this study, the Health Belief Model was used to evaluate compliance behavior among hypertension patients at UNRWA, Government, and NGOs primary health care centers. Even with the acceptable compliance scores in the study, the results indicate the importance of this

study as many factors were unsatisfactory such as obesity, overweight, uncontrolled hypertension and co-morbidities.

The respondents were convinced of the seriousness of the disease which affected their treatment compliance, and they believed that non-compliance lead to undesirable medical and social consequences which threaten the life of the patients. They were sufficiently convinced of the benefits of complying with their treatment despite their belief that compliance with treatment will not decrease chance of dying regarding religious consideration. The patients believe that they are not responsible for management of their condition, and this may be because they don't have the ability to do that which reflects the lack of communication and the sharing of information between health care provider and the patients. The patients admitted that the doctors didn't explain how they could manage their blood pressure. The patients believe that advice from doctors motivated them to comply with their treatment, so this is a good point in helping to convince patients to comply with their treatment.

The non-compliance behaviors which were revealed included failure to regularly monitor their blood pressure, comply with follow-up visit requirements, and honor their clinic appointments. An unacceptably high number of respondents also failed to ingest their medications as prescribed during the previous three days.

The risk behaviors which were identified are insufficient physical exercise, relaxation, sleep, and failure to keep their weight under control. An unacceptable number of the respondents insufficiently complied with the dietary requirements of limiting their consumption of animal fat, salt, fast foods, and smoking cessation.

Findings of this study have wide ranging implications for health care professionals dealing directly with hypertension patients in the health centers and generally with the Ministry of Health, UNRWA and NGOs managers to unite their efforts toward effective hypertension management in the whole country.

6.8 Recommendations

Recommendations for this study will focus on two sides. The first one is the clinical practice, and the second one is recommendations for further research.

Recommendations for clinical practice

The following recommendations for clinical practice are derivative of the findings:

Doctors and nurses must educate hypertensive patients about their disease with specific emphasis on its causes, the severity of the disease, how their medications work and the consequences of non-compliance with treatment. Patients should be taught how to interpret their blood pressure readings. Doctors need to emphasize that the drug treatment is for life, dosage should not be skipped and that the medications should not be discontinued. Patients should be discouraged from relying on local herbs to treat their condition.

Doctors and nurses need to emphasize the importance of compliance with their hypertension treatment despite the absence of symptoms. This includes complying with follow-up visits and honoring clinic appointments. It is necessary to stress the benefits of their treatment and their risks of developing complications.

The doctors should move beyond these explanations by contributing towards the removal of the barriers which may compromise compliance. Special emphasis should be placed on reducing the

waiting times at the clinics, ensuring that medicines are available at all times, and regular in-service training sessions for doctors. Contact and communication mechanisms should be introduced at the health centers to trace and monitor patients who do not comply with follow-up visits and clinic appointments.

Health education campaigns concerning hypertension should be delivered through the mediums of radio, television, posters, and pamphlets. It is necessary to target patients and the community at large, especially family and friends of hypertensive patients. The health education message could be transported by persons who developed complications as a result of non-compliance and those who lost a precious one as a result of hypertension.

This study has shown that most non-compliant patients are very likely to admit being so if interviewed by their doctors. Therefore, during consultation, doctors must inquire whether the patient is complying with prescribed medication and lifestyle modification regimens and if not steps must be taken to encourage compliance.

This study has highlighted essential lifestyle behaviors to which patients should be motivated to comply. These are physical exercise, weight control and adequate sleep. Thus, health professionals must encourage their patients to have adequate sleep (6-8 hours per day) and engage in moderate physical exercise lasting between 30 minutes and one hour on at least 3 to 5 days per week. Exercise helps weight control and maintenance of normal blood pressure.

Doctors are required to motivate patients to reduce their consumption of animal fat, fast foods, salt, and to quit smoking. This study found unacceptable high level of obesity among the respondents. Policies should be drawn at the national level to focus on diet and physical activity in order to control obesity and hypertension.

Patient support groups should be established in all districts as this would help compliant and non-compliant patients meet, interact and share experiences.

With regards to the patient's files at Government clinics, they were not separated, so it's better to design separated files.

For all clinics, it's recommended to add an item about side effects of hypertension drugs.

Recommendations for further research

The following aspects require further research, the prevalence rate of hypertension and uncontrolled hypertension must be conducted in the country; such a survey would provide useful information for policy makers to evaluate medical situation and economic reasons.

A study aimed at comparing the medication and the lifestyle modifications compliance patterns in patients attending private health care centers should be conducted.

Qualitative research should be conducted to obtain much more detailed information about factors that could improve compliance. It is known that not all factors that affect compliance with medications and lifestyle modifications requirement were studied.

List of references:

- 1- Abed, Y., & Abu-Haddaf, S. (2013). Risk factors of hypertension at UNRWA primary health care centers in Gaza governorates. *ISRN Epidemiology*, 2013, 9 pages. doi: 720760.
- 2- Akpan Edo, T. (2009). Factors affecting compliance with anti-hypertensive drug treatment and required lifestyle modifications factors affecting compliance with anti-hypertensive drug treatment and required lifestyle modifications among hypertensive patients on Praslin Island. (Unpublished master's thesis).
- 3- Angeli , F., Reboldi G, Mazzotta G, Garofoli M, Ramundo E, Poltronieri C, Verdecchia P. Reboldi , G., Mazzotta , G., Garofoli , M., Ramundo , E., Poltronieri , C., &Verdecchia , P. (2012). Fixed-dose combination therapy fixed-dose combination therapy in hypertension: cons. in hypertension. *High Blood Press CardiovascPrev*, 19(2), 51-54. doi: 0.2165/11632070-000000000-00000.
- 4- Ascertaining barriers for compliance: policies for safe, effective and cost - effective use of medicines in Europe. (2012). Manuscript submitted for publication, The ABC Project

team, PrzemyslawKardas, PhD, Associate Professor, Medical University of Lodz, Lodz, Poland. Retrieved from http://abcproject.eu/img/ABC_Final.pdf.

- 5- DessieAmbaw, A., AsresAlemie, G., Solomon, S., & BirhanuMengesha, Z. (2012). Adherence to antihypertensive treatment and associated factors among patients on follow up at university of gondar hospital, northwest ethiopia. BMC Public Health, 12, 282. doi:10.1186/1471-2458-12-282.
- 6- Drug. In (2013). Oxfrd dictionary. Oxfrd: Atlantic International University. Retrieved from <http://www.oxforddictionaries.com/definition/english/drug?q=drug>.
- 7- Hashmi, S. K., Afridi, M. B., Abbas, K., Sajwani, R. A., Saleheen, D., Frossard, P. M., ...& Ahmad, U. (2007). Factors associated with adherence to anti-hypertensive treatment in Pakistan. PLoS One, 2(3), e280. doi:10.1371/journal.pone.0000280.
- 8- Haynes, B. R. (1982). Management of patient compliance in the treatment of hypertension. Journal of Hypertension, 4(3), 416-419.
- 9- Jokisalo, E., Kumpusalo, E., Enlund, H., Halonen, P., & Takala, J. (2002). Factors related to non-compliance with antihypertensive drug therapy. Journal of Human Hypertension, 16(8), 577-583. doi: doi:10.1038/sj.jhh.1001448.

- 10- Karakurt, P., & Kasikci, M. (2012). Factors affecting medication adherence in patients with hypertension. *Journal of Vascular Nursing*, 30(4), 118-126. doi:10.1016/j.jvn.2012.04.002.
- 11- Khmour, M., Shaeen, M., Jarab, A., & Al-Shahed, Q. (2013, april). Prevalence, awareness, treatment and control of hypertension in the Palestinian population. *Journal of Human Hypertension*, 27, 623-628.
- 12- K. Janz, & Marshall, H. B. (1984). The health belief model: A decade later. *Health Education Quarterly*, 11(1), 1-47. Retrieved from <http://deepblue.lib.umich.edu/bitstream/handle/2027.42/66877/10.1177?sequence=2>. (1982).
- 13- Management of patient compliance in the treatment of hypertension. *Journal of Hypertension*, 4 (3), 415-423. Retrieved from <http://hyper.ahajournals.org/content/4/3/415.full.pdf>.
- 14- Mizuno, R., Fujimoto, S., Uesugi, A., Danno, D., Maeda, K., Kanno, M., Matsumura, M., & Fujimoto, T. (2008). Influence of living style and situation on the compliance of taking antihypertensive agents in patients with essential hypertension. *Internal Medicine*, 47(19), 655-661. doi: DOI: 10.2169/internalmedicine.47.1016).

- 15- O'Hanrahan, M., & O'Malley, K. (1981). Compliance with drug treatment. *British Medical Journal (Clinical Research Edition)*, 283(6286), 298-300. Retrieved from <http://www.jstor.org/discover/10.2307/29503001?uid=2129&uid=2&uid=70&uid=4&sid=21104388038413>.
- 16- Randolph, I. (1985). Long-term compliance. *Journal of American physical therapy association*, 65,1832-1839. Retrieved from <http://ptjournal.apta.org/content/65/12/1832>.
- 17- Sabate, E. (2003). Adherence to long-term therapies evidence for action. World Health Organization, Retrieved from <http://whqlibdoc.who.int/publications/2003/9241545992.pdf>.
- 18- Samuel, N., Gangne, J., & kasper, V. (1994). Models of health behaviors and compliance: Applications to audiological rehabilitation research. *Journal of the Academy of Rehabilitative Audiology*, 27(Mono Suppl), 375-389. Retrieved from <http://www.audrehab.org/jara/1994SI/Noh Gagne Kaspar, JARA, 1994.pdf>.
- 19- Sung, Y., Burt, V., Louis, T., & Carroll, M. (2012, October 1). Hypertension Among Adults in the United States, 2009–2010. *CDC, National Center for Health Statistics (NCHS)*, 107, 1-8. <http://www.cdc.gov/nchs/data/databriefs/db107.pdf>.
- 20- Sweileh, W., Aker, O., & Hamooz, S. (2005). Rate of compliance among patients with diabetes mellitus and hypertension. *An-Najah University Journal for Research - Natural*

Sciences, 19(1), 1-11. Retrieved from <http://scholar.najah.edu/sites/default/files/journal-article/rate-compliance-among-patients-diabetes-mellitus-and-hypertension.pdf>.

21- (2012). the annual report of the department of health 2011. Retrieved from UNRWA website: <http://reliefweb.int/report/occupied-palestinian-territory/annual-report-department-health-2011>.

22- The sixth report of the joint national committee on prevention, detection, evaluation and treatment of high blood pressure. (1997). Manuscript submitted for publication.

23- Treatment. In (2013). Oxford: Atlantic International University. Retrieved from <http://www.oxforddictionaries.com/us/definition/english/treatment>.

24- Urquhart, J. From the University of Limburg,, Netherlands, (1996). Patient non-compliance with drug regimens: measurement, clinical correlates, economic impact. Retrieved from European Heart Journal website: http://eurheartj.oxfordjournals.org/content/17/suppl_A/8.full.pdf.

25- World Health Organization, WHO Library Cataloguing. (2010). Global status report on non-communicable diseases 2010 (ISBN 978 92 4 156422 9). Retrieved from World Health Organization website: http://whqlibdoc.who.int/publications/2011/9789240686458_eng.pdf?ua.

26- World Health Organization, WHO Media center. (2013). Cardiovascular diseases (cvds) (Fact sheet N°317). Retrieved from website:

<http://www.who.int/mediacentre/factsheets/fs317/en>.

27- WHO. (2007). Prevention of cardiovascular: Guidelines for assessment and management of total cardiovascular risk. Retrieved from World Health Organization website:

http://whqlibdoc.who.int/publications/2007/9789241547178_eng.pdf.

28- Wridat, M. (2012). Compliance with antihypertensive treatment among the patients attend the PHC in clinics in hebron.". (Unpublished master's thesis).

29- Zyoud, S., Al-Jabi , S. W., Waleed M, S., Aysha H, W., Hanan M , S., Hayat A , A., Mohammad A , B., & Rahmat , A. (2013). Health-related quality of life associated with treatment adherence in patients with hypertension. *International Journal of Cardiology*, 168(3), 2981-2983. <http://dx.doi.org/10.1016/j.ijcard.2013.04.105>.

Annex (1) informed consent

اقرار بالموافقة على المشاركة في البحث

عزيزي/عزيزتي المشارك في هذه الدراسة

تحية طيبة و بعد:

أنا الطالبة أمل العزه أقوم بهذه الدراسة وذلك كمتطلب لنيل درجة الماجستير في السياسات والادارة الصحية من جامعة القدس –أبوديس وهي بعنوان العوامل التي تؤثر على التزام مرضى ارتفاع ضغط الدم بتناول علاجهم وتعديل انماط السلوك في عيادات الصحة الاولية في منطقة بيت لحم.

انا الموقع ادناه ----- اقبل المشاركة في هذا البحث والذي يهدف الى تحديد العوامل التي تؤثر على التزام المرضى بعلاج ارتفاع ضغط الدم وتعديل نمط الحياة في عيادات الصحة الاولية في منطقة بيت لحم حيث أن الالتزام بالعلاج وتعديل أنماط السلوك هو من أهم العوامل التي تساعد المرضى على ضبط ضغط الدم لديهم.

هذه الاستبانة تتكون من مجموعة من الاسئلة وتحتاج تعبئتها ما لا يزيد عن 25 دقيقة. وهي لاهداف تعليمية بحتة.

واتعهد بالمحافظة على سرية المعلومات الواردة في هذا الاستبيان ، ولك الحق في قبول او رفض المشاركة في هذا البحث. و اخيرا فاننا نود ان ننوه الى السرية التامة حول هوية الشخص الذي قام بتعبئة الاستبانة مضمونة في هذا البحث.

الباحثة

أمل محمود العزه

توقيع المشارك/ه ----- .

التاريخ ----- .

Al-Quds University
Jerusalem
School of Public Health



جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2011/11/27
الرقم: ك ص ع/71/2011

حضرة د. محمد عيسى رزق المحترم
مدير صحة بيت لحم

الموضوع: مساعدة الطالبة أمل العزة

تحية طيبة وبعد،،
تقوم الطالبة أمل محمود يونس العزة ماجستير سياسات وإدارة صحية/ كلية الصحة العامة/ جامعة القدس بإجراء بحث بعنوان:
"العوامل التي تؤثر على التزام مرضى الضغط بتناول العلاج وتعديل نمط حياتهم في عيادات المنظمات الغير الحكومية في محافظة بيت لحم".
وهي بحاجة إلى جمع معلومات عن العيادات الحكومية في محافظة بيت لحم. لذا أرجو من حضرتكم مساعدتها في الحصول على البيانات والمعلومات المطلوبة. علماً بأن المعلومات ستكون لأهداف البحث العلمي فقط.
وتفضلوا مع الاحترام،،

د. عيسى رزق
الإمام
كلية الصحة العامة
القدس
Faculty of Public Health

30-1-12

نسخة: الملف

Jerusalem Branch/Telefax 02-2799234
Gaza Branch/Telefax 08-2884422-2884411
P.O. box 51000 Jerusalem

فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-2884411-2884422
ص.ب. 51000 القدس

Al-Quds University
Jerusalem
School of Public Health



جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2011/11/27

الرقم: ك ص ع/٩٦٧/2011

حضرة د. محمد عودة المحترم
مدير جمعية الإغاثة الطبية/بيت لحم

الموضوع: مساعدة الطالبة أمل العزة

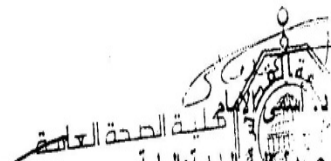
تحية طيبة وبعد،،

تقوم الطالبة أمل محمود يونس العزة ماجستير سياسات وإدارة صحية/ كلية الصحة العامة/ جامعة القدس بإجراء بحث بعنوان:

"العوامل التي تؤثر على التزام مرضى الضغط بتناول العلاج وتعديل نمط حياتهم في عيادات المنظمات الغير الحكومية في محافظة بيت لحم".

وهي بحاجة إلى جمع معلومات عن العيادات الغير حكومية في محافظة بيت لحم. لذا أرجو من حضرتكم مساعدتها في الحصول على البيانات والمعلومات المطلوبة. علماً بأن المعلومات ستكون لأهداف البحث العلمي فقط.

وتفضلوا مع الاحترام،،



Annex 3: questionnaire

العوامل التي تؤثر على التزام المرضى بعلاج ارتفاع ضغط الدم وتعديل نمط الحياة في عيادات الصحة الأولية في منطقة بيت لحم

رقم المريض-----

يتلقى المريض علاج ضغط الدم في:

عيادةالوكالة□ عيادة الحكومة □ عيادة الاغاثة الطبية □

القسم الاول(أ): بيانات السيرة الذاتية

1- ضغط الدم:-

2-الوزن(كغم)-----3-الطول(سم)-----4-مؤشر كتلة الجسم-----.

5- العمر (بالسنوات)؟-----.

6- جنس المريض:

ذكر □ انثي □

7- الحالة الاجتماعية:

أعزب □ متزوج □ مطلق □ منفصل □ أرمل □

8- المؤهل العلمي:

أمي □ ملم (يعرف القراءة والكتابة بدون انتهاء مرحلة تعليمية) □ مرحلة الزامية (ابتدائي+اعدادي)

□ أعلى من بكالوريوس □ مرحلة ثانوية □ دبلوم متوسط □ بكالوريوس □

9- طبيعة عملك خلال اخر ثلاثة شهور

موظف حكومي □ موظف غير حكومي □ عمل خاص □ طالب □ متقاعد □ لا يعمل □

10- معدل الدخل الشهري للعائلة خلال السنة الماضية بالشيكل.

صفر- 999 □ 1000- 1999 □ 2000- 2999 □ 3000 فأكثر □

11- كيف عرفت (ان عندك) باصابتك بضغط دم مرتفع؟

الطبيب □ الممرض □ في البيت □ الصيدلية □ عند صديق □ العيادة □ غير ذلك □

12- متى علمت لأول مرة ان ضغط دمك مرتفع؟

أكثر من سنة □ سنتين فأكثر □ ثلاث سنوات فأكثر □ اربع سنوات فأكثر □ خمس سنوات فأكثر □

13- المشاكل الصحية التي تشكو منها بالاضافة لضغط الدم ؟

مشاكل في القلب □ شلل في الأطراف □ انتفاخ في القدمي انتفاخ في الساقين □ خلل في النظر □ مشاكل في الكلى □

ضيق في النفس في وقت الراحة
غير ذلك

ضيق في النفس عند بذل مجهود
لا يوجد

الام في القلب -- ذبحة صدرية
عدم انتظام في دقات القلب

14- هل تتعاطى دواء لعلاج ارتفاع ضغط الدم؟

نعم لا

15- كم نوعا من الدواء تتعاطى لعلاج ضغط الدم المرتفع؟

واحد اثنان ثلاثة أربعة أكثر من أربعة

16- كم جرعة دواء تتعاطى في اليوم لعلاج ضغط الدم المرتفع؟

1 2 3 4 5 فأكثر

17- كم جرعه من العلاج لم تتعاطها خلال الايام الثلاثة الماضيه ؟

صفر (ولا جرعه) 1 2 3 4 5 فما فوق

18- هل تدخن حاليا؟

نعم لا

19- كم سيجارة تدخن يوميا؟

4-1 سجائر 5-9 سجائر 10-14 سيجارة 15-19 سيجارة 20 سيجارة فما

فوق

20- هل كنت تدخن سابقا؟

نعم لا

21- كم سيجارة كنت تدخن يوميا؟

4-1 سجائر 5-9 سجائر 10-14 سيجارة 15-19 سيجارة 20 سيجارة فما

فوق

22- كم سنة دخنت؟

1 2 3 4 5
أكثر من خمس سنوات

23- هل تتناول الكحول؟

نعم لا

24- كم تستهلك من الكحول عادة؟

يومية نادرا قليلا كثيرا

القسم الثاني: الامتثال (الالتزام) للعلاج:

هل	دائما 4	غالبا 3	نادرا 2	أبدا 1
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

القسم الثالث: الامتثال لتعديل سلوك ونمط الحياة

كم	دائما 4	غالبا 3	نادرا 2	أبدا 1
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				

القسم الرابع: ادراك شدة المرض

لا اوافق بشدة 1	لا اوافق 2	اوافق 3	اوافق بشدة 4	الى أي حد توافق على الجمل الآتيه:
				1 ادرك خطورة حالتي المرضية
				2 لا اكثرث لحالتي المرضية لعدم وجود اعراض للمرض
				3 انا قلق من حالتي المرضية بسبب وجود اعراض المرض
				4 انا اعتقد انني شفيت لعدم وجود اعراض للمرض

القسم الخامس: ادراك مخاطر المرض

لا اوافق بشدة 1	لا اوافق 2	اوافق 3	أوافق بشدة 4	كيف تنظر (بتشوف/ي) ظروف وقوع الامور الآتية نتيجة لارتفاع ضغط دمك؟
				1- ان اصاب بسكتة دماغية
				2 ان اصاب بخلل في النظر
				3 ان اصاب بمشاكل قلبية
				4 ان اصاب بمشاكل في الكلى
				5 ان اصاب بشلل
				6 ان اصبغ عبئاً على العائلة
				7 ان تتأثر مهنتك سلبيا
				8 ان تؤثر على حياتي العائلية سلبيا
				9 ان تؤثر على علاقتي الاجتماعية سلبيا

القسم السادس: ادراك الفوائد

غير مفيدة مطلقاً 1	مفيدة نوعاً 2	مفيدة 3	مفيدة للغاية 4	كيف تنظرون الى فوائد الامتثال لعلاج الطبيب
				1 يبقى حالتي المرضية تحت السيطرة
				2 يحسن نوعية حياتي
				3 يزيد شعوري بالرفاهية (مشوار, رحلة-----)
				4 يحميني من مضاعفات المرض (أمراض القلب, الجلطات, الكلى, --)
				5 يجنبني زيادة الاعباء المالية لعلاج مضاعفات المرض
				6 يقلل فرص الموت (الوفاه)
				7 يعطيني سلام عقلي (راحة بال)

القسم السابع: ادراك العوائق

لا يوجد تأثير	تأثير منخفض	تأثير وسط	تأثير عالي	أيمنالعوامل الاتية تعيق التزامك بتناول دوائك؟
1	2	3	4	
				1 فعالية الدواء على استقرار ضغط دمي
				2 قلة الدافعية تجاه شفائي من المرض(مثلا عندك امل يا حج/ة انك تشفي)
				3 لا يوجد الوقت الكافي لممارسة الرياضة
				4 النظام الغذائي
				5 ايقاف التدخين
				6 الاسترخاء(قلة الوقت اللازم للاسترخاء)
				7 عندك مشاكل في النوم

القسم الثامن: العوامل الداخلية

لا اوافق بشدة	لا اوافق	موافق	اوافق بشدة	الى أي مدى توافق على الجمل الاتية:
1	2	3	4	
				1 اتفهم طبيعة حالتي(مرضي)
				2 اتفهم سبب ارتفاع ضغط دمي
				3 اتفهم دور ادويتي في المحافظة على ضغط دمي
				4 اتفهم ضرورة تناول دوائي كما هو موصوف لي
				5 اعرف ما على عمله للمحافظة على ضغط دمي تحت السيطرة.
				6 افهم معنى قراءة ضغط دمي
				7 اعتقد انني استطيع ان اعالج ضغط الدم بالاعشاب المحلية وليس بالادوية الموصوفة
				8 لدي القدرة لاتدبر مع ضغط دمي
				9 انا المسؤول الاول عنضبط ضغط دمي
				10 طبيبي هو المسؤول الاول عن ضبط ضغط دمي
				11 انا المسؤول عن صحتي البدنية(الجسمية)
				12 صحتي البدنية (الجسمية) تتحدد بما اعمل وبما لا اعمل.
				13 انا اعرف عندما يكون جسمي مرتاح
				14 اللاحظ فورا عندما لا يكون جسمي مرتاح

القسم التاسع: العوامل المرتبطة بمزودي الخدمات الصحية

الى أي مدى توافق على هذه الجمل				
لا اوافق بشدة 1	لا اوافق 2	اوافق 3	اوافق بشدة 4	
				1 وقت الانتظار في العيادة مقبول
				2 الطبيب الذي يعالجني في العيادة متمرس(خبير)
				3 انا اثق بطبيبي
				4 الطبيب صبور معي
				5 الطبيب يعاملني باحترام
				6 العاملين الصحيين(المرضة/المرشدة) يعاملني باحترام
				7 الطبيب يستمع الى مخاوفي
				8 الطبيب يتفهم مخاوفي
				9 الطبيب يشرح لي عن حالتي
				10 الطبيب يشرح لي كيف اتعايش مع ضغط دمي
				11 العلاج متوفر عندما احتاجه
				12 العلاج الذي اتلقاه في العيادة فعال

القسم العاشر: محفزات العمل والالتزام

أي من هذه الدوافع شجعتك على الالتزام بعلاج ضغط الدم:				
لا اوافق بشدة 1	لا اوافق 2	اوافق 3	اوافق بشدة 4	
				1 البرامج التلفزيونية عن ضغط الدم
				2 برامج المذياع(الراديو) عن ضغط الدم
				3 النصيحة من الاصدقاء
				4 النصيحة من طبيبي
				5 نصيحة العاملين الصحيين (الممرض/ة-المرشدة/ة-اخصائي التغذية)
				6 النصيحة من افراد العائلة
				7 موت صديق او قريب نتيجة لضغط الدم
				8 قراءة مجلة او جريدة
				9 معلومات من الانترنت
				10 من الملصقات الصحية المعروضة
				11 منشورات المعلومات الصحية المعطاة لي
				12 عندما اشعر بأنني ليس على ما يرام

:
:
ملخص الدراسة

300

%100

(%67.1)

3-1

3-1 (%99.1)

(%34.3)

(%65.6)

(%32.6)

(%0.7) (%96)

(%69.3)

(%30.7)

p-) (p-value = 0.003) (p-value = 0.000)
. (p-value = 0.001) (value = 0.000)

(p-value = 0.035)
p-value) (p-value = 0.001) (p-value = 0.035)
(= 0.011)

p-value =) (p-value = 0.000)
p-value =) (p-value = 0.039) (0.013
. (p-value = 0.019) (0.008)

p-) (p-value = 0.037)
P-value =) . (p-value = 0.024) (value = 0.03
(0.008)

