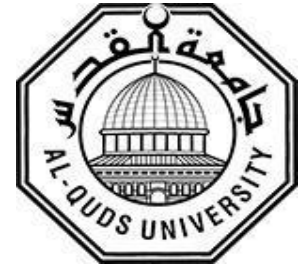


Al-Quds University

Deanship of Graduate Studies



**Beliefs about Cholesterol Lowering Drugs and Medication
Adherence Among Palestinian Adults with Dyslipidemia
in Ramallah and Bethlehem areas of the West Bank**

Jihad Khalil Ahmad Shakarna

M.Sc. Thesis

Jerusalem, Palestine

1441/2019

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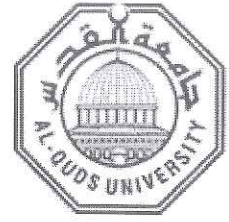
Supervisor: Dr. Hussein Hallak

**This thesis is submitted in partial fulfillment of the
requirements for the degree of Master of Pharmaceutical
science in Pharmacy Department.**

Al-Quds University

1441/2019

Al-Quds University
Deanship of Graduate studies
Pharmaceutical Science Program



Thesis Approval

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Jerusalem – Palestine

1441/ 2019

Dedication

I dedicate my graduation project to those who harvested thorns from my way to pave the path of science to the great hearts to my parents.

To my lovely husband for his endless support and encouragement. To my beloved children Khaled and Mesk who give me the power and inspiration to keep on.

Also to my sisters and brothers, who gave me all the support to complete my research step by step. Without their unfailing support and help this work would not have been possible.

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 study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed: Jihad Shakarna

Jihad Khalil Shakarna

Date: 14/12/2019

Acknowledgements

First of all, I thank Allah for giving me strength and ability to complete this project.

Special thanks for my professors for their guidance, encouragement, and help through this study.

Many thanks also for all workers at health clinics at Ramallah and Bethlehem, my thanks for the participants who willingly accepted to share for the purpose of this study.

Finally, an honorable mention goes to my family for their understandings and supports for me in completing this project, the product of this project would not be possible without all of them.

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List of Abbreviations

Abbreviation	Explanation
BMQ	Brief medication questionnaire
CHD	Coronary heart disease
CVD	Cardiovascular disease
HDL	High density lipoprotein
HIV	Human immune deficiency
IRB	Institutional review boards
LDL	Low density lipoprotein
MESA	Multi ethnic study of atherosclerosis
MMAS-4	Morisky medication adherence scale four items
MS	Metabolic syndrome
NCD	Necessity concern differential
NCDs	Non-Communicable Diseases
NCEP	National cholesterol education panels
NCF	Necessity concern framework
NHANES	National health and nutr Trying to provide the medicine permanently to patients in private health centers that it needs permanent and uninterrupted treatment for these medicines situation examination survey
SD	Standard deviation
SPSS	Statistical package for social sciences
SRM	Self-regulatory model
TC	Total Cholesterol
TG	Triglyceride
WHO	World health organization

Abstract

Background:

Lipid-lowering drugs are widely underused, despite strong evidence indicating they improve cardiovascular end points. Poor patient adherence to a medication regimen can affect the success of lipid-lowering treatment.

Objectives:

The aim of the present study was to assess the level of medication adherence among hypelipidemic patient's, patient's beliefs about medicines and explore the relationship between medication adherence and medicines beliefs and other demographic and clinical variables in the study participants.

Methods:

The study was a cross sectional design conducted between Jan 2019 and July 2019 to evaluate the influence of beliefs about medicines, demographic and clinical factors on adherence to cholesterol lowering drugs among Palestinians. This study was carried out at middle governmental primary healthcare clinics in Ramallah and Bethlehem cities. The disease specific tool is Morisky and beliefs about medicine questionnaires (BMQ).

Adherence was measured using self-reported four-item Morisky Medication Adherence Scale (MMAS-4) which measures the medication adherence with questions 1-4 having dichotomous responses (No =0 score and Yes = 1 score). The results were analyzed using Statistical Package for Social Sciences (SPSS) program version 21 Multiple linear regression analysis was performed to determine the most important variables related to adherence in dyslipidemic patient.

Results:

Of the 220 patients approached, a total of 185 patients agreed to participate in the study with a response rate of (84.1%). Of them, 106 (57.3) were men. Almost half of the participants 88 (46.5%) were ≥ 56 years. According to the MMAS-4 scale, medication non-adherence was high (47.6%). The majority of the participants (65.5%) believed in the necessity of their treatment for maintaining their good health. Mean necessity score of 17.3 (S.D. 3.7) was significantly greater than mean concerns score of 14.0 (3.5); $P < 0.001$). Multivariate regression demonstrated that 4 variables remain significant and associated with non-adherence; illiterate (OR= 2.52; CI: 0.9 – 4.3; $P = 0.03$), polypharmacy (OR= 3.18; CI: 1.9-5.7; $P = 0.007$), having comorbidity (OR= 3.10; CI: 2.2-4.6; $P = 0.005$) and having concerns about side effects (OR= 2.89; CI: 1.1-4.6, $P = 0.04$) were most likely non-adhere to their medications.

Conclusion:

Non-adherence among patients taking lipid lowering agents was high. Most people with hyperlipidemia have positive beliefs about the necessity of their medication. However, levels of concern are also high. Physicians should identify and target high risk patients and individualize their treatment plan in order to achieve adequate control of hyperlipidemia.

Key words:

Hyperlipidemia, Cholesterol, Statin, Adherence, Beliefs, -Palestine, WHO, MMSA-4, BMQ, CVD, CHD.

Chapter one

Introduction

1.1. Dyslipidemia

When lipoproteins are overproduced or deficient, the result is a lipoprotein metabolism disorder known as dyslipidemia. Elevated total cholesterol is one of the culprits of dyslipidemia. Cholesterol is a fat protein that is produced by the liver and is necessary to maintain healthy cell membranes, brain function, hormone production, and vitamin storage.

The two forms of cholesterol are high-density lipoprotein (HDL) and low-density lipoprotein (LDL). As their names suggest, both LDL and HDL are lipoproteins that comprise a combination of a lipid and a protein. The lipid portion is bound to proteins, for the cholesterol molecules to move through the blood.

LDL and HDL are unique in their function. LDL it is sometimes called "bad cholesterol," because high LDL levels cause risk factor for the CAD. In contrast, HDL is called as the "good one," because it transfer the cholesterol back to liver, which is how cholesterol is removed.

A diagnosis of dyslipidemia occurs when the total cholesterol (TC) level is above the normal value, or when LDL is generated or eat diary or bad foods [1]. A hyperlipidemia patient may show elevated levels of either LDL and TG or both. Triglycerides are a type of fat found in the blood. TG are associated with coronary heart disease.

Metabolic syndrome (MS) is a condition when a patient has a variety of medical disorders that combined show an increased risk of developing cardiovascular disease (CVD). Studies in Middle East showed that MS affects approximately one in four people, and its incidence increases with age. Due to reports showing increase percentages of MS and its main cardiovascular risk factors (15-60%) among Middle Eastern populations, there is a need for national and international programs that counter obesity, hypertension, and especially dyslipidemia. Ultimately, it is crucial to focus on early prevention and control [2].

The treatment of dyslipidemia is clearly prevent primary and secondary heart diseases. However, in Europe and the USA, cross-sectional surveys examining factors associated with chronic heart disease show that treatment of dyslipidemia remains inadequate. Consequently, more studies are necessary to evaluate the present level of undertreated dyslipidemia , which occurs when a patient receives a lipid-lowering treatment but still has TC and/or LDL-C levels that are uncontrolled, and why some patients on suboptimal therapy which consequently prone to CVD. [3-6]. Thus, the aim of this study was to examine the effect of dyslipidemia on the daily life of patients by measuring their compliance indices and their adherence to medication.

1.2 Types of dyslipidemia:

Hyperlipidemia is categorized based on the type of fat that is affected and how it impacts the body. The main types of hyperlipidemia are described here.

Type I: This type is severe and typically occurs during childhood. It triggers abdominal pain, repeated pancreatic infections, and enlargement of the spleen and liver. Occasionally, this type is referred to as familial LPL deficiency, and it is a congenital condition that interrupts the normal breakdown of fats.

Type II(a + b): Type IIa is also referred to as familial hypercholesterolemia and type IIb is frequently called familial combined hyperlipidemia. Both types lead to high levels of LDL and result in the deposition of fat in the skin and around the eyes. In addition these 2 types increase the risk of heart problems.

Type III: This type is referred to as familial dys beta lipoproteinemia, and it affects lipoproteins. These patients experience extremely low LDL levels in the blood, but normal HDL levels. Xanthomas, which are flat, yellow-grayish plaques that occur on the eyelids and around the eyes, is one of the characteristic features of type III hyperlipidemia. Type III, in addition, increases risk of CVD and peripheral artery diseases .

Type IV: This type induces a rise in triglyceride levels in the blood but not cholesterol, and the result high BP, Glucose and insulin levels,. This form of the disease usually goes undetected until early adulthood. All of the types described above can be controlled via dietary measures [7]

1.3 Classification of Dyslipidemia:

Classification of dyslipidemia is defined by the National Cholesterol Education Panel's (NCEP). All the concentrations are expressed as mg/dL [8].

Table 1.1 Lipid levels

LDL Cholesterol	
<100	Optimal
100 – 129	Near or above optimal
130 – 159	
160 – 189	High
≥ 190	Very high
TC (mmol/L)	
<200	Desirable
200 – 239	Borderline high
≥ 240	High
HDL Cholesterol	
<40	Low
≥ 60	High
Triglycerides	
<150	Normal
150 – 199	Borderline
200 – 499	High
≥ 500	Very high

1.4 Causes of Dyslipidemia

There are several factors that influence hyperlipidemia:

- Genetic factors: This referred to as primary hyperlipidemia.

The build up of fat in the blood due to a poor diet, over time, which cause organ damage and CVD

- Alcohol intake
- BMI and increase weight
- Some medications like steroids
- Metabolic disease like DM and CKD
- an underactive thyroid gland (hypothyroidism)
- pregnancy

Hereditary dyslipidemia is more common in certain ethnic groups, including French Canadians, Christian Lebanese, South African Afrikaners, and Ashkenazi Jews [8].

1.5 Symptoms and diagnosis:

Dyslipidemia typically presents with no obvious signs or symptoms. However, for genetic or inherited dyslipidemia, yellowish fatty growths are often present around the eyes or the joints.

The detection of dyslipidemia usually occurs during routine lab work or test or after CVD event, such as a heart attack or stroke.

Over time dyslipidemia leads to the formation of plaque on the walls of arteries and blood vessels. These plaques reduce size of the vessel openings, creating unstable blood flow. As a consequence, increases the work on the heart to pump the blood through the constricted regions.

A blood work, known as a lipid profile, is used to screen for hyperlipidemia. The test is done in the fasting state. For men, this type of screening may start as early as the age of 20 if they are considered at high risk, and it usual done at a later time for low risk men and women. It is advisable to repeat the test every 5 years when the results are normal. [9].

1.6 Adherence

Chronic illnesses are frequently treated via the drug therapy treatment for long time. While medications are typically successful in treat the disease, often their full benefits are not recognized, because around 50% of patients do not adhere to their prescribed treatments. The factors that associated with poor adherence vary. For example, these include factors related to the patients (e.g., illiteracy and a deficiency in their involvement in the treatment plan), factors related to health provider (e.g., complex regimens, lack of communication skills, lack information regarding the adverse effects, and provision of care by multiple physicians), and health care system related factors (e.g., lack of time , access limitation to care, and information technology). Impediments to medication adherence are complicated and diverse. Therefore, the resolutions to improve adherence need to be multifactorial [10].

Adherence to treatment is commonly defined as the degree to which a patient takes the medication as prescribed by their health care provider. For individual patients, the rate of adherence is usually reported as a percentage of actual taken medication in a specific period of time [11].

Patients with acute conditions reported higher adherence rate relative to those with chronic conditions. In fact, adherence for chronic condition patients is unacceptably low and drops most radically after 6 months of the therapy [11].

Moreover, medication non-adherence affect patients' health outcomes range from a decreased QoL and poorly managed symptoms to death. However, when examining the consequences of medication non-adherence beyond the individual, non-adherence is also connected to substantial societal.

A multidimensional model proposed by the WHO in 2003, determined by five dimensions, including patient-related factors, social and economic factors, the healthcare team and system-related factors, and finally the condition and therapy-related factors [12].

Several models describe health behavior based on whether a patient has a positive or negative perception of their treatment or health advice.

For adherence studies, the models include NCF, SRM, and the belief model, which suggest that health-related behavior is a rational response that is influenced by emotional the patient's perception regarding the treatment. Accordingly, the necessity concern framework regarding adherence is the outcome of the cut point between a patient prescribed drugs and their side effects

The Palestinian population, which has reached almost four million, lives in two separated areas, namely the West Bank and the Gaza Strip. It is a young population, with 46% under the age of 15, and 40% of the population are females who are of reproductive age. Despite the young age of this population, chronic disease is a major health concern in the occupied Palestinian territory. Specifically, there has been a drastic increase in chronic disease, such as cardiovascular disease, diabetes mellitus, and dyslipidemia [13].

For the past six decades, the political and socio-economic dilemmas of Palestinian life have raised important challenges in the health care system with regards to its capability to provide adequate services to its population.

The Palestinian health service provision is inadequate, and at any moment, it is subject to sudden discontinuation because of extreme political unrest. Unfortunately, the health service provision does not have an alternate plan to address the people's needs efficiently in such a situation [13].

Palestinians are affected by the perplexing living conditions and the socio-cultural norms and attitudes that affect their well-being and quality of life. Ultimately, for patients, all of these factors contribute to medication adherence. [14].

The patient's beliefs and attitudes as related to their hyperlipidemia medications influence their adherence. The usage and acceptance of these medications by the patients is critical. This study aims to fill the gaps between patients' knowledge and adherence.

1.7 High probability factors affecting patient adherence to medication are shown as in the diagram [15]

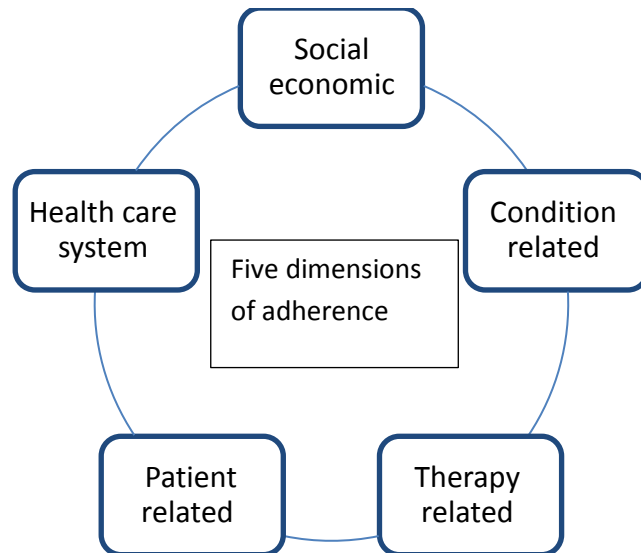


Figure 1.1: Five dimensions of adherence.

1.8 Prevalence of dyslipidemia

A study conducted by The National Health and Nutrition Examination Survey (NHANES), between 1999 and 2002, revealed that the estimated prevalence of dyslipidemia was 52.9% [16].

Using the updated NCEPATP III criteria, the Multi-Ethnic Study of Atherosclerosis (MESA) study, which was conducted in six American communities between 2000 and 2002, demonstrated that the overall prevalence of dyslipidemia was 29.3% [17].

Dyslipidemia in the Middle East:

The prevalence of dyslipidemia in the Middle East has been examined in several studies.

However, in most of them the assessment of the prevalence of dyslipidemia centered on the updated NCEP ATP III, and different cut-off values and lipid level ratios were used [18].

Moltagh and colleagues reported, in a systematic review, that based on risk factors related to the CVD in the Middle East from between the period January 1980 to April 2005, the prevalence of dyslipidemia could not be calculated because of noticeable disparities in the definitions used in the different studies [19].

Additionally, the systematic review conducted in Gulf countries by Aljefree and colleagues examined the CVD risk factors in adult populations from 1990 to 2014 and revealed that the prevalence of hypercholesterolemia ranged from 17% to 54.9% in males and 9% to 53.2% in females [20].

Dyslipidemia in Palestine:

In 2018, the number of deaths in Palestine reached 12,098 in the West Bank and 4,950 in the Gaza Strip, which was 59.1% and 40.9% of the total deaths, respectively. The primary cause of death in Palestine in 2018 was cardiovascular diseases, accounting for 31.5% of total reported deaths. [21]

According to the annual report for the UNRWA about medical expenditures, the total in 2018 was US \$12.1 million.[21]

An analysis of the expenditures on different medicines revealed that 43.0% of the funds were spent on medicines used to treat NCDs, 5.0% were cardiovascular medications, and 8.4% were lipid lowering agents. [21]

Since dyslipidemia is one of the most prominent causes of cardiovascular disease, it is necessary to examine the reasons that prevent patients from continuing to take their medication.

1.9 Problem statement:

There are many factors that may pose challenges and affect a patient's adherence to his/her medication such as the following:

Multiple medications may be taken by a patient to treat other diseases, which may have an effect on the adherence of patient to his/her dyslipidemia medications; the cost of the medication; the length of the treatment period, which lowers patient adherence to medication; and the patient's misconception that prolonged use of the drug will cause serious side effects.

1.10 General Objectives :

To identify the predictors of dyslipidemia medication adherence which will help to improve patient adherence and enhance awareness about importance of dyslipidemia medications in patient with high risk of CAD.

1.11 Specific objectives:

- 1- To measure patient beliefs about high cholesterol and cholesterol lowering medication.

- 2- To assess patient adherence to taking dyslipidemia medications.

- 3- To find a relationship between adherence and beliefs.

- 4- To find a relationship between adherence, beliefs, and other demographic and clinical data.

The present study evaluated medication adherence among dyslipidemic patients using the four-item Morisky Medication Adherence Scale (Appendix C). It additionally investigated patient beliefs concerning medicines using the Beliefs about Medicines Questionnaire (Appendix A), and explored the relationships of these beliefs and other demographic and clinical variables with medication adherence.

Chapter Two

Literature review

2.1 Literature review:

Drugs cannot be effective if patients do not take them in the first place. Many studies have been conducted to evaluate medication adherence and performance. One such study evaluated the Portuguese versions of the Morisky-Green test and the Brief Medication Questionnaire (BMQ) in terms of reliability and performance in the context of patients receiving hypertensive treatment at a primary healthcare unit in Brazil by Vasani [22] another study was done by Kuller found that BMQ to perform better in terms of both sensitivity and specificity. Effective evaluation of patient adherence is important as a means of helping clinicians to differentiate insufficient treatment regimens from the inadequate use of medication [23, 24].

In observational studies, low adherence to hypertensive treatment has been considered a barrier to control of blood pressure [25].

However, opinions vary as to what degree of adherence is adequate; some trials consider 80% or more to be acceptable, while others consider 95% to be the target minimum, especially when the treatment is for a serious condition such as the human immunodeficiency virus. Many factors affect the pattern of adherence to a medication regimen, such as patient beliefs; for example, a 2013 study by Berglund concerning adherence to statin treatment highlighted the importance of patient beliefs about

medications, their experience of cardiovascular events, disease burden, and the degree of perceived control [26]. Patients with a high perception of treatment necessity generally adhered to their regimen well, while side effects were shown to negatively impact adherence.

The study was done by Haynes and Mamdani in 2002 show that Although adherence is frequently reported as a binary variable (adherence vs. non-adherence), it is most precisely represented by a continuum ranging from 0 to more than 100 percent, which accounts for the possibility of patients taking more medication than they are prescribed. For individual patients, rate of adherence is most often reported as the percentage of prescribed doses that are actually taken over a given interval. This definition has been further refined by some investigators to separately consider dose taking (number of pills per day) and dose timing (taking pills within a given period). Higher adherence is typically observed for patients with acute conditions; in those with chronic conditions, adherence is unfortunately low, with a substantial drop occurring six months after the initiation of therapy [27, 28]. In addition, physician ability to recognize non-adherence is frequently poor, and interventions with the goal of increasing adherence have yielded mixed results [29, 30]. In spite of all efforts to date, a broad gap remains between evidence-based guidelines and actual primary care practice. This gap is predominantly ascribed to failures of physician and patient adherence, and studies that evaluate adherence are essential for helping to narrow it.

Studies that evaluate beliefs and adherence are important because in spite of all efforts a wide therapeutic gap still exists between evidence-based guidelines and their practice in the primary care, which is primarily attributed to physician and patient adherence.

One study done by Qneibi in Palestine indicated that failure to follow guidelines could largely be ascribed to non-adherence by physicians [31]. It additionally identified the most challenging issue to be pharmacotherapy initiation, and that greater adherence mainly occurred in conditions of high volume with respect to patients and visits. The practical implications noted by the authors were a need for more frequent follow-up visits and greater focus in primary care on the prevention of metabolic conditions by cardiologists or by primary care clinics specializing in metabolic conditions.

Another study conducted by Goff in England showed that approximately 20%-50% of patients do not take medication as prescribed, which may have related to fear of interactions between medications, adverse effects, misunderstanding of the necessity of medication, a perceived lack of effectiveness, or concern regarding cost [32]. This study also suggested there may be modifiable entities that influence medication adherence, including participant concerns about the relationships of doctors and pharmaceutical representatives and their beliefs regarding the best medications for their conditions. One of the most important points highlighted by this study is the patient-doctor relationship as a factor in both belief and preference; that is, trust between doctor and patient is necessary for a medication recommendation to be accepted

A pilot study carried out at Georgia by Robinson evaluated the relationship of beliefs to adherence in a rural population, specifically concerning high cholesterol and cholesterol-lowering medication. Adherence was assessed using the Morisky scale, and beliefs about medication with the HABIT questionnaire [10].

A study conducted by Sweileh in Nablus investigated medication adherence, beliefs concerning medications, and the influence of beliefs on adherence in Palestinian patients with chronic illness. The results demonstrated that patient beliefs contribute substantially to medication adherence [33].

Finally, another study conducted by Qadah measured the relationship between self-reported belief and adherence of hypercholesterolemia patients at a single clinic in Nablus. The authors concluded that beliefs and adherence correlate significantly with the achievement of target LDL-C values[34].

2.2 Significance of study :

As mentioned previously, there is a clear problem with adherence to chronic medications. Dyslipidemia is a condition that requires continuous administration of medications for disease control. Furthermore, some of these medications have serious side effects such as myopathy and rhabdomyolysis. This study will evaluate patient beliefs about lipid-lowering medications in the middle area of the West Bank, specifically the cities of Ramallah and Bethlehem. Furthermore, patient adherence to medications will be measured and their sociodemographic characteristics recorded.

The key contribution of this study is the identification of factors that predict adherence to dyslipidemia medication, which will help to improve patient adherence and enhance awareness of the importance of dyslipidemia medications in patients with a high risk of CAD.

Chapter Three

Methods and Materials

3.1 Study design

This study, conducted between January and July 2019 in a Palestinian population, used a cross-sectional design to evaluate the influence of patient demographic characteristics, patient beliefs about medications, and clinical factors on adherence to treatment with cholesterol-lowering medications.

3.2 Study setting

This study was conducted at two middle governmental primary healthcare clinics in the cities of Ramallah and Bethlehem. Both centers provide care for patients with chronic illnesses, including: diabetes mellitus, hypertension, hyperlipidemia, heart failure, psychiatric conditions, and respiratory diseases.

3.3 Study Participants

Participants were selected from patients who are provided with medical care and anti-hyperlipidemia medications at the selected healthcare centers with regular follow-up.

3.4 Sampling procedure and sample size calculation

This cross-sectional survey used the Morisky Medication Adherence Scale (MMAS-4) and the Beliefs about Medicine questionnaires. The necessary sample size was estimated using Raosoft (<http://www.raosoft.com/samplesize.html>), which determined 170 patients across both clinics to be required for adequate power. Participants were recruited by means of convenience sampling.

3.5 Inclusion and exclusion criteria

The following criteria were required for participant inclusion: age at least 18 years, able to read or understand Arabic, willing to take part in the study, hyperlipidemia diagnosis at least one year prior, currently being treated for hyperlipidemia, and LDL and TC levels available retrospectively from medical records within six months of study participation.

Participants were excluded if their anti-hyperlipidemia medication had been taken for less than one year or if diagnosed with a mental or severe cerebral vascular disease potentially affecting their cognitive ability.

3.6 Instruments and data collection form

The questions in this cross-sectional, questionnaire-based study (see Appendix A) were adapted from three different published questionnaires. The survey used contained four sections:

Section One: Demographic Variables

The first part of the questionnaire addressed socio-demographic factors such as age, gender (male, female), marital status, education level (elementary, preparatory,

secondary, higher education), residency (city, village, or Palestinian refugee camp), employment, and primary health care center.

Section Two: Medication adherence

Self-reported medication adherence was measured using the four-item Morisky Medication Adherence Scale (MMAS-4) (Morisky, Ang, Krousel- Wood, & Ward, 2008) (Morisky, Green, & Levine, 1986), in which all questions had dichotomous responses (No=0 and Yes=1). Total scores were summed (range 0-4), with scores of 0-1 denoting high adherence and 2-4 denoting low adherence.

The MMAS is perhaps the most widely-accepted instrument for measuring self-reported medication adherence, and has been confirmed in patients with other chronic diseases as having outstanding validity and reliability.

Section Three :Beliefs about medications

Beliefs about medicines were collected using the Beliefs about Medicines Questionnaire (BMQ) developed by Horne et al. (Horne, Weinman, & Hankins, 1999). The Arabic version used in this study was validated in 2012 for use in patients with chronic illness (Alhalaiqa, Deane, Nawafleh, Clark, & Gray, 2012). The BMQ consists of two five-item scales, one of which assesses perceived necessity of a prescribed medication for controlling the patient's illness and the other their concerns about the medication's potential adverse consequences.

The necessity scale consists of items such as: "My health, at present, depends on my medicines" and "My medicines protect me from becoming worse." The concerns scale consists of items such as: "I sometimes worry about the long term effects of my

medicines” and “I sometimes worry about becoming too dependent on my medicines.”

On either scale, each item is scored from 5 (strongly agree) to 1 (strongly disagree), with a higher score representing stronger belief or concern; summing along a scale gives a total score ranging from 5 to 25. Subtracting concern from necessity gives the necessity-concerns differential score (-20 to 20), for which a positive value indicates that the patient perceives medication benefits to outweigh risks, and a negative value the inverse. Furthermore, patients were categorized into four attitudinal profiles by dividing the scales at their midpoints (i.e. 15): “indifferent” (low necessity, low concern), “skeptical” (low necessity, high concern), “accepting” (high necessity, low concern), and “ambivalent” (high necessity, high concern).

Section Four : Clinical Variables

This part of the questionnaire pertained to clinical variables, namely: LDL, TC, duration of hyperlipidemia, the presence of co-morbid conditions, and the medications used to control LDL with their dosages and treatment duration.

3.7 Ethical approval

Before the initiation of this study, all aspects of the protocol were authorized by the Al-Quds University Institutional Review Board and local health authorities at the study sites. This includes.

3.8 Pilot study

A pilot study (25 participants) was carried out to test the survey tool, ensure the necessary data would be available, estimate the required time, and identify any modifications needed in the data collection form. Patients who participated in the pilot study were excluded from the final analysis, we found it is suitable with no change were made with questionnaire.

3.9 Statistical analysis

All analyses were carried out using the Statistical Package for Social Sciences (SPSS), version 21. Continuous variables (e.g. age, number of medications) were expressed as mean \pm SD, and categorical variables as frequencies (percentages). The normality of each variable was evaluated using the Kolmogorov-Smirnov test. For categorical variables, significance was tested using either chi-square or Fisher's exact test, and differences in category means by Kruskal-Wallis or Mann-Whitney test. For all analyses, results were considered significant if the obtained *p*-value was less than 0.05.

Chapter Four

Results

4.1. Patient characteristics

Of the 220 patients approached for this study, a total of 185 agreed to take part (response rate 84.1%). Of responders, 106 (57.3%) were men. Almost half of the participants (88, 46.5%) were ≥ 56 years of age; 79.7% had been widowed; 42.7% were not educated; and 64.1% described themselves as religious. Two-thirds of participants (65.4%) reported school education, while only 22.2% were educated at the college or university level. Also, 119 (64.32%) had been prescribed with more than four drugs. Nearly all patients were taking statins (168, 90.80%) and had done so for an average duration of 8.6 ± 4.7 years; the mean total cholesterol of participants was 263.1 ± 52.1 mg/dl. Participant characteristics are detailed in Table 2.

4.2 Non-adherence behaviors

In this study population, medication non-adherence as captured by Morisky medication adherence scale four item was high (47.6%). Univariate analysis revealed that non-adherence was most likely among illiterate patients ($P=0.03$), those on more than four drugs ($P<0.001$), and those having comorbidities ($P<0.001$) (Table 2). Non-adherence was most commonly attributed to forgetfulness (35.2%), and second-most to insufficient care about taking medications (27.3%). Non-adherence was commonly unintentional (70.5%), and less often either intentional (26.1%) or mixed in intent (20.5%) (Table 3).

Table 4.2 Patient characteristics and univariate analysis results reflecting potential contributions of characteristics to medication adherence.

Variable n (%)	All patients (185)	High adherence (97)	Low adherence (88)	P-value
Gender				
Male	106 (57.3)	55 (56.7)	51 (57.9)	0.61 [¥]
Female	79 (42.7)	42 (43.3)	37 (42.04)	
Age				
18-35 years	22 (11.9)	9 (9.3)	13 (14.8)	0.11 [¥]
36-55 years	77 (41.6)	35 (36.1)	42 (47.7)	
≥ 56 years	86 (46.5)	41 (42.3)	45 (51.1)	
Education Level				
Illiterate	23 (12.4)	8 (8.24)	15 (17.04)	0.03 [¥]
School level	121 (65.4)	66 (68.04)	57 (64.8)	
College/university level	41 (22.2)	29 (29.89)	16 (18.2)	
Living Status				
Living Alone	19 (10.27)	7 (7.22)	12 (13.64)	0.06 [¥]
Living with Someone	166 (89.73)	90 (92.78)	76 (86.36)	
BMI				
Normal	66 (35.68)	38 (39.28)	28 (31.82)	0.45 [¥]
Overweight	89 (48.12)	48 (49.5)	44 (50.0)	
Obese	30 (16.22)	11 (11.34)	19 (21.59)	
Polypharmacy				
<4	119 (64.32)	69 (71.13)	50 (56.82)	<0.001 [¥]
>4	66 (35.68)	28 (28.87)	38 (43.18)	
Comorbidities				
Yes	125 (67.57)	55 (56.70)	70 (79.54)	
No	60 (32.43)	42 (43.29)	18 (20.45)	<0.001 [¥]
Medications				
Statins	168 (90.80)	90 (92.8)	78 (88.6)	0.55
Fibrates	15 (8.21)	7 (7.2)	8 (9.0)	
Others	2 (1.1)	0	2 (2.4)	
Duration of statin use (years±SD)	8.6 ± 4.7	7.3± 4.1	8.8± 4.4	0.06 [*]
Total Cholesterol (mg/dl±SD)	263.1 ±	256.8 ±	269.9 ±	0.07 [*]

	52.1	50.5	53.2	
LDL-C (mg/dl±SD)	140.0 ±18.1	140.6 ± 18.3	137.7 ± 17.9	0.63*
HDL-C (mg/dl±SD)	53.2 ± 6	54.1 ± 6.6	53.1 ± 5.4	0.71*
Total Morisky score (±SD)	1.4 ± 0.5	0.961 ± 0.17	2.0 ± 0.3	<0.00*

¥ = Chi square test for categorical groups. * = T-Student Test. LDL = Low density lipoprotein, HDL = High density lipoprotein. Total Morisky score range 1-4.

Table 4.3. Adherence and non-adherence among study participants (n= 185).

Prevalence of Adherence/Non-Adherence	Total 185 (%)
Adherent Patients	97 (52.4)
Non-Adherent Patients	88 (47.6)
Likely cause of non-adherence	Total 88 (%)
Forgetting to take medication	31 (35.2)
Careless at times about taking medications	24 (27.3)
Feeling better	17 (19.3)
Feeling worse	13 (14.7)
Type of Non-Adherence Behavior	Total 88 (%)
Unintentional	62 (70.5)
Intentional	23 (26.1)
Mixed	18 (20.5)

4.3 Beliefs concerning medicines

Among participants in this study, a majority (65.5%) reported a positive belief in the necessity of their current treatment to maintain good health (i.e. not become ill). Hyperlipidemia treatment was additionally regarded by most (52.7%) as important for ensuring future health (Figure 2).

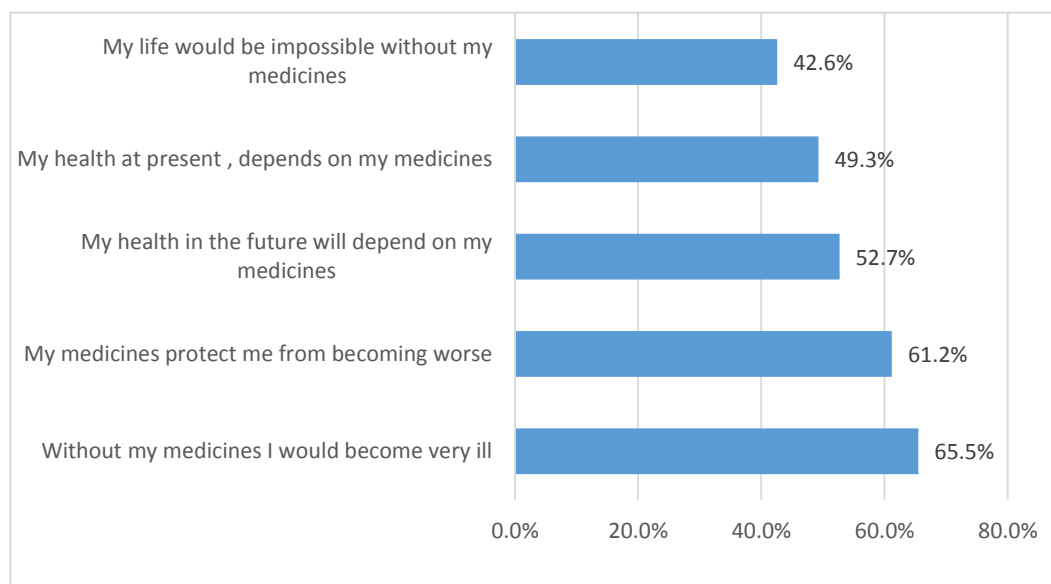


Fig. 4.2 Respondent agreement (agree/strongly agree) with questionnaire statements (necessity-statements).

However, despite these beliefs, 60.1% of participants also reported concerns about their dyslipidemia medications having long-term or adverse effects. Overall, most participants (54%) were concerned about becoming dependent upon anti-dyslipidemic agents. There was much less concern about the medications disturbing their lives (Figure 3). Notably, the mean concern score of 13.21(S.D. 3.2) was significantly below the mean necessity score of 17.92 (S.D. 3.2; $P<0.001$), for a mean necessity–concern differential of 4.7 (S.D.1.4). However, individual necessity scores were lower

(i.e. necessity–concerns differentials were negative) for 33 participants (17.8%), while equal scores were obtained for eight participants (4.3%).

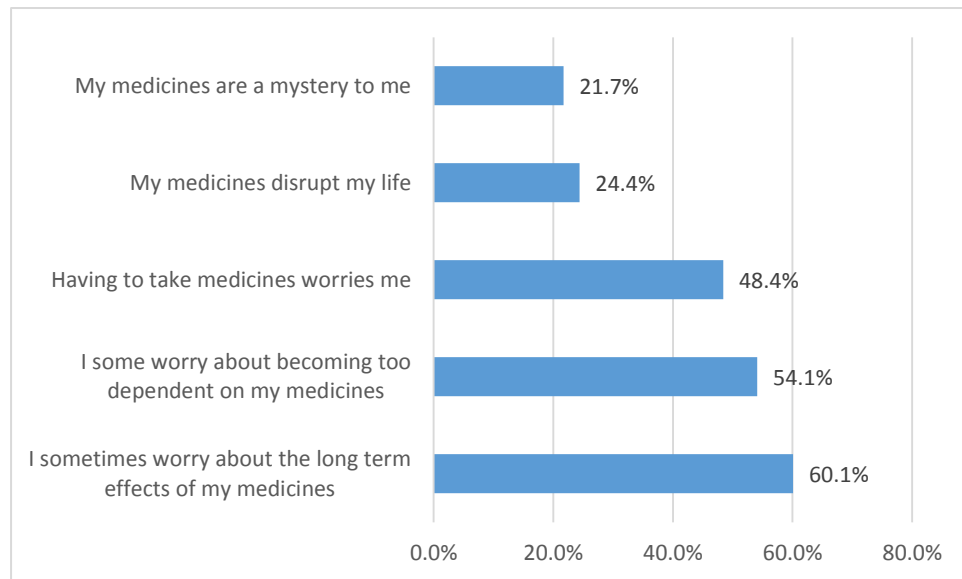


Fig. 4.3 Respondent agreement (agree/strongly agree) with questionnaire statements (concern-statements).

To group participants, their beliefs were categorized as high or low relative to the scale midpoints (Specific-Necessity and Specific-Concerns), defining four attitudinal categories: Accepting high necessity, low concern (93, 50.3%), Ambivalent high necessity, high concern (48, 25.9%), Skeptical high concern, low necessity (19, 10.3%), and Indifferent low concern, low necessity (25, 13.5%) (Fig. 4).

Chi square analysis showed significant variation in non-adherence across attitudinal groups, $\chi^2 (3, n=185) = 13.47, P=0.004$. A majority (60.8%) of adherent patients were accepting, compared with 38.6% of the non-adherent group. In contrast, 78.9% of non-adherent patients were skeptical, compared with 21.1% of the adherent group.

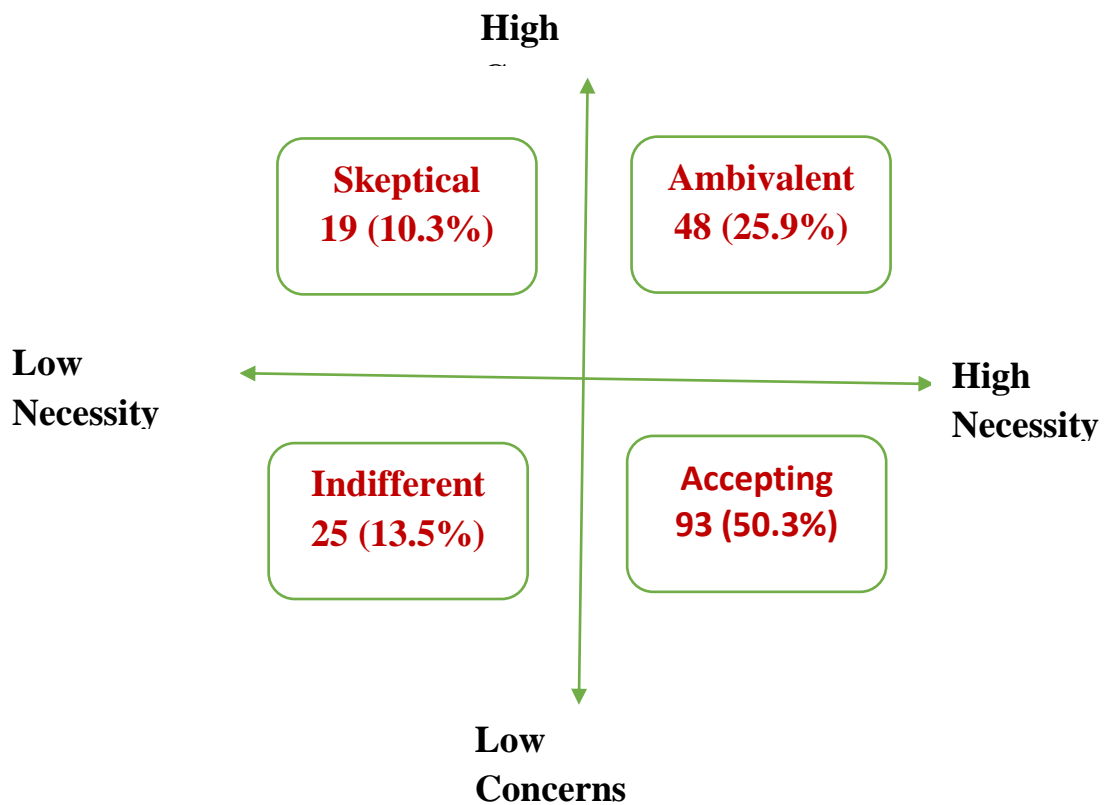


Fig. 4.4 Classification groups describing patient attitudes toward their medications.

4.4 Association of beliefs with other factors

Analysis revealed that adherent patients more strongly believed they had personal need of anti-dyslipidemia drugs. Meanwhile, non-adherent participants possessed stronger concerns about long-term use of medications and potential adverse events in the future (Table 4). The Necessity-Concerns Differential (NCD) score of non-adherent participants was lower than that of adherent participants (4.7 vs. 1.7, $P < 0.001$), revealing that for non-adherent participants, belief in the need for anti-dyslipidemia agents was similar to concern about long-term use of the medications.

Table 4.4 Necessity and concern scores for adherent and non-adherent patients.

Score	Adherent Mean (sd)	Non-adherent Mean (sd)	t (df)	Mean difference	CI, 95%	P-value
Necessity score	17.92 (3.2)	16.63 (4.1)	2.4 (185)	1.29	0.23-2.3	0.018
Concerns score	13.21 (3.2)	14.91 (3.7)	-3.3(185)	-1.69	-2.70- -0.68	0.001
NCD	4.7 (1.4)	1.7 (0.16)	3.5 (185)	2.96	1.33-4.54	0.001

NCD =Necessity-Concerns Differential, sd = standard deviation, df=degrees of freedom

Table 5 gives additional results correlating necessity scores with patient characteristics. The mean necessity score for men was not significantly greater than that of women (17.7 vs. 16.8, $P=0.14$). However, a significant negative correlation was observed when considering total cholesterol ($P=0.03$) or Morisky score ($P=0.01$). No significant association was identified that connected any other demographic or clinical variables with necessity scores.

Table 4.5 Association of participant characteristics with necessity scores.

Variables	N	Pearson's correlation	P-value
Age (years, SD)	185	0.059	0.49
Duration of statin use (years)	185	0.042	0.61
Number of medications taken	185	-0.144	0.09
Total cholesterol (mg/dl)	185	-0.21	0.03
LDL-C (mg/dl)	185	0.11	0.13
Mean Morisky adherence score	185	-0.38	0.01

Unlike necessity scores, concern scores were found to have significant associations with demographic and clinical variables (Table 6). Namely, significant positive correlations were identified with the number of medications being taken ($P=0.01$) and Morisky score ($P=0.01$). No significant correlations were identified for other demographic or clinical variables.

Table 4.6 Association of participant characteristics with concern scores.

Variables	N	Pearson's correlation	P-value
Age (years, SD)	185	0.03	0.69
Duration of statin use (years)	185	0.12	0.18
Number of medications taken	185	0.33	0.01
Total cholesterol (mg/dl)	185	0.34	0.01
LDL-C (mg/dl)	185	0.067	0.44
Mean Morisky adherence score	185	0.43	0.01

Associations of independent variables with low adherence were predicted using a stepwise multivariate logistic regression model (Table 7). Four variables were identified as remaining significant and associated with non-adherence: illiterate (OR=2.52; CI: 0.9–4.3), polypharmacy (OR=3.18; CI: 1.9-5.7), having a comorbidity (OR=3.10; CI: 2.2-4.6), and having concerns about side effects (OR=2.89; CI: 1.1-4.6).

Table 4.7 Multiple regression analysis for variables predicting non-adherence.

	B	OR	CI	P-Value
Education (illiterate)	0.924	2.52	0.9-4.3	0.032
Living alone	0.285	1.33	0.5-2.7	0.157
Polypharmacy >4	1.157	3.18	1.9-5.7	0.007
Duration of statin use >5 years	0.599	1.44	1.3-3.3	0.093
Having comorbidity	1.410	3.10	2.2-4.6	0.005
Having concerns about side effects	1.06	2.89	1.1-4.4	0.043
Necessity score <15	0.322	1.38	0.6-3.3	0.113

β, regression coefficient.; OR, odds ratio; CI, confidence interval

Chapter five

Discussion

For this analysis, patients were only considered adherent if scored as high adherence (score of 0-1); those who scored >1 were considered to have low adherence. More than 90% of participants were taking statins, and 47.6% self-reported low adherence. Our findings are inconsistent with previous studies, which determined that 33% to 50% of patients stop taking statin medication one year after treatment and that adherence decreases over time [39]. The most likely causes of low adherence in our sample were unintentional forgetfulness and carelessness in taking medications, which were reported by 35.2% and 27.3% of patients, respectively. However, nearly a fifth of patients (19.3%) reported intentional non-adherence in that they stopped taking their medications upon feeling better. The overall non-adherence rate (46.7%) in this study concurs with prior reports by Elsous et al. (52.3%) [40], Jackson et al. (51.2%) [41], and Bizu et al. (51%) [42]. However, lower adherence rates have also been reported by Sweileh et al [43]. and Jamous et al. [44], at 16.9% and 42.7%, respectively.

In this study population, non-adherence was primarily caused by unintentional behaviors, most commonly forgetfulness and carelessness about medication time [45]. Reasonable explanations for these behaviors may be attributed to multiple factors,

including work, travelling, economic status, and lack of effectiveness or adverse effects of the medications [46].

The main finding concerning beliefs about medicines was that the majority of patients having hyperlipidemia hold positive beliefs with regard to medication necessity (mean necessity score 17.3). However, a high proportion of participants also expressed concerns about long-term and potential adverse effects. Bruckert et al. [47] reported that among patients with hyperlipidemia who were treated with high-dose statins, 10% experienced myopathy; among those, nearly a fifth discontinued treatment (19.8%), and a similar percentage had their dosages reduced (16.7%). A recent review by Fernandez et al. [48] additionally showed that up to 20% of patients receiving statins experience myopathy. The importance of patient perception of side effects in adherence has been demonstrated by several studies [49],[50], and non-adherence may be particularly likely for patients on high doses of cholesterol-lowering drugs who experience adverse events [51].

In this study, no association was identified connecting necessity score with the demographic variables of age, duration of hyperlipidemia, or the number of drugs being taken. However, necessity scores were negatively associated with mean Morisky medication adherence (low score meaning higher adherence) and with total blood cholesterol level. This finding is reasonable as better adherence with lipid-lowering agents will result in a decrease of total cholesterol in the blood. Meanwhile, significant and positive associations with concern scores were observed for Morisky score, high blood cholesterol level, and number of medications taken. These findings are in line with prior reports in US specialist care and in the context of various long-term conditions [15].

Patient adherence was further evaluated in terms of attitude by combining necessity and concern ratings in a two-dimensional analysis. Most participants (50.3%) classified as accepting of their anti-hyperlipidemic agents (high necessity, low concern). Participants who classified as skeptical (high concern, low necessity) were more likely to also have low adherence.

Logistic regression revealed several factors predictive of non-adherence behaviors; illiteracy and low education (at most through primary school) were the most likely predictors ($P=0.03$). Many previous studies have similarly reported higher rates of non-adherence among patients of lower education levels [52],[53]. Lower education is also associated with lower socioeconomic status, poor access to the health system, and less knowledge about their disorder [54]. Thus, providing more accessible facilities and arranging educational and training programmes can improve treatment adherence [55].

Polypharmacy (having more than four drugs prescribed) was found to be highly predictive of non-adherence ($P=0.007$). A recent review study by Zelko et al. [56] found that for polypharmacy patients, non-adherence rates ranged from 6% to 55%. Other studies have also reported negative associations of medication adherence with more drugs being taken, a large caregiver burden, and also impaired hearing and poor cognition [57],[58]. In the present study, comorbidity was another highly significant predictor of non-adherence ($P=0.005$). This finding is consistent with other studies in the literature, which have reported association of comorbidities with depression, anxiety, and stress, which then have negative effects on adherence [59],[60].

The last independent predictor of non-adherence identified in this analysis was concern about medications ($P=0.04$), consistent with prior literature [61],[62].

Consideration of patient concerns may be essential in ensuring adherence and effective use of medication; patient concerns have been found to predict non-adherence in terms of both extent and direction (over- or underuse) [63].

When developing interventions to improve adherence, the aim should be to address modifiable factors, and the patients targeted should be those most likely to not adhere. However, the currently available literature on adherence is highly heterogeneous; efforts are first needed to improve the standardization and therefore comparability of adherence studies.

Patient education and information has been shown to lead to enhanced knowledge and improved lipid-control behaviors [64]. A systematic review of seven studies involving educational and knowledge interventions [65] found that participants who received an intervention were more adherent than those who received only usual care (odds ratio 1.93, 95% confidence interval 1.29-2.88).

The results of this work indicate that patients with risk factors pay more attention. Accordingly, patient beliefs about the risks of high cholesterol and the severity of high cholesterol are significantly associated with medication compliance, and adherence then reinforces the beliefs. Other studies have reported that patient beliefs about the importance of cholesterol in heart disease incidence will increase patient motivation for adherence to medication [66]. Meanwhile, patients who lack understanding of the risks associated with high cholesterol may be less likely to believe the condition is serious and that aggressive treatment is necessary [67].

Pharmacists are in an ideal position to enhance adherence among hyperlipidemic patients. A number of interventions that involve pharmacists have been documented in the literature, including counselling visits at the pharmacy [67], making phone calls

[68] and leaving voice messages [69], telephone counselling coordinated by a computer-based tracking system [70], and preparing a ‘beepcard’ to provide reminders when a dose is due [71].

Chapter Six

Conclusion

6.1 Strength of our study:

Major strength of this study include: this is the first study about beliefs of cholesterol lowering drug and medication adherence among Palestinian adult with dyslipidemia conducted at west bank in Ramallah and Bethlehem .

It provides baseline data about Palestinian dyslipidemic patients adherence to their medication, their mostly commonly used medication ,also tried to identify significant factors that may pose challenges and affect patients adherence to his /her medication.

This study is the first of its type in Palestine and Arab world that classified patients attitudes toward their medications as four attitudinal categories :accepting (high necessity /low concern), ambivalent (high concern /high necessity), skeptical (high concern / low necessity),

Indifferent (low concern/low necessity).

Only few studies examined the beliefs and adherence of dyslipidemia patients to their medication .also ,the current study measured both beliefs and adherence to medication among dyslipidemia patients by using the global instruments: MMAS-4, BMQ scales.

6.2 Recommendation and limitations

Surveys and self-reported methods have potential limitations, which are prone to recall biases and /or overestimation of adherence rate may have occurred. Due to the nature of the study as a questionnaire-based study, explaining the cause and effect of non-adherence is limited. Finally, the study covered only two medical center, which may have to some extent limited the overall generalizability of the findings. Moreover, cross-sectional study cannot permit drawing causal associations between the factors studied and results should be confirmed in prospective follow-up studies.

This study could carry important recommendations for health centers in terms of providing health education and awareness of patients and devote more time to follow the doctor to the patient's condition, as it should. It highlights the importance and prognostic value for the patient's continued taking of his medicine and his commitment throughout the diagnosis, prognosis and treatment period.

Trying to provide the medicine permanently to patients in health centers that it needs permanent and uninterrupted treatment for these medicines.

Based on the results from our study, we can give an objective proof for predictors of dyslipidemia medication adherence which will help to improve patient adherence and enhance awareness about importance of dyslipidemia in patient with high risk of CAD.

6.3 Conclusion

This study contributes to the increasing evidence suggesting that patient concerns and beliefs about medication are associated with adherence behavior. In addition, direction of non-adherence was related to specific types of concern. Patient concerns, long-term effect and experiencing side effects appear more pivotal in determining non-adherence than both level of LDL and cholesterol.

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Appendices A:



Evaluation of adherence of patients with cholesterol-lowering drugs to their prescribed treatment and their impact on drug conviction in the Bethlehem and Ramallah areas of the West Bank at the Palestinian Ministry of Health.

I would like to require from you to participate in a research entitled Evaluation of the commitment of a patient to reduce cholesterol by his medication based on his belief and belief in the effectiveness of the treatment given to him.

The researcher is a master's student in the Faculty of Pharmacy, Al-Quds University.

The aim of the study is to evaluate the patient's responsiveness and commitment to his medications and to see the relationship between the patient's convictions and their impact on his commitment to treatment.

Your participation in this research is voluntary and can be rejected. You can also leave an answer to any question you do not wish to answer.

Your identity will remain anonymous and the data obtained will only be used for scientific research purposes and will be kept confidential.

If you agree to participate, please answer the questions carefully and objectively

Thanks for your cooperation

Researcher

Jihad Shakarna.

Section one : personal information				
Age (year)				
Age	≤40	(41-55)	(56-60)	≥ 61
Sex	Male	Female		
Address	Bethlehem	Ramallah		
Job	No	Yes		
Education	Elementary	Preparatory	Secondary	High education
Income	≤1000	(1000-1500)	(1500-2000)	≥2000
Status	Single	Married	Divorce	Widowed

Section two: Patient response and commitment to medicine based on Morisky fourth scale		
1-do you ever forget to take medication?	1-Yes	2-No
2- Are you carless at times about taking your medication?	1-Yes	2-No
3-When you feel better, do you sometimes stop taking your medication ?	1-Yes	2-No
Sometimes ,if you feel worse when take your medicine, do you stop taking it?	1-Yes	2-No

Section three(part one):patients beliefs toward illness and medication					
	1-Strongly disagree	2- Disagree	3- Indifferent	4-Agree	5- Strongly agree
My current health status depends on my medication.					

<p>My life will be impossible without taking my medicine.</p>					
<p>Without my medication I will become very ill.</p>					
<p>My future health depends on taking my medication.</p>					
<p>My medications protect me from becoming worse.</p>					

Section three (part two): patient concerns about medication

	1-Strongly disagree	2-Disagree	3-Indifferent	4-Agree	5- Strongly agree
The need to take medicine worries me.					
I sometimes feel worried about the long-term effects of my medication.					
My medication is puzzle for me .					
My medication is disrupting my life.					
Sometimes ,I was worried that I became too dependent on my medication					

Section Four: Questions related to dyslipidemic patient about their disease and treatment (Medical History).					
Duration of disease (year)	year ≤	(1-5) year	(6-10)year	≥10 year	
If you are using lipid lowering drug ,please mention?	1-	2.....			
Other disease?	1-hypertension	2-CVD	3-diabetes	4- other disease	5- no
Does a member of your family suffer from cardiovascular disease?	1-Yes	2-No			
Smoking ?	1-Yes, duration	2-No	3- leave smoking since.....		
Physical activity ?	1-Yes	2-No			
Waist circumference	50-60cm	61-70cm	71-80cm	81-90cm	≥90cm
Weight	1-(50-100)kg	2- (101-150)kg	150 kg≥		

Appendices B



تقييم التزام مرضى أدوية خفض الكوليسترول بعلاجهم الموصوف وتأثره باقتناعهم بالدواء في مناطق بيت لحم ورام الله في الضفة الغربية في وزارة الصحة الفلسطينية

حضرة السيد/ السيدة المشارك بالبحث

ارجو من حضرتك المشاركة في بحث بعنوان تقييم التزام مريض ادوية خفض الكوليسترول بدوائه بناء على اعتقاده وقناعاته بفعالية العلاج المعطى والمقدم له. الباحثة طالبة ماجستير في كلية الصيدلة جامعة القدس والهدف من الدراسة هو تقييم مدى تجاوب المريض والتزامه بأدويته ورؤية العلاقة بين قناعات المريض وتأثيرها على التزامه بعلاجه ان امكن .

مشاركتك في هذا البحث تطوعية بالكامل وتستطيع الرفض, كما تستطيع ترك اجابة اي سؤال لا تود الاجابة عنه فارغا.

هويتك ستبقى مجهولة كما أن البيانات التي سيتم الحصول عليها لن تستخدم إلا لأغراض البحث العلمي وستحاط بالسرية التامة.

اذا كنت توافق على المشاركة ارجو منك الاجابة عن الاسئلة بدقة وموضوعية.

شكرا لتعاونكم

الباحثة

القسم الاول :1- المعلومات الشخصية				
العمر	1- (40≥) سنة	2- (41-55) سنة	3- (56-60) سنة	4- (61≤) سنة
الجنس	1- ذكر	2- انثى		
مكان السكن	1-بيت لحم			2- الخليل
التعليم	1- ابتدائي	2-اعدادي	3- ثانوي	4-تعليم عالي
الوظيفة (العمل)	1- لا اعمل	2- نعم اعمل (اذا كانت الاجابة بنعم : الرجاء تحديد : طبيعة العمل (الوظيفة) :		
الدخل الشهري	1-(1000≥) شيكل	2- (1000-1500) شيكل	3- (1600-2000) شيكل	4- (2000≤) شيكل
الوضع الاجتماعي :	1- اعزب\اعزباء	2-متزوجة	3- مطلقة	4- ارملة

جهاد شكارنة

القسم الثاني :استجابة المرضى والتزامهم بالدواء استنادا للمقياس الرابع للعالم مورنسكي		
1- هل سبق ونسيت أن تأخذ دواءك ؟	لا	نعم ,, كم عدد المرات التي نسيت فيها ذلك
2- هل أنت غير مهتم (مهمل) بوقت أخذك لدوائك ؟	لا	نعم , السبب
3- عندما تشعر بأنك أفضل هل توقف أخذك لدوائك ؟	لا	نعم
4- عندما تشعر أنك أسوأ هل توقف أخذك لدوائك ؟	لا	نعم

القسم الثالث (الجزء الاول): قناعات المريض الشخصية تجاه المرض والأدوية

5- اوافق بشدة	4- اوافق	3- محايد	2- أعارض	1- أعارض بشده	
					وضعي الصحي في الوقت الحاضر , يعتمد على تناول أدويتي .
					حياتي سوف تكون مستحيلة دون تناول أدويتي .
					بدون أدويتي سأصبح مريضا للعاية .
					صحتي في المستقبل تعتمد على تناول أدويتي .
					أدويتي تحمي من أن أصبح أسوأ .

القسم الثالث (الجزء الثاني) : مخاوف المريض تجاه الأدوية

5- أوافق بشده	4- أوافق	3- محايد	2- أعارض	1- أعارض بشده	الحاجه الى تناول الأدوية تقلقني .
					أشعر أحيانا بالقلق من الاثار الطويلة الامد لأدويتي .
					أدويتي هي لغز بالنسبة لي .
					أدويتي تعطل حياتي .
					أقلق في بعض الاحيان أن أصبح معتمدا جدا على أدويتي .

القسم الرابع : اسئلة موجهة للمرضى متعلقة بالعلاج والمرض (التاريخ المرضي).					
مدة المرض (سنة)	1 > -1 سنة	2 -1) -2 سنة (5	3 -3) -6) 10) سنة	4 -4 < 10 سنة	
إذا كنت تستخدم ادوية لخفض الدهون ,الرجاء ذكرها ؟					
أمراض أخرى	1- ارتفاع الضغط	2- تصلب القلب والشرايين	3- سكري	4- أمراض أخرى لم يتم ذكرها	5- لا
هل يعاني أحد افراد عائلتك من امراض القلب والشرايين ؟	1- نعم	2- لا			
مدخن	1- نعم ,الفترة الزمنية للتدخين		2- لا	3-تركت التدخين منذ	
ممارسه الرياضة	1- نعم		2- لا		
محيط الخصر	1- 50 سم	2- 61-70 سم	3- 71-80 سم	4- 81-90 سم	5- >90 سم
الوزن	1- 50 - 10 < 0) غم	2- 101-150 كغم	3- < 15 50 غم		

Appendices C:

MMAS-4	Yes	No
• Do you ever forget to take medication?		
• Are you careless at times about taking your medication?		
• When you feel better, do you sometimes stop taking your medication?		
• Sometimes ,if you feel worse when take your medicine do you stop taking it?		

لا	نعم	مقياس مورنيسكي
		1- هل سبق ونسيت أن تأخذ دواءك ؟
		2- هل أنت مهمل بأوقات أخذك لدوائك ؟
		3- عندما تشعر بالتحسن , هل توقف أخذك لدوائك أحيانا ؟
		4- في بعض الاحيان اذا شعرت بأنك أسوأ عندما تأخذ دواءك هل توقفه ؟

Appendices D:

Ethical approval

Al-Quds University
Jerusalem
Deanship of Scientific Research

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



جامعة القدس
القدس
عمادة البحث العلمي

Research Ethics Committee
Committee's Decision Letter

Date: September 15, 2019
Ref No: 86/REC/2019

Dear Dr. Hussein Hallak, Miss Jihad Shakarna,

Thank you for submitting your application for research ethics approval. After reviewing your application entitled "**Beliefs about cholesterol lowering drugs and medication adherence among Palestinian adults with hypercholesterolemia in Ramallah and Bethlehem areas of the West Bank**".

The Research Ethics Committee confirms that it is in accordance with the research ethics guidelines at Al-Quds University. Please inform us if there will be any changes in your research methodology, subjects, plan and we would appreciate receiving a copy of your final research report.

Thank you again and wish you productive research that serves the best interest of your subjects.


Dina M. Bitar PhD
Research Ethics Committee Chair

Cc. Prof. Imad Abu Kishek - President
Cc. Members of the committee
Cc. file

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تقييم التزام مرضى أدوية خفض الكوليسترول بعلاجهم الموصوف وتأثره باقتناعهم بالدواء في مناطق بيت لحم و رام الله في الضفة الغربية في وزارة الصحة الفلسطينية

اعداد : جهاد خليل احمد شكارنة

المشرف: الدكتور حسين الحلاق

الملخص:

المقدمة

فقر التزام المريض لاستخدام ادويه خفض الدهون جعل عدد مرضى الكوليسترول يتزايد سنويا على الرغم من الأدلة القوية التي تربط المرض باعتباره مؤشر خطير و عامل مساعد و مسبب اساسي في حدوث الجلطات القلبية و امراض القلب.

هناك عدد محدود من الدراسات في جميع انحاء العالم تبين العلاقة بين التزام المريض و تأثيره باقتناعه بالدواء و العلاج الموصوف له لخفض الكوليسترول لذلك تم اجراء هذه الدراسة لفحص مدى التزام المريض و تأثيره على استجابته لدوائه الموصوف له.

الاهداف

كان الهدف من هذه الدراسة هو تقييم مستوى التزام مرضى الكوليسترول بأدويتهم و تأثير قناعاتهم على التزامهم بهذه الادوية . و توضيح العلاقة بين التزام المرضى بدوائهم و المتغيرات الديموغرافية و السريرية الاخرى المتعلقة بالمشاركين في الدراسة .

الأساليب

اجريت دراسه مستعرضة في الفترة ما بين يناير 2019 و يوليو 2019 لتقييم تأثير معتقدات المرضى حول الأدوية والعوامل الديموغرافية والسريرية التي تؤثر على تقيدهم بأدوية خفض الكولسترول.

أجريت هذه الدراسة في عيادات الرعاية الصحية الأولية الحكومية في مدينتي رام الله وبيت لحم. و تم قياس مدى الالتزام بالأدوية باستخدام مقياس مورسكي للالتزام بالدواء (4-MMAS). وقد تم تحليل النتائج باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية (SPSS).

النتائج

من بين 220 مريضاً تم تناولهم ، وافق ما مجموعه 185 مريضاً على المشاركة في الدراسة بمعدل استجابة (84.1%). منهم 106 (57.3%) من الرجال. كان ما يقارب من نصف المشاركين 88 (46.5%) \leq 56 سنة.

وفقاً لمقياس Morisky-Green-Levine ، كان عدم الالتزام بالأدوية مرتفعاً (47.6%). حيث أن غالبية المشاركين (65.5%) يؤمنون بضرورة علاجهم للحفاظ على صحتهم الجيدة.

أظهر الانحدار متعدد المتغيرات أن 4 متغيرات لا تزال كبيرة وترتبط مع عدم الالتزام. (OR = 2.52 ؛ CI: 0.9 - 4.3 ؛ P = 0.03) ؛ (OR = 3.18 ؛ CI: 1.9-5.7 ؛ P = 0.007) ؛ (OR = 3.10 ؛ CI: 2.2-4.6 ؛ P = 0.005) ؛ (OR = 2.89 ؛ CI: 1.1-4.6 ؛ P = 0.04) كانوا على الأرجح غير ملتزمين بأدويتهم.

الاستنتاج

كان عدد المرضى الغير ملتزمين بتناول ادويه خفض الدهون عالي, و وجد ان معظم مرضى خلل الكوليسترول لديهم اعتقاد ايجابي بضرورة أخذهم للدواء, و على الرغم من ذلك فان مستويات مخاوف المرضى اتجاه الدواء مرتفع ايضا . لذلك يجب على الاطباء تحديد و استهداف المرضى المعرضين لمخاطر عالية و تخصيص خطة العلاج الخاصة لهم من أجل الوصول بسيطرة كافية على عدم الالتزام لهذه الأدوية.