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Faculty of Graduate Studies

The Association Between Adherence and Beliefs about Medications among Patients with Ischemic Heart Disease: A Cross Sectional Study from Palestine

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Dedication

To my lovely mother and father

To my brothers and sisters

To the spirit of my grandmothers and grandfathers

To my supervisor

To all whom I love

Acknowledgement

I can find no words to express my thanks and gratitude to my supervisor Dr Rowa AL-Ramahi for endless support and help throughout the course of this study.

Special thanks to my university -An-Najah National University and to all my teachers for their continuous support.

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Special thanks to all patients involved in the research.

My thanks also for all people who helped me in any way to continue my study.

الاقرار

أنا الموقعة أدناه، مقدمة الرسالة التي تحمل عنوان:

The Association Between Adherence and Beliefs about Medications among Patients with Ischemic Heart Disease: A Cross Sectional Study From Palestine

أقر بأن ما اشتملت عليه هذه الرسالة إنما هو نتاج جهدي الخاص، بإستثناء ما تمت الإشارة إليه حينما وجد، وأن هذه الرسالة كاملة، أو أي جزء منها لم يقدم من قبل لنيل أي درجة أو لقب علمي أو بحثي لدى أي مؤسسة تعليمية أو بحثية أخرى.

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's Name: **اسم الطالب:**

Signature: **التوقيع:**

Date: **التاريخ:**

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List of Abbreviation

ACE-I	Angiotensin covering enzyme inhibitor
ACS	Acte coronary syndrome
AMI	Acute myocardial infarction
ARB	Angiotensin receptor blocker
ASMR	Age standardized mortality rate
BMQ	Beliefs about Medicines Questionnaire
CABG	Coronary artery bypass graft surgary
CCB	Calcium channel blockers
CHD	Coronary heart disease
CVD	Cardiovascular diseases
IHD	Ischemic heart disease
IPQ	Brief Illness Perception Questionnaire
IRB	Institutional Review Board
LL	Lipid-lowering medications
MAS	Medication Adherence Scale
MARS	Medication Adherence Report Scale
MMAS	Morisky Medication Adherence Scale
NSTSE-MI	Non-ST-segment elevation myocardial infarction
RAM	Reported Adherence to Medication Scale
PDC	Propotion of day covered
SPSS	Statistical Package for Social Sciences
STEMI	ST-segment elevation myocardial infarction
TRPs	Treatment related problems

The Association Between Adherence and Beliefs about Medications among Patients with Ischemic Heart Disease: A Cross Sectional Study from Palestine

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Abstract

Background: optimal medication adherence in patients with ischemic heart disease (IHD) is very important to prevent cardiac events and decrease the rate of mortality. Patients' beliefs about medicines are one of the most important factors that may affect adherence.

Objectives: to measure adherence to medications among Palestinian ischemic heart disease patients, and to find the effect of some patient factors and medication beliefs on their medication adherence.

Methods: the study was a cross-sectional study among patients in governmental outpatient clinics, information was obtained from patients by a face to face interview and from medical files. The Morisky Medication Adherence Scale- 8 questions (MMAS-8) and Beliefs about Medicines Questionnaire (BMQ) were used to measure medication adherence and patients' beliefs about medicines respectively.

Results: a total of 400 patients were included in the study, mean age ± standard deviation was 62.35± 9.30 years. Most patients 348(87.0%) had comorbid conditions. The majority 304 (76.0%) of patients were using at least 5 medicines. According to MMAS-8 score, 195 (48.8%) of participants were non adherent to their medicines (adherence score < 6) and

205 (51.3%) were adherent (adherence score ≥ 6). Multivariable analysis showed that patients who had others disease (comorbid conditions) had higher odds (O.R=2.316(95%CI (1.192-4.499)) of being non-adherent. patients who had higher concerns about medicines had higher odds (O.R=1.124(95%CI (1.063-1.188)) of being non-adherent, also patients who had positive harmful beliefs of medications had higher odds (O.R=1.092(95%CI (1.018-1.171)) of being non-adherent. On the other hand, Patients who had positive beliefs of medication necessity had lower odds (O.R=0.902(95%CI (0.847-0.960)) of being non-adherent.

Conclusions: Poor adherence was very common among Palestinian IHD patients. Stronger positive beliefs about necessity of treatment was associated with lower non-adherence while high concerns of long term use of medicines or harmful effects of medications were associated with higher non-adherence, which emphasizes the importance of patients' beliefs about medicines in medication adherence.

Chapter One

Introduction

Chapter One
Introduction

1.1 Background

Ischemic heart disease (IHD) is defined as lack of oxygen and decreased or no blood flow to the myocardium resulting from coronary artery narrowing or obstruction. It may present as acute coronary syndrome (ACS), which includes unstable angina and non–ST-segment elevation (NSTE) or ST-segment elevation (STE) myocardial infarction (MI), chronic stable exertional angina, ischemia without symptoms, or ischemia due to coronary artery vasospasm (variant or Prinzmetal angina) (Wells et al., 2015). IHD is the leading cause of mortality worldwide. In 2008, it accounted for 12.7% of all global mortality (Finegold et al., 2013) and in 2013, it accounted 8.1 million of all mortality (Dawn Shepard et al., 2015). IHD was counting approximately half of all mortality from cardiovascular diseases (CVD) (Dawn Shepard et al., 2015). Russia, United State of America and Ukraine showed the largest count of mortality then India and China (Nowbar et al., 2014). In 2005, Palestinian population with heart diseases including IHD was estimated to be the first reason of death (Husseini et al., 2009). For Palestinians of 40 years of age and older, age standardized mortality rate (ASMR) from acute myocardial infarction (AMI) over 5 years from 1999-2003 was 78.5 for men and 34.9 for women per 100000 population (Abu-Rmeileh et al., 2008). A higher count of new cases with ACS among Jerusalem Palestinian was reported in 1997 and also mortality rate due to

IHD was greater among Arab participants than in Jewish participants for both genders (Kark et al., 2006).

Long term use of evidence based therapy (e.g aspirin, B-Blockers, angiotensin-coverting enzyme inhibitors (ACE-I) or angiotensin receptor blockers (ARB), and statins) is very important to prevent coronary heart disease (CHD) events as stent thrombosis, systolic heart failure, recurrent MI , stroke, and sudden cardiac death (Wells et al., 2015), to achieve this we need to emphasize on medication adherence and factors associated with medication adherence for maximum benefit.

Medication adherence is defined by World Health Organization as the extent to which patients follow medical directions for long term period (World Health Organization, 2003). For patients with chronic diseases, non-adherence to medications can lead to increased healthcare cost and increased hospitalization (Sokol et al., 2005). For CVD including IHD, non-adherence is the main cause of death (Sokol et al., 2005), while adherence of patients to at least one of cardioprotective medication led to lower risk of mortality (Ho et al., 2006a), also non-adherence was associated with increased hospitalization (Ho et al., 2008). Long term of maximum adherence to evidence based therapies was associated with minimum ratio of cardiac events and lower cost (Bansilal et al., 2016). In developed countries adherence to medications was only around 50% for chronic disease, so medication adherence is a big challenge for healthcare all over the world (World Health Organization, 2003).

Studies offer a weak relationship between demographic or clinical variables and adherence to medications (Gagnon et al., 2017). Beliefs about medicines is the most effective factor that may affect adherence (Gagnon et al., 2017, Horne and Weinman, 1999). In order to estimate and improve our information of beliefs about medicines, Horne et al. improved the Beliefs about Medicines Questionnaire (BMQ) (Horne et al., 1999). The BMQ assess beliefs about medicines in general and specific beliefs about the patients' own medicines for specific disease (Horne et al., 1999). These beliefs about medicines have been related to medication adherence among patients with chronic diseases including CVD (Dias et al., 2014). Many studies have shown the effect of patients' beliefs about medicines on medication adherence among patients with chronic illness (Jamous et al., 2014, Horne and Weinman, 1999), it is possible that the association between medication adherence and patients' beliefs about medicines is different in different types of diseases. Medication adherence may also be affected by the presence of other diseases as these diseases need other medications for management. Many patients with IHD did not know the necessity of cardioprotective medications and had concerns about long term adverse effects (Allen LaPointe et al., 2010), and there was an association between decreased the necessity of cardioprotective medications beliefs and lower adherence to lipid-lowering medications (Allen LaPointe et al., 2010).

1.2 Statement of problem

Many studies have measured adherence among chronic disease patients and the association with demographic and clinical variables, while few studies have measured the association between patients' beliefs about medicines and medication adherence among IHD patients, most of them were done in non-Arab World. To the best of our knowledge, this study will be the first study in Palestine to measure the association between patients' beliefs about medicines and medication adherence among ischemic heart disease patients.

1.3 Significance of the study

Use of evidence based pharmacotherapy for optimal management of patients with ischemic heart disease is very important because poor adherence to medications can increase risk of mortality (Hamood et al., 2015).

Improving relation model between patients' beliefs, demographic variables and adherence among patients with IHD is very important for physicians and clinical pharmacists in different fields to improve therapeutic outcomes.

Adherence to medications is not expected to be optimal among Palestinian patients similar to other countries. It is important to know the rate of medications adherence and factors related to improve the situation.

1.4 Objectives

The objectives of this study are to measure adherence to medications among Palestinian IHD patients and to find the effect of patient factors and medication beliefs on their medication adherence.

Specific objectives

- To find the rate of adherence to medications among IHD patients.
- To assess patients' beliefs about medications
- To find the relation between patients' beliefs and adherence to medications
- To find any possible association between sociodemographic and clinical factors and adherence to medications.

Chapter Two

Literature Review

Chapter Two
Literature Review

Many studies all over the world and in the local region assessed medication adherence among patients with different chronic illnesses, while fewer studies targeted patients with IHD, limited number of studies targeted the association between patients' beliefs about medicines and medication adherence.

2.1. Studies from different parts of the world that have measured rate of adherence among chronic disease patients

A study from German primary care centers among chronic illness patients, using the Medication Adherence Report Scale (MARS-D) questionnaire to assess medication adherence found that 62.1% of 190 patients had suboptimal adherence. The mean MARS-D score was 23.5. they found no statistically significant associations between degree of adherence and patient characteristics (Huther et al., 2013).

Another study was carried out in the US general population and measured adherence with the 8-item Morisky Medication Adherence Scale (8-MMAS) found that low adherence was recorded by up to half of participants and only 28.6% had high adherence. Low adherence was significantly associated with: younger age, being of Hispanic origin or African-American, having stiffness with healthcare, medicines price, needing the support of others to access primary care, health limiting activity, using multiple providers, infrequent visits to primary care

providers and visiting an emergency department >3 times in last 12 months and they concluded very high level of low medication adherence in the general population, particularly for those who use multiple healthcare providers and those who experience barriers to access for regular primary care (Feehan et al., 2017).

A study was carried out among Lebanese outpatients with chronic disease using 8-MMAS to measure medication adherence indicated that 42.6% of patients were described as adherent to their medication. The most important factor that was associated with high medication adherence was the understanding how to take medicines after physician description, other factors as good drug knowledge ,ability of patients to recall drug name and good patient –doctor relationship also were indicated to be associated with good adherence. On the other hand, low adherence was associated with previous occurrence of drug side effect, chronic pain, memory problem and patients' belief that their medications are unable to change their health conditions and they concluded that patients should be regarded as active decision makers. Patient education should be regarded as basic for therapy success (Al-Hajje et al., 2015).

2.2 Studies from different parts of the world that have measured rate of adherence among patients with ischemic heart disease

In a retrospective study in Israel among AMI patients, the adherence to medications was assessed by proportion –of –days covered (PDC), they found that non-adherence to cardioprotective medications after AMI in the

outpatients was widespread, less than one quarter of patients were adherence (PDC ≥ 80%) to all cardioprotective medications, and about three-quarters of patients were adherent to at least one medication, adherent patients to all medications were usually older age, female gender, less possible to be from Arab origin, more possible to be married, more possible to have used cardioprotective medications six months before admission, and more possible to have revascularization procedures. There was a significant association between number of outpatient visits and better adherence. The presence of comorbid conditions was significantly associated with poorer adherence (Hamood et al., 2016).

A study was carried out in the USA among patients with MI to estimate the rate of cardioprotective medications (aspirine, B-blockers, statin) discontinuation after one month of hospitalization. They found that approximately 33.66% of patients discontinued the use of at least one medication by one month. Older patients and those who did not complete high school were more likely to discontinue all cardioprotective medications (Ho et al., 2006b).

In another study from the USA (Carolina) among participants with IHD to assess adherence for long period, participants were described to be adherent if they were taking medications prescribed at discharge for 1 years, they found that just 54% of participants remained adherent after 1year, adherent participants were significantly more likely to be men, married with good education and had small number of medications. Finally they concluded that providers of health care should facilitate medication regimens as

possible and make sure patients understand how drugs should be taken and for what (Kulkarni et al., 2006).

In a study among patients of rural India with CAD for more than one year, the four item MMAS was used for measuring medication adherence. About one third of patients were adherent to their medications, carelessness was the most common and forgetfulness was the least common cause of non-adherence and the study concluded that patients of rural India adhere poorly to cardiovascular medicines, so non-adherence should be investigated as a public health problem (Santra, 2015).

2.3 Studies related to the association between patients' beliefs about medicines and adherence to medications among patients with chronic illness

A study among Swedish pharmacy clients used 5-item MARS and BMQ to estimate medication adherence and patients' beliefs about medicines, respectively. They reported that about half of participants were non-adherent. Participants' beliefs with higher benefit and lower harm about medicines associated with both medication adherence and high level of education (Mardby et al., 2007).

Another study was carried out in Italian regions included 567 elderly patients with multiple therapy. They aimed to determinate the association between adherence to treatment and beliefs about medicines using 8-item MMAS and BMQ, respectively. The study found that patients reporting higher levels of necessity or concerns about their medicines showed higher

adherence (OR: 1.61, and 2.02, respectively; both p<.001). Accepting patients (high necessity and low concerns) were less likely (OR: 0.24; p<.001) to report adherence than ambivalent ones (high necessity and concerns). (Cicolini et al., 2016).

A study in Germany among 309 older patients with multiple diseases using two items from Reported Adherence to Medication Scale (RAM) and BMQ to provide medication adherence and patients' beliefs about medicines, respectively found significant association between non-adherence and number of diseases, number of drugs, BMQ-specific necessity, as increased number of diseases lead to an increase in non-adherence to treatment, however best adherence was seen with increased number of drugs. Also patients who increasingly perceived the necessity of treatment for the health were more adherent (Schuz et al., 2011).

In a study from London among 324 patients with chronic illness, measuring medication adherence and patients' beliefs about medicines through 4-item self-report questionnaires and BMQ, respectively. The study showed that large percentage of sample 89% had high beliefs in the importance and necessity of their therapy, but more than one third of them had high concerns about medicines, there was a positive correlation between necessity of medications and adherence, on the other hand there was a negative correlation between concerns about medicines use and adherence, also the higher adherence was found for patients whose necessity score were more than concerns score (necessity –concerns

difference scores), a diagnosis of asthma, a diagnosis of heart disease, and age (Horne and Weinman, 1999).

Another study in the New York showed impact of patients' beliefs on medication adherence, they used 8-item MMAS and BMQ, respectively also questions about patients' external barriers to take medicines were used. They found that 54% of patients were non-adherent to treatment. Older age associated with high medication adherence. Patients with higher beliefs and concerns about unwanted effects of medicines with more than beliefs about importance of medicines for health condition (negative beliefs) were less likely to be adherent to therapy (Gagnon et al., 2017).

A study in the USA among patients who used chronic medications to find the association between patients' beliefs about medicines and medication non-adherence which were measured by using BMQ and 9-item MMAS, respectively found that medication non-adherence significantly had positive association with concerns about medications, overprescribed medicines by doctor, and harmful effects of medicines, while controlling for other medication beliefs, specific-necessity ($p = 0.02$) and specific-concerns ($p = 0.01$) exhibited significant negative and positive associations with non-adherence, respectively (Phatak and Thomas, 2006).

Another study in Saudi Arabia among 408 patients with chronic illnesses assessed medication adherence and patients' beliefs about medicines by using 8-item MMAS and BMQ, respectively. The study found that 56.9% of patients were non-adherent. Positive association was showed between

medication adherence and specific necessity and there was negative association between medication adherence and specific concerns, general overuse, and harm effect of medicines. Multivariable analysis revealed that age, number of medications, number of medical conditions, specific necessity and concerns beliefs, and general harm beliefs were associated with medication adherence. They concluded that prevalence of low adherence among patients on long-term medications is high and it is related to negative beliefs about medications (Alhewiti, 2014).

In a study among Jordanian patients with chronic illnesses, adherence to medication and patients' beliefs about medicines were measured by using 8-item MMAS and belief dimension section of the Brief Medication Questionnaire (BMQ), respectively. They found about half of participants were non-adherent to their therapy. Significant association was found between best adherence and minimum number of medications, minimum number of disease states and minimum number of treatment related problems (TRPs), and adherence was negatively associated with younger age, lower educational level, lower number of physician visits per month , difficult in remembering to take treatment at time and complicated regimen of therapy. There was a significant association between lower adherence and patients negative beliefs about the potency of therapy and knowledge that therapy will prevent future complication of health conditions (Basheti et al., 2016).

2.4 Studies related to the association between patients' beliefs about medicines and adherence to medication among patients with ischemic heart disease

A study in the USA was carried out among 387 participants after coronary artery bypass graft surgery (CABG), 132 (34%) completed the questionnaire. Nonparticipants were more likely to be female and have undergoes 1-or-2-vessel CABG procedures compared with 3-or 4-vessel procedures. To measure the association between medication adherence and patients' beliefs about cardioprotective medication using 4-item Medication Adherence Scale (MAS) and BMQ. The study found that adherent behavior was reported in 73 of 132 patients (55%). The average period between CABG and the survey was 16 months. Non-adherent patients were in stronger agreement on the General Overuse ($p = 0.01$) and General Harm ($p = 0.04$) scales. The adjusted odds of adherent behavior were significantly lower, with an increasing General Overuse score (OR 0.83; 95% CI 0.72 to 0.95; $p = 0.007$); an annual income of $50,000 to $100,000 relative to less than $20,000 (OR 0.36; 95% CI 0.14 to 0.91; $p = 0.031$), and a living status of "alone" compared with "with adults and no children" (OR 0.20; 95% CI 0.06 to 0.65; $p = 0.007$). The odds ratio of self-reported adherence was higher with increasing age (OR 1.05; 95% CI 1.01 to 1.09; $p = 0.023$). They concluded that patient beliefs and attitudes regarding medications, along with other social, economic, and demographic factors, help explain differences in self-reported adherence to standard drug therapy following CABG (Khanderia et al., 2008).

Another study in the USA included 208 patients with ACS who were interviewed 10 months after discharge, their mean ± SD age was 64.9 ±13.0 years, with 60.6% male, 95.7% white, 57.3% with a collage education, 87.9% living with at least other person , and 42% indicating excellent or very good health. They used 4-item MAS and BMQ to measure medication adherence and patients' beliefs about medicines, respectively. The study found that the percent of patients continuing on medication at the time of survey ranged from 87.4% for aspirin to 66.0% for angiotensin-converting enzyme inhibitors. Reasons for stopping medication included physician discontinuation or adverse effects. Of patients still on drug therapy, the mean MAS was 1.3 +/- 0.4, with 53.8% indicating non-adherence (score >1). The final regression model showed R(2) = 0.132 and included heart-related health status and Specific Necessity as significant predictor variables, they concluded that after ACS, not all patients continue their drugs or take them exactly as prescribed. Determining beliefs about illness and medication may be helpful in developing interventions aimed at improving adherence (Sud et al., 2005).

Another study in the USA among 973 patients with ACS after discharge from hospital (the patients were on 3 medication classes (B-blockers, ACEI/ ARB and lipid-lowering medications (LL)) to show the association between patients' beliefs and adherence to medications 3 months after discharge, three cohorts were identified for analysis, 882 were in the B-blocker cohort, 702 in the ACEI/ARB cohort, and 873 in the LL cohort. To measure patients' beliefs, BMQ-specific was used, and adherence was

measured by asking patients how often they failed to take a dose in past month. They found that adherence ratio at 3 months were 77%, 74%, 77%, respectively. Strong necessity score had significant association with higher adherence to B-blockers, ACEI/ARB, and LL while strong perceived concern score of medication adverse effects had significant association with lower adherence for all medication classes (Allen LaPointe et al., 2011).

In a study from Portugal that included 254 patients with IHD using 8-item MMAS and BMQ for evaluation medication adherence and patients' beliefs about medicines, respectively. The patients had a mean age of 66.94 years, 26% were females, 73.2% were married, 69.3% had education up to the 4^{th} grade and 57.1% lived in village. They found that about half of patients (50.4%) did not adhere to the therapy. Women had a strong belief in the specific needs of the prescribed medications, while men expressed greater belief in relation to long-term side effects (P>.05). Patients who expressed a low belief about the harmful potential of medicines revealed predictors of adherence to medication (Dias et al., 2014).

Another study in Ireland on CHD patients using 5-item MARS and BMQ for measuring medication adherence and patients 'beliefs, respectively found that medication beliefs were moderately related to medication adherence, accounting for about 7% of the variance in scores. A strong belief in the necessity of one's medication and a lower level of concern about one's medication were associated with higher levels of adherence. They concluded that an illness perception approach did not prove helpful in

predicting secondary preventive behavior among this group of patients. However, beliefs about medications appear to be reasonable predictive of medication adherence (Byrne et al., 2005).

A study was carried out among Jordanian patients using 8-item CHD MMAS and IPQ for patients' beliefs to find adherence to healthy behaviours and medications. They found that male patients perceived lower consequences ($p<0.05$) and had a better understanding of their illness than female patients ($p<0.001$). There were significant associations between increasing age and each of timeline ($r=0.326$, $p<0.001$), ($r=0.146$, $p<0.024$) and coherence ($r=-0.166$, $p<0.010$). Adjusted regression analysis showed that exercise adherence was predicted by both a strong perception in personal control (β 2.66, 95% confidence interval 1.28-4.04), timeline (β -1.85, 95% confidence interval 0. 8-2.88) and illness coherence (β 2.12, 95% confidence interval 0.35-3.90). Medication adherence was predicted by perception of personal control and treatment control. Adherence to a low-fat diet regimen was predicted by perception of illness coherence only (odds ratio 12, 95% confidence interval 1.04-1.33). Finally, the majority of patients thought that the cause of their heart problem was related to coronary heart disease risk factors such as obesity and high-fat meals. They concluded that patients' illness beliefs are candidates for a psycho-educational intervention that should be targeted at improved disease management practices and better adherence to recommended healthy behaviors (Mosleh and Almalik, 2016).

2.5 Studies from Palestine related to medication adherence and the associated factors among different populations

A study was carried among Palestinian geriatrics ≥ 60 years old living with chronic disease found that global knowledge and global adherence scores were (67.57%) and (89.29%), respectively. Adequate levels of knowledge were 71.4%, and of adherence 75%. Significant higher levels of global knowledge and global adherence were recorded for males, and for participants who hold a Bachelor's degree, those who live on their own, and did physical activity for more than 40 hours/week. Furthermore, workers, participants with a higher monthly income, and non-smokers had a higher knowledge level. They found positive correlation between participants' global adherence and global knowledge. Negative correlation was found between participants' global knowledge and adherence with age. Negative correlation between global knowledge and the number of drugs taken was predicted. So they concluded that patients with a higher level of knowledge are more adherent to their medications and that better understanding of socio-demographic factors has a clear influence on the level of knowledge and adherence to medications. (Najjar et al., 2015)

Another study measured medication adherence among Palestinian hypertensive patients, 8-item MMAS was used to assess medication adherence. The study found 244 (54.2%) of participants were poor adherent to their medications. Poor adherence was associated with younger age (< 45 years), living in a village, evaluating health status as very good, good or poor compared with excellent, forgetfulness, fear of getting used of

medication, adverse effect, and dissatisfaction with therapy. They concluded that poor adherence to medications was very common (Al-Ramahi, 2015).

Another study assessed medication adherence among patients with type 2 diabetes mellitus, used 4-item MMAS. The study was found 214 (58%), 146 (39.5%) and 9 (2.5%) had high, medium and low adherence, respectively. Medication adherence was associated with female gender and perception of diseases' severity. They concluded that adherence to medication was suboptimal (Elsous et al., 2017).

A study included patients with chronic diseases, aim of this study was to find association between medication adherence and patients' beliefs about medicines, used the 8-items MMAS and BMQ to assess medication adherence and patients' beliefs about medicines, respectively. They found that only 30.5% of patients were adherent to treatment. Most patients agreed or strongly agreed that treatment were important for their health. However, more than half of patients were concerned about either having to take medicines for long base or becoming dependent on their medicines. Patients with higher beliefs about necessity of medications have been more adherent. On the other side, patients who had higher concern beliefs about medication have been less adherent. They concluded that beliefs about medicines are major effective factor to medication adherence.(Jamous et al., 2014)

A study included patients with type 2 diabetes mellitus aimed to assess medication adherence and the association with patients' beliefs about medicines, used 8-item MMAS and BMQ to measure medication adherence and patients beliefs, respectively, they found the mean ± SD age of the participants was 58.3 ± 10.4 (range = 28 – 90) years. More than half (53.3%) of the participants were females. Approximately 42.7% of the study sample were considered non-adherent (MMAS-8 score of < 6). Non-adherence to anti-diabetic medication was significantly associated with beliefs about necessity of medications, concerns about adverse effect of medications and beliefs that medicines in general are essentially harmful. Diabetic patients with strong beliefs in the necessity of their anti-diabetic medications were less likely to be non-adherent. However, diabetic patients with high concerns about adverse effect of anti-diabetic medications and those with high belief that all medicines are harmful were more likely to be non-adherent. They concluded that patients beliefs about medicines is important factor in understanding medication adherence (Sweileh et al., 2014).

Chapter Three

Methodology

Chapter Three
Methodology

3.1 Study design

The study was across sectional study, a face to face interview was used.

3.2 Sample population

This study included a convenient sample from patients visiting outpatient cardiology and internal clinics at Alia Governmental Hospital and others four outpatient clinics of Ministry of Health in Hebron (Halhul, Alkirnatayna, Al-Rama, and Ain Sarah outpatient clinics) between 1 January to 15 October 2017.

3.3 Sample size

The sample size was calculated using Raosaft sample size calculator, as the number of population is not available, the recommended sample size was 385 participants (confidence level of 95%, and a margin of error of 5%),so it was decided to include a convenient sample of at least 400 patients (114 of patients from the hospital and 286 from primary care clinics).

3.4 The inclusion criteria

Patients ≥ 18 years age.

Patients who had been diagnosed with any ischemic heart disease (any type of angina and any type of myocardial infarction).

Patients who have been on prescribed medications for at least 3 months.

3.5 Data collection

The data collection tool was a face to face interview which included demographic and clinical information: age, gender, educational level, insurance, income and co-morbidities. Patients were asked about details of their prescribed drugs along with drug class, frequency per day, in addition to the 8 questions MMAS-8 (Morisky et al., 2008) and BMQ (Horne et al., 1999) (Appendix 1). The duration of data collection for every patient was around 15 minutes.

3.6 Study tools

8-questions of (MMAS-8) (Morisky et al., 2008) and BMQ (Horne et al., 1999) were the tools used to assess adherence to medications and patients' beliefs, prospectively. The approval and Arabic translation were described and published by other authors in previous studies (Al-Ramahi, 2015, Jamous et al., 2014).

3.7 Measurement of adherence

Adherence assessment through the 8-item self-report MMAS was used. This medication adherence measure was proved to be reliable with good concurrent and predictive validity in outpatient settings. It is an 8-item questionnaire with a high reliability and validity, which has been particularly useful in chronic conditions (Morisky et al., 2008). The 8 questions are found in appendix 2.

Self-report measures, such as the one proposed in this study, are simple and economical to use, and can provide real-time feedback regarding adherence behavior and potential reasons for poor adherence including social, situational and behavioral factors affecting adherence.

In the MMAS-8 items questionnaire, the first 7 questions are yes / no questions and the 8th question has 5 multiple choices answers; never, rarely, sometime, usually, or all the time. For each one of the yes /no questions, answer yes takes 0 score and no answer takes 1 score except for the fifth question where yes answer takes 1 score, and for the last question, the 5 choices range from 0-1 as each one of the choices give an decrease of 0.25, zero score is given for all the time choice. The sum of the scores of the 8 questions provides MMAS scores from 0-8, MMAS score >6 was considered as good adherence while MMAS score <6 was considered as non-adherence (Morisky et al., 2008).

3.8 Beliefs about medicine measurement

Beliefs about medications was measured also by using BMQ which contains two sections; The BMQ-Specific which assesses patients' beliefs about medications prescribed for personal use and BMQ-General which assesses patients' beliefs about medications in general (Horne et al., 1999). The items are found in appendix 3.

Each statement has a 5-point likert scale (strongly disagree, disagree, uncertain, agree, and strongly agree), then answers were scored from 1 for strongly disagree to 5 for strongly agree, higher scores estimate stronger

beliefs for each part, then for number of participants who answered strongly disagree or disagree were collected together and also of strongly agree or agree were collected together in descriptive information.

Specific –necessity and specific –concerns scales have 5 items for each scale and scores ranged from 5 to 25. Lower specific–necessity scores show weaker perceptions of personal need of medications to protect health. Lower specific-concerns scores report weaker concerns about negative effects of medications. The general-overuse and the general harm scales have 4 items for each scale and scores ranged from 4-20. Lower scores on general –overuse report positive views about the way in which medicines are prescribed by doctors. Lower scores of general-harm scale report positive views about medications (Horne et al., 1999).

3.9 Ethical considerations

Permissions from the Institutional review Board (IRB) of An-Najah National University (Appendix 4), and Palestinian Ministry of Health (Appendix 5) were obtained before the study. Patients' verbal consent was obtained also.

3.10 Statistical analyses

Statistical analysis was performed using Statistical Package for Social Sciences (SPSS version 20). Descriptive analysis was computed using mean± standard deviation or median (lower-upper value) for continuous data, frequencies and percentage were calculated for categorical variable

which were compared using Chi-squared and Fisher's exact test, as applicable. Multivariable logistic regression was done using adherence vs. non-adherence as the outcome variable, while various study variables were used as independent variables. A p-value of less than 0.05 was considered to be statistically significant for all analyses.

Chapter Four

Results

Chapter Four

Results

4.1 General characteristics

A total of 400 patients were included in the study, mean age ± standard deviation was 62.35 ±9.30 years with a range from 35 to 85years, more than two third of the included participants were males 294 (73.5%), females were 106 (26.5%). About one half of participants had primary education level 208(52.0%). Most of participants were living in city 331 (82.8%). Most of participants 342 (85.5%) were married. About one quarter of participants had income from 2000-3000 NIS. Large number of participants had governmental health insurance 240(60.0%). General characteristics of the patients are shown in table 1.

Table 1: General characteristics of the patients (N=400).

Variable	Frequency	Percentage (%)
Patients present in primary care	286	28.5
Patients present in hospital	114	71.5
Gender		
Male	294	73.5
Female	106	26.5
Education level		
Illiterate	51	12.75
Primary	208	52.0
Secondary	77	19.25
Graduate/postgraduate	64	16.0
Residency		
City	331	82.75
Village/ camp	69	17.25
Social state		
Married	342	85.5
Single/divorced/widowed	58	14.5
Monthly income		
Less than 1000 NIS	66	16.5
1000- 2000 NIS	108	27.0
2000- 3000 NIS	115	28.8
3000- 5000 NIS	87	21.8
More than 5000 NIS	24	6.0

Health insurance types		
Yes, governmental	240	60.0
Yes, private	116	29.0
Yes, social affairs	43	10.75
No	1	0.25
Presence of other chronic diseases		
Yes	348	87.0
No	52	13.0
Number of medications		
≤ 5	96	24.0
≥ 5	304	76.0

4.2 Clinical characteristics

Most patients had comorbid conditions 348 (87.0%). Many patients had hypertension 259(64.75%), type 2 diabetes mellitus 240 (60.0%) and dyslipidemia 140 (35.0%), patient with both hypertension and diabetes mellitus were 186(46.5%), participants who suffered from hypertension, diabetes mellitus and dyslipidemia were 79(19.25%). Comorbidities are shown in table 2.

Table 2: Frequency and percentage of comorbidities among patients (N= 400).

Type of comorbidity	Frequency (%)
Hypertension	259 (64.75)
Type 2 diabetes mellitus	240 (60.0)
Dyslipidemia	140 (35.0)
Gout	57 (14.25)
Heart failure	33 (8.25)
Asthma or chronic obstructive pulmonary disease	28 (7.0)
Hypothyrodism or hyperthyroidism	13 (3.25)
Chronic kidney disease	9 (2.25)
Others	83 (20.75)
Both hypertension and type 2 diabetes mellitus	186 (46.5)
Hypertension, type 2 diabetes mellitus and dyslipidemia	79 (19.25)
Hypertension, type 2 diabetes mellitus and gout	36 (9.0)

The majority 304 (76.0%) of patients were using at least 5 medicines with an average of 7.24±2.40, about 372 (93.0%) of patients were on aspirin, 360 (90.0%) were on atorvastatin and more than one half 241(60.25%) were managed by bisoprolol and approximately one half 223(55.75%) of included patients were given clopidogrel (Table 3).

Table 3: Frequency and percentage of medications used by patients.

Drug	Frequency (%)
Statins	**373(93.25)**
Atorvastatin	360(90.0)
Rosuvastatin	12(3.0)
Simvastatin	1(0.25)
Aspirin	**372(93.0)**
B-Blockers	**304 (76)**
Bisoprolol	241(60.25)
Atenolol	38(9.5)
Carvedilol	23(5.75)
Propranolol	2(0.5)
Metoprolol	1(0.25)
Clopidogrel	**223(55.75)**
Angiotensin converting enzyme inhibitors (ACE-I) or angiotensin receptor blockers (ARBs)	**201(50.25)**
Enalapril	86(21.5)
Ramipril	40(10.0)
Valsartan	34(8.5)
Losartan	22(5.5)
Candesartan	19(4.75)
Metformin	**178(44.5)**
Ranitidine	**151(37.75)**
Furosemide	**138(34.5)**
Nitrates	**117 (29.25)**
Isosorbide mononitrate	98(24.5)
SL isosorbide dinitrate	19(4.75)
Calcium Channel Blockers (CCBs)	**113 (28.25)**
Amlodipine	108(27.0)
Nifedipine	4(1.0)
Dilitazem	1(0.25)
Insulin	**101(25.25)**
Omeprazole	**83(20.75)**
Glimepiride	**71(17.75)**
Vitamin D3	**65(16.25)**

Allopurinol	**57(14.25)**
Hydrocholothiazide	**45(11.25)**
Spironolactone	**41(10.25)**
Carbamazepine	**41(10.25)**
Calcium carbonate	**38(9.5)**
Doxozosin	**21(5.25)**
Pantoprazole	**21(5.25)**
Warfarin	**16(4.0)**
Miflonide inhaler	**16(4.0)**
Digoxin	**14(3.5)**
Levothyroxine	**13(3.25)**
Diclofenac	**13(3.25)**
Others medication	**138(34.5)**

4.3 Medication adherence and patient's beliefs

Table 4 shows patients' answers to the Morisky medication adherence scale. According to MMAS-8 score, one hundred ninety five (48.8%) of participants were non adherent to their medicines (adherence score < 6) and two hundred five (51.3%) were adherent (adherence score ≥ 6) (Figure 1).

Table 4: Patients' responses to the eight questions of Morisky Medication Adherence Scale.

Number	Question	Yes Frequency (%)	No Frequency (%)
1	Do you sometimes forget to take your medicines?	223(55.8)	177(44.3)
2	Over the past two weeks, were there any days when you did not take your medicines?	166(41.5)	234(58.5)
3	Have you ever cut back or stopped taking your medication without telling your doctor because you felt worse when you took it?	35(8.8)	365(91.3)
4	When you travel or leave home, do you sometimes forget to bring along your medications?	56(14.0)	344(86.0)
5	Did you take your medicines yesterday?	345(86.3)	55(13.8)

6	When you feel like your symptoms are under control, do you sometimes stop taking your medicine?	37(9.3)	363(90.8)
7	Taking medication every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?	195(48.8)	205(51.3)
8	How often do you have difficulty remembering to take all your medications? Never 134(33.5) Rare 134(33.5) Sometime 91(22.8) Most times 26(6.5) All time. 15(3.8)		

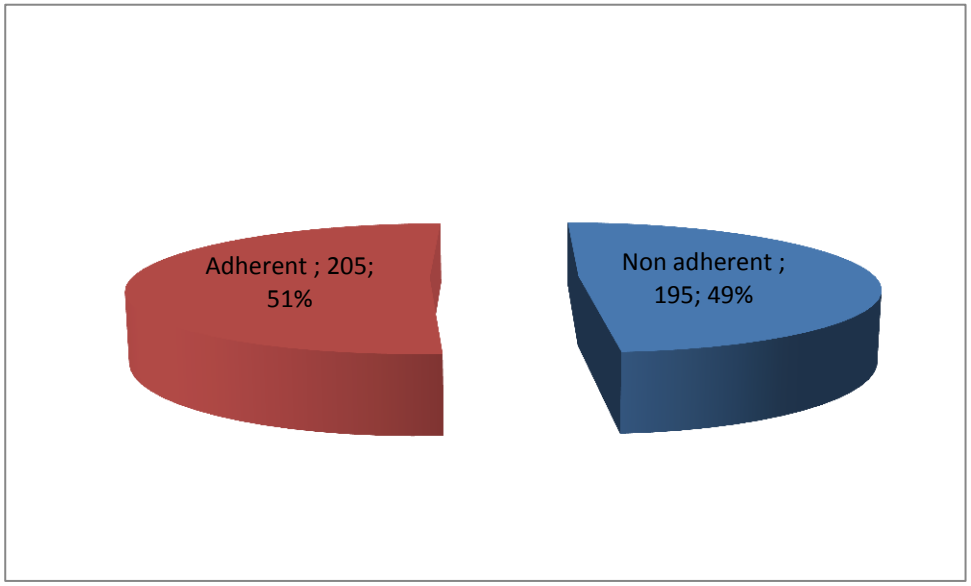

Figure 1: Frequency and percentage of patients who were adherent to their medications according to Morisky medication adherence Scale**.**

In Table 5, participants' responses to BMQ items are presented

Table 5: Participants' response to Beliefs about Medicines Questionnaire (BMQ) items (N=400).

Statements	Strongly disagree/disagree N (%)	Uncertain N (%)	Strongly agree/agree N (%)
Specific-necessity			
My life would be impossible without my medicines.	84 (21%)	31 (7.75%)	285 (71.25%)
Without my medicines, I would be very sick.	91 (22.75%)	54 (13.5%)	255 (63.75%)
My health, at present, depends on my medicines.	39 (9.75%)	18 (4.5%)	343 (85.75%)
My medicines protect me from becoming worse.	22 (5.5%)	27 (6.75%)	351 (87.75%)
My health in the future will depend on my medicines.	28 (7%)	97 (24.25%)	275 (68.75%)
Specific-concerns			
I sometime worry about long term effects of my medicines.	162 (40.5%)	39 (9.75%)	199 (49.75%)
Having to take medicines worries me.	210 (52.5%)	20 (5%)	170 (42.5%)
I sometime worry about becoming too dependent on my medicines	158 (39.5%)	67 (16.75%)	175 (43.75%)
My medicines disrupt my life.	325 (81.25%)	13 (3.25%)	62 (15.5%)
My medicines are mystery to me.	234 (58.5%)	13 (3.25%)	153 (38.25%)
General-overuse			
If doctors had more time with patients, they would prescribe fewer medicines.	152 (38%)	122 (30.5%)	126 (31.5%)
Doctors use too many medicines.	212 (53%)	55 (13.75%)	133 (33.25%)
Doctors place too much trust in medicines.	36 (9%)	74 (18.5%)	290 (72.5%)
Natural remedies are safer than medicines.	149 (37.25%)	105 (26.25%)	146 (36.5%)
General-harm			
Medicines do more harm than good.	259 (64.75%)	42 (10.5%)	99 (24.75%)
People who take medicines should stop their treatment for a while every now and again.	288 (72%)	67 (16.75%)	45 (11.25%)
Most medicines are addictive.	187 (46.75%)	60 (15%)	153 (38.25%)
All medicines are poisons.	192 (48%)	64 (16%)	144 (36%)

4.4 Univariate analysis of factors associated with non-adherence

Univariate analysis (Table 6) showed significant association with residency, presence of other chronic diseases, specific necessity to use their medications, specific concerns about adverse effect of medication, general overuse of medications by doctors and general harmful effect of drugs use (p-value <0.05). There were no association with age, gender, educational level, social state, monthly income and number of medications used.

Table 6: Univariate analysis of variables associated with non-adherence.

Variable	Total sample N=400	Non – adherent N=195	Adherent N=205	Test type	P-value
Age (Mean ±SD)	62.35±9.30	62.07±9.01	62.63±9.58	T-Test	0.549
Patients present in primary care	286	145(74.4%)	141(68.8%)	Chi-Square	0.217
Patients present in hospital	114	50(25.6%)	64(31.2%)		
Gender				Chi-Square	0.451
Male	294	140(71.8%)	154(75.1%)		
Female	106	55(28.2%)	51(24.9%)		
Educational level				Chi-Square	0.322
Illiterate	51	30(15.4%)	21(10.2%)		
Primary	208	103(52.8%)	105(51.2%)		
Secondary	77	33(16.9%)	44(21.5%)		
Graduate/postgraduate	64	29(14.9%)	35(17.1%)		
Residency				Chi-Square	**0.022**
City	331	170(87.2%)	161(78.5%)		
Village/ camp	69	25(12.8%)	44(21.5%)		
Social state				Chi-Square	0.352
Married	342	170(87.2%)	172(83.9%)		
Single/divorced/widowed	58	25(12.8%)	33(16.1%)		
Monthly income				Chi-Square	0.441
Less than 1000 NIS	66	36(18.5%)	30(14.6%)		
1000- 2000 NIS	108	50(25.6%)	58(28.3%)		
2000- 3000NIS	115	61(31.3%)	54(26.3%)		
3000- 5000NIS	87	39(20.0%)	48(23.4%)		
More than 5000NIS	24	9(4.6%)	15(7.3%)		

Health insurance Yes, governmental Yes, private Yes, social affairs No	 240 116 43 1	 116(48.3%) 54(46.6%) 25(58.1%) 0(0%)	 124(51.7%) 62(53.4%) 18(41.9%) 1(100%)	Chi-Square	0.439
Presence of other chronic diseases Yes No	 348 52	 177(90.8%) 18(9.2%)	 171(83.4%) 34(16.6%)	Chi-Square	**0.029**
Number of medications ≤ 5 ≥ 5	 96 304	 46(23.6%) 149(76.4%)	 50(24.4%) 155(75.6%)	Chi-square	0.851
	Medium (lower-upper)				
Specific –necessity score	21(7-25)	20(17-22)	21(19-23)	Mann Whitney U Test	**0.007**
Specific –concerns score	14(5-25)	15(12-18)	13(10-16)	Mann Whitney U Test	**<0.001**
General –overuse score	12(6-20)	13(11-14)	12(11-14)	Mann Whitney U Test	**0.047**
General –harm score	10(4-20)	11(8-13)	9(7-12)	Mann Whitney U Test	**<0.001**

4.5 Multivariate analysis of factors associated with non-adherence

Factors which were found to be associated with non-adherence (P value <0.05) in univariate analysis were included in multivariate analysis. Multivariable analysis showed that patients who had others disease (comorbid conditions) had higher odds (O.R=2.316(95%CI (1.192-4.499)) of being non-adherent. patients who had higher concerns about medicines had higher odds (O.R=1.124(95%CI (1.063-1.188)) of being non-adherent, also patients who had positive harmful beliefs of medications had higher odds (O.R=1.092(95%CI (1.018-1.171)) of being non-adherent. On the other hand, Patients who had positive beliefs of medication necessity had lower odds (O.R=0.902(95%CI (0.847-0.960)) of being non-adherent. (Table 7)

Table 7: Factors associated with medication non-adherence using binary logistic regression analysis

Factors	Standardized coefficients Beta	P -value	Odds (95% confidence interval of odds) (Lower-Upper)
Residency	0.329	0.278	1.39(0.767-2.518)
Presence of other chronic diseases	0.840	0.013	2.316(1.192-4.499)
Specific-necessity	-0.103	0.001	0.902(0.847-0.960)
Specific-concerns	0.117	<0.001	1.124(1.063-1.188)
General-overuse	-0.017	0.721	0.983(0.894-1.080)
General-harm	0.088	0.014	1.092(1.018-1.171)

Chapter Five

Discussion

Chapter Five

Discussion

This study assessed the association between beliefs and adherence to drug treatment among Palestinian IHD disease patients. In this study 48.8% of participants were non-adherent, this finding was in agreement with many other studies in other parts of the world, it is lower than other studies as 50.4% of patients were non-adherent in Portugal (Dias et al., 2014) and a study that included patients with ACS in the USA as 53.8% of patients had poor adherence (Sud et al., 2005). On the other hand, Khanderia et al found lower ratio of non-adherence (45%) to cardioprotective medications after CABG (Khanderia et al., 2008), also another study in the USA (Carolina) had lower ratio of non-adherence (46%) than us (Kulkarni et al., 2006). For medication adherence among patients with chronic illness, non-adherence in New York and Germany reached to 54% and 62.1%, respectively (Schuz et al., 2011, Gagnon et al., 2017), which are considered as very high ratios, also in Arab world for example Saudi Arabia and Lebanon reported high rate of non-adherence reached to 56.9% and 57%, respectively (Alhewiti, 2014, Al-Hajje et al., 2015). Basheti et al indicated that 46.1% of Jordanian patients were non-adherent to their medications and in Palestine high percentage (69.5%) of chronic illness patients were non-adherent (Jamous et al., 2014, Basheti et al., 2016), these differences may be explained by the disease severity, type of patients, type of disease and the differences in methodologies. However, in summary, poor adherence with medications is high in this study similar to other studies among patients with chronic diseases.

It has been reported that medication beliefs have more powerful effect on medication adherence than clinical and demographic factors (Gagnon et al., 2017, Horne and Weinman, 1999). In this study, patients who had positive beliefs about the importance of therapy were less likely to be non-adherence, which is similar to other studies in the USA among participants with ACS as those who perceived the importance of cardioprotective medications had the best adherence (Sud et al., 2005, Allen LaPointe et al., 2011), also there were studies among patients with other chronic diseases which confirmed the same result in New York , Saudi Arabia, Jordan and Palestine (Alhewiti, 2014, Jamous et al., 2014, Basheti et al., 2016, Gagnon et al., 2017). Patients with higher concerns about adverse effect of medicines were more likely to be non-adherence, this result was in agreement with other studies also as in a study by Allen LaPointe et al among participants with ACS (Allen LaPointe et al., 2011), In addition to Mardby et al, Alhewiti et al, Jamous et al and Gagnon et al among patients with other chronic diseases (Mardby et al., 2007, Alhewiti, 2014, Jamous et al., 2014, Gagnon et al., 2017). Effect the awareness of medication necessity and low concerns from medications on medication adherence can be support by Byrne et al who found better medication adherence among IHD participants who had better beliefs about the necessity of drug therapy and minimum concerns from un-wanted effects of their therapy (Byrne et al., 2005). Another study in London among patients with chronic illness found lowest adherence ratio among patients whose concerns score was more than necessity score (Horne and Weinman, 1999), furthermore in a study from New York, patients whose beliefs and concerns about

medicines adverse effect were more than beliefs about importance of medicines were less likely to be adherent to therapy (Gagnon et al., 2017), however, Cicolini et al found that higher necessity and concerns about drug therapy was associated with higher medication adherence among older participants with multiple therapy (Cicolini et al., 2016).

Regarding general harm part, patients with higher harmful beliefs of medication were assessed to have higher medication non-adherence, similar to other studies as in a study among patients after CABG surgery which found that patients' concerns about toxicity of medicines (general harm) was associated with poor adherence (Khanderia et al., 2008), also this result is consistent with other studies among chronic illness patients in Saudi Arabia, Swedish pharmacy clients, and a study in the USA in patients who used chronic medications (Phatak and Thomas, 2006, Mardby et al., 2007, Alhewiti, 2014).

In this study, participants who had other diseases (comorbid conditions) had higher ratio of being non-adherence, this is also similar to other studies among participants with acute myocardial infraction (Hamood et al., 2016), and others among Jordanian and German members with chronic diseases (Schuz et al., 2011, Basheti et al., 2016), however, Alhewiti found that increased number of diseases was associated with better adherence (Alhewiti, 2014).

In our study, neither number of medications nor number of medications were associated with medication adherence which confirms the view that patients' beliefs about medicines and knowledge about treatment role have higher effect on adherence level rather than the number of medications that the patients take or their health state and severity of symptoms.

In this study, most patients understood the importance of medications for their health as most of them strongly agreed or agreed with the five specific necessity questions which is good but also 49.75% of patients concerned about the effect of medicines for long period, so it is important for their physicians and clinical pharmacists to be aware to this point and to give patients the suitable education and counseling about their medications to improve their benefits about therapy, to decrease their concerns about adverse effects and to solve their drug-related problems if present, this can be of a great importance in improving their adherence to their medications.

Finally medication adherence problem present among another Palestinian population as hypertensive participants in which low medication adherence reached 54.2% of participants (Al-Ramahi, 2015), in a study that included diabetic patients in Nablus about 42.7% of patients were estimated as non-adherent, (Sweileh et al., 2014), furthermore high adherence appeared in diabetic patients in the Gaza Strip (58%), however, this did not reach to optimal level (Elsous et al., 2017). Importance of patients' beliefs about medicines on medication adherence can also be noted in another population in Palestine, diabetic participants with negative beliefs about importance of treatment was associated with non-adherence. On the other hand, non-

adherence to medications was associated with high concern about side effect of medications and high beliefs that medications are harmful in general (Sweileh et al., 2014).

Study limitations and strengths

A face to face interview was used to measure medication adherence and patients' beliefs about medicines, so there is a possibility of recall bias and overestimation of the level of adherence. Also, the sample was a convenience sample in one area of Palestine (Hebron) which may limit the generalization of results.

On the other hand, the study tools are well-known widely used tools (MMAS-8 and BMQ), and this is one of the limited studies in the Arab world and to the best of our knowledge, the first in Palestine to assess the association between medication adherence and patients' beliefs about medicines among patients with ischemic heart disease.

Conclusions and Recommendations

Conclusions

Poor adherence was very common among Palestinian IHD patients. Stronger positive beliefs about necessity of treatment was associated with low non-adherence while high concerns of long term use of medicines or harmful effects of medications were associated with higher non-adherence, which emphasizes the importance of patients' beliefs about medicines in medication adherence.

Recommendations

We recommend that providers of health care should review medication regimens as possible and make sure patients understand the importance of their medications, how drugs should be taken and for what. We recommend expanding the role of clinical pharmacists in counseling and patients' education to make sure that all patients know well about their own medications and understand their medications goal. Also we recommend having other studies to find the factors that may affect patients' beliefs and how can we change this in a positive way to improve medication adherence.

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Appendixes

Appendix 1

Data collection form

انا طالبة ماجستير صيدلة سريرية – جامعة النجاح الوطنية_ اقوم بعمل دراسة حول "العلاقة بين الإلتزام والمعتقدات حول الأدوية عند مرضى نقص التروية القلبية: دراسة مقطعية من فلسطين". ولذلك ارجو الموافقة على الإجابة عن هذا الاستبيان بدقه، نتائج هذه الدراسة ستستخدم لغرض الدراسة العلمية فقط، ولن يكون بالإمكان التعرف على هوية المشاركين في تعبئة هذا الاستبيان. المشاركة في هذه الدراسة اختيارية و طوعية.

الرجاء التكرم بالإجابة على هذه الأسئلة شاكرين لكم تعاونكم...

العمر: _____

الجنس: ☐ ذكر ☐ أنثى

المستوى التعليمي: ☐ أمي ☐ المرحلة الابتدائية/الإعدادية ☐ المرحلة الثانوية ☐ التعليم الجامعي ☐ أعلى من ذلك

أين تعيش في فلسطين؟ ☐ مدينة ☐ قرية ☐ مخيم

الحالة الاجتماعية: ☐ أعزب ☐ متزوج ☐ مطلق ☐ أرمل

الدخل الشهري للعائلة بالشيكل: ☐ اقل من1000 ☐ 1000-2000 ☐ 2000-3000 ☐ 3000-5000 ☐ أكثر من 5000

هل لديك تأمين صحي؟ ☐ نعم، تأمين حكومي ☐ نعم، تأمين خاص ☐ لا

هل تعاني من مرض مزمن أخر يحتاج إلى أدوية بشكل مستمر ؟ ☐ نعم ☐ لا

ما مجموع عدد حبات الدواء التي تتناولها في اليوم؟ _____

ما هو عدد المرات التي تتناول فيها أدويتك في اليوم الواحد؟ _____

هل سبق و عانيت من أي أعراض جانبية غير مرغوب فيها نتيجة الادوية؟ ☐ نعم ☐ لا

ان وجدت ما هي؟_____

مورسكي سكيل لقياس مدى الالتزام بتناول الأدوية

الرجاء التكرم بالإجابة على الأسئلة التالية	نعم	لا
هل تنسى تناول أدويتك في بعض الأحيان؟		
خلال الأسبوعين السابقين هل مرت أيام لم تتناول فيها أدويتك ؟		
هل سبق أن توقفت عن اخذ أدويتك بدون إخبار طبيبك لأنك شعرت بأنك تصبح أسوأ عند أخذها؟		
عندما تسافر هل تنسى في بعض الأحيان أن تأخذ أدويتك معك؟		
هل تناولت أدويتك يوم أمس؟		
عندما تشعر أن مرضك تحت السيطرة هل توقف في بعض الأحيان استعمال أدويتك؟		
هل سبق و أن شعرت بالانزعاج من صعوبة الالتزام بخطة علاج مرضك؟		

هل تشعر أن عندك صعوبة في تذكر تناول أدويتك ؟

- ☐ أبدا
- ☐ نادرا
- ☐ أحيانا
- ☐ عادة
- ☐ طوال الوقت

استبيان المعتقدات حول الأدوية– الجزء الخصوصي

آراؤك حول الأدوية الموصوفة لك

- أرغب في سؤالك حول رأيك في الأدوية الموصوفة لك.
- هذه عبارات قام أناس آخرين بتكوينها حول أدويتهم.
- الرجاء تحديد إلى أي مدى أنت توافق أو لا توافق على هذه العبارات بوضع إشارة في المربع المناسب.
- لا يوجد إجابات صحيحة أو خاطئة. نحن مهتمون في آرائك الخاصة.

السؤال	أعارض بشدة	أعارض	غير متأكد	أوافق	أوافق بشدة
Specific- Necessity					
حياتي ستكون مستحيلة بدون أدويتي					
بدون أدويتي، سوف أكون مريضا جدا					
صحتي في الوقت الحالي تعتمد على أدويتي					
أدويتي تحميني من أن أصبح بحالة أسوأ					
صحتي في المستقبل سوف تعتمد على أدويتي					
Specific–Concerns					
أحيانا، أقلق بشأن الآثار طويلة المدى لأدويتي					
الحاجة إلى تناول الدواء تسبب لي القلق					
أحيانا أقلق من أن أصبح معتمدا جدا على أدويتي					
أدويتي تعطل حياتي					
أدويتي تعد لغزا بالنسبة لي					

استبيان المعتقدات حول الأدوية– الجزء العمومي

آراؤك حول الأدوية بشكل عام

- أرغب في سؤالك حول رأيك في الأدوية بشكل عام.
- هذه عبارات قام أناس آخرين بتكوينها حول الأدوية بشكل عام.
- الرجاء تحديد إلى أي مدى أنت توافق أو لا توافق على هذه العبارات بوضع إشارة في المربع المناسب.
- لا يوجد إجابات صحيحة أو خاطئة. نحن مهتمون في آرائك الخاصة.

السؤال	أعارض بشدة	أعارض	غير متأكد	أوافق	أوافق بشدة
General-Overuse					
إذا أمضى الأطباء وقتا أطول مع مرضاهم، لكانوا وصفوا لهم أدوية أقل					
الأطباء يستعملون أدوية كثيرة					
الأطباء يضعون كثيرا من الثقة في الأدوية					
العلاجات الطبيعية أكثر أمانا من الأدوية					
General–Harm					
الأدوية تسبب ضررا أكثر من النفع					
الناس الذين يستخدمون الدواء، عليهم أن يتوقفوا عن استخدامه بين الحين والآخر					
معظم الأدوية تسبب الإدمان					
كل الأدوية هي سموم					

ما هي جميع الأدوية التي تتناولها يوميا؟

Appendix 2

Morisky Medication Adherence Scale (MMAS-8)

1. Do you sometimes forget to take your pills?
2. Over the past two weeks, were there any days when you did not take your medicine?
3. Have you ever cut back or stopped taking your medication without telling your doctor because you felt worse when you took it?
4. When you travel or leave home, do you sometimes forget to bring along your medications?
5. Did you take your medicine yesterday?
6. When you feel like your disease is under control, do you sometimes stop taking your medicine?
7. Do you ever feel hassled about sticking to your treatment plan?
8. How often do you have difficulty remembering to take all your medication?

Appendix 3

Beliefs about Medicines Questionnaire (BMQ) items

Specific-necessity

My life would be impossible without my medicines

Without my medicines, I would be very sick

My health, at present, depends on my medicines

My medicines protect me from becoming worse

My health in the future will depend on my medicines

Specific-concerns

I sometimes worry about the long-term effects of my medicines

Having to take medicines worries me

I sometimes worry about becoming too dependent on my medicines

My medicines disrupt my life

My medicines are a mystery to me

General-overuse

If doctors had more time with patients, they would prescribe fewer medicines

Doctors use too many medicines

Doctors place too much trust in medicines

Natural remedies are safer than medicines

General-harm

Medicines do more harm than good

People who take medicines should stop their treatment for a while every now and again

Most medicines are addictive

All medicines are poisons

Appendix 4

IRB Approval

An-Najah
National University
Faculty of medicine &Health
Sciences
Department of Graduate Studies[

جامعة النجاح
الوطنية
كلية الطب وعلوم الصحة
دائرة الدراسات العليا

IRB Approval Letter

Study Title:

The Association between Adherence and Beliefs about Medications among Patients with Ischemic Heart Disease: A Cross Sectional Study from Palestine"

Submitted by:

Wafaa Al- Barbarawi

Date Reviewed:

13 November 2016

Date Approved:

20 November 2016

Your Study titled:" **The Association between Adherence and Beliefs about Medications among Patients with Ischemic Heart Disease: A Cross Sectional Study from Palestine"** with archived number (28) October was reviewed by An-Najah National University IRB committee and was approved on November 20/2016.

Hassan Fitian, MD

IRB Committee Chairman

An-Najah National University

نابلس - ص.ب 7 أو 707 || هاتف 2342902/4/7/8/14(09) (970) || فاكسميل 2342910 (09) (970)

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Appendix 5

MOH Approval

An-Najah
National University
Vice President Office for Academic Affairs

جامعة
النجاح الوطنية
مكتب نائب الرئيس للشؤون الاكاديمية

الرقم: ن ك ص/ ٤١آذ/٢٠١٧
التاريخ: ٢٠١٧/٣/٢١

حضرة الدكتوره أمل ابو عوض المحترمه
مدير عام التعليم الصحي

تحية طيبة وبعد،

الموضوع: تسهيل مهمة

تهديكم جامعة النجاح الوطنية أطيب التحيات ونعلمكم بأن الطالبة **وفاء بربراوي** طالبة ماجستير صيدلة سريرية وهي بصدد عمل بحث بعنوان:

The Association between Adherence and Beliefs about Medications among Patients with Ischemic Heart Disease: A Cross Sectional Study from Palestine

ولاتمام البحث تحتاج الطالبة الاطلاع على ملفات مرضى العيادات **في مراكز الرعاية الاولية في مدينة الخليل** والوصفة الطبية التي تم صرفها لهم بالاضافة الى سؤال المرضى بعض الاسئلة البسيطة خلال انتظارهم لدورهم لجمع معلومات تتعلق بالبحث يرجى من حضرتكم الايعاز للمعنيين في مراكز الرعاية الأولية في مدينة الخليل تسهيل مهمة الطالبة وسوف يتم الحفاظ على السرية التامة وعدم استخدام هذه المعلومات لأي أغراض أخرى.

شاكرين لكم حسن تعاونكم.

وتفضلوا بقبول فائق الاحترام.

نائب الرئيس للشئون الأكاديمية

د. محمد العمله

نسخه: كلية الطب وعلوم الصحة.
نسخه: د. منسقة برنامج ماجستير صيدلة سريرية
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جامعة النجاح الوطنية

كلية الدراسات العليا

العلاقة بين الإلتزام و المعتقدات حول الأدوية عند مرضى نقص التروية القلبية: دراسة مقطعية من فلسطين

إعداد

وفاء يوسف محمد البربراوي

إشراف

د. رواء الرمحي

قدمت هذه الإطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في الصيدلة السريرية، بكلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس- فلسطين.

2018

العلاقة بين الإلتزام و المعتقدات حول الأدوية عند مرضى نقص التروية القلبية:

دراسة مقطعية من فلسطين

إعداد

وفاء يوسف محمد البربراوي

إشراف

د. رواء الرمحي

الملخص

المقدمة: الالتزام الأمثل بتناول الدواء لدى المرضى الذين يعانون من مرض نقص التروية القلبية مهم جدا لتحقيق أقصى فائدة ولمنع حدوث أمراض القلب وتقليل معدل الوفيات. إعتقادات المرضى حول الأدوية من العوامل الأكثر تأثيراً على الالتزام بالأدوية.

الهدف من الدراسة: قياس مدى الالتزام بالأدوية عند مرضى نقص التروية القلبية في فلسطين، وإيجاد تأثير بعض العوامل والمعتقدات الدوائية على إلتزامهم بالدواء.

المنهجية: الدراسة كانت دراسة مقطعية من فلسطين شملت مرضى نقص تروية القلب من العيادات الخارجية الحكومية، تم الحصول على المعلومات من المرضى من خلال المقابلة وجها لوجه ومن خلال الملفات الطبية .تم استخدام مقياس الالتزام بألادوية لمورسكي- 8 أسئلة (MMAS-8) واستبيان المعتقدات حول الأدوية (BMQ) التي تستخدم لقياس الالتزام بالدواء ومعتقدات المرضى حول الأدوية على التوالي.

النتائج: تم مقابلة 400 مريض في الدراسة، وكان متوسط الأعمار ± الانحراف المعياري 62.35 ± 9.30 سنة. معظم المرضى 348 (87.0 ٪) كانوا يعانون من أمراض مزمنة أخرى. غالبية المرضى 304 (76.0٪) يستخدمون 5 أدوية على الأقل. وفقا لقياس مورسكي MMAS-8، 195(48.8%) من المشاركين لم يلتزموا بأدويتهم (درجة الالتزام < 6) و205 (51.3٪) كانوا ملتزمين بأدويتهم (درجة الالتزام ≤ 6). أظهر التحليل الإحصائي أن المرضى الذين يعانون من أمراض مزمنة أخرى كان لديهم احتمال أكبر (O.R=2.316(1.192-4.499)

CI 95%) من عدم الإلتزام. المرضى الذين لديهم تخوف أكبر من الأعراض الجانبية لأدويتهم (O.R=1.124 (95%CI(1.188-1.063)) كان لديهم احتمالا أكبر من عدم الإلتزام، كما أن المرضى الذين لديهم تخوف أكبر حول مضار أدويتهم كان لديهم احتمال أكبر (O.R=1.092 (95%CI(1.171-1.018)) من عدم الإلتزام. من ناحية أخرى، المرضى الذين لديهم إعتقادات إيجابية بأهمية دوائهم (O.R=0.902 (95% CI(0.96-0.847)) كان لديهم احتمالا أقل من عدم الإلتزام.

الخاتمة: عدم إلتزام مرضى نقص التروية القلبية بتناول أدويتهم في فلسطين يعتبر شائعاً. ارتبطت معتقدات المرضى الإيجابية حول أهمية الأدوية لصحتهم بإنخفاض احتمالية عدم إلتزامهم في حين ارتبطت المخاوف من الاعراض الجانبية لأدويتهم نتيجة إستخدام الدواء لفترة طويلة أو الآثار الضارة للأدوية مع إرتفاع عدم الألتزام، مما يؤكد على أهمية معتقدات المرضى حول الأدوية وتأثيرها على الإلتزام بالدواء.