ORIGINAL ARTICLE

Adherence to Cardiovascular Therapy Medications and Factors Associated with Non-Adherence among Cardiac Patients' Who Attending Outpatient Clinic at Al Nasiriyah Heart Center

QASIM ALI KHASAL[1]
[1]Adult Nursing Department, Faculty of nursing, University of THi-Qar, Nasiriyah City, Iraq
Corresponding author: Qasim Ali Khasal, Email: k.a.k@utq.edu.iq, https://utq.edu.iq

ABSTRACT

Background: non-adherence to medication among patients with cardiovascular disease is often the major factor that causing poor clinical outcomes ,high mortality rates and consequently higher healthcare costs. The literature evaluating the prevalence of and reasons for non-adherence in settings with poor resource is extremely limited compared with resource-rich settings. There is a lack of data about adherence to cardiovascular therapy medications in Iraq hence this study was conducted to identify prevalence, predictors as well as barriers of non-adherence to medication among cardiovascular disease patients' in An Nasiriyah city.

Methods :a descriptive, cross-sectional study design was carried out at An Nasiriyah Heart Center in Al- Nasiriyah city for period from January 8, 2021 to July 5, 2021. A purposive (non- probability) sample of 195 patients with cardiovascular disease were included. Constructed questionnaire and the process of the self-administrative report were used to collect data. The questionnaire involves of 3 parts: part 1includes Patients socio-demographic and Clinical information . Part 2: involve of patient responses to the adherence with medication regimen . Part 3: involve of factors associated with non-adherence to Medication. Panel of experts determined content validity of the instrument, as well as the internal consistency of the instrument was determined through the pilot study and the calculation of Alpha Correlation Coefficient (0.83). Adherence to Cardiovascular therapy medications is assess through use the Medication Compliance Questionnaire . Factors influencing non-adherence to cardiovascular therapy medications , were determined through application of adjusted basis and multiple logistic regression models.

Results: study result showed that the prevalent for non-adherence to cardiovascular drug was (54.4%) . The top four barriers for poor cardiovascular therapy medications adherence among the study participants were the forgetfulness of take dose for medications 59(44.4%), financial strain34 (25.6%) , multiple medication15 (11.3%) and 15 (11.3%) Too busy. In multivariable analysis, participants who were age group > 60 years and number of medication uses were more likely to be non-adherent to their cardiovascular medications .

Conclusions: the current study concluded that the adherence to cardiovascular medications is poor where more than half of study participants being nonadherent.

Keywords: cardiovascular therapy, Medication adherence, cardiovascular disease patients' , An Nasiriyah Heart Center.

INTRODUCTION

Cardiovascular disease (CVD)has become the most important reason of morbidity and mortality amongst men and women worldwide and accounting for about 17 million (30%) deaths every year. In 2030 this number of CVD deaths is projected to increase to over 23.3 million. The population most affected are people living in regions where more than 80% of all CVD deaths occur [1,2]

In Iraq, non-communicable diseases, including CVD constitute a rising disease burden after the 2003 war as well as according to the World Health Organization (WHO) account for 27% of all deaths in Iraq in 2016[3]. Cardiovascular disease considered one of the most preventable causes of death in the world, because of the fact that the majority of its risk factors can be prevented or controlled. In 2020, a survey conducted in Al Nasiriyha State to assess risk factors for coronary heart disease among the population displayed a high prevalence of low physical activity (59.66%), overweight and obesity (68.0%), dyslipidaemia (21.0%), diabetes (22.2%) Hypertension(24.2%).and smoking (40.0%) [4.]

WHO describes adherence as the extent to which a person's behavior, such as taking medication, following a dietary regimen, and/or performing lifestyle changes, corresponds with agreed recommendations from a health-care provider [5].

The vital component in the managing CVD properly and ensuring successful of treatment is to ensure that patients take their medication(s) as prescribed. The selected drug as well as the dose prescribed should produce therapeutic levels of the drug in the patient's bloodstream. Patient adherence to the prescribed pharmacological therapy helps ensure that the concentration of drug in the blood is within the therapeutic limits in order to improve clinical outcomes. In situations where self-administration of oral medicines is required and in situations where poly-pharmacy exists non-adherence to medications is documented to be a major issue [3].

There is evidence that more thann 50% of prescribed CVD medicines are not taken by patients as recommended. This suboptimal adherence to CVD medicines can result in major health consequences for patients as well as negative consequences for national healthcare systems because Non-adherence Decreases the effectiveness of the drug treatment and further more is associated with morbidity, mortality, medications wastage, hospital admissions and higher costs of care [6]. In USA, nonadherence to prescribed pharmacological therapy is the cause of about 125,000 avoidable deaths annually as well as accounts for $100-$300 billion in avoidable healthcare costs to their healthcare systems annually. Adherence to medication is a multidimensional problem that can be affected by the interplay of factors related to patient, treatment and healthcare system. In lower and middle-income countries, such as Iraq, the prevalence of substandard and falsified medications may worsen this healthcare problem by giving rise to unintentional nonadherence [7].

The exact prevalence rate of non-adherence to medication among patients with cardiac disease in Iraq is not known since there are limited published studies. A study was carried out among patients with cardiovascular disease attending cardiac clinics in Misan , Amara, Iraq in order to determine the adherence to secondary-prevention medication among (303) patients and it was found that only 50.8% of the them were adherent to their medications[3].

In Iraq Cardiovascular diseases are a growing healthcare concern. The low level of adherence to prescribed CVD pharmacological therapy highlighted in this study requires actions for nursing care. This study provides the motivation for assessment of medication non-adherence in routine nursing role practice in Iraq, using a mixed method approach. This is to maximize patient benefit from the drug therapies prescribed and decrease medications wastage and healthcare costs.

Significance of the Study: In developed countries, an massive effort has been made to explore cardiovascular disease patients' adherence to their cardiovascular pharmacotherapy and the factors related with their adherence or non-adherence to their cardiovascular therapy medications regimes. This is in order to improve clinical outcomes, decrease the risk factors, complications as well as the costs associated with treating poorly managed cardiovascular disease. However, in Iraq, in spite of the alarming increase prevalence of cardiovascular disease, studies conducted in this area is not adequate to identify the status of cardiovascular pharmacotherapy adherence among patients cardiovascular disease and the factors associated adherence. Identifying the status of adherence for cardiovascular disease patients is a vital step for assessing pharmacological management of cardiovascular disease patients, early detection of medications adherence issues as well as preventing further complications associated with poor adherence. Understanding of the factors associated with adherence to cardiovascular therapy medications from the growing literature that documented the three major domains include individual-related, provider-related and healthcare–system related factors requires an understanding of the significance of these factors in relation to adherence to cardiovascular therapy medications in global studies. Nevertheless, it does not necessarily mean that all these factors are applicable to all populations such as patients' cardiovascular disease in Iraq. This is as a result of the differences of demographic profile, cultural context in addition to the healthcare system for the selected cardiovascular disease patients' population from Iraq. For that reason, conducting this study in Iraq may lead to a different understanding.

Research Questions

To achieve the above purpose of this study the following questions should be answered-:

• What is the level of adherence to cardiovascular prescribed medications among cardiovascular diseases patients?

• What are the factors influencing to non-adherence to prescribed cardiovascular medications among patients with cardiovascular diseases?

General objective of the Study: This study assesses the adherence to prescribed cardiovascular medications among patients with cardiovascular diseases attending out-patient clinic in An Nasiriyah Heart Center**.**

Specific objective of the Study

• assess the level of adherence to prescribed cardiovascular therapy medications among cardiovascular disease patients

• To assess factors influencing adherence to prescribed cardiovascular therapy medications among cardiovascular disease patients

METHODS

Design of the Study: a quantitative approach using descriptive study was carried out to examine the adherence to prescribed cardiovascular therapy medications for patients with cardiovascular disease in An Nasiriyah city. The study was carried out over a 12-month period during the period from January 8, 2021 to July 5, 2021.

Setting of the Study : the study was conducted at cardiac outpatient clinics in An Nasiriyah city.; these clinic is located in the in An Nasiriyah heart center.

Administration Arrangement: After getting the approval of the council of Nursing College and Clinical Research Ethics Committee the study, the researcher submitted a detailed description containing the objectives and questionnaire) of the study to the Thi-qar Health Directorate (Department of Training and Development) for obtaining an official permission, that finally presented to an Nasiriyah Heart Center to ensure their agreement and cooperation .

The Study population: all cardiac patients who reported at the out-patient cardiac clinics at Al Nasiriyah Heart Center during the period of the study were sampled.

The Sample size : The sample size of 195 was calculated by using Cochrane formula with precision of 0.3% and confidence interval of 95%.

The Sample of the Study : A non-probability (purposive) sample of (195) patients was selected. All the patients diagnosed with cardiovascular diseases and have been on medications for more than 6 months and they had a medical records and visited out-patient cardiac clinics at Al Nasiriyah Heart Center, for regular health checkup.

Ethical consideration: After explaining the study objective to him / her, the researcher obtained an independent, informed verbal consent to participate from each patients. They were told of their right to deny or remove no questions asked at any time. Total anonymity and confidentiality were guaranteed, with reassurance that the collected information would be used only for research purposes.

The Study Instrument: for the purpose of measuring the present study variables the researcher designed and constructed a questionnaire. Such construction was employed through the review of literature of related studies. The questionnaire contained of three parts which are:

Part I: Socio- Demographic Data and Clinical information: demographic information: age, gender, marital status, educational level, occupation, monthly income ,residential area , Co-morbidity, health education, Smoking, Alcohol Consumption, Medications prescribed,

Part II: the medication regimen adherence questionnaire (MCQ): It consists (7 items)

Part III: Factors associated with non-adherence to cardiovascular diseases Medication: It consists (7 items)

Medication adherence measures: which has been previously validated for assessing medication adherence was medication compliance .This tool a score of 2; previously "Always", Morisky been assessed a score of was per week)", 1. A total score for 95% of prescribed doses (minimum) as a questionnaire has Adherence score of 27 or more while non-adherence was defined by a score of the adherence times value of 0.782, suggesting (7) questions Hill-Bone Medication Adherence Scale. calculated which could each to medication instructions scales including the with a self-reporting patient was range from A 4-point Likert 7 scoring. Reliability of this tool has reported by using Cronbach's alpha as acceptable. This assess patients' intentional and unintentional non-adherence involving factors associated with non-adherence to cardiovascular therapy medication . System application Adherence was defined Moresby Medication Scale , if cut-off is guided had taken at in the top 28 least e combination questionnaire used developed using a. scale for each question was The s per month)", a score of 3; "Often used in the data collection tools: The response "Never" was given a participants or more than two score of 4; "sometimes (one to four time less than 27. This scale and the (more than five times per month by. This approach has been used in previous published studies and thus helped in comparability of our findings.

Validity: The validity of the instrument was established through a panel of (8) experts. to investigate clarity, relevancy, and adequacy of the questionnaire to achieve study objectives.

Conducting pilot study: The translated research instrument was tested on (10) patients with cardiac disease ,whose met the eligibility criteria for the study, for the purpose of providing suggestions and alternatives for the questionnaire as well as to assess the understanding of the instrument contents that include words, sentences or items that possibly will be unfamiliar

Reliability: Reliability results showed a very high degree of accuracy and internal consistency of the main sections of the questionnaire answers, all of which were measured by using the main statistical parameter: Alpha Cronbach, revealing that the coefficient of the individual correlation is (0.83).

Data Collection: The data has been collected through the using of a developed questionnaire pre-designed that structured after the validity and reliability are estimated, and by means of structured

interview technique with the participants who are individually interviewed.

Statistical Analysis : the application of statistical procedures and the package of SPSS version (22) are used for data analysis. Descriptive data analysis including Mean, Frequencies (f) in addition to percentages (%) were computed for variables, well group comparisons done using the chi-squared test . Basic logistic regression models were used to investigate factors associated with medication non-adherence among patients with cardaic disease . Candidate predictor association between variables was tested using multivariable regression model and P < 0.05 was taken as statistically significant.

Limitation: The Morisky Medication Adherence Scale has a low sensitivity rate with high specificity rate.

Table 1: Distribution of the studied groups according to Sociodemographic characteristics

SDCv.	Classes	F	%
Age Groups	≤60	103	(52.8)
	>60	92	(47.2)
	Mean age	60.5 ± 13.6 years	
Sex	Male	136	(70.1)
	Female	58	(29.9)
	Total	195	100
Level of Education	literate	39	(20.1)
	Primary school graduate	83	(42.8)
	Intermediate school graduate	39	(20.1)
	University graduate	33	(17.0)
	Total	195	100
Marital status	Single	0	00
	Married	180	92.3
	Divorced	8	4.1
	Widowed	4	2
	Separated	3	1.5
	Total	195	100
Occupation	Unemployed	69	(35.4)
	Government employee	53	(27.2)
	Self-employee	19	(9.7)
	Wife house	34	(17.5)
	Retired	20	(10.3)
	Total	195	100
Monthly income	Sufficient	83	(42.8)
	Barely sufficient	39	(20.1)
	Insufficient	73	(37.4)
	Total	195	100
Residential area	Rural	100	51.3 %
	Urban	95	48.7 %
	Total	195	100

RESULTS

Table 1. total participants (195) fulfilled the inclusion criteria of which (136)70.3% were male and (58) 29.9% female. The mean age was 60.5 ± 13.6 years. Regarding to the education level, the greater number of them do primary school graduate and they are accounted for 83(42.8%) of the sample. The table also shows that a high percentage (84.0%)of sample there were married. As concerns the occupation represents (35.4%) were unemployed (27.2%, 17.5%, and 10.3%) while of patients were from government employee, wife house, and retired respectively. monthly income were insufficient, (51.3 %%) of patients were living in Rural, and (48.7 %) live in Urban.

Table 2. displays the clinical characteristics of the study participants. Study results has shown that the prevalence of the smoking is 3(1.5%). Concerning alcohol consumption the study revealed current no alcohol consumption is (100%) among sample study . One-half of respondents had hypertension, 61(31.4%)had dyslipidaemia and57(29.4%) had ischemic heart disease. Data on the Cardiovascular Diseases medications prescribed to patients are presented in Table 2. That indicated (51.2%)of the patients were prescribed β-blockers, (39.3%)

angiotensin II receptor blockers , (16.7%) on ACE inhibitors, (48.2%) statins and (17.5%) calcium channel blockers.
Table 3. Result of the study indicated that 106 of the patients within were non-adherent to cardiovascular medication with a 54.4% prevalence (95% [confidence interval]: 47.1%–61.5%).

Table 2: Clinical characteristics of the respondents (n = 195)

SDCv.	Classes	F	%
Cigarette smoking	Yes	3	(1.5)
	No	191	(98.5)
Alcohol consumption	Yes	0	0
	No	191	(100)
Number of medications	1–2	80	(41.7)
	3–4	54	(28.1)
	5–6	26	(13.5)
	>6	32	(16.7)
Number of chronic diseases	1	80	(41.2)
	2–3	82	(42.3)
	>3	32	(16.5)
Duration of medication use years	1–2 years	44	(22.9)
	3–4 years	44	(22.9)
	5–6 years	95	(49.5)
	>6 years	9	(4.7)
Types of chronic diseases	Hypertension	100	(51.2)
	Dyslipidaemia	61	(31.4)
	Ischaemic heart disease	57	(29.4
	Chronic heart failure	45	(23.1)
	Arrhythmia	43	(22.1)
	Cardiac valve replacement	39	(20.1)
	Rheumatic heart disease	38	(19.6)
	Cerebrovascular disease	15	(7.7)
Medications prescribed	Beta-blockers	100	(51.2)
	Statins	94	(48.2)
	Furosemide	93	(47.2)
	Low-dose aspirin	85	(43.6)
	Warfarin	79	(40.8)
	Angiotensin converting enzyme inhibitors	76	(39.3)
	Potassium-sparing diuretics	60	(30.8)
	Calcium-channel blockers	34	(17.5)
	Clopidogrel	30	(15.4)
	Angiotensin receptor blockers	26	(13.4)
	Nitrates	24	(12.3)
	Digoxin	18	(9.2)
	Thiazide diuretic	9	(4.6)

Table 3: Factors Influencing nonadherence medications

Reasons for non-adherence (n = 133)	F	%
1. Forgetfulness of take dose for medications	59	(44.4%)
2. Effect the financial strain to medication adherence	34	(25.6%)
3. Stopping or changing your medicine because think it is not working	2	(1.5%)
4. Side effect of drug	6	(4.4%)
5. Disappearance of symptoms	2	(1.5%)
6. Multiple medication	15	(11.3%)
7. Too busy	15	(11.3%)

Table 4. Evaluation of patients' opinions on some of the likely reasons for non-adherence indicated that, 59 (44.4%) of them agreed that Forgetfulness and 34 (25.6%) of them agreed that taking drugs since many years and lack of finance were a paramount reason for medication non-adherence .While evaluation of patients' opinions on some of the likely reasons other for non-adherence indicated that, disappearance of symptoms 2 (1.5%), busy 15 (11.3%) and 15 (11.3%) were some of the by factors

nonadherence medications.

Table 5. shown responses to the medication adherence questions ,That (54.4%) More than half of the study participants were non-adherent to their cardiovascular medication

Table 6. Bivariate analysis of age group, education of level, duration of therapy use, and number of medication use were significantly associated with non-adherence. In multivariable analysis, participants who were aged > 60 years (adjusted odds ratio (aO.R.) = 0.48; 95% CI: 0.25–0.94□, and number of used medication (a O.R. = 2.85; 1.01–8.08, p = 0.04) were more likely to be non-adherent to their cardiovascular medications

Table 4: Prevalence of non-adherence to cardiovascular medication among patients with cardiac diseases

Variable	Classes	Adherent		Non-adherent		Total N (%)		p-value
		f	(%)	f	(%)	f	(%)	
Age Groups	≤60	37	(35.9)	66	(64.1)	103	(52.8)	0.01
	>60	52	(56.5)	40	(43.5)	92	(47.2)	
Levels of education	Illiterate (Never)	26	(66.7	13	(33.3)	39	(20.1)	0.03
	Primary school graduate (Primary)	35	(42.2)	48	(57.8)	83	(42.8)	
	Secondary school graduate (Secondary)	14	(35.9)	25	(64.1)	39	(20.1)	
	High institute graduate. (University)	13	(39.4)	20	(60.6)	33	(17.0)	
Gender identity	Female	65	(47.5)	71	(52.2)	136	(70.1)	0.30
	Male	23	(39.7)	35	(60.3)	58	(29.9)	
Duration of medication use years	1–2 years	17	(51.6)	27	(48.4)	44	(22.9)	0.07*
	3–4 years	14	(31.8)	30	(68.2)	44	(22.9)	
	5–6 years	49	(38.6)	46	(61.4)	95	(49.5)	
	>6 years	6	(66.7)	3	(33.3)	9	(4.7)	
Cigarette smoking	No	1				3	(1.5)	0.67*
	Yes	(33.3)	2	(66.7)		191	(98.5)	
Number of chronic diseases	1	(45.5)	104	(54.5)	(50.0)	80	(41.2)	0.54
	2–3	35	(42.7)	47	(57.3)	82	(42.3)	
	>3	13	(40.6)	19	(59.4)	32	(16.5)	
Number of medications use	1–2	43	(53.8)	37	(46.3)	80	(41.7)	0.04*
	3–4	26	(48.2)	28	(51.8)	54	(28.1)	
	5–6	7	(26.9)	19	(73.1)	26	(13.5)	
	>6	11	(34.4)	21	(65.6)	32	(16.7)	

Table 5 : Distribution of responses to the eight-item Morisky medication adherence scale among the participants

SDCv.	Responses	F	%
1. How often do you forget to take your medicine?	Never	98	(50.3%)
	Sometimes	69	(35.4%)
	Often	19	(9.7%)
	Always	9	(4.6%)
2. Thinking over the past 2 weeks, were there any days when you did not take your medicine ?	Never	143	(73.3%)
	Sometimes	32	(16.4%)
	Often	13	(6.7%)
	Always	7	(3.6%)
3. How often do you miss taking your medicine because you feel better?	Never	151	(77.4%)
	Sometimes	30	(15.4%)
	Often	6	(3.1%)
	Always	8	(4.1%)
4. How often do you decide to take less of your medicine?	Never	161	(82.6%)
	Sometimes	28	(14.4%)
	Often	4	(2.0%)
	Always	2	(1.0 %)
5. How frequently do you stop taking your medication because you are feeling sick as a result of the medication's side effects	Never	176	(90.3%)
	Sometimes	12	(6.1%)
	Often	5	(2.6%)
	Always	2	(1.0%)
6. How often do you forget to bring along your medicine when you travel away from home?	Never	143	(73.3%)
	Sometimes	34	(17.5%)
	Often	12	(6.1%)
	Always	6	(3.1%)
7. How often do you not take your drugs because run out of pills at home before you can get refills.	Never	120	(61.5%)
	Sometimes	53	(27.2%)
	Often	20	10.3) %(
	Always	2	)%(1.0

According to the Likert scale, "Never" = 4, "Sometimes" = 3, "Often" = 2, "Always" = 1

Table 6: Distribution of responses to the factors associated with non-adherence to cardiovascular medication for patients with cardiac diseases .

Variable	Classes	Odds ratio	(CI 95%)	Odds ratio	(CI 95%)	p-value	ASSESS
Age Groups	≤60					(0.02)	S
	>60	0.44	(0.25–0.78)	0.48	(0.25–0.94)		
Levels of education	Illiterate (Never)					(0.52)	NS
	Primary school graduate	2.74	(1.24–6.08)	1.71	(0.71–4.10)		

	(Primary)						
	Secondary school graduate (Secondary)	3.57	(1.40–9.08)	1.58	(0.54–4.62)		
	High institute graduate. (University)	3.08	(1.17–8.07)	1.60	(0.49–5.20)		
Gender identity	Female					(0.81)	NS
	Male	1.39	(0.75–2.60)	1.07	(0.05–2.28)		
Body mass index (BMI)		0.99	(0.97–1.01)			(0.55)	NS
Duration of medication use (years)	1–2 years	1.69	(0.82–3.50)			(0.22)	NS
	3–4 years	2.28	(1.08–4.84)				
	5–6 years						
	>6 years	0.53	(0.13–2.26)				
Cigarette smoking	No					(0.67)	NS
	Yes	1.67	(0.15–18.76)				
Number of chronic diseases	1					(0.54)	NS
	2–3	1.34	(0.72–2.49)				
	>3	1.46	(0.64–3.35)				
Number of medication use	1–2					(0.04)	S
	3–4	1.25	(0.63–2.50)	1.16	(0.56–2.42)		
	5–6	3.15	(1.19–8.34)	2.85	(1.01–8.08)		
	>6	2.22	(0.95–5.20)	0.78	(0.76–4.71)		

*p-value on multivariable analysis, Number of medication use, BMI body mass index, ref. reference, OR odds ratio, CI confidence interval

DISCUSSION

The present study is the first known to be conducted among cardiac patients who attending at Al-Nasiriya Heart Center to examine their level of adherence to cardiovascular medications, as well as to determine predictors and factor influencing of non-adherence. These findings would be the first step to improve a better understanding of adherence to cardiac medication among cardiac patients in Al-Nasiriya city , and are valuable for Nurse staff to inform future improvement healthcare services . These results could be utilized to summarize quantitative evidence for interventions in designing targeted strategies to improve adherence and to decrease the adverse outcomes related with non-adherence to medications . The result of the present study has revealed that percentage (26%) of patients ages from (60 years old and more). Most of them (92.3%) were married. Regarding patients educational level, the largest percent (42.8 %) were primary school graduate, while only(17.0) were university graduates. As regards occupation, (35.4%) were not working, (27.2%) were government employee and about (17.5%) were Wife house.

The table also displays that a high percentage (42.8%) of sample their monthly income were insufficient, (51.3 %) of patients were living in Rural and (48.7 %) live in Urban. These results agree with results obtained from a study done by (Khasal et al., 2020) [8] which showed the highest percentages of the sample (26%) were noticed among the age group 60 years and more, and the highest percentage (78.0 %) of patients are male, .The highest percentage (71%) was low educational level, 30.0%) were unemployed, (40.0%) low monthly income. (73%) of patients were living in Rural, and (27.0%) live in Urban. Another study conducted by (Smyth, 2018) [9] which indicated the highest percentages of the sample (52.3%) were noticed among the age group 60 years and more, and the highest percentage (76.2%) of patients are male, and only (23.8%) were female .The highest percentage (52.3%) was low educational level, (58.5%) were unemployed, (44.6%) low monthly income. More than half (54.4%) of the study participant were non-adherent to their prescribed CVD pharmacotherapy . While this might imply a lack of attention patients with cardiovascular disease (CVD) give to their health, it may also reflect limitations in the cardiac patients care model or services in the study hospital, with likely pint-sized or no patient counseling on the importance of strict adherence to their cardiovascular medication. Moreover, the reported prevalence of nonadherence is likely to be conservative as this was based on cardiac patients recall and self-reports which usually overestimate cardiac patients adherence levels. An almost similar result was obtained, carried out by [Khidder et al., 2013] [10]in Erbil that displayed More than half

of the hypertensive patients were uncontrolled. The factors associated with uncontrolled hypertension were irregularity of treatment (non adherence to treatment).Another study conducted by Awad et al., (2017) [11]. in Khartoum State, Sudan showed a prevalence of 51% had poor adherence. This difference in adherence levels could be attributed to variations in the health care services, socio-economic status and metrics used for assessment of adherence across the study settings. The present findings are within prevalence's reported in developed and developing countries, which ranged between 31% and 60%. The high non-adherence rate demonstrated by this study is of particular concern as a potential contributing factor to poor clinical outcomes, including rehospitalisation, increased mortality rates and increased healthcare costs, and underscores the urgent need for its improvement in order for cardiac patients to derive the maximal benefit of their prescribed medications [12] .

The factors associated Influencing with non-adherence drug among cardiac patients , close to a third mentioned forgetfulness of take dose for medications while sixth of patients indicated it was due to lack of financial to medication adherence and for regular medication purchase. In this study shown is a very common reason for patient don't take their medicines as prescribed because they can't afford them. Our result is somewhat similar to those of by Awad et al., (2017) [11].who found for poor medication adherence among the study forgetting to pick up

participants was the polypharmacy. verbal instructions non-adherence pharmacy provided by from the, forgetting In a study o high cost of drugs and fcapecitabine, 23% (10/43) of self-reported forgetfulness as the main reason for non-adherence. This included that the barrier to participants medication the health professional, and forgetting the medication schedule[13] .In this study, , conducted by , Jimmy et al. suggest that identification of individual patient barriers to medication adherence and adaptation of suitable techniques may lead to better drug adherence[14].

CONCLUSION

Our findings show that over half of the patients with cardiovascular disease receiving care in the two study hospitals were non-adherent to their cardiovascular therapy medications . Key reasons for non-adherence included forgetfulness and lack of financial resources to obtain medication.

There is a statistically significant between non-adherent to their cardiovascular medications and demographic characteristics of patients toward level education , duration of therapy use, and number of medication.

There is significant relationship between aged > 60 years and number of used medication regarding non-adherent to their

cardiovascular medications.

Recommendations: Patients should be informed about the chronicity of the condition, the importance of rigorous self-care skills for adherence to cardiovascular therapy medications management, and the consequences of non-adherence to cardiovascular therapy medications, which can lead to problems, through a health educational program. We urge that similar research be conducted in diverse study settings in Iraq so that we may generalize our findings. Qualitative research on the factors that influence non-adherence should be promoted. Because forgetfulness was cited as the most prevalent reason for poor adherence, the use of phone reminders, prescription calendars, and pill boxes may be effective.

We recommend prescribing a drug regimen with fewer adverse effects. During each follow-up, nurses are urged to monitor side effects as well as determine medication adherence and correct if there is any other reason for poor adherence. Self-help groups can be effective since patients can discuss and address the problem of poor adherence among themselves.

Non-adherence to to cardiovascular therapy medications should be recognized as a danger by the Ministry of Health, and it should be included as one of the modifiable risk factors for preventing cardiovascular disease complications.

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