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Original Research Article

Elderly Patients' Adherence, Knowledge and Belief to Medications in Primary Healthcare Centers in Baghdad

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Abstract

Background: currently the Elderly population is rapidly increasing and with this increment comes more challenges for the healthcare system, non-adherence to medications especially in elderly can lead to economic and human lost that is avoidable by improving patients' compliance and address the related issues leading to the non-adherence. ***Objectives:*** 1-assess the level of adherence knowledge and belief to medications. 2-identify the related factors causing the non-adherence. ***Methodology:*** A cross sectional study was conducted in primary healthcare centers in Baghdad targeting geriatric age group of both genders attending the primary healthcare centers and having at least one diagnosed chronic disease, the study enrolled10 healthcare centers from both sides of Baghdad. Patients were directly interviewed and data was collected using a questionnaire. ***Results:*** The study showed that (83.4%) of the sample (n=385) had low adherence level, this percentage tend to increase as the age increases, no significant association was found with gender variable, and a significant association was found with the age variable. most of the participants has low beliefs level (86%) and only (7%) of the sample scored (high) on knowledge level which was significantly associated with adherence level, (13.5%)of the participants faced high difficulty to adhere to their medication. ***Conclusions:*** Elderly patients attending the primary healthcare centers in Baghdad had low level of adherence; most of them did not have enough knowledge about their medications. Patients who scored low level of adherence tend to pay more visits to the healthcare centers.

Keywords: elderly, medications, adherence, Knowledge, belief.

INTRODUCTION

Populations around the world are rapidly aging, Aging represents both challenges and opportunities and it will increase demand for primary health care and long term medical care [i].

The population aged 60 and more is growing each year, by the year 2025 the world will have 1.2 billion people aged 60 and over rising to 1.9 billion in 2050, while the proportion of elderly population to total population was 5.8% in 2000 [ii].

Elderly related demographic data In Iraq showed that the proportion of population aged 60 and above increased from 2.8% in 1950 to 4.2% in 1975 and then it decreased to 3.4% in 2010 and for those 65 years and over represent 3.55% (male632, 753/female794, 489) of total Iraqi population in 2018 and it is expected to reach 8.7% by year 2025 and 15% by 2050 [iii, 4].

Chronological definition of elderly or aged is commonly used, but contested UN tabulations provided figures for both 60 and 65years of age and older ,the WHO uses categories starting at the age of 65 and 80 [5].

Iraq defines the senior citizens as "people who are 60-65 years and above, 60 years for males and 59 for females [6].

The demographic shift in elderly population is not only a challenge itself, but also because the development of chronic diseases is often associated with and more common among older age groups, these groups will need considerable support from society in the future due to that they have to live with and among chronic conditions over the long term, for the rest of their lives [7]. Chronic diseases are generally considered physical or mental conditions that last more than a year and require ongoing care. They compromise the

individuals' physical and social function, the health related quality of life and economic sustainability of healthcare system [8].

The most common of the chronic diseases are cardiovascular disease, diabetes, cancer and chronic respiratory disease, together they account for 41 million deaths in the world every year, and this number is increasing [7].

The combined cost savings from the health and productivity that results from a small reduction in the prevalence of chronic disease cannot be ignored, resulting in a genuine return on investment in a very small span of time, the need for long -term care for the chronic conditions can lead to decline in the QoL of elderly and by recognizing their needs and constraints regarding the chronic diseases would fix many problems the patients face and result in an improved QoL , safety, and overall health in elderly , their productivity will rise as well thereby contributing to the economic and social opportunities [8, 9], so adherence to long term medications can play a crucial part in the process as adherence-where prescribed medications are taken at the right doses and frequency recommended by the healthcare provider-has been shown to improve health outcomes and reduce healthcare costs [10].

A multifactorial phenomenon factors as age, gender, socioeconomic status and level of disease severity all have shown to affect adherence. Medication non-adherence is recognized as a worldwide public health problem with important implications for the management of chronic diseases and consequent polypharmacy as it is simultaneous and chronic use of multiple medications, predisposing those practicing it to low adherence [11] it is a major cause of Morbidity especially in elderly patients approximately 10% -30 of hospitalizations maybe result of medication non-adherence, There are many factors that increase the level of non-adherence in elderly age group include adverse drug reactions that come with polypharmacy, decreased visibility and motor dexterity, and decreased autonomy [12].

Older adults can experience age-related declines in the cognitive processes necessary for medication adherence, and therefore they may be at higher risk for neglecting to take medication as prescribed. This risk is accentuated for individuals suffering from chronic diseases [13].

Several Classifications had been recognized regarding non-adherence, intentional and non-intentional adherence is two Types of non-adherence behaviors. Intentional non-adherence is a behavior driven by a decision not to take medicines. The drivers of this decision are complex but have been suggested to be based on beliefs, personal circumstances, interpretations of healthcare advice and personal motivation. Unintentional non-adherence reflects person's ability and skill at medicine taking including forgetting, poor manual dexterity, losing medicines or no being able to afford them [14].

Other studies classify adherence as either primary or secondary. Primary non-adherence is the frequency with which patients fail to fill prescriptions when new medications are started so it is related to refilling and initiation of medication therapy. Secondary non-adherence is defined as the medication being not taken as prescribed when prescriptions are filled. It does not only affect the clinical outcome, but also affect the financial outcome of health system [15].

According to WHO, where there are multiple factors leading to poor medication adherence, normally classified into five categories: socioeconomic factors, therapy-related factors, patients -related factors, condition related factor, and healthcare system/health care team-related factors [16].

A patient's medication knowledge is an important factor that affect the medication adherence as it is defined the awareness of the drug name, purpose, administration schedule, adverse or side effects and special administration instructions. Poor medication knowledge can have a negative impact on medication adherence_ especially in elderly_ which may result in increased use of medical resources, such as physician visits, laboratory tests, E.R. Visits And hospital admissions [17]. In general inadequate medication-adherence is the single most modifiable aspect of chronic diseases management [18]. Most studies have focused on improving adherence to one drug group, and thus have limited the applicability to the older population who commonly use multiple medications [19].

OBJECTIVES

- Determination of the adherence levels in elderly patients in Baghdad-Iraq
- Determination of the association of the levels of adherence with sociodemographic variables and other medical variables.
- Exploration some of the difficulties elderly patients face that hinder proper adherence.

PATIENTS AND METHODS

The study designed as cross sectional, the data collected in primary health care centers in Baghdad city including six primary healthcare centers from AL-KARKH district and four from AL-RUSAFA district, the patients were directly interviewed for 7-10 minutes each in the waiting hall of the primary center, .data were collected approximately 3 days a week, researcher explained the aim of the study and details of the questionnaire.

A convenient sample size was collected, the sample included all patients aging equal or more than 65 years (according to the WHO definition of geriatric age group), both genders with least one chronic disease who were present at the time of the study and willing to participate.

A questionnaire used MMAS-8 scale of medication adherence to assess the adherence ,patients were categorized into three groups: low adherence(MMAS<6), medium adherence(MMAS 6-<8) and high adherence(MMAS=8) [26], which is also used for beliefs (7 points high),(<7->5 points is medium) and (<=5 points is low), knowledge(6 point is high), (<6->4 is medium)and(<=4 is low) and difficulty(5points is high),(<5->3 is medium) and(<=3 is low) [20]. The adherence question included dichotomous responses (YES/NO).

The questionnaire consisted of two parts

A -Part one: sociodemographic data and medical variables: including

- Age
- Gender
- Marital status
- Level of education
- Social habits
- Number of chronic diseases
- Number of medications taken.
- Number. of visits to the PHC per month
- Number of family members living in the house.

B-Part two: assessment of the factors associated with low adherence to pharmacotherapy in elderly patients.

Ethical Issue: verbal consent was taken from each individual after full explanation of the aim and the method of the research. Ensure to the individual there was no harm or any invasion of privacy or dignity. Informed the subject about the methods will be used to protect anonymity and confidentiality

STATISTICAL ANALYSIS

Analysis of data was carried out using the available statistical package of SPSS-27 (Statistical Packages for Social Sciences- version 27). Data were presented in frequency and percentage.

The significance of difference of different percentages was tested using Pearson Chi-square test (χ2-test) with application of Yate's correction or Fisher Exact test whenever applicable. Statistical significance was considered whenever the P value was equal or less than 0.05 [21].

RESULTS

Table-1: The sociodemographic and medical variables of the studied sample. (n=385)

		No	%
Age (years)	65---69	154	40
	70---74	99	25.7
	75---79	69	17.9
	80---84	53	13.8
	=>85years	10	2.6
Gender	Male	191	49.6
Marital status	Female	194	50.4
	Married	250	64.9
	Single	44	11.4
	Widowed	91	23.6
Level of education	No education	48	12.5
	Primary	58	15.1
	Intermediate	71	18.4
	Secondary	102	26.5
	Graduate	83	21.6
	Postgraduate	23	6
Employment status	Unemployed	116	30.1
	Retired	154	40
	Freelancer	70	18.2
	Employed	45	11.7
Social habits-Smoking	Smoking	107	27.8
	None	278	72.2
Social habits-Alcohol	Alcohol	22	5.7
	None	363	94.3
Number of chronic diseases	One	97	25.3
	Two	174	45.4

	Three	94	24.5
	Four & more	18	4.7
Number of medication taken	1---3	135	35.1
	4---6	170	44.2
	7---9	74	19.2
	=>10items	6	1.6
Frequency of use of medical services	DNK	127	33
	1---3	131	34
	4---6	75	19.5
	>6months	52	13.5
Number of family members	1memebr	8	2.1
	2---3	126	32.7
	4---5	158	41
	>5members	93	24.2

Table-2: Responses to memory (adherence) questions. (n=385)

A-Memory (Adherence):	Yes		No	
	No	%	No	%
Sometimes forget to take medications for a day or two	265	68.8	120	31.2
There are days that totally forget to take medicine	218	56.6	167	43.4
Forget to take medicine with him/her upon leaving home	168	43.6	217	56.4
Take his/her pills by him/herself	295	76.6	90	23.4
Ever stopped taking medicine because he/she did not buy it, or no one bought it for him/her	158	41.0	227	59.0
Remember the names of his/her medicines	197	51.2	188	48.8
Remember the timing of each medicine intake	246	63.9	139	36.1
Use an alarm or a person to help him/her remember his/her medications	239	62.1	146	37.9

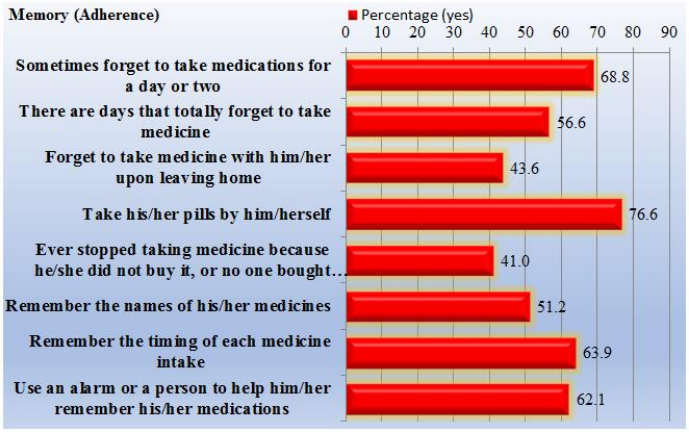

Fig-1: Responses of the sample to memory (adherence) questions. (n=385)

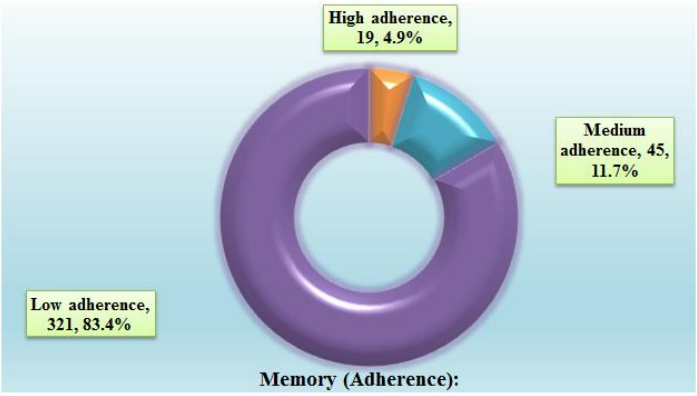

Fig-2: Shows the level of adherence among the studied sample. (n=385)

Beliefs

Table-3: Responses of the sample to (Beliefs) questions. (n=385)

B-Beliefs:	Yes		No	
	No	%	No	%
Ever stopped taking your medicine because he/she did not feel better	266	69.1	119	30.9
Ever stopped taking his/her medicine because he/she felt better	211	54.8	174	45.2
Change the doses of medications without the physician consultation	144	37.4	241	62.6
Believe that taking medications is not harmful	195	50.6	190	49.4
Think the prices of his/her medications are high	269	69.9	116	30.1
The price of his/her medications affect the purchase of them	133	34.5	252	65.5
The method of drug intake prevents him/her from taking it	158	41.0	227	59.0

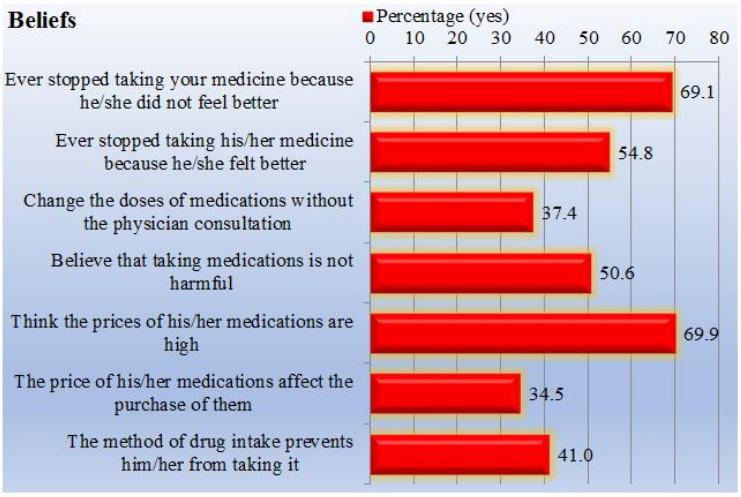

Fig-3: Shows the distribution of the answers to (Beliefs) questions.

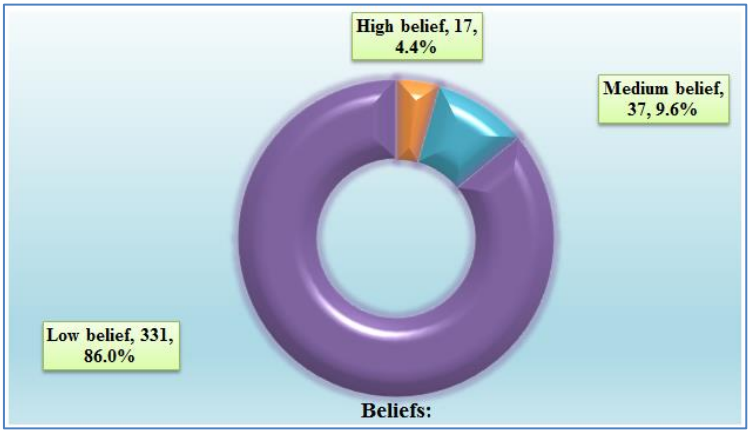

Fig-4: Shows the level of Beliefs among the studied sample.(n=385)

Knowledge

Table-4: The responses to General Knowledge of medications questions. (n=385)

C-General Knowledge:	Yes		No	
	No	%	No	%
Have enough knowledge about his/her medications	268	69.6	117	30.4
Read the medicine leaflet or ask someone to read it for him/her	212	55.1	173	44.9
Ask the physician about the medicine's side effects before taking it	199	51.7	186	48.3
Take medications randomly without a physician prescription	157	40.8	228	59.2
Think the continuous use of medications will prevent further deterioration	294	76.4	91	23.6
Would continue to take the medications despite the side effects	206	53.5	179	46.5

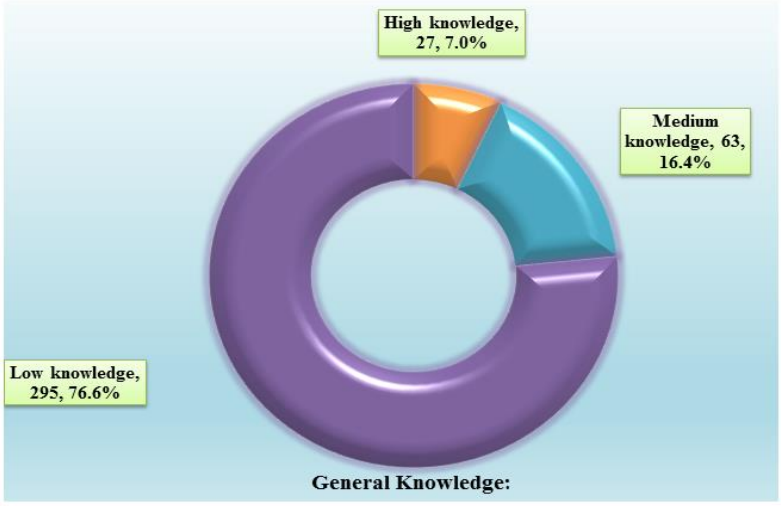

Fig-5: The level of general knowledge among the studied sample

Difficulty

Table-5: the responses to difficulty to adherence questions. (n=385)

D-Difficulty:	Easy		With difficulty		Very difficult	
	No	%	No	%	No	%
How it is to read the prescription leaflet	64	16.6	253	65.7	68	17.7
How it is to open the medicine container	301	78.2	76	19.7	8	2.1
How it is to remember taking your medications	139	36.1	229	59.5	17	4.4
How it is to commit to the time of each medication	133	34.5	225	58.4	27	7.0
How it is to take a lot of medications at the same time	136	35.3	201	52.2	48	12.5

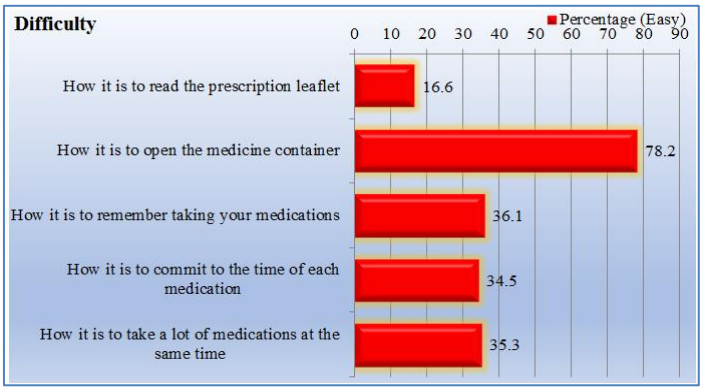

Fig-6: Shows the distribution of the response (easy).

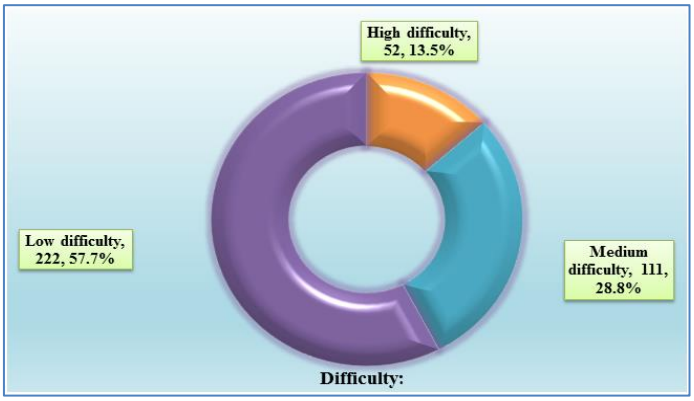

Fig-7: Shows the level of difficulty of adherence among the sample.

Association of adherence with sociodemographic features

Table-6: Association the level of adherence with the sociodemographic variables

		High adherence (8)		**Medium (<8 to >6)**		**Low adherence (=<6)**		**P value**
		No	**%**	**No**	**%**	**No**	**%**	
Age (years)	65---69	11	7.1	35	22.7	108	70.1	**0.0001***
	70---74	3	3.0	5	5.1	91	91.9	
	75---79	3	4.3	2	2.9	64	92.8	
	80---84	2	3.8	3	5.7	48	90.6	
	=>85years	0	0.0	0	0.0	10	100.0	
Gender	Male	8	4.2	23	12.0	160	83.8	0.788
	Female	11	5.7	22	11.3	161	83.0	
Marital status	Married	11	4.4	38	15.2	201	80.4	**0.048***
	Single	2	4.5	1	2.3	41	93.2	
	Widowed	6	6.6	6	6.6	79	86.8	
Level of education	No education	5	10.4	5	10.4	38	79.2	**0.0001***
	Primary	0	0.0	4	6.9	54	93.1	
	Secondary	0	0.0	4	5.6	67	94.4	
	High school	1	1.0	10	9.8	91	89.2	
	Graduate	8	9.6	17	20.5	58	69.9	
	Postgraduate	5	21.7	5	21.7	13	56.5	
Employment status	Unemployed	3	2.6	13	11.2	100	86.2	0.066
	Retired	9	5.8	26	16.9	119	77.3	
	Freelancer	4	5.7	2	2.9	64	91.4	
	Employed	3	6.7	4	8.9	38	84.4	
Social habits-Smoking	Smoking	0	0.0	5	4.7	102	95.3	**0.0001***
	None	19	6.8	40	14.4	219	78.8	
Social habits-Alcohol	Alcohol	0	0.0	0	0.0	22	100.0	0.098
	None	19	5.2	45	12.4	299	82.4	
*Significant difference between percentages using Pearson Chi-square test (χ^2-test) at 0.05 level.								
			25					
		High adherence (8)		Medium (<8 to >6)		Low adherence (=<6)		P value
		No	%	No	%	No	%	
Number of chronic diseases	One	4	4.1	17	17.5	76	78.4	**0.033***
	Two	6	3.4	18	10.3	150	86.2	
	Three	7	7.4	5	5.3	82	87.2	
	Four & more	1	5.6	5	27.8	12	66.7	
Number of medication taken	1---3	8	5.9	25	18.5	102	75.6	0.066
	4---6	9	5.3	12	7.1	149	87.6	
	7---9	2	2.7	7	9.5	65	87.8	
	=>10items	0	0.0	1	16.7	5	83.3	
Frequency of use of medical services	DNK	8	6.3	23	18.1	96	75.6	**0.004***
	1---3	2	1.5	7	5.3	122	93.1	
	4---6	5	6.7	6	8.0	64	85.3	
	>6months	4	7.7	9	17.3	39	75.0	
Number of family members	1memebr	0	0.0	0	0.0	8	100.0	0.276
	2---3	8	6.3	19	15.1	99	78.6	
	4---5	9	5.7	13	8.2	136	86.1	
	>5members	2	2.2	13	14.0	78	83.9	
*Significant difference between percentages using Pearson Chi-square test (χ^2-test) at 0.05 level.								

Table-7: Association of the level of adherence with Beliefs, General knowledge and Difficulty levels

		High adherence (8)		Medium (<8 to >6)		Low adherence (<6)		P value
		No	%	No	%	No	%	
B-Beliefs:	High belief (7)	0	0.0	7	41.2	10	58.8	**0.0001***
	Medium (<7 to >5)	4	10.8	15	40.5	18	48.6	
	Low belief (=<5)	15	4.5	23	6.9	293	88.5	
C-General Knowledge:	High knowledge (6)	2	7.4	9	33.3	16	59.3	**0.005***
	Medium (<6 to >4)	4	6.3	8	12.7	51	81.0	
	Low knowledge (=<4)	13	4.4	28	9.5	254	86.1	
D-Difficulty:	High difficulty (5)	0	0.0	0	0.0	52	100.0	**0.0001***
	Medium (<5 to >3)	1	0.9	6	5.4	104	93.7	
	Low difficulty (=<3)	18	8.1	39	17.6	165	74.3	
*Significant difference between percentages using Pearson Chi-square test (χ^2-test) at 0.05 level.								
				27				

DISCUSSION

Physicians must be vigilant in the fight against medication non-adherence, and since older adults are usually at highest risk due to multi-comorbidities and polypharmacy often combined in this age group [22]. The world health organization had termed adherence to therapy a "multidimensional phenomenon" comprised from five dimension [23], this study focused on socioeconomic factors, patient-related factors, and therapy-related factors. In the current study, the memory (adherence) for medications was low in 83.4% of participants and high among only 4.9%, mostly attributed to self-administration of medication (76.6%), forgetting to take medication of a day or two (68.8%) or totally forgetting to take it (56.6%) and not knowing the names of their medications (48.8%).

The adherence of our patients was much lower compared to results of Awad *et al.* (2020) in Kuwait, who studied 424 elderly patients from ten PHCCs, and reported that 54.7% had low adherence, mostly attributed to forgetfulness, missing doses when they feel better, or because of multiple doses (> once daily) [24]. In another study done by Salama *et al.* (2017) in Egypt, who studied 438 patients, and reported that 73.2% were considered adherent [25].

In Portugal, a study done by Gomes *et al.* (2020), enrolling 1089 elderly patients, and reported that 47.7% showed low adherence which was related to forgetfulness, difficult medication schedules, worrying about adverse effects, and cost issues [26] . The difference of adherence level between this study and the aforementioned studies could be attributed to different methods used to assess the adherence of patients to medication, and the actual lack of a standardized gold standard method.

The beliefs of patients were low in 86%, and that was mostly attributed to high medication cost (69.9%), stopping medication because they did not feel better (69.1%), or the felt better (54.8%), and 49.4% thought taking medication was harmful. The interaction between beliefs about medication and medication burdens (including adherence) has very influential role in determining the outcome of patients, as reported by Mohmmed *et al.* (2016) [27].

In this study, 76.6% of patients had low knowledge about medications, as 76.4% of them think they should continuously use medication to prevent disease progression, and 69.6% of them had enough knowledge about their medications, and as shown in Table 6; higher level of education was associated with better medication adherence. Jin *et al.* (2016) in Korea had studied factors related to medication adherence, and reported that patients' satisfaction, sufficient explanation of medication counseling, education level, health-related problems, and dosing frequency [28], and this highlighted a very pivotal point in patients doctor relationship, as the physicians are ought to provide sufficient explanation about patients illness and the appropriate medication they prescribe for each, building trust and improving adherence.

An important point is education of patients about their diseases, regardless of their backgrounds, especially for chronic diseases that some of them may not understand the reasons for taking the medication [29]. This was also studied by Taibanguay *et al.* (2019) in Thailand, and reported that education patients with rheumatoid arthritis significantly increased patients' adherence to treatment [30]. In the current study, 13.5% of patients had high medication difficulty, and it was probably due to the very low proportion of patient who knows how to read the prescription (16.6%), and how to remember the timing, or commit to it, and taking a lot of medication at the same time.

These results were in concordance with report of Pantuzza *et al.* (2017), in their extensive systematic review of 35 studies that investigated the association between complexity in regimens and adherence of medication and in 28 of those studies high complexity

was associated with lower adherence level [31]. Medication factors should always be put in mind while treating patients with multimorbidity, as the guidelines for separated diseases are not inherently designed for treating patients with combined disease, which would ultimately leads to higher burden on patients, linked with lower patients satisfaction and higher disruption to their lives[32].In this study, patients older than 65 years were enrolled, the most frequent age group was 65-69 years (40%), then 70-74 years (25.7%), and older age was related to lower medication adherence and lower belief These results were in comparison to results of Awad *et al*. (2020) in Kuwait, who reported that 73.1% of participants were aged between 65 and 74 years, and those aged 75 years and older had higher medication related burden and higher difficulty living with medications [[24]].

Tsai *et al*. in Taiwan studied 193 elderly patients with a mean age of 76.2 years, and reported no significant difference in mean age between low and high medication adherence [33]. With advancing age, there are increasing number of factors affecting welfare, living style, and health behavior, however Gautério-Abreu in Brazil (2015) reported that the desire to feel better and healthy was enough to make elder patient have better adherence to medications [34].

In this study, gender was not associated with adherence level, while married individuals showed better adherence level compared to unmarried and widowed patients. These results were consistent with results of Mahmoodi *et al*. (2019) in Iran, who studied 455 older adults regarding medication adherence, and reported that 54.5% of them had low adherence level, and this was not associated with gender, but married individuals had higher adherence level [35].

While Manteuffel *et al*. (2014) reported that women had lower adherence than men regarding chronic disease medication like diabetes mellitus and hypertension 36], also Biffi *et al.* (2020) reported that older than 65 year-women had lower adherence to anti-hypertensive medications [37] .as Joung *et al*. (2020) reported that women are more likely to develop side-effects with newer anti-diabetic agents much more likely than men [38]. Regarding marital status, Wu *et al*. (2012) reported that unmarried patients had lower medication adherence are twice the risk for having cardiac events[39]. One aspect could be related to loneliness, as Kusaslan (2018) in Turkey reported that, loneliness was correlated with lower adherence to medication [40].

In the current study, smoking was associated with lower medication adherence, and although alcohol consumption showed no significant association with adherence, all alcoholics had low adherence. This was consistent with results of Aggarwal and Mosca (2010) in India, who reported that smoking was significantly associated with lower adherence level of anti-hypertensive and lipid lowering agents [41]. Fialová *et al.* (2018) in Czech Republic reported that alcohol is one of the psychological/behavioral factors that are associated with medical poor adherence [42]. One explanation might be the effect of smoking habit on daily activities and routine of patients, negatively affecting medication adherence. On the other hand, alcoholics could think that alcohol would interact with the medications they should take [43].

In the current study, higher number of chronic diseases was associated with better adherence, while the number of medications was not related. With aging, the number of health events and chronic diseases usually increase, accompanied by an increment in number of medications to control these diseases [44], leading to inaccurate use of medications and a higher incidence of adverse events, which could be avoided by appropriate use of medications [45]. The prevalence of poor adherence in patients taking high number of medications (polypharmacy) ranges from 6% to 55%, which could be due to the difference in defining polypharmacy [46].

Frequency of medical services utilization was inversely associated with medication adherence. Aging population requires more healthcare services, suffers more inpatients admissions with longer be times than any other age groups, thus enforcing more burden on healthcare [47]. However, one explanation for this contradiction is that patients with poor medical adherence are at more risk for hospitalization, which indirectly point that patients who are compliant to therapy have lower utilization for healthcare services [48].

CONCLUSIONS

1. Low adherence to medications is alarming among the elderly patients in Baghdad city.
2. Patients have poor knowledge regarding their medications on many levels.
3. The level of adherence decreases with getting older in age.
4. Patients with low adherence level attend more frequently to PHCs causing more time spent from healthcare providers.

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