MEDICATION ADHERENCE AMONG ELDERLY PATIENTS WITH CHRONIC DISEASE IN AL-RESAFA PRIMARY HEALTH CENTER IN BAGHDAD, 2024

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Background: The adherence defined as the extent to which the person's behavior (including medications taking) corresponds with agreed recommendations from a healthcare provider. Medication non-adherence is a common and significant public health problem, especially among the geriatric population. Objectives: Determine the level of adherence to medication among elderly patients with chronic disease attending the primary health care centers in AL-Resafa sector of Baghdad City. Identify factors affecting adherence to medication among elderly patients with chronic disease. Patients and methods: A cross sectional study will be conducted at a sample of primary health care centers in AL-Resafa sectors in Baghdad from November 2023 to August 2024. A total of 20 primary health care centers will be selected conveniently for data collection. Elderly patient aged 60 and above who have at least one chronic disease attending the 20 selected primary health care centers will be included in the current study. Using a questionnaire including the full socio-demographic characteristics, questions related to the disease and the 8-items morisky medication adherence questions. Data was analyzed using SPSS program version 22, and p value considered significant if it is less than 0.05. **Results:** Five hundred patients were included in this study, with a mean of 65.9+5.5.5 years standard deviation, (38.8%) of the participants had low level of adherence while the good adherence found in (30.2%). Diabetes, employment status and number of medication taken were statistically significant with medication adherence. Conclusions: Elderly patients attending the primary healthcare centers in Baghdad had low level of adherence.

Key words:chronic disease, elderly patients, adherence to medication.

Introduction

Non-Communicable Diseases (NCDs), also known as chronic diseases, are the most important cause of mortality worldwide and contribute to 71% of all globally deaths ⁽¹⁾.

The rising in life expectation and the aging of the world people have been paralleled by an alarming progress in the world wide load of chronic conditions. The number will be will be suspected to increase from one billion in 2019 to 21 billion by $2050^{(2)}$.

Chronic diseases are long-lasting in their effects, require limit every day activity and continuous medical care ⁽³⁾, it need long-term treatment and an increase in the demand for long-term healthcare services that lead to decrease elderly people's quality of life ⁽⁴⁾.

Medication adherence is defined as the extent to which a person's medication taking behavior coincides with agreed medication regimen from the health care provider or is the process by which the patient consumes their medication as prescribed ⁽⁵⁾.

Majority of elderly people with chronic diseases do not adhere to prescribed medication which leads to poor clinical outcomes ⁽⁶⁾, is also associated with an increased risk of hospitalization and death ⁽⁷⁾, and a significant burden on the health care system ⁽⁸⁾, therefore, it is essential to increase medication

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adherence in patients with chronic diseases to decrease premature deaths and social burden⁽⁹⁾.

The commonly used classification of the adherence assessment methods, used by the WHO, refers to subjective and objective methods. Subjective methods involve the patient's assessment of their medication taking behavior or healthcare provider (usually with the help of a questionnaire). On the other hand, objective methods (such as measurements of clinical outcomes, dose counts, pharmacy records, electronic monitoring of medication administration) have the apparent potential to best measure treatment adherence ⁽¹⁰⁾.

Other Type of classification includes direct and indirect methods. The direct and indirect methods have been used for evaluating drug adherence⁽¹¹⁾.

The most cheap and simple procedures for measuring adherence is self-reported methods. Whether they are distributed online, administrated as structured interviews, or written questionnaires they enjoy a high degree of popularity in adherence research and can easily be adapted in different patient populations ⁽¹²⁾.

The WHO has been recognized multifactorial determinants that influence adherence, categorizing them into five dimensions: patient-related factors, therapy-related factors, condition-related factors, socioeconomic factors, health care team, and system-related Factors ⁽¹³⁾.

Poor medication adherence (MA) is one of the most common predictors of all-cause mortality in patients with chronic diseases such as heart failure and diabetes⁽¹⁴⁾, and is the single most modifiable part of chronic disease in elderly person that should be studied to identify the factors affecting the medication adherence among this elderly population⁽¹⁵⁾.

Objectives

The study aimed to:

- 1. Determine the level of adherence to medication among elderly patients with chronic disease attending the primary health care centers in AL-Resafa sector of Baghdad City.
- 2. Identify factors affecting adherence to medication among elderly patients with chronic disease.

1.1.1 Methodology

A cross sectional study was conducted at a sample of primary health care centers in AL-Resafa sectors in Baghdad from November 2023 to August 2024.

A total of 20 primary health care centers (two from each Health District) were selected conveniently for data collection. Elderly patient aged 60 and above who have at least one chronic disease attending the 20 selected primary health care centers were included in the current study. Data was collected by directly interviewing the participants, the time was needed for each interview 10-15minutes, about four days per week, start at 9a.m to 1p.m, a questionnaire form was prepared after reviewing literature which include three parts:

Part one: Demographic data and social habits: Age (in years), gender, marital status (single, married, divorced and widow), level of education (illiterate/read and write, primary, intermediate, secondary and college and higher), employment status (retired, Governmental employee, private sector, not working), social habits; smoking (None, Ex-smoker, current smoker {duration and number of cigarettes smoked/day}, alcohol drinking (yes, no) and number of family members.

Part two; Medical status: Presence of chronic disease (yes, no), list of chronic diseases (diabetes, hypertension, asthma, cancer, cardiac disease, osteoarthritis, osteoporosis, others), number of medication taken (items), methods of taking medication (tablets, drop, injection, capsule, inhaler, cream, patches).

Part three: Morisky Medication Adherence Scale (MMAS) ⁽¹⁶⁾

The Morisky Medication Adherence Scale (MMAS) was used to assess the level of elderly

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patient adherence to medication, this scale consists of eight questions (answered by Yes or No). The respondent will have one degree for the correct answer and zero for the wrong answer. The score ranged from0-8 and the respondents were categorized into three groups: Low adherence; MMAS <6, Meduim adherence; MMAS 6-7, High adherence; MMAS =8

Microsoft Excel, version 16, and Statistical Package for Social Sciences (SPSS) version 22 were used in data processing and analysis. Continuous variables were presented as means and standard deviation while categorical variables were presented as frequencies and percentages. Chi square test was used to test the association between categorical variables. P value of <0.05 was considered statistically significant.

Results

Five hundred patients were included in the current study; their age ranged from 60 to 95 years with a mean of 65.9 ± 5.5 years Standard Deviation (SD), 372(74.4%) were aged 60-69 years, 252 (50.4%) were females with a female to male ratio of nearly 1:1, 391(78.2%) were married, 269 (53.8%) were with primary level of education or lower, 244 (48.8%) were not working and 207 (41.4%) have 4-6 family members (**Table 1**).

Variables		Frequency	Percent
A go groups	60 – 69 years	372	74.4
Age groups	≥70 years	128	25.6
Candan	Male	248	49.6
Gender	Female	252	50.4
Current manital status	Not married	109	21.8
Current marital status	Married	391	78.2
	Less than primary	136	27.2
	Primary	133	26.6
Level of education	Intermediate	84	16.8
	Secondary	61	12.2
	College	86	17.2
	Not working	244	48.8
Employment status	Government employment	30	6.0
	Private sector	50	10.0
	Retired	176	35.2
	<u>≤</u> 3	134	26.8
Number of family members	4-6	207	41.4
	>6	159	31.8

Table ((1):	Sociodemo	graphic	characteristics	of the	participants
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As for chronic illnesses; table two showed that 381 (76.2%) of the participants were known cases of hypertension, 288 (57.6%) were with DM, 182 (36.4%) were with cardiac diseases and 113 (26.4%) were with at least three chronic illnesses (**Table 2**).

 Table (2): Chronic diseases among the participants, N=500

Chronic diseases	Frequency	Percent
Hypertension	381	76.2
Diabetes	288	57.6
Cardiac disease	182	36.4
Osteoarthritis	61	12.2

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Asthma	26	5.2
Cancer	15	3.0
Cerebro-vascular accident	17	3.4
Thyroid disease	17	3.4
Renal disease	16	3.2
Rheumatoid arthritis	8	1.6
Osteoporosis	7	1.4
Parkinson disease	3	0.6
Number of chronic diseases		
One	131	26.2
Two	237	47.4
Three or more	113	26.4

On calculating participants scores from their responses to the questionnaire regarding the level of medications adherence we found that good adherence was found in 155 (31.0%) of the participants, medium adherence was found in 151 (30.2%) and low adherence was found in 194 (38.8%) of the participants (**Figure 1**).





On studying the associations between participants' adherence level to chronic diseases' medications and their sociodemographic characteristics, table 3 showed that significant association was found only with their employment status ($\chi 2=13.93$, df.=6, P=0.030) (**Table 3**).

		Adherence level				
Variables		Low	Medium	Good	P value	
		No. (%)	No. (%)	No. (%)		
A go groups	60 - 69 years	148 (39.8)	110 (29.6)	114 (30.6)	0.726	
Age groups	70+ years	46 (35.9)	41 (32)	41 (32)	0.730	
Condor	Male	97 (39.1)	71 (28.6)	80 (32.3)	0.717	
Genuer	Female	97 (38.5)	80 (31.7)	75 (29.8)	0.717	
Marital status	Not married	44 (40.4)	31 (28.4)	34 (31.2)	0.90	
	Married	150 (38.4)	120 (30.7)	121 (30.9)	0.89	
	Less than primary	53 (39)	50 (36.8)	33 (24.3)		
	Primary	57 (42.9)	32 (24.1)	44 (33.1)		
Level of education	Intermediate	34 (40.5)	23 (27.4)	27 (32.1)	0.369	
	Secondary	20 (32.8)	18 (29.5)	23 (37.7)		
	College	30 (34.9)	28 (32.6)	28 (32.6)		
	Not working	107 (43.9)	69 (28.3)	68 (27.9)		
Employment status	Governmental	15 (50)	7 (23.3)	8 (26.7)	0.020*	
	Private Private		23 (46)	15 (30)	0.030*	
	Retired	60 (34.1)	52 (29.5)	64 (36.4)		
Number of family member	≤3	49 (36.6)	48 (35.8)	37 (27.6)		
	4-6	85 (41.1)	59 (28.5)	63 (30.4)	0.462	
	>6	60 (37.7)	44 (27.7)	55 (34.6)		

Table (3): Cross tabulation for participants' adherence level to chronic diseases' medications and their sociodemographic characteristics

* The association was statistically significant (χ2=13.93, df.=6, P=0.030).

On studying the associations between participants' adherence level to chronic diseases' medications and their chronic diseases; statistically significant association was found only among participants with DM ($\chi 2=8.25$, df=2, P=0.016) (**Tables 4**).

Table (4): Cross tabulation for participants' adherence level to chronic diseases' medications and having hypertension, DM and cardiac diseases

Variables		Low	Medium	Good	P value
		No. (%)	No. (%)	No. (%)	
Hypertension	Yes	141 (37)	122 (32)	118 (31)	0.214
	No	53 (44.5)	29 (24.4)	37 (31.1)	
Diabetes	Yes	97 (33.7)	98 (34)	93 (32.3)	0.016*
	No	97 (45.8)	53 (25)	62 (29.2)	
Cardiac disease	Yes	65 (35.7)	53 (29.1)	64 (35.2)	0.200
	No	129 (40.6)	98 (30.8)	91 (28.6)	0.299

* The association was statistically significant (χ2=8.25, df=2, P=0.016).

A statistically significant association was found between participants' adherence level to chronic diseases' medications and the number of medications used daily for their chronic diseases ($\chi 2=18.97$, df=4, P=0.001); whereas the associations between participants' adherence level to chronic diseases'

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medications and the routes of administrating their medications was statistically not significant (Table 5)

Table (5): Cross tabulation for partic	cipants' adherence level to chroni	c diseases' medications and
the number of medications used dail	y for their chronic diseases and re	outes of administration

Variables	Low	Medium	Good	P value
	No. (%)	No. (%)	No. (%)	
Number of medications				
1	15 (68.2)	2 (9.1)	5 (22.7)	
2	68 (48.2)	38 (27)	35 (24.8)	0.001*
3 or more	111 (32.9)	111 (32.9)	115 (34.1)	
Tablets				
Yes	192 (38.7)	151 (30.4)	153 (30.8)	0.402h
No	2 (50)	0 (0)	2 (50)	0.4030
Injections				
Yes	18 (26.9)	21 (31.3)	28 (41.8)	0.056
No	176 (40.6)	130 (30)	127 (29.3)	0.030
Inhaler				
Yes	9 (37.5)	8 (33.3)	7 (29.2)	0.042
No	185 (38.9)	143 (30)	148 (31.1)	0.942

* The association was statistically significant (χ2=18.97, df=4P=0.001)

Discussion

Medication adherence is a serious element in treating chronic disease, and non-adherence among elderly patients is a problem facing health care provider⁽¹⁷⁾.

The current study aimed to measure medication adherence in elderly patients with chronic diseases attending primary health care centers in Baghdad AL-Resafa Sector and to assess the level of adherence and factors influencing their Medication Adherence using the eight items Morisky Medication Adherence questionnaire (MMS-8)⁽¹⁸⁾.

The age of the participants raged from 60 to 95 years with a mean of 65.9 ± 5.5 years (SD). On assessing the level of medications adherence, we found that (31.0%) of patients had a good level of adherence, (30.2%) had a medium level of adherence, and (38.8%) had a low level of medications adherence according to 8-item Morisky medication adherence scale, in comparison with another study in primary health care centers in Baghdad found that (83.4%) had low level of adherence, medium adherence was (11.7%) and high adherence only (19.4%), the low rate because the beliefs of patients were low in 86%, and that was mostly attributed to high medication cost and 76.6% of patients had low knowledge about medications ⁽¹⁹⁾. Alhabib et al; on studying the medication adherence among geriatric patients with chronic diseases in Riyadh, Suadi Arabia found that 21.3% had a good level of adherence, 13.3% had a partial level of adherence, and 0.5% had a low level of adherence⁽¹³⁾. These differences were because Alhabib et al used the general medication adherence scale which is different medication adherence assessment tool.

The adherence rate was low in other studies as in Al-Sayyad et al from Bahrain were the adherence rate was (19.5%) ⁽²⁰⁾, Ibrahim et al from United Arab Emirates, had 16.7% adherence to chronic disease medications ⁽²¹⁾. These low levels were attributed to the use of different scales (MARS).

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On studying the association between medication adherence and type of chronic disease; this current study showed that there was statistical significance association between medical adherence and diabetes as the level of medication adherence to treatment was good in (32.3%), medium in (34%), and low adherence in (33.7%) patients, whereas Shlash A. and Rabeea I.S. from $Iraq^{(22)}$ in their study "Evaluation of Diabetic-Medications Adherence among Diabetic Type 2 Patients" using the same 8item Morisky medication adherence scale found that (75.5%) have poor adherence to medication which was higher than what was found in the current study while (21.5%) have medium adherence to diabetic management and only 3% have good adherence to medication which was lower than what was found in the current study. This could be explained by improving patients' awareness about diabetes.

Although no statistically significant association was found between medication adherence and other type of chronic disease (except for diabetes) the current study found statistically significant association between the patient adherence level to chronic disease medications and the number of medication used daily for their chronic disease more than two thirds of the patient (337) (67.4%) reported taking three medication or more daily for their chronic.

Disease, 141(28.2%) took two medications daily and only 22 patient (4.4%) reported taking one medication daily where the adherence level was good in (34.1%) of those who took three drugs and more, this result was inconsistent with pervious study in Bahrain, as polypharmacy was not associated with adherence $^{(20)}$.

The current study revealed no association between medication adherence and age; (74.4%) were aged 60-69 years; (39.8%) of them with low adherence and age group 70 years and more (35.9%) of them with low adherence level, in comparison with another study in Saudi Arabia which found a positive correlation between the level of adherence and age, high rates of adherence in patients aged 60 years and above ⁽²³⁾. In contrast to other study from USA where age appeared to have no significant correlation with adherence ⁽²⁴⁾.

The only significant statistical association was found with employment status, (P=0.03) which was similar to a study done in Saudia Arabia ⁽¹³⁾, and a study that was conducted in Babel-Iraq where a statistically significant association was found between medication adherence and employment status among patients with hypertension and diabetes ⁽²⁵⁾. Positive correlations were found from met analysis study ⁽²⁶⁾.

Regarding Social habits; few number of patients were smoker in this study, however smoking was found not to be a significant predictors of medication adherence as (47.9%) from the current smoker had low adherence compared with (36.1%) among non-smoker. Other study found a statistical significant association with medication adherence ⁽²⁵⁾. Another study in Baghdad found that smoking was associated with low medication adherence ⁽¹⁹⁾. In Saudia Arabia smoking was found to be a significant predictors of medication adherence ⁽¹³⁾.

The wide range of discrepancy in the results observed in different studies may be attributed to the difference in the health care system, socio-economic variations among population, patient educational programs, patient beliefs on the disease, and the difference in the tools used to estimate the adherence level with overestimation may be reported by the participants in self-reported questionnaires and the poor level of adherence obtained indicate lack of people's attention to take care of their health.

Conclusions

The current study concluded that:

1. Good medication adherence was found in 155(31%) of patients, low level of adherence in 149(38.8%) patients had low level of adherence and 151(30.2%) patients had medium level of adherence.

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- 2. A statistically significant association was found between levels of medication adherence and employment status.
- 3. Age, gender and educational levels had no association with medication adherence.
- 4. A statistically significant association was found between levels of medication adherence and patients with diabetes
- 5. A statistically significant association was found between levels of medication adherence and number of medication taken, three and more drug associated with good level of adherence among elderly patients.

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