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| RESEARCH ARTICLE

The Impact of Socioeconomic Status as Determinants of Adherence to Chronic Treatments at Thi-Qar Governorate: Socioeconomic Status and Adherence to Chronic Treatments

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| ABSTRACT

Poor adherence to medication regimens highly linked to socioeconomic status. Non-adherence adversely impacts the efficacy, safety, and costs of treatments. Controlling socio-economics factors may improve patient's adherence at all. This study conducted to understand the influence of socioeconomics factor as the main determinates of patient adherence to treatment. The participants were recruited from private pharmacies in Thi-Qar governorate. The survey used for data gathering included their sociodemographic characteristics, patient's diseases and medications and questions about the distribution of patients according to their attitude toward health services and medications availability. 356 adult individuals (49.7% male and 50.3% female) were recruited to include in study. The majority of participants were stable in their economic situation in general (65%). Multivariable analysis showed that the monthly income and difficult paying for your medications due to insufficient monthly income? are highly linked or effect on the current economic situation of participants (p = 0.000), while age, gender, and occupation were not. Economic status strongly affects medication adherence. Despite prescription refill and adherence issues, most individuals are stable economically. Current research shows that many people lack health insurance, which affects medication adherence. To promote adherence, consider socioeconomic factors. Education and follow-up should be better tailored to low-income people.

| KEYWORDS

Socioeconomic status, Adherence, Chronic treatments, Thi-Qar

| ARTICLE INFORMATION

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Introduction

Achieving optimal therapeutic outcomes relies on the crucial factor of patient adherence to the prescribed medication. The World Health Organization (WHO) defines "adherence to a medication" as "the degree to which an individual's behavior in taking medication, adhering to a diet, and/or implementing lifestyle modifications aligns with the recommendations provided by a healthcare professional" (1,2). Adherence, formerly known as compliance, is a term based on the patient. It indicates that patients should do and maintain specific actions, such as adhering to prescription regimens, following an informed decision within a supportive culture. Despite the evident advantages of avoiding and managing chronic illnesses like hypertension and hypercholesterolemia, several individuals consistently neglect to comply with treatment protocols that have been demonstrated to decelerate disease progression, reverse its course, and minimize morbidity and mortality (3). Understanding the elements that may adversely affect adherence is crucial for various reasons. This information can facilitate recognizing patients at a higher risk for non-adherence. Secondly, it can facilitate the identification of potential adherence obstacles that may be removed. Third, it can facilitate the creation of personalized adherence-enhancing strategies (4). Unlike in the past, when most therapies were exclusively offered in hospitals, effective medicines are now accessible in outpatient settings. The demographic shifts occurring in developing

as well as industrialized countries render chronic illnesses increasingly widespread. All of this renders modern therapies reliant on patient self-management. Frequently, evidence-based treatments fail due to the human component identified for several decades as patient non-adherence (5). The WHO proposes that variables influencing patient adherence be categorized into five dimensions: socio-economic factors, health care team factors, illness-related factors, therapy-associated factors, and factors associated with patients (6). Socioeconomic status (SES) is consistently linked to greater adherence to prescribed medications in individuals with chronic conditions, including asthma, diabetes, and cardiovascular diseases (7). It is significant that, although socio-economic status is a frequently utilized term, it is quite challenging to define and quantify. "The New Dictionary of Cultural Literacy" states that socioeconomic status (SES) is dependent upon a combination of factors, including occupation, education, income, and residential location (8). The socioeconomic factors affect medication adherence for chronic diseases including hypertension and diabetes. In hypertension, lack of social support, high drug costs, and difficulty understanding medical instructions were barriers to adherence (9). The implementation of prescription cost coverage programs can enhance the adherence rates of individuals with chronic illnesses (10). Individuals of lower socioeconomic status are more prone to report poorer health, experience reduced life expectancy, and endure a greater prevalence of chronic illnesses compared to those of higher socioeconomic status (5,8). A study previously conducted in Singapore showed a negative association between socioeconomic status (SES), assessed through educational achievement and income, and the prevalence of hypertension (11). Numerous studies indicate that those with lower socioeconomic status often experience diminished satisfaction with their healthcare and encounter significant obstacles, such as inadequate insurance coverage and costly expenses (7,10). Adherence with chronic medication is often recognized as the most challenging form of medicine taking behavior. Nonadherence can result in adverse consequences, including patient and physician distress, misdiagnoses, and, in severe cases, ineffective therapy, illness aggravation, or increased mortality. For example, Nonadherence has been identified as a primary factor contributing to recurrent hospitalizations in individuals with heart failure (9). The predominant research until now has been focused on patient-related variables linked to nonadherence, including forgetfulness of doses, lifestyle limitations, and insufficient self-management abilities. Other factors, especially socioeconomic barriers or social determinants of health (SDH), have received insufficient attention. In Iraq, few studies have focused on understanding the influence of socioeconomics factor as the main determinates of patient adherence to treatment, so our study comes to fill this gap (12–14).

Methods:

Study design

A cross-sectional study was conducted to evaluate the effect of socioeconomics factors as determinate of patient adherence to treatment.

Study setting and sampling technique

The current study participants were patients ho came to the pharmacy to get their refill of chronic treatments at private pharmacies in Thi-Qar Governorate during the period from January 2025 to March 2025. The study was conducted in Nasiriya City, the administrative center of Thi-Qar Governorate, in southern Iraq. The data was acquired using a survey. Five final year pharmacy students worked to collect the required data of the patients and each of them asked a list of questions to fill out the requirements of the study survey. The research employed a convenience sampling technique to recruit eligible participants meeting the inclusion criteria. A significant disadvantage of this strategy is its propensity to induce selection bias, indicating that the sample may not adequately represent the broader population. All participants were informed of the study's objectives, and data collection commenced only after securing their verbal informed permission.

Sample size

More than one pharmacy was visited to get the target sample of patients with inclusion criteria. A total of 356 participants were included in this study. The participants were selected randomly of target population. The sample size surpassed the minimum necessary computed by conventional sample size calculation techniques for survey investigations, presuming a level of confidence of 95% and an acceptable margin of error. So as a result, the total sample size was considered adequate to give sufficient statistical power to get representation and associations.

Sample criteria

The study participants were limited to adult’s patients who visit pharmacies to obtain medication for chronic illnesses. Patients under 18 years of age or who decline to engage in the study or have psychological or mental illnesses were excluded of the study.

Survey tool

A questionnaire was developed based on previous studies in the same filed to gather data on patients' adherence to chronic therapies and their correlation with their socioeconomic level. The printed questionnaires were promptly delivered in several pharmacies within the study area, where students collected data from visitors after elucidating the study's goal and securing their

verbal consent. After data collection, the responses were manually entered into an electronic form for subsequent statistical analysis. The questionnaire included the following questions like: sociodemographic characteristics, what is the monthly cost for your chronic treatments?, how many chronic diseases do you have?, what chronic medications are you taking?, how many medications do you take daily?, are you finding it difficult to pay for your medications due to insufficient monthly income?, are financial costs affecting your adherence to treatment?, what factors prevent you from getting your medications regularly?

Statistical analysis

The statistical analysis was conducted using SPSS software, version 22.0 (IBM Corporation, USA). Frequencies and percentages were employed to illustrate category variables. The correlation between the present economic situations and several patient features was examined by binary logistic regression analysis.

Ethical approval

The academic committee at the University of Thi-Qar of Pharmacy collage accepted the study. Consent was acquired from the individual prior to the commencement of data collection. The researchers adhered to the declaration of Helsinki as a framework of ethical standards in the performance of the research.

Results

Table 1 outlines Sociodemographic characteristic of the participants. The research enrolled 356 participants (49.7% male and 50.3% female). In percent more than 75% of participants, the monthly cost for their chronic treatments was less than 100 thousand Iraqi dinars.

Table 1: Distribution of patients according to sociodemographic characteristic n= 356.

Variable	Categories	F	%
Age	18-24	38	10.7
	25-34	20	5.6
	35-44	34	9.6
	45-54	98	27.5
	55-64	91	25.6
	65>	75	21.1
Sex	Male	177	49.7
	Female	179	50.3
Level of Education	Illiterate	71	19.9
	Basic Literacy	18	5.1
	Primary school graduate	86	24.2
	Secondary school graduate	67	18.8
	Diploma	11	3.1
	Bachelor degree	97	27.2
	Higher education degree	6	1.7
Marital status	Single	44	12.4
	Married	256	71.9
	Divorced	4	1.1
	Widowed	52	14.6
Occupation	Unemployed	183	51.4
	Employee	72	20.2
	Student	28	7.9
	Retired	73	20.5
Monthly income	Less than 250 thousand Iraqi dinar	96	27.0
	250-500 thousand Iraqi dinar	113	31.7
	500 thousand to 1 million Iraqi dinar	118	33.1
	More than 1 million Iraqi dinar	29	8.1
	Less than 50 thousand Iraqi dinar	137	38.5

What is the monthly cost for your chronic treatments?	50 to 100 thousand Iraqi dinar	130	36.5
	More than 100 thousand Iraqi dinar	89	25.0

n= number of samples, F= frequency, %=percentage

Distribution of patients according to their diseases and medications

In Table 2, most of the 356 people who took part had one or two chronic diseases. Many patients utilized more than one medication every day, with diabetes and cardiovascular disorders being the most common diseases treated with drugs. Many patients said they had trouble paying for their drugs and said that the cost of therapy made it hard for them to take medications regularly. The primary challenges were high prescription pricing and restricted availability, but a lot of patients said they had no trouble getting their medications.

Table 2: Distribution of patients according to their diseases and medications uses.

Variables	Groups	F	%
How many chronic diseases does the patient have?	1 disease	187	52.5
	2 diseases	109	30.6
	3 diseases or more	58	16.3
Chronic drugs you have?	Hypertension or CVS drugs	69	19.4
	D.M drugs	74	20.8
	Asthma or respiratory disorder drugs	23	6.5
	Musculoskeletal disorder drugs	9	2.5
	Psychiatric disorders drugs	6	1.7
	Other	23	6.5
	Combination of more than 2 above choice	152	42.7
How many drugs do you take daily?	One	95	26.7
	Two	102	28.7
	Three or more	158	44.4
Are you finding it difficult to pay for your medications due to insufficient monthly income?	Always	45	12.6
	Mostly	65	18.3
	Some times	107	30.1
	Rare	56	15.7
	Never	83	23.3
Due to financial costs?	I strongly disagree	5	1.4
	Disagree	9	2.5
	I don't know	57	16.0
	Agree	175	49.2
	Strongly agree	110	30.9
What factors prevent you from getting your medications regularly?	Cost of drugs	94	26.4
	Not always available	75	21.1
	Distance from the pharmacy	11	3.1
	Lack of clarity	2	0.6
	No prescription	2	0.6
	Forgetfulness	58	16.3
	Health concerns	17	4.8
	None	97	27.2

F= frequency, %=percentage

Distribution of patients according to their attitude toward health services and medications availability

The majority of participants were stable in their economic situation in general (65%), Figure 1. Most of the respondents who took part (61.5%) did not forego health services because they couldn't afford them. However, 28.9% did so sometimes and 9.6% did so often. Approximately a third (34.5%) had replaced their prescribed drugs with cheaper ones. Most of them (86.8%) didn't have health insurance for their drugs. Fewer people reduce doses or switch prescriptions. Most of the people who took part (61.2%) said that the current health system doesn't do enough to help people get their medicines, Table 3.

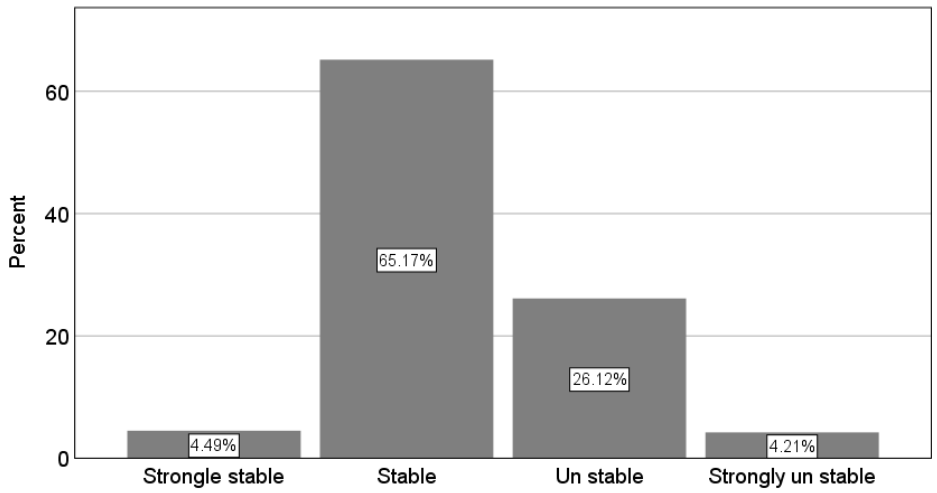

Figure 1: Simple bar percent of particpants respones for how would you describe your current economic situation?

Variables	Groups	F	%
During the past year, have you had to avoid any health services or medications due to financial constraints?	Yes, frequently	34	9.6
	Some times	103	28.9
	No	219	61.5
Have you replaced the medication prescribed by your doctor with another, less expensive medication?	Yes	123	34.5
	No	233	65.4
Do you have health insurance that covers the cost of your medications?	Yes completely	20	5.6
	Yes, but partially	27	7.6
	No	309	86.8
What methods do you follow to deal with the cost of medicines?	Reduce or skip doses	43	12.1
	Request financial support from family or friends	90	25.3
	Substitute the medication prescribed by the doctor with a cheaper medication	38	10.7
	Visit free or subsidized clinics	15	4.2
	other	170	47.8
	Strongly agree	2	0.6

Do you think the current health system in Iraq provides enough support for patients who need medication?	Agree	46	12.9
	I don't know	90	25.3
	disagree	161	45.2
	I strongly disagree	57	16.0

n= number of samples, F= frequency, %=percentage

Table 3: Distribution of patients according to their attitude toward health services and medications availability uses, n= 356

Association of the current economic situation with other factors

The table (4) shows that there are some factors associated with the current economic situation of participants. The data demonstrate that monthly income and difficult paying for your medications due to insufficient monthly income? are highly linked or affected by the current economic situation of participants (p = 0.000). However, there wasn't a significant association between the current economic situation and other variables as shown in Table 4.

Table 4: Association of current economic situation with other factors.

Note: B= regression coefficient, S.E. = standard error, p-value less 0.05 significant.

	Coefficients[a]				
	Unstandardized Coefficients		Standardized Coefficients	t	P value
	B	S. E	Beta		
Age years	-0.005	0.024	-0.014	-0.228	0.820
gender	0.072	0.060	0.058	1.187	0.236
Marital status	-0.019	0.067	-0.017	-0.281	0.779
Educational level	-0.005	0.020	-0.016	-0.269	0.788
Occupation	0.033	0.031	0.054	1.049	0.295
Monthly income	0.162	0.038	0.244	4.262	0.000
Difficult to pay for your medications due to insufficient monthly income?	-0.179	0.024	-.381	-7.360	0.000
Financial costs	-0.036	0.035	-.049	-1.055	0.292
Health insurance	-0.079	0.056	-.065	-1.404	0.161

Discussion

This study included the impact of socioeconomic status on adherence to chronic treatments at various pharmacies in Thi-Qar governorate. Most of the patients in the study were aged more than 45 years-old that correlate with the fact that there is a high prevalence of chronic diseases as they progress with age (15). The findings indicate that a significant number of participants in the study suffered from chronic illnesses and were prescribed numerous drugs. Many of them had to take more than one medication each day, this type of polypharmacy which is common in chronic disease management, puts more pressure on economy in general and tends to be a reason for patients non adherence. This correlates with general agreement that the cost of medications affects patients' behaviors to deal with instructions of prescriptions. These findings highlight the need to make more efforts to reduce the cost of chronic drugs and make it more affordable to support continuous illness management. In percent more than 86.76%, the vast majority of patients do not have any form of health insurance, which correlates with the same findings in a previous study conducted in Iraq (16). This significant lack of insurance coverage imposes a heavy financial burden on patients, especially those suffering from chronic illnesses that require continuous and often costly treatment. However, the lack of health insurance was not necessarily a barrier to patients all time, as they adopted various strategies to maintain their adherence to medications, such as seeking financial support from family or friends, substituting prescribed medications with cheaper alternatives, and relying on free

or subsidized clinics. A significant portion of respondents indicated that financial difficulties led them to replace their prescribed medications with cheaper alternatives, while others stated that financial issues did not affect their ability to obtain their prescribed medications. These mixed responses reflect the financial disparity among patients. The majority of participants do not believe that the current health system provides sufficient support for those with chronic diseases, which correlates with the same findings of study that recognizes most Iraqis people expressed disappointment from the health system after 2003 (17). The monthly income directly affects the economic status of people in Iraq and consequently, patients' adherence to their chronic treatments. The majority 65.17% of patients stated that their economic status is stable and thus, they do not have any problems regarding paying for their medications, this findings reverse with the results of a previous study that found low-income adults, cost was a well-established barrier to taking medications (18). There was a strong association between the difficulty in paying for medications due to insufficient income and the current economic situation. This indicates that patients with a weak or unstable economic situation tend to have difficulties in affording their medications. This highlights the importance of facilitating access to affordable medications as part of efforts to support economic stability. Regarding these results, it is important to allocate further focus on the possible increase in adherence issues driven by economic constraints and the subsequent deterioration that may ensue. This research has some limitations that require acknowledgment. The cross-sectional design precludes the establishment of causal links. The data delivering may lead to recollection and reporting bias. Localized area for study conducted at Nasiriya city diminishes the generalizability of results.

Recommendations:

1- Conduct an extensive design study to ascertain the principal factors contributing to patient non-adherence to treatment.
2- Conduct a study with a large sample size and a wide geographical area to get more generalizability.
3- Expand health insurance coverage to cover a larger number of patients.
4- Enhance patient's awareness about the importance of patient adherence to treatments and its positive impact on health and quality of life at all.
5- Set up an electronic system in pharmacies for monitoring a chronic drug and how well patients are following their treatment. This could include keeping track of prescription refills and making follow-up visits with doctors.

Conclusion

The socioeconomic effects on adherence remain insufficiently researched, especially in lower-income regions. Based on our research, we found that medication adherence is significantly influenced by patients' economic conditions. Despite the challenges in the refill of medications and patients adherence to medications, most of participants in stable current economic situation. Moreover, the current study highlights that many individuals lack health insurance, a factor that directly impacts their adherence to medication regimens. Socioeconomic aspects must be taken into consideration in order to encourage adherence. Educational and follow-up initiatives should be more effectively customized for individuals with low socioeconomic status.

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Conflict of Interest

The author declares no conflict of interest.

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