Role of Health Locus of Control and Self-Efficacy on Level of Psychotropic Medication Adherence among Patients with Psychiatric Disorders

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Abstract:
Medication non-adherence is a major global issue among patients with psychiatric disorders. The most important elements related with medication non-adherence are health locus of control and self-efficacy. **Aim of the study:** To explore role of health locus of control and self-efficacy on level of psychotropic medication adherence among patients with psychiatric disorders. **Subject:** A convenience sample of 140 patients with psychiatric disorders was involved. **Settings:** The study was executed at the Inpatient Psychiatric Department in two settings; Tanta University Hospital and the Psychiatry, Neurology and Neurosurgery Center. **Study design**: A descriptive correlational research design was utilized. **Study tools:** Four tools were used: **Tool I**: Socio-demographic and Clinical Data Structured Questionnaire. **Tool II:** Medication Adherence Rating Scale. **Tool III:** Multidimensional Health Locus of Control (form C) . **Tool IV:** General Self-Efficacy Scale. **Results:** The study revealed that two thirds of the studied patients were non adherent to psychotropic medications and the half of them had moderate level of self-efficacy. Self-efficacy and health locus of control had statistically significant role in the prediction of psychotropic medication adherence among studied subjects. **Conclusions:** Self-efficacy and health locus of control are strong determinants in the occurrence of medication adherence among patients with psychiatric disorders. **Recommendations**: Developing programs for enhancing health locus of control and self-efficacy among patients with psychiatric disorders.

Keywords: Psychiatric Disorders, Psychotropic Medication Adherence, Health Locus of Control, Self-Efficacy.

Introduction

Psychiatric disorder is often associated with significant personal distress, as well as social distress and functional disruptions in one's life [(1)]. Psychiatric illnesses are a global public health concern, affecting approximately 17.6% of the world's population and accounting for 14% of the global disease burden [(2, 3)]. A significant portion of individuals (31.7%) with serious psychiatric disorders have long-term incapacity and dependency. One of the major challenges in treating psychiatric disorders is patient's non-adherence to psychotropic medications [(4,5)].

The world health organization (WHO) defines medication non-adherence as cited in **Hyvert et al (2023)** as, "a case in which a person's behavior in taking medication does not correspond with agreed recommendations from health personnel" [6,7]. Worldwide percentage of non-adherence to psychotropic medications was 20% to 60% among patients with psychiatric illness [8,9]. Additionally, on the national level, an Egyptian study carried by **El-Azzab and Ali (2021)** reported that almost two thirds of psychiatric patients did not take their prescribed psychotropic drugs as required.

Non-adherence to psychotropic medication has a huge gloomy impact on patients, family and society. It can result in exacerbation of patients' illness, decrease the efficacy of treatment and may make patients less receptive to further treatment [10, 11]. Previous studies have demonstrated that medication adherence is a multifaceted phenomenon influenced by a variety of factors, such as those linked to the patient, the environment, the drug, the condition, and other aspects of the treatment. [12]. In this respect the health locus of control and self-efficacy have been shown to be of special relevance related to medication adherence [13].

The key factor of medication adherence in the context of chronic mental illness is self-efficacy. Self-efficacy is the belief in one's own capacity to carry out a certain behavior or group of related acts. ([14]. The feeling of self-efficacy has a high promise for lowering the prevalence of psychiatric disorders, chronic diseases, and improving psychotropic and other medication adherence. As per studies, patients with psychiatric disorders have strong self-efficacy comply to their medications more than patients with poor self-efficacy [14-17].

Another key factor rather than self-efficacy which affect medication adherence is health locus of control (HLOC). Health locus of control refers to the extent to which an individual perceives events in his or her health as being a consequence of his or her actions, and perceived control. A recent study reported that HLOC impact the outcome and possible recovery in psychosis [18, 19]. There are two types of health locus of control; internal and external. While a person with a high external locus of control is more likely to believe that other factors are at play and is more vulnerable to psychosocial maladjustment. A person with a strong internal locus of control may feel more empowered to maintain healthy habits.[18-20]. Accordingly more external HLOC may diminish medication adherence and recovery in psychosis, whereas more internal HLOC may boost medication adherence, rehabilitation, better psychological adaptation to the disease and recovery [19-21].

Significance of the problem:

The psychiatric disorder has a detrimental impact on patients' quality of life, medical costs, health outcomes, health resource use, and death rates. These unfavorable consequences are strongly connected to poor adherence to psychotropic medication, which results in poor psychiatric illness recovery and rehabilitation. This emphasizes the need for psychiatric nurses to explore factors affecting psychotropic medication adherence like health locus of control and self-efficacy among patients with psychiatric disorders.

Aim of the study

This study was aimed to:-

Explore the role of health locus of control and self-efficacy on level of psychotropic medication adherence among patients with psychiatric disorders.

Research hypothesis:-

Patients with psychiatric disorders whom having high internal health locus of control and high self-efficacy will be more adherent to psychotropic medication.

Subjects & Method

Subjects

Research design:-

A descriptive correlational research design was used in the current study.

Setting:-

The present study was conducted at Inpatient Psychiatric Department of the following settings:

a. Tanta University Hospital. Its capacity is (42 beds) divided into two wards for men (26 beds) and two wards for women (16 beds).
b. Psychiatry, Neurology and Neurosurgery Center. This center has a capacity of (61 beds) divided into two wards for men (50 beds) and one ward for women (11 beds).

Both previously settings are affiliated to High Ministry of Education.

Subjects:

A convenience sample of 140 patients with psychiatric disorders was involved as the following; 80 patients from inpatients Psychiatric Department, and 60 patients from the other setting. The sample size was calculated using Epi-Info software statistical package. The criteria used for sample size calculation were as follows; 95% confidence level and expected outcome was 70% with margin of error was 5% as 900 patients were recruited yearly from the previously mentioned settings. According to the previously stated requirements, the sample size should be N >134; however, in order to improve the trustworthiness of the study results, the number of patients was increased to 140. Based on the following criteria, the subjects were chosen from the previous settings;

Inclusion criteria:

- Patients whom are at least 18 years old.
- Patients with psychiatric disorders.
- The patients were able to engage in the study and communicate well.

Exclusion criteria:

- Patients diagnosed with mental retardation, or substance use disorder.
- Having chronic medical illness that may affect a psychological state of patients.
- In acute stage of psychosis **.**

Tools of the study: -The data was collected by using the following tools:-

Tool I: Socio-demographic and Clinical Data Structured Questionnaire:

The questionnaire was developed by the researcher based on scientific review of literatures to assess and elicit data about socio-demographic characteristics[1-7] ; it consisted of 8 questions ; (gender , age in years , residence, marital status, level of

education, occupation, income and living status) . As well as clinical data questionnaire; it contained 7 questions; (onset of illness (in years), duration of illness (in years), numbers of previous admissions, and insight of psychiatric illness, type of admission, clinical diagnosis and prescribed psychotropic medications).

Tool II: Medication Adherence Rating Scale (MARS):

It was adopted from **Thompson et al., (2000)** [22]. It was used for assessing medication adherence behaviors among patients with psychiatric disorders. It was a self-reported instrument consists of 10 statements like "I take my medication only when I am sick". It is a Likert type scale (yes \ no). Yes scores equal (0) and No scores equal (1).While there are 2 reverse statements (No.7and 8) like (By staying on medication, I can prevent getting sick.).

Scoring system:

Total score of **MARS** scale was ranged from zero to ten. The higher score indicated good adherence .The total score was categorized into three levels as the following;

- Poor adherent ranged from (0-3)
- Partial adherent ranged from (4-6)
- Good adherent ranged from (7-10)

Tool III : Multidimensional Health Locus of Control (MHLC) Scale (form C)

- It was adopted from **Wallston et al., (1994**) [23]. It was a self reported scale that was used for assessing individuals' beliefs related to influences on their health. This scale was consisted of 18 items. Each item included a belief statement about the patient's medical condition. It is a six-point Likert scale which was ranged from strongly disagree (1) to strongly agree (6). It composed of **four subscales:** one subscale denoted internality and three subscales denoted external locus of control.

- **An internal locus of control subscale (Internality)**: It composed of 6 items and refers to the extent that patient behavior was responsible for his health or illness. It included items (1, 6, 8, 12, 13, 17). Statements like (I am directly responsible for my condition getting better or worse).

Three external locus of control subscale: -

– **Chance subscale:** It contained 6 items and reflected one's belief that his health depends on chance, luck, or fate. It included items (2, 4, 9, 11, 15, 16). Statements like (Luck plays a big part in determining how my condition improves).

– **Doctors subscales:** It encompassed 3 items and described the degree to which one's health is influenced by others for example, physicians or other healthcare professionals**.** It included items (3, 5,14), like (Following doctor's orders to the letter is the best way to keep my condition from getting any worse).

– **Other (powerful) People subscale:** It composed of 3 items and referred to the degree to which one's health is influenced by others for example, family or friends or others in community. It includes items (7, 10, 18), like (Other people play a big role

in whether my condition improves, stays the same, or gets worse).

Scoring system:

After summing all responses on scale statement, total score were ranged from 18-108 and then according to total scores of each subscale, it classified into the following;

- **Internal locus of control**: ranged from 6-36
- **Chance locus of control** score ranged from 6-36
- **Doctors locus of control** score ranged from 3-18
- **Other people locus of control** score ranged from 3-18

N.B:

Total level of each subscale of MHLC scale come from multiplying total items of each subscale by numbers of likerts(likert that ranged from 1-6)

Tool IV: General Self-Efficacy Scale (GSES)

It was adopted from **Schwarzer&Jerusalem (1995)** [24]. This scale was intended to measure how confident a person was in their own abilities to adapt to unfamiliar or challenging circumstances and overcome any related challenges or failures. It consisted of 10- items. It is a four-point Likert scale ranging from 1 (not at all true) to 4 (completely true). Like statements (I can always manage to solve difficult problems if I try hard enough) or (If someone opposes me, I can find the means and ways to get what I want)

Scoring system:

Total Scores were ranged from 10-40 and classified into three levels as follow:

- Low self-efficacy (10-20).
- Moderate self-efficacy (21-30).
- High self-efficacy (31-40)

Method

The study was accomplished according to the following steps:-

a. The director of the study settings received an official letter from the dean of the nursing faculty seeking for their assistance and consent to collect data.

b. Ethical considerations:-

- Official approval was obtained from the Scientific Research and Ethical Committee of the Faculty of Nursing (**Code**: 43-2-2022) and Faculty of Medicine after explanation the purpose of the study.
- After informing the patients of the study's goal, informed consent was acquired.
- The patients were reassured regarding the privacy and confidentiality of the data acquired; additionally, code numbers were utilized in replacement of names of studied patients.

- Respecting the patients' freedom to withdraw at any time while data is being collected.

- The study's design didn't cause any injury or suffering to the studied subjects.

c. The researcher translated the study tools into Arabic, and five experts in the field of psychiatric nursing evaluated the tools for content validity. Based on expert revisions, the appropriate modifications were made.

d. Tools of the study were tested for reliability using Cronbach's alpha test and found to be 0.761 - 0.881 - 0.951 respectively for tool II , tool III and tool IV which represented highly reliable tools.

e. To determine if the tools were applicable and feasible, a pilot study involving 10% of the sample was conducted. It was also used to calculate the approximate amount of time needed for conducting interviews and determining any obstacles that might arise while gathering data. As a result, the modification was made, and the participants were subsequently excluded from the actual study.

f. Actual study:

- The researcher reviewed the patient records first then selected the study subjects who met the inclusion criteria and then reviewed.
- After informing the study's purpose, the studied patients were invited to participate in the study. Each patient was interviewed face-to-face by the researcher to gather research data on an individual basis.
- The researcher met the patients at the morning shift at the activity room and wards of the hospital within a range of four days (from Sunday to Wednesday) per week on the individual basis. Depending on the patient's state and capacity to tolerate answering questions, the interview lasted and ranged from 70 to 90 minutes.
- .Five months of data collecting were conducted, beginning in July and ending at the end of November 2022.

Statistical analysis:

Version 26 of the statistical computer program SPSS was used to arrange, tabulate, and statistically analyze the data that had been gathered. The range, mean, and standard deviation were computed for quantitative data. To compare qualitative data, the Chi-square test ($\chi 2$) was employed.

Pairing samples T-test was used to compare means of two variables within a group. The analysis of variance's (ANOVA) F-value was computed to compare the means of more than two variables within a group.

The Pearson and Spearman correlation coefficients, r, were used to assess the correlation between the variables. The significance level used to interpret the findings of the significance tests (*) was set at $P<0.05$. Additionally, a very significant threshold of $P<0.01$ was used to evaluate the significance test results. (**) [25].

Results:

Table 1 clarifies socio–demographic characteristics of studied patients. About two thirds of the studied patients (65.7%) were males. Less than half of studied patients (41.4%) aged 30 to less than 40 years old with Mean ±SD 40.24±11.474. About half of the studied patients (47.1%) were married. More than half of the studied patients (60.7%) had secondary school, 64.3% were not working and 52.9% were living in urban areas. Relating to income and living status, 65% had enough income and most of studied patients (92.9%) were living with their family.

Table 2 presents clinical characteristics of studied patients. Half of studied patients (52.9%) were diagnosed with schizophrenia. Concerning age onset of the illness, half of studied patients (51.4%) was from 20 to less than 30 years old with Mean ± SD 29.47±10.698. Regarding the number of previous psychiatric hospitalization; about two thirds of studied patients (64.3%) were admitted less than five times. In the relation to duration of illness 51.4% of patients had the disease less than 10 years ago. Most of studied patients (95%) admitted involuntary and majority of studied patients (85%) had not insight . Regarding to prescribed psychiatric medication; all studied patients (100%) received antipsychotic medications.

Figure 1 illustrates level of psychotropic medication adherence among studied patients (n=140). It was showed that 31.4% had good adherence, 36.4% had partial, and 32.2% were poor adherent to psychotropic medication.

Figure 2 demonstrates total mean scores of internal and external health locus of control among studied patients. It was found that total mean score of external health locus of control of studied patients (51.71± 8.761) was more than mean internal health locus of control (21.01±7.691).

Figure 3 describes levels of general self-efficacy among studied patients. It emphasized that (50%) of the studied patients had moderate self-efficacy. While more one quarter (28%) had high sense of self- efficacy and only 21.4% of the studied patients had low sense of self-efficacy.

Table 3 shows correlation between medication adherence and total scores of multidimensional health locus of control and general self-efficacy of studied patients. It was obvious that there was a positive statistical significant correlation between general self-efficacy and medication adherence of studied patients where r= **0.134**, p= **0.014.** It was noticed that there was highly positive statistical significant correlation between internal health locus of control of studied patients and medication adherence where r= **0.663**, p= **0.000.** But, there was highly negative statistical significant correlation between external health locus of control and medication adherence among studied patients where r= **-0.476**, p= **0.000**. This indicated that with increasing self-efficacy and internal health locus of control, there are subsequently increases in medication adherence of studied patients.

Table 4 presents role of medication adherence on internal and external locus of control and general self-efficacy among studied patients by simple linear regression analysis. Results showed that both internal locus of control and general self-efficacy of the studied patients had significant positive role on occurrence of medication adherence (β= 0.663; P=0.000 & β= 0.134; P=0.000) respectively. While results showed that external locus of control of the studied patients had significant negative role on occurrence of medication adherence (β= -0.476; P=0.000).This indicates that both internal locus of control and general self-efficacy can significantly predict occurrence of medication adherence. At the same time, external locus of control can significantly predict poor medication adherence.

Table (1): Socio–demographic Characteristics of Studied Patients (n=140).

Socio-demographic Characteristics	Studied patients (n=140)	
	N	%
Gender		
- Male	92	65.7
- Female	48	34.3
Age (in years)		
- (18-<30)	18	12.9
- (30-<40)	58	41.4
- (40-<50)	27	19.3
- (50-<60)	19	13.6
- (≥60)	18	12.9
Range	**(22-61)**	
Mean ± SD	**40.24±11.474**	
Residence		
- Rural	66	47.1
- Urban	74	52.9
Marital status		
- Single	42	30.0
- Married	66	47.1
- Divorced	17	12.1
- Widow	15	10.7
Educational level		
- Illiterate	11	7.9
- Read and write	22	15.7
- Secondary	85	60.7
- University	18	12.9
- Post studies	4	2.9
Occupation		
- Work	50	35.7
- Not work	90	64.3
Income		
- Enough	91	65.0
- Not enough	49	35.0
Living status		
- Alone	10	7.1
- Family	130	92.9

Table (2): Clinical characteristics of Studied Patients(n=140)

Clinical characteristics	Studied patients (n=140)	
	N	%
Clinical diagnosis		
- Schizophrenia	74	52.9
- Bipolar disorder	35	25.0
- Major depressive disorder	24	17.1
- Brief psychotic reaction	4	2.9
- Border line personality disorder	3	2.1
Age at beginning illness (in years)		
- (<20)	14	10.0
- (20-<30)	72	51.4
- (30-<40)	26	18.6
- (40-<50)	13	9.3
- (≥50)	15	10.7
Range	**(15-58)**	
Mean ± SD	**29.47±10.698**	
Duration of illness (in years)		
- (<10)	72	51.4
- (≥10)	68	48.6
Range	**(1-30)**	
Mean ± SD	**10.51±8.995**	
Numbers of previous admissions		
- None	10	7.1
- (<5)	90	64.3
- (5-10)	19	13.6
- (>10)	21	15.0
Range	**(0-25)**	
Mean ± SD	**4.97±5.585**	
Type of hospital admission		
- Voluntary	7	5.0
- Involuntary	133	95.0
Insight of psychiatric illness		
- No	119	85.0
- Yes	21	15.0
Prescribed psychotropic medications		
- Antipsychotics	140	100.0
- Mood stabilizer	30	21.4
- Antidepressant	24	17.1

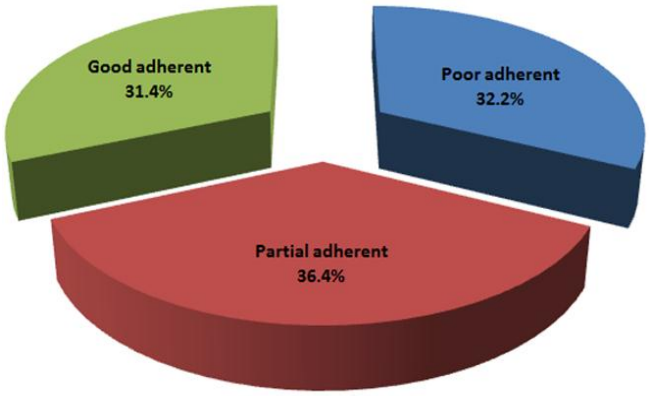

Figure1: Level of Psychotropic Medication Adherence among Studied Patients (No=140).

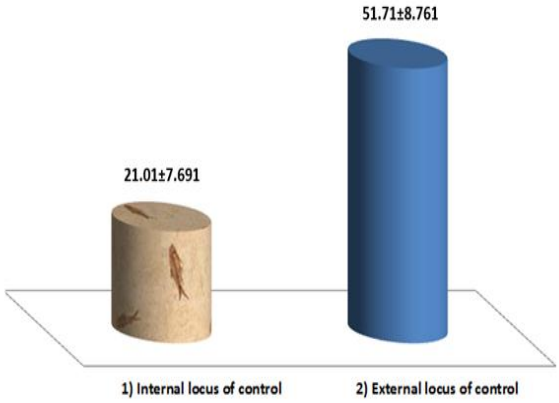

Figure 2: Total Mean Scores of Internal and External Health Locus of control among Studied Patients(n=140)

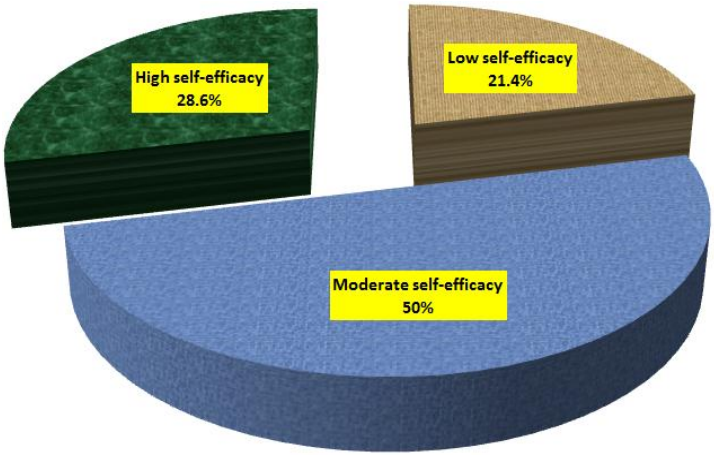

Figure 3: Levels of General Self-Efficacy among Studied Patients (No=140).

Table (3): Correlation between Total Score of Medication Adherence and Multidimensional Health Locus of Control and General Self-Efficacy of Studied Patients.

	Medication Adherence	
	r	**P**
General Self-Efficacy (GSE)	0.134	**0.014***
Internal locus of control	**0.663**	**0.000****
External locus of control	**-0.476**	**0.000****

r: Pearson' correlation coefficient *** Significant at level P < 0.05.**
Highly significant at level P < 0.01.

Table (4): Role of Multidimensional Health Locus of Control and General Self-Efficacy on Level of Medication Adherence among Studied Patients by Simple Linear Regression Analysis.

		Internal locus of control	External locus of control	General self-efficacy
Medication adherence (MARS)	**ΔR^2**	0.435	0.221	0.011
	F	107.963	40.370	2.529
	β	0.663	-0.476	0.134
	P	**0.000****	**0.000****	**0.014***

*** Significant at level P<0.05** **** Highly significant at level P < 0.01.**

Discussion

One of the major challenges in treating psychiatric disorders is patient's non-adherence to psychotropic medications. Adherence to psychopharmacological treatment is a frequent issue in clinical healthcare because, evidently, compliance with prescriptions is a prerequisite for treatment efficacy [(3)]. Self-efficacy and health locus of control are ones of potentially important predictors of psychotropic medication adherence [(15, 19)]. So, alongside with this, the present study was conducted to explore the role of health locus of control and self-efficacy on level of psychotropic medication adherence among patients with psychiatric disorders.

Concerning psychotropic medication adherence level, unfortunately approximately majority of studied patients had partial and poor adherence, while, only one third had good adherence. It denotes that the majority of studied patients were non adherent to psychotropic medications. This may be owing to the fact that the majority of studied patients stated during data collection that patients leave medications due to some following reasons: " they may belief the medication does not work", "did not need for their medications when discharged from hospital with improvement" side effects of medication are undesirable for them such as patients feel tired of medications or less concentrated or the medication make sleepy most of the time". Also, the patient reported that" they don't adhere because of certain social factors as "lack of social support "family didn't support them they feel stigmatized when taking psychotropic medications". Additionally, most of the studied patients didn't adhere to medications because they didn't have insight and this actually supported with the results of the present study.

Such result was actually in line with the study of **Şahin et al (2018)** which conducted at Turkey on individuals with schizophrenia and showed that 71.7% of the patients weren't adherent to psychotropic medication [(26)]. Also, at the national level, the current findings in the same direction with certain Egyptian studies as the study of **Wahba et al (2021)** conducted at "psychiatric outpatient clinics at Port Said and Demira Mental Health Hospital" and(x) represented that the majority of the patients with psychiatric disorders didn't adhere to the medications [(27)].

Also the study of **El-Serogy et al (2021**) conducted at "psychiatric hospital at Assiut university", estimated that a half of patients with schizophrenia who react greatly to medications are noncompliant with their medication regimen [(28)]. With summarizing the previous findings, this signposts that the level of adherence to psychotropic medications was very low among individuals with psychiatric disorders at international and national levels [(29)].

Regarding health locus of control, the current findings of the present study demonstrated that the studied patients were found to have high mean score on external health locus of control than internal one. Such high score of external locus of control may be attributed to that the most patients stated during data collection that other people play a big role in their condition to

be improved or get worse. Also studied patients mentioned that "their condition is a matter of fate". Additionally the studied patients stated that "they can't change their situation through their own efforts whatever happened", "they feel hopeless or powerless in the face of difficult situations".

These results was certainly supported by the Egyptian study carried by **Mahmoud et al (2021)** conducted at "psychiatric outpatient clinics at Port Said Psychiatric Health Hospital" stated that patients with psychiatric disorders have higher scores on external health locus of control than internal[30]

As regard self-efficacy among studied patients, the result of the current study for surprising illustrated that, the half of studied patients had moderate level of self-efficacy. These high levels of self-efficacy among studied patients may be due half of the studied subjects had schizophrenia and one quarter of them had bipolar disorders. Without doubt both diagnoses have main manifestation of delusional grandiosity and inflated self-esteem that provide the patients with sense of false powerful ability to front any problem and solve any difficult situation. Also during data collection, patients stated that' they wanted to be discharged from hospital and showed that they are well and think that the researcher will report their physicians with their improvement because of high self-efficacy. As a result of patient's point of view, they answer perfectly on researcher's questionnaire of general self-efficacy. This finding matched with the study of **Chan et al (2023)** which found that 75 % of patients with psychiatric disorders had high levels of self-efficacy [31]. However this result wasn't compatible with the study of **Tian,Y et al (2023)** which reported that only 30% of patient with psychiatric disorders had high level of self-efficacy [32].

Self-efficacy and health locus of control are the potentially important predictors of psychotropic medication adherence [16,20]. The current result demonstrated that internal health locus of control of the studied patients and general self-efficacy had significant positive role on occurrence of medication adherence. This may be due to that those only studied patients with higher internal health locus of control are more likely to take responsibility for their actions and sustain on it and their health status is the result of their actions and behaviors so adhere more to the medication for better health. Additionally, patients with high internal locus of control feel confident in the face of challenges. So patients were able to confront difficult situations independently and handle the medication problems without frustration or blaming outside forces for their circumstances.

Also these current findings may be owing to that studied patients with high self-efficacy will be more motivated to adhere with their psychotropic medications, as patients convinced that their personal abilities allow them to govern their actions. Also patients with high self – efficacy have the ability to assess and solve their problems independently. So this ability helps patients to properly assess any problems with their medications and detect the alternative solutions rather than discontinuing the medications. In the same side, those patients able to adapt and cope with the difficult

events. So this enables the patients to comply with their psychotropic medications regardless high medication cost, medication complexity and side effects.

These findings agreed with the result of **Na´fra´di, L et al (2017)** who suggested that high levels of self-efficacy and internal health locus of control among patients with psychiatric disorders are consistently found to promote medication adherence [(12)] . However, this finding was in contrast with results by **Abd ElRahman Rabea et al (2023**) reported that a high level of Internal HLOC promotes critical non-adherence to medication regimen [(33)] .

Conclusion & Recommendations

Conclusion

Self-efficacy and health locus of control are strong determinants in the occurrence of medication adherence among patients with psychiatric disorders. Such supported by results of the present study of presence of significant positive role of internal locus of control and general self-efficacy of the studied patients on occurrence of medication adherence.

On the contrast, the current results showed that external locus of control of the studied patients had significant negative role on occurrence of medication adherence. These findings indicate that both internal locus of control and general self-efficacy can significantly predict occurrence of medication adherence. At the same time, external locus of control can significantly predict poor medication adherence.

Recommendations

According to the results of the current study, the following recommendations were suggested: -

- In service update training for mental health nurse about medication adherence and it's affecting factors among patients with psychiatric disorders.
- Implementation of research project on patients with psychiatric disorders for improving internal health locus of control.
- Development training program for developing self-efficacy of patient with psychiatric disorders
- Further studies are needed to assess other factors affecting medication adherence of patients with psychiatric disorders.

Conflict of interest

The authors states that they haven't conflict of interests

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