Original Article

Treatment adherence and its relationship with health literacy in patients with mood disorders in hospitals affiliated with Isfahan University of Medical Sciences in 2022: A cross-sectional study

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Abstract

Background and aims: Mood disorders include major depression and bipolar disorder. Treatment adherence and health literacy are very important in these patients because they may affect their quality of life, performance, and recovery. Therefore, this study aims to determine the level of treatment adherence and its relationship to health literacy in patients with mood disorders.

Methods: This cross-sectional-correlation study was conducted on 120 patients with mood disorders in 2021-2022. Data were collected using the treatment adherence questionnaire of Ziaee et al and the Health Literacy of Iranian Adults (HELIA) questionnaire. Finally, the collected data were analyzed in SPSS-16 software.

Results: Findings showed that patients with mood disorders had moderate treatment adherence (51.53±8.31) and insufficient health literacy (61.31±15.91). The results indicated that treatment adherence had a significant relationship with health literacy in patients with mood disorders ($P < 0.05$, r: 0.298).

Conclusion: Inadequate health literacy in patients with mood disorders shows that health literacy should be considered in improving mental health. Therefore, it is recommended that by promoting the health literacy of these patients and identifying its challenges, treatment adherence in patients with mood disorders be improved.

Keywords: Treatment adherence, Health literacy, Mood disorders

Introduction

Mood disorders are among the most severe and important mental diseases, including major depression and bipolar disorder. They are classified as debilitating disorders due to their recurring nature, inevitable complications, and heavy costs (1-3). These disorders affect one in every four persons during their lifetime (1). In a study conducted in six European countries, mood disorders ranked second among debilitating mental diseases. In Iran, in 2013, the prevalence of mood disorders was 4.35% (4). Studies estimate the prevalence of bipolar disorder in the general population to be 1.5-2.1% (5,6). Unfortunately, the rate of bipolar disorder in Iran is high, so the prevalence of type 1 bipolar disorder in Iran is estimated at 2-4% (5,7). Mahmoudi et al divided the causal conditions of recovery from bipolar disorders into three categories: individual, family, and social, and introduced drug-related issues (such as medication adherence) as mediators (8). Because these disorders are frequently treated with long-term psychotherapy and pharmacotherapy, Pharmacotherapy is the first measure suggested for young patients with bipolar disorders. In this regard, continuous adherence to pharmacotherapy can lead to psychological health in young patients with bipolar disorder or recurrent major depression (9,10).

Treatment adherence describes the patient's compliance with the medical recommendations and includes behavior, dietary compliance, and lifestyle changes (11). Therefore, it is the main key to disease management (12). Therefore, treatment adherence is essential in improving disorders such as bipolar disorder. In addition, treatment adherence can significantly affect patients' quality of life

and performance in society and result in family stability, satisfaction, and independence (13,14). Studies have shown that non-adherence to treatment can increase length of stay, rehospitalization, and disease exacerbation, increasing care costs. Therefore, a lack of attention to this issue hinders the achievement of treatment goals (11,13,14). A report by the World Health Organization (WHO) titled "Adherence to long-term therapies" showed that weak treatment adherence is one of the reasons for adverse clinical outcomes, can waste health resources, and may disrupt the ability of healthcare systems in the world to achieve health goals (15). Although non-adherence to treatment is common in all health disciplines, mental disorders face a higher challenge (16). In psychological disorders, non-adherence to long-term therapies is common among complex treatment regimens (17). Non-adherence to treatment plans and early discontinuation of medications in these patients may lead to complications and, hence, maltreatment of mood disorders (18). Mikaili et al showed that treatment adherence is low in psychological patients, and factors such as patient awareness can increase treatment adherence (11). Zeighami et al stated that about 40% of patients with psychological disorders do not adhere to treatment (19).

Treatment adherence, especially in mental disorders, is a multifactorial phenomenon such as patient-based factors, demographic factors, treatment-related factors, healthcare and support system factors, proper therapeutic communication of the patient and physician, socioeconomic factors, disease-related factors, health beliefs, and perception of the need by patients (11,20). Health literacy is such a factor that can play an important role in treatment adherence (21,22). Health literacy is "the degree to which individuals can obtain, process, and understand basic health information and services needed to make appropriate health decisions" (23,24).

Low health literacy is associated with unfavorable health-related outcomes. It can be stated that most unfavorable health-related outcomes arise from low health literacy (21,22). A report by the WHO titled "Health Literacy: The Solid Facts" showed that weak health literacy skills are associated with high-risk behaviors, poor health, lack of self-management, and hospitalization (25). Therefore, those with poor health literacy have worse health conditions and face problems with self-management methods for their daily programs (26). Given the low public awareness about preventing mental disorders, help requests, and awareness of the existing treatments, understanding the health literacy status is a crucial step toward mental health improvement in communities (27). The study of Samar and Perveen shows that mental health literacy has a positive relationship with people's attitudes toward help-seeking (28). Mental health literacy may also increase knowledge, decrease stigma, and improve general health indices (28,29). Studies on measuring health literacy, especially mental health literacy, are very limited in Iran and often

do not have the necessary scope (22). However, studies such as the study by Sadeghian et al and Parsa et al have shown that the rate of treatment adherence in patients with mental disorders was low before interventions such as education and education improved treatment adherence in mental patients (13,16).

Despite the effect of treatment adherence on the improvement of mood disorders and the importance of assessment of mental health literacy, limited studies have been performed in this field, most of which lack the necessary extent for identifying the existing challenges in this regard (11,22). Therefore, the present study aimed to determine treatment adherence and its relationship with health literacy in patients with mood disorders in Hospitals Affiliated with Isfahan University of Medical Sciences in 2022.

Materials and Methods
Technical information
Study design and site
It was a cross-sectional-correlation study performed on patients with mood disorders in the neuropsychology hospitals (Farabi and Korshid) affiliated with Isfahan University of Medical Sciences in 2022. Data collection and analysis in this study lasted from June to August 2022.

Selection and description of participants
The research population included all patients with mood disorders hospitalized in the study hospitals (Farabi and Khorsid) in Isfahan (Iran). Inclusion criteria were age ≥ 18 years, mood disorders (depression or bipolar) diagnosed by a psychiatrist, and willingness of people to participate in the study. Patients who refused participation or did not fill out the questionnaire or those with severe physical problems that prevent interaction between the researcher and the patient were excluded. In previous studies, the relationship between adherence to treatment and the health literacy of these patients was not investigated. However, the Pearson correlation coefficient between the treatment adherence and social support parameters was -0.33, and the sample size was calculated at 54 people using the following formulas. However, to increase the study's validity, the research team selected 120 patients with mood disorders who met the inclusion criteria through convenience sampling.

$$u_p = \frac{1}{2} ln \frac{1+\rho}{1-\rho} = 0.5 \times ln \frac{1-0.33}{1+0.33} = -0.35$$

$$n = \frac{(Z_{1-\alpha} + Z_{1-\beta})^2}{u_p^2} + 3 = \frac{(1.64 + 0.84)^2}{(-0.35)^2} + 3 = 53.2 \cong 54$$

Variables and data collection
Variables
This study investigated adherence to treatment and health literacy as main variables, and demographic variables (including age, gender, marital status, education level, employment status, and source of receiving

health information) were investigated and analyzed as moderating variables.

Measurement

This study used a tripartite questionnaire to assess treatment adherence and health literacy in patients with mood disorders—the first part of the questionnaire pertained to demographic information, which was evaluated using a researcher-made questionnaire. The second part was derived from the treatment adherence questionnaire of Ziaee et al, which evaluates the three dimensions of adherence to diet (13 items), adherence to drug regimen (6 items), and physical activity pattern (7 items). The total score of this tool ranges from 0 to 100, and the higher the score, the higher the treatment adherence. In the study of Heydari et al, the validity of this questionnaire was approved through the content validity, and its reliability was calculated through Cronbach's alfa as 0.86, 0.91, and 0.95 for adherence to diet, adherence to the drug regimen, and activity pattern dimensions, respectively (30).

The third part pertained to the Health Literacy of Iranian Adults (HELIA) questionnaire and includes 33 items for evaluating five dimensions of health literacy (reading, access, perception, assessment, and decision-making and behavior). The items are scored according to the 5-point Likert scale. The total score of the questionnaire ranges from 0 to 100, and the higher the score, the higher the health literacy. Montazeri et al evaluated the validity of this questionnaire through exploratory factor analysis and its reliability by calculating internal consistency. The construct validity of the questionnaire is favorable. Cronbach's alfa of the items in the corresponding constructs was acceptable (72.0 to 89.0), and the questionnaire's reliability has been approved (31).

Data collection

After selecting the eligible patients, the researcher attended the selected hospitals for collecting data and sampling in the morning shift all days of the week except holidays. Participants were informed of the questionnaire completion method. To avoid bias, the researcher interviewed each patient individually and accurately applied their answers to the questionnaire. Completing each questionnaire takes 20 to 30 minutes. Sampling continued with the available method until it reached almost twice the predicted sample size. Finally, 120 patients completed the questionnaires.

Statistical analyses

The collected data were analyzed in SPSS-16 at a significance level of < 0.05. The results of qualitative variables were reported as numbers (percentage), and quantitative variables were reported as mean ± standard deviation. Pearson's correlation coefficient test was used to examine the relationship between the two main variables (treatment adherence and health literacy) and the age

variable. Independent samples test and ANOVA were used to investigate the relationship between the main variables and the two groups' demographic variables and compare them between groups. Also, in the case of multi-group demographic variables, Multiple Comparisons were used.

Results

Out of 120 patients, with a mean age of 39.54 ± 13.13 years, 52 (43.3%) were men, and 68 (56.7%) were women. In addition, 52 (43.3%) patients were married, and 68 (56.7%) were single (Table 1). The Pearson correlation test showed that the mean of the total score of treatment adherence had a significant relationship with the mean of the total health literacy score in patients with mood disorders ($P < 0.05$, r = 0.298, Table 2). The results also showed that health literacy had a significant relationship with patients' age ($P < 0.05$), so an increase in age was associated with a decrease in health literacy; however, treatment adherence had no relationship with age ($p > 0.05$). The independent samples test and ANOVA results showed that women had significantly higher treatment adherence and health literacy than men ($P < 0.05$). Furthermore, marital status had no relationship with treatment adherence and health literacy ($P > 0.05$, Table 3).

The results of Multiple comparisons showed no relationship between treatment adherence and level of

Table 1. Frequency distribution of Patients' characteristics

Variables	Value
Age, Mean ± SD	39.54 ± 13.13
Gender, No. (%)	
Male	52 (43.3%)
Female	68 (56.7%)
Marital status, No. (%)	
Married	52 (43.3%)
Single	68 (56.7%)
Level of education, No. (%)	
High school	36 (30%)
Diploma	45 (37.5%)
Associate	22 (18.3%)
Bachelor	17 (14.2%)
Employment status, No. (%)	
Employed	11 (9.2%)
Non-employed	64 (53.3%)
Housekeeper	34 (28.3%)
Retired	3 (2.5%)
Student	8 (6.7%)
Source of information, No. (%)	
Health care providers	19 (15.8%)
Internet	46 (38.3%)
TV & Radio	7 (5.8%)
Friends	42 (35%)
Not knowing the source of information	6 (5%)

Table 2. Treatment adherence and health literacy and their relationship

Treatment adherence	Mean ± SD	Health literacy	Mean ± SD	P value[a]
Diet	29.31 ± 4.99	Reading	14.21 ± 3.64	
		Access	22.28 ± 5.13	
Physical activity	3.50 ± 2.41	Understanding	26.22 ± 5.36	
		Assessment	12.73 ± 3.36	
Drug regimen	18.72 ± 3.91	Decision-making & behavior	38.72 ± 5.74	
Total score	51.53 ± 8.31	**Total score**	61.31 ± 15.91	0.001

[a] Pearson's correlation coefficient.

Table 3. Correlation of treatment adherence and health literacy with demographic variables

Variables	Treatment adherence		P value	Health literacy		P value
Age	Mean ± SD		0.119	Mean ± SD		<0.001
	39.54 ± 13.13			39.54 ± 13.13		
Gender	Male	Female	<0.01	Male	Female	<0.001
	45.17 ± 7.13	56.40 ± 5.34		54.35 ± 10.52	66.64 ± 17.30	
Marital status	Married	Single	0.072	Married	Single	0.053
	53.10 ± 8.31	50.34 ± 8.17		58.04 ± 16.89	63.81 ± 14.76	

education; however, health literacy increased significantly with an increase in academic degree, although this increase was not significant between associate degree and bachelor's ($P = 0.302$). In addition, occupational status had no relationship with health literacy, although treatment adherence was significantly higher in housewife patients than in students and unemployed patients ($P < 0.05$). The results showed that patients who used the Internet to acquire information had significantly higher health literacy than the other patients. In contrast, the health literacy of patients who did not know how to acquire information was significantly lower than other patients ($P < 0.05$).

Discussion

The present study aimed to determine the level of treatment adherence and its relationship with health literacy in patients with mood disorders. Our results showed that patients with mood disorders had moderate levels of treatment adherence. In contrast, previous studies performed on patients with psychiatric disorders such as mental and bipolar diseases and Schizophrenia showed low or very low levels of treatment adherence in these patients (11,13,19). Differences in study results may be due to research on different populations in different cultures. Because factors such as race, stability of the living environment, social support, and socioeconomic status can affect treatment compliance (13,19). Also, in this study, questionnaires were completed by self-report method. In this method, patients may tend to adhere more to the treatment regimen than in reality (19).

Findings showed that patients with mood disorders needed more health literacy. However, Lewin, who investigated the relationship between health literacy and re-admission in psychiatric hospitals, showed that most patients had adequate health literacy (32). On the other hand, some studies have shown that the health literacy

of patients with mental disorders is lower than others; in addition, people who do not have enough health literacy have a higher chance of developing depression (33,34). Since health literacy can be affected by familial, cultural, social, and economic factors (21), the difference in the results can arise from a difference in communities' cultural and social backgrounds.

The results showed that the Internet and broadcasting were the most and least used resources for acquiring health information. In addition, health literacy in patients using the Internet was significantly higher than in other patients. However, Morton et al showed that most patients with bipolar disorders acquired information from friends and acquaintances, whereas a minority of patients acquired information from public and health organizations (35). Considering that nowadays, access to the Internet and global websites is relatively easy for most people, the results of our study were expected. In addition, non-print media, including pictures, videos, and computer applications, are effective in providing health information even for people with low health literacy (21). Given the limited studies on the health literacy of patients with mood disorders, evaluating the dimensions of this subject and the resources patients use for acquiring information seems necessary.

According to our results, treatment adherence of patients with mood disorders had a significant direct relationship with health literacy. Limited studies have been performed on the relationship between health literacy and treatment adherence in patients with mood disorders. However, a study on patients with anxiety disorders showed that improving mental health literacy results in the awareness and asking for treatment of patients' disorders (36). Lack of sufficient knowledge and awareness can be one of the reasons for non-acceptance of treatment in bipolar or schizophrenic patients (12,37).

So, in the study of Sadeghian et al, it was shown that not providing an educational program to patients with mental disorders leads to a decrease in their medication compliance (13). This can indicate the importance of the role of health literacy and its promotion in the treatment compliance of patients with mood disorders. In addition, regarding chronic diseases such as diabetes, hypertension, and cardiac failure, the results align with the present research (38-40).

Our findings did not show a relationship between treatment adherence of patients with mood disorders and education. Only the ability to read and write or academic education is not enough to comply with the treatment. Understanding the importance of recovery and the motivation to comply with treatment may be more important in these patients. However, the dimensions of this issue should be evaluated more carefully in future studies. However, Rolnick et al found a significant direct relationship between treatment adherence and education (41). This difference can be caused by the nature of the study population and the assessment tools. Our results showed no association between treatment adherence and age. In this regard, Zeighami et al found no significant relationship between age and acceptance of the drug regimen in patients with mental disorders (19). Given the intricate relationship between age and the cooperation of patients with treatment (42,43), more evidence is required to evaluate the dimensions of this subject, especially in patients with mood disorders. Older patients cooperate more with the treatment staff, and younger patients have higher levels of treatment adherence due to their better educability and health literacy.

In this study, the mean total health literacy score in female patients was significantly higher than in male patients. Accordingly, studies performed in different societies and patients showed that women had a higher level of health literacy than men (22,44). This may arise from cultural and social differences in the study population that can affect the attitudes of people and their interaction with the health system (21). Therefore, this subject should be further studied to identify gender-related factors and their effects on health literacy.

Our results showed a significant direct relationship between health literacy and academic degree. Mental health literacy is people's knowledge and beliefs about mental disorders that help recognize, manage, or prevent those disorders (45). It requires their knowledge, motivation, and competence to access health information, understand, evaluate, and apply it (33). Therefore, it seems that the ability to read and write is not enough to achieve these goals, and only the level of education cannot be a suitable criterion for evaluating health literacy.

The results showed a significant inverse relationship in this study between patients' age and health literacy, so an increase in age was associated with decreased health literacy. This can be attributed to aging, which results in physical and mental changes and reduces the reading ability and perception of health information (21). In line with our study, Morton et al found a relationship between the age of patients with bipolar disorders and their digital health literacy (35). However, Mantell et al showed that the age of patients with mental disorders has no significant impact on their health literacy (33). This difference may arise from different tools used and dissimilar research environments.

One of the limitations of this study was not investigating the effect of demographic and confounding variables on the relationship between adherence to treatment and health literacy.

Conclusion
Inadequate health literacy in the studied patients shows that further attention should be paid to health literacy in mental health improvement programs. As mentioned, the importance of treatment adherence and following the medication regimen for controlling the symptoms of mental disorders and preventing their remission is undeniable, and inadequate health literacy can be an important obstacle. Health literacy may play a decisive role in the treatment adherence of patients. Of course, more studies should be conducted to identify the factors affecting health literacy and examine the barriers and facilitators of the effectiveness of health literacy on treatment compliance in patients with mental disorders (especially mood disorders). Although the various aspects of the effectiveness of health literacy on the adverse consequences of non-adherence to treatment are not investigated in detail, this study can be used as a basis for future studies. Therefore, it is recommended to conduct more extensive studies to determine the intervening factors in the relationship between health literacy and treatment adherence. However, we must note that the cultural and social background of the research environment can affect the findings and their generalizability.

Authors' Contribution
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Competing Interests
The authors declare that there is no conflict of interest.

Ethical Approval

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