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Treatment Adherence in Patients with Mental Illnesses: The Effect of Stigma and Spirituality

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Abstract

Background and Aim: Treatment nonadherence in patients with mental illnesses recurs and exacerbates the complications of the disease and disrupts the treatment process. Experienced stigma may aggravate treatment nonadherence while spiritual well-being may improve stigma and treatment adherence. This study aimed to determine the relationship of stigma with treatment adherence and spiritual well-being in patients with mental illnesses in Iran in 2019.

Materials and Methods: This cross-sectional correlational study was performed on patients with mental illnesses who referred to Farshchian Psychiatry Hospital of Hamadan, from December 2018 to March 2019. A total of 250 available patients were selected and asked to complete demographic, stigma, treatment adherence, and spiritual well-being questionnaires under the supervision of a researcher. Data were analyzed using descriptive statistics and path analysis in SPSS22 and AMOS23.

Results: Mean stigma, treatment adherence, and spiritual well-being scores were calculated as 2.2±0.5, 139.89±27.52, and 83.12±19.5, respectively. The results showed a significant negative correlation between stigma and treatment adherence (r=-0.54, P<0.001). In addition, there was a significant direct relationship between treatment adherence and spiritual well-being (r=0.44, P<0.001) and a significant negative relationship between stigma and spiritual well-being (r=-0.48, P<0.001)

Discussion and Conclusion: The results showed a relationship between stigma and treatment adherence, stigma and spiritual well-being, and spiritual well-being and treatment adherence. Then can be suggested that treatment teams can improve treatment adherence by undertaking several interventions to reduce stigma and promote spiritual well-being to prevent the adverse individual and social effects of treatment nonadherence.

medication adherence; mental disorders; stigma; spirituality

INTRODUCTION

Mental illnesses have significant impacts on people's quality of life (QoL) [1]. It has been reported that these health problems influence about 22.1% of the conflict-affected population assessed at any point in time [2]. Patients with mental illnesses face two major problems in most cases: 1) they must cope with their symptoms, and 2) they must deal with wrong perceptions of community members that can cause

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social stigma [3]. The lay public is only vaguely aware of the nature of mental disorders and tends to stigmatize psychiatric patients irrespective of the severity of their conditions. The highest level of stigma is attributed to patients with mental illnesses among other diseases [4]. Stigma refers to the public's beliefs, attitudes, and negative thoughts about mental illness [3, 5]. Nearly nine out of ten people with mental health problems believe that stigma and discrimination have negative effects on their QoL [6]. In a study by West et al. (2011), conducted on 144 patients with mental illnesses to assess stigma levels, 36% of patients experienced stigma [7].

Stigma causes high stress on patients [4] and can have pervasive adverse effects on people with mental disorders [8]. Social stigma often results in negative attitudes toward treatment, acting as a barrier to seeking treatment [9]. As a result of social stigma, people under treatment may refrain from continuing their treatment and medication due to a sense of shame and inferiority. Social stigma also make people afraid of being judged and its consequences [8, 10, 11]. Over 75% of people suffering from a mental illness do not take their medications and state that medication does not affect their treatment process [5]. Social stigma also exacerbates patients' unwillingness to be treated [8].

Quoting from Cooper, Connor writes that there is an inverse relationship between perceived stigma and treatment adherence [9]. Kamaradova et al. in their study conducted in the Czech Republic on 332 patients with mental illnesses showed a statistically significant correlation between self-stigma and treatment adherence [4]. Yılmaz and Okanl conducted a study to determine the effect of internalized stigma on treatment adherence in patients with schizophrenia. The results showed that internalized stigma levels were high in patients with schizophrenia and that internalized stigma had a negative effect on treatment adherence and attitude toward treatment [12]. Therefore, stigma can be considered a potentially critical factor in medication nonadherence [13]. Medication nonadherence is defined as the number of non-administered or wrongly administered medication doses that endanger therapeutic purposes [14]. In Europe and the United States, 52-74% of patients with mental illnesses do not seek treatment [15]. Moreover, 28-52% of patients with depressive disorder, 20-50% of patients with bipolar disorder, and 20-72% of patients with schizophrenia refuse to take medications [16].

Complications of medication nonadherence, including prolonged treatment, poor cognitive ability, substance abuse, suicide, poor QoL, uncoordinated social functioning [14], increased hospitalization, high hospitalization costs, recurrence, suicide, and gradual brain injury (18), affect both patients and the community [17].

In addition to stigma, other factors that may affect treatment adherence in patients with mental illnesses include negative attitudes toward medication, previous history of medication nonadherence, ineffective discharge planning, and religion and spirituality [17].

The effects of religion and spirituality, including spiritual well-being, on treatment adherence have been examined in several studies [13,15, 19]. Hutson et al. conducted a study to determine the relationship between stigma and spiritual well-being in people with AIDS. The results showed an inverse relationship between spirituality (spiritual mode) and perceived stigma [20]. Kretchy et al. conducted a study to determine the relationship between spirituality/religion and medication continuity in hypertensive patients. The results showed that the treatment adherence level in patients with high spirituality was 2.68 times lower than that in patients with less spirituality [21]. Thus, religion and spirituality are among factors that may play an essential role in treatment adherence in chronically ill patients; however, reviewing the literature indicates conflicting results in this regard.

Spirituality cannot be easily defined because it is a personal matter that differs from person to person and is closely related to faith in many people [22]. In addition, there may be an overlap between the definition of religion and that of spirituality.

Spiritual well-being is defined as having a sense of acceptance, positive feelings, ethics, and a solid emotional bond with an unlimited power source. This state emerges from a dynamic and harmonious process at an individual level, involving cognitive, experiential, interactive, and consequential dimensions. Spiritual well-being covers humans' spiritual experience in two different perspectives, i.e. religious and existen-

tial spiritual well-being [23]. In Islam, spirituality is not separated from religion and is an inner dimension of it. According to this school of thought, religion presents a path for achieving the ultimate purpose of life: the constant relationship with God. Therefore, the separation of religion and spirituality is not acceptable in the Islamic way of living [24].

Some spiritual needs are universal, while others depend on culture [25]. Many people take refuge in their religious beliefs and practices throughout their lives to adapt to stressful living conditions and to provide mental peace [13]. Spiritual well-being helps people adapt to illness. Paying attention to adapting to and coping with illness and its problems through recognizing and enhancing the spiritual side of patients' health is of particular importance [26]. In the present era, it appears essential to consider spirituality as a help to treat mental illness [13].

Treatment nonadherence entails the need for long-term hospitalization and high financial and economic costs for patients, in addition to chronic conditions. Stigma, on the other hand, is a global cultural phenomenon. Considering that spiritual well-being is one of the crucial aspects of health, it is essential to perceive its role in treatment adherence in patients with mental illnesses. Few studies have been conducted to evaluate the interactive effect of spiritual well-being on stigma and treatment adherence. Thus, this study aimed to determine the relationship of stigma with treatment adherence and spiritual well-being in patients with mental illnesses in Iran in 2019.

METHODS

Study design and sample

The present cross-sectional study was conducted in 2019. The study population included all inpatients and outpatients with a mental disorder admitted to the Farshchian (Sina Hospital) Educational and Medical Center affiliated to the XXX University of Medical Sciences, a comprehensive psychiatric hospital in western Iran. The sample size was estimated to be 250 patients based on a similar study [20, 27] and by considering a correlation coefficient of 0.22, with a power of 90%, an estimated error of 0.05%, and sample loss of 10%, using the following formula:

$$C = 0.5 * \ln[(1+r)/(1-r)]$$

Patients were selected using a convenient sampling method by considering the inclusion criteria, including having a mental illness (e.g., schizophrenia, schizoaffective, bipolar I disorder, bipolar II disorder, major depressive disorder, generalized anxiety disorder, obsessive-compulsive disorder, personality disorders) diagnosed by a psychiatrist based on the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) diagnostic criteria, age between 18 and 70 years, and having at least a six-month history of mental disorder. The exclusion criteria were acute severe symptoms (e.g., aggression, noncompliance, suicidal thoughts, and lack of communication), comorbid and substance abuse-related disorders, organic brain disorder, severe physical disorder, and intellectual developmental disorder.

Data collection procedures

Participation in the study was optional, and written informed consent was obtained from the participants after the study's purpose was explained to them. The questionnaires were filled in a quiet environment away from confounding factors without the presence of others, such as in the classroom, without rest, visitation, or medication interference. When completing the questionnaires, the participants were ensured of privacy, the possibility for inquiry, and access to the researcher. It took from 30 to 60 minutes to complete the questionnaires. The questionnaires were filled with a structured review. A member of the research team who was a graduate student in psychiatry performed data collection.

INSTRUMENTS

The data collection procedure was accomplished using four instruments, including a demographic questionnaire, a treatment adherence questionnaire, the internalized stigma of mental illness (ISMI) scale, and Paloutzian and Ellison's spiritual well-being scale.

The demographic questionnaire

Items in the demographic questionnaire explore sex, marital status, education level, employment status, age, past history, medication nonadherence history, mental illness, suicide history, family history, insight into the illness and treatment, hospitalization history, hospital days.

The treatment adherence questionnaire

The treatment adherence questionnaire is a 40-item self-report questionnaire developed by Seyed Fatemi et al. The questionnaire was used in the present study since it was developed in Iran and is appropriate to the culture of Iranian patients. Items in the questionnaire are scored based on a 5-point Likert scale, (quite important=5, somewhat important=4, moderately important=3, slightly important=2, not important at all=1), with the maximum score of 200 and the minimum score of 40. A higher score in the questionnaire indicates more treatment adherence. The content and face validity of the questionnaire were confirmed in Seyed Fatemi et al.'s study. The average content validity index (S-CVI/Ave) was 0.914. The reliability of the questionnaire was assessed using test-retest reliability with Cronbach's alpha of 0.92 (28). In the present study, Cronbach's alpha was 94% for the questionnaire.

The internalized stigma of mental illness (ISMI) scale

ISMI is a 29-item self-report questionnaire developed by Ritsher et al. to measure self-stigmatization in patients with mental disorders. This instrument consists of five subscales, including alienation (Questions: 1, 5, 8, 16, 17, and 21) stereotype endorsement (Questions: 2, 6, 10, 18, 19, 23, and 29), perceived discrimination (Questions: 3, 15, 22, 25, and 28), social withdrawal (Questions: 4, 9, 11, 12, 13, and 20) and stigma resistance (Questions: 7, 14, 24, 26, and 27). Items in the questionnaire are scored based on a 4-point Likert scale (strongly agree=4 to strongly disagree=1). Scores of the items in the stigma resistance subscale are reversed. The minimum and maximum scores on this scale are 1 and 4, representing the lowest and highest internalized stigma levels, respectively [29].

In the present study, the interpretation of the scores was accomplished using the four-category method, which was as follows: 1.00-2.00: minimal internalized stigma or lack of stigma, 2.01-2.50: mild internalized stigma, 2.51-3.00: moderate internalized stigma, and 3.01-4.00: severe internalized stigma [30].

Jacobsson et al. confirmed the validity and reliability of the ISMI scale after translating it into Persian in an experimental study conducted on 30 patients. They reported the Cronbach's alpha coefficient of 0.87 for the instrument [31].

In Sadeghian et al.'s study, the internal reliability of the ISMI scale was examined by administering it to 30 patients, rendering a Cronbach's alpha coefficient of 0.897, which indicated a proper internal consistency [32]. In the present study, Cronbach's alpha was 92% for the questionnaire.

Paloutzian and Ellison's spiritual well-being scale

Palutzian and Ellison first proposed the spiritual well-being scale in 1982 [33]. The scale includes 20 items, of which 10 measure spiritual well-being and 10 assess existential health. Response options for all the items were set on a 6-point Likert scale, ranging from 6=completely disagree to 1=completely agree. The scale consists of two dimensions, i.e. religious (odd items) and existential health (even items). The items 1, 2, 5, 6, 9, 12, 13, 16, and 18 are scored reversely. The final score is obtained by summing up scores of each dimension. In this instrument, the score ranges of 20-39, 40-70, and >70 represent weak, moderate, and high spiritual well-being, respectively. The content validity of the Persian version of the spiritual well-being scale was confirmed in Biglari Abhari et al.'s study using confirmatory factor analysis, and statistics for SWBS were the goodness of fit index (χ=103.36, P=0.0081) and the root mean square error of approximation (0.0047). Test-retest analysis was performed to assess the reliability and repeatability of the scale, and *ICC* was calculated as 0.94 [33]. In a study by Soleimani et al. the Cronbach's alpha coefficient of the scale was measured as 0.91 [24]. In the present study, Cronbach's alpha was 92% for the scale.

Data pre-processing and dealing with missing values

Before conducting any analysis, the data were checked concerning spelling errors and other irregularities/irrelevancies. Possible missing values were imputed using mean (for continuous variables) and median (for discrete or qualitative variables), and the maximum amount of missingness was 3.6%.

RESULTS

Sample description

The mean age of the participants was 38.67±11.81 years. Most of the participants were women (55.6%), unemployed (28.8%), university-educated (31.6%), and single (43.6%) (Table 1).

The mean treatment adherence score was 139.89±27.52, and the mean stigma score was 2.27±0.55. About 36.8% of the patients had minimal stigma levels, and 10.4% had the highest stigma levels. The mean spiritual well-being score was 83.12±19.5. The majority of the participants (72.8%) had moderate spiritual well-being levels (Table 2).

Table 1. Socio-demographic characteristics of participants

Variables		Frequency /mean	Percent/standard deviation
Sex	Female	139	55.6
	Male	111	44.4
Marital status	Single	109	43.6
	Married	99	39.6
	Widow	21	8.4
	Divorced	21	8.4
Education level	Illiterate	20	8
	Elementary	39	15.6
	Middle and High School	42	16.8
	Diploma	70	28
	university-educated	79	31.6
Employment Status	Employee	54	21.6
	Housewife	70	28
	Unemployed	72	28.8
	Business	54	21.6
Discontinue Medication History	Yes	149	59.6
	No	101	40.4
Diagnosis	MDD	54	21.6
	OCD	18	7.2
	Bipolar	68	27.2
	Mania	16	6.4
	Personality Disorder	35	14
	Anxiety Disorder	11	4.4
	Schizophrenia	48	19.2
History of suicide attempts	Yes	60	24
	No	190	76

Family History	Yes	81	32.4
	No	169	67.6
Insight into the illness/treatment	Yes	182	72.8
	No	68	27.2
Hospitalizations History(N)		3.25	2.46
Hospital Days(day)		18.30	10.18
Age(Year)		38.67	11.81
Past History (Year)		6.56	5.15

Table 2: Distribution of absolute and relative frequency of research units in terms of stigma, spiritual wellbeing, and adherence

Variables	Frequency	Percent	Mean	SD
Stigma			2.27	0.55
Minimal (1-2)	92	36.8		
Mild (2.01–2.50)	76	30		
Moderate (2.51-3.00)	56	22.4		
Severe (3.01-4.00)	26	10.4		
Spiritual Wellbeing			83.12	19.50
Weak (20-40)	7	2.8		
Moderate (41-70)	182	72.8		
High (> 70)	60	24		
Treatment Adherence			139.89	27.52

The relationship between the studied variables

Pearson's correlation test showed a significant negative correlation between stigma and treatment adherence (r=-0.54, P<0.001). In addition, there was a significant direct relationship between treatment adherence and spiritual well-being (r=0.44, P<0.001) and a significant negative relationship between stigma and spiritual well-being (r=-0.48, P<0.001) (Table 3).

Table 3. Correlation between Adherence and Stigma, Adherence and Spiritual Wellbeing, and Stigma and Spiritual Wellbeing

Variables		R (Pearson correlation coefficient)	P
Treatment Adherence	Stigma	-0.54	<0.001
Treatment Adherence	Spiritual Wellbeing	0.44	<0.001
	Existential Health	0.47	<0.001
	Religion Health	0.43	<0.001
Stigma	Spiritual Wellbeing	-0.484	<0.001
	Existential Health	-0.548	<0.001
	Religion Health	-0.338	<0.001

The relationship between the demographic variables and the studied variables

The results of the correlation between the demographic variables and the studied variables indicated a significant relationship between stigma with marital status (P=0.003) and medication discontinuation (P=0.003), between spiritual well-being with marital status (P=0.04) and medication discontinuation (P=0.01), between treatment adherence and employment status (P=0.003), and between insight into the illness/treatment (P=0.02) and medication discontinuation (P=0.001) (Table 4).

Table 4. Comparisons of mean stigma, spiritual wellbeing, and Treatment Adherence based on Socio Demographic variables

Variables		Stigma			Spiritual Wellbeing			Treatment Adherence		
		Mean±SD	Test statistics	P	Mean±SD	Test statistics	P	Mean±SD	Test statistics	P
Sex	Female	0.56±2.32	1.65	0.10	68.18±15.69	0.15	0.89	28.96±140.52	0.89	0.15
	Male	2.20±0.54			60.05±14.54			23.9±141.74		
Marital status	Single	2.36±0.54	4.47	0.003	81.58±19.34	2.72	0.04	137.89± 27.05	2.16	0.09
	Married	2.36±0.64			85.9±18.99			142.86±26.74		
	Widow	2.77±0.54			87.09±17.77			153.61±23.43		
	Divorced	2.76±0.54			74.14±21.86			141.58±26.61		
Education level	Illiterate and Elementary	2.27±0.59	0.206	0.814	79.51±19.31	1.42	0.242	140.43±31.67	2.65	0.07
	High School and Diploma	2.23±0.60			80.91±22.28			146.61±26.75		
	university-educated	2.28±0.52			81.84±17.77			138.15±25.83		
Job Status	Employee	2.39±0.63	1.33	0.262	86.68±18.93	1.12	0.341	132.52±40.73	4.86	0.003
	Housewife	2.20±0.52			83.59±18.33			149.69±27.21		
	Unemployed	2.25±0.53			80.31±19.08			137.89±23.19		
	Business	2.25±0.55			82.67±21.92			142.66±24.82		
Insight into the illness/ treatment	Yes	2.27±0.52	0.04	0.97	62.51±14.53	1.06	0.11	143.58±26.80	2.45	0.02
	No	2.27±0.62			63.54±17.49			134.32±25.78		
History of suicide attempts	Yes	2.14±0.6	-0.45	0.65	61.15±16.5	-0.95	0.33	144.11±25.80	1.01	0.314
	No	2.18±0.54			63.31±14.94			140.10±27.10		
Medication discontinuation History	Yes	2.23±0.46	2.98	0.003	80.09±21.27	-3.23	0.001	134.36±28.06	-5.29	0.001
	No	2.15±0.46			87.63±15.54			150.59±21.37		

Path analysis model

We fitted two different models: one with mediator variables and one without them. The goodness of fit criteria for the model not without the mediator variables were Chi2/df=6.428; df=23; P-value<0.001; AGFI=0.790; GFI=0.893; CGI=0.706; and RMSE=0.148. The goodness of fit criteria improved by considering the mediator variables in the model. In this study, the final path model was explored through consecutive steps by fitting several regression models (exploratory data analysis). The

goodness of fit criteria for the final model were Chi2/df=1.232; df=19; Pvalue=0.220; AGFI=0.950; GFI=0.979; CGI=0.990; and RMSE=0.031, falling into acceptable limits. Therefore, we chose the latter as the final model (Figure 1).

According to the path analysis results (Table 5), the direct effect of discontinuation of medication History on the previous history of suicide attempt was statistically significant (P<0.001). Medication discontinuation, also, had a direct negative effect on the treatment adherence score (P<0.001), so that those patients with a history of discontinuation of medication had a lower treatment adherence score. In contrast, greater religious health was associated with better treatment adherence score (P<0.001). Moreover, having an insight into the illness/ treatment was associated with greater treatment adherence score (P=0.02). Also, stigma and having a previous history of suicide attempt were negatively associated with treatment adherence score (P<0.05). According to the results, the effect of existential health on stigma was statistically significant (P<0.001).

On the other hand, having an insight into the illness/ treatment increased the treatment adherence score indirectly (P=0.007), whereas medication discontinuation indirectly decreased treatment adherence score (P=0.001). Besides, as shown in Table 5, an increase in existential health indirectly increased the treatment adherence score (P<0.001).

In general, the total effect of having an insight into the illness/ treatment on patients' religious health (P=0.011) and treatment adherence score (P=0.003) were statistically significant. Similarly, the total effect of existential health on the stigma and treatment adherence score was statistically significant (P=0.001 and P=0.002, respectively). Also, the total effect of medication discontinuation on the previous history of suicide attempts, and treatment adherence score was statistically significant (P=0.001). Furthermore, the total effects of religious health, previous history of suicide attempt and stigma on the treatment adherence score were statistically significant (P=0.002 and P=0.003, respectively).

Table 5. Estimation of Direct (A), Indirect (B) and Total (c) Regression Coefficients of the Predictors in the Path Analysis

Path			Unstandardized regression coefficients	Standard Errors	P
A)Direct effects					
Medication discontinuation History	→	History of suicide attempts			
No	Ref				
Yes			0.207	0.053	<0.001
Medication discontinuation History	→	Treatment Adherence			
No	Ref				
Yes			-0.306	0.067	<0.001
Religious Health	→	Treatment Adherence	0.169	0.041	<0.001
Existential Health	→	Stigma	-0.293	0.037	<0.001
Stigma	→	Treatment Adherence	-0.511	0.068	<0.001
History of suicide attempts	→	Treatment Adherence			
No	(Ref)				
Yes			-0.237	0.076	0.002
Insight into the illness/treatment	→	Religious Health			
No	(Ref)				
Yes			0.329	0.109	0.003
Insight into the illness/treatment	→	Treatment Adherence			
No	(Ref)				

Yes			0.167	0.072	0.020
Age (year)	→	Insight into the illness/ treatment	0.009	0.002	<0.001
B)Indirect effects					
Insight into the illness/treatment	→	Treatment Adherence			
No	(Ref)				
Yes			0.052	-0.035	0.007
Existential Health	→	Treatment Adherence	0.150	0.243	<0.001
Medication discontinuation History (Yes)	→	Treatment Adherence			
No	(Ref)				
Yes			-0.049	-0.036	0.001
Age (year)	→	Treatment Adherence	-0.004	0.015	0.001
C)Total effects					
Insight into the illness/treatment	→	Religious Health			
No	(Ref)				
Yes			0.329	-0.217	0.011
Insight into the illness/treatment	→	Treatment Adherence			
No	(Ref)				
Yes			0.220	-0.224	0.003
Existential Health	→	Stigma	-0.293	-0.692	0.001
Existential Health	→	Treatment Adherence	0.149	0.116	0.002
Medication discontinuation History	→	History of suicide attempts			
No	(Ref)				
Yes			0.207	0.143	0.001
Medication discontinuation History	→	Treatment Adherence			
No	(Ref)				
Yes			0.257	0.103	0.001
Religious Health	→	Treatment Adherence	0.159	0.143	0.002
History of suicide attempts	→	Treatment Adherence			
No	(Ref)				
Yes			-0.237	-0.240	0.003
Stigma	→	Treatment Adherence	-0.511	-0.537	0.001
Age (year)	→	Treatment Adherence	-0.002	0.001	0.001

DISCUSSION

The present study was conducted to determine the relationship of treatment adherence with stigma and spiritual well-being in patients with mental illnesses. The results showed that the patients had moderate treatment adherence. Ebrahimi et al. conducted a study on 80 patients with schizophrenia and showed relative medication adherence [34], confirming the present study results. Oliver et al. examined treatment-seeking in patients with mental disorders and found that only 28% of them achieved a high follow-up score [35]. Elsewhere, XXX et al. in their study on patients with mental illnesses showed low medication adherence in most psychiatric pa-

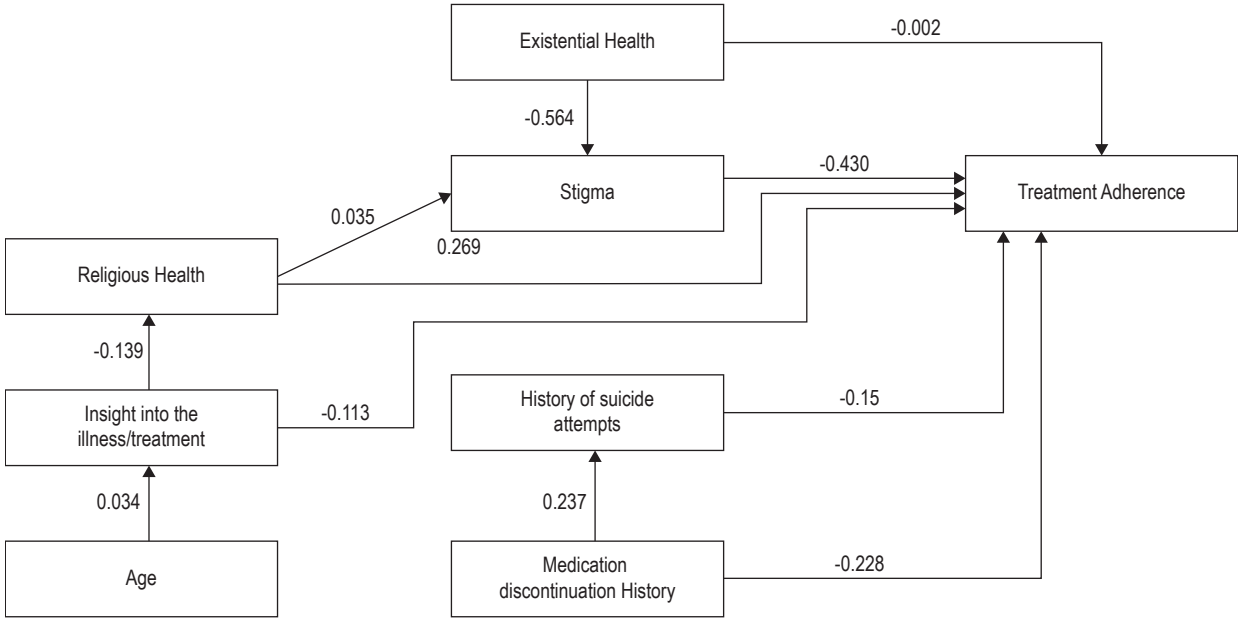

Figure 1: Drawing the final route model using AMOS23 software
(Goodness of fit criteria: RMSE=0.047; CFI=0.975;:1.545 (P=0.057); GFI=0.973; AGFI=0.940)

tients [16]. A systematic review by Fernández's showed that the treatment acceptance rate was very low in patients with bipolar disorder and schizophrenia [36]. The difference between the results of these studies and those of the present study may lie in the application of different methodologies.

Most of patients participating in the present study had mild internalized stigma. Pearl et al. (2017) investigated stigma levels in patients with mental illnesses admitted to a Massachusetts hospital, with the mean stigma score of 2.11±0.53 [37]. Moreover, Mashiach-Eizenberg et al. showed that the internalized stigma level was 2.11 among patients in the United States [38]. The mean stigma score in the above study is lower than that in the present study, which may be due to cultural differences. A study by West et al. on 144 patients with severe mental illness showed that 36% of patients with stigma experienced minimal stigma levels, which is consistent with the present study results [7]. In a study by XXX et al., the mean experienced stigma score of patients with psychiatric disorders was 2.7±0.33, which was an average value. This difference may be due to their study participants, as their research population included patients receiving electroconvulsive therapy [16].

Brain et al. in their study found that more than half of respondents experienced social exclusion and deprivation. Also, they showed that about 1/3 of patients reported to be stigmatized by healthcare workers receiving treatment during the previous hospitalization and that the remaining 2/3 claimed to be discriminated while participating in social relationships [10].

Furthermore, according to the present study results, most of the units reported moderate spiritual well-being levels. In a study by Abu-Raiya et al. on people experiencing high life stress levels, spirituality levels were reported to be 1.45 (1 – 4.93), indicating low spirituality levels in these individuals [39].

This study showed a significant negative relationship between stigma and treatment adherence in patients, meaning that treatment adherence increases with a decrease in stigma experiences. The present study results are in line with those of many others [16, 34-36]. Corrigan et al. in their study on patients with mental illnesses showed that people with higher stigma levels were less likely to engage in treatment processes [40]. Moreover, Schnyder et al. reported that 27% of their participants had a negative attitude toward treatment adherence and about 95% of them attributed stigma to medication discontinuation [41]. Kamaradova et al. in their study showed that internalized stigma had a significant negative effect on treatment adherence [4]. The present study results are consist-

ent with those of the studies mentioned above. Unlike the present study, Brain et al. investigating the relationship between stigma and medication adherence in patients with schizophrenia found no relationship between these two variables [10]. This difference may be due to cultural differences, different study populations, and different tools of the two studies.

The present study results showed a significant direct relationship between treatment adherence and spiritual well-being. In this regard, participants obtaining higher spiritual well-being scores had better treatment adherence. In another study, Grossoehme et al. determined the relationship between spirituality and treatment adherence in cystic fibrosis patients and showed that low adherence levels were associated with low spirituality levels, i.e. those with less adherence followed religious practices to a lesser extent [42].

Zagożdżon et al. conducted a review study to determine the relationship between religious beliefs and treatment adherence in patients with mental illnesses. They showed that religious beliefs predicting treatment adherence were worse in schizophrenic patients. However, spiritual orientation was shown to play a significant role in the recovery from addiction and to improve adherence in patients with this condition. In addition, treatment adherence was higher in religious depressed patients [17]. Grossoehme et al. examined the relationship between treatment adherence and spirituality in adolescents with cystic fibrosis. They showed that high spiritual levels were associated with lower perceptions of treatment usefulness [43]. The difference between the results of the two studies may lie in applying different methodologies and cultural differences. Badanta-Romero et al. obtained different results by conducting a systematic review study to determine the relationship between religion, spirituality, and treatment adherence because patients were divided into two different categories. We found a relationship between spirituality and treatment adherence in one group of patients, but no relationship or even mixed effects in another group of chronically ill patients with different diagnoses [44].

Nonetheless, in a study on cardiac patients to determine spirituality and treatment adherence in Brazil, spirituality was identified as an essential positive factor in treatment adherence, as consistent with the study results [15]. Also, Oji et al. found that spirituality causes less treatment and medication continuation decisions [45]. Boyd et al. and Abd Aleati et al. showed that patients with low spiritual well-being levels had very low medication continuation levels [13, 46], which is in line with the results of the present study. In a study by Borras et al., more than half of patients reported that their illness and treatment were directly influenced by their religious beliefs [11].

The present study results indicated a significant inverse relationship between stigma and spiritual well-being, meaning that a decrease in spiritual well-being levels was associated with an increase in stigma experiences for the participants. Since this was the first study to investigate the association between stigma and spiritual well-being in patients with mental disorders, no study has been found in multiple searches whose results are comparable to those of the present study. In this regard, Huston et al. in their study on patients with AIDS showed an inverse relationship between spirituality and stigma [20]. Kretchy et al. carried out a study on patients with hypertension and showed that adherence rates of patients with high spirituality levels were 2.68 times those of patients with less emphasis on the relationship between spirituality and health [21]. The results of these two studies are in line with those of the present study.

The present study indicated a significant relationship between stigma and marital status, between spiritual well-being and marital status, and between treatment adherence and employment status, with insight into the illness/treatment and medication discontinuation.

In the study by Clement et al., women had lower stigma levels [47]. Docker et al. in their study reported that women had higher stigma levels than men during the follow-up, although men had higher stigma levels than women while receiving treatment [14]. In a study by Staiger et al. unemployed participants experienced higher stigma levels [48]. In Ali et al.'s study [49], older people reported more significant stigma, and there was a moderate association between stigma and non-wage earners. Stringer et al. in their study revealed that married couples with children had more significant stigma compared to other groups.

Moreover, mothers have higher stigma levels than fathers, which is observed as a barrier to treatment adherence [50]. In a study by Smith, adolescents reported more significant stigma than other age groups for treatment adherence [51]. Sendt et al. systematically reviewed factors affecting antipsychotic medication adherence in patients with schizophrenia. They reported that positive attitude toward treatment and insight into the illness were the only factors consistently associated with better treatment adherence. There was a correlation between socio-demographic factors and treatment adherence in the three previous studies. According to these studies, married couples, highly educated people, employed people, and women had better medication adherence [52].

CONCLUSION

The present study results indicated that most of psychiatric patients participating in this study experienced minimal stigma levels. Moreover, the patients' spiritual well-being and treatment adherence levels were at a moderate level. The results also showed a relationship between stigma and treatment adherence, stigma and spiritual well-being, and spiritual well-being and treatment adherence. People experiencing high stigma levels had lower treatment adherence. Moreover, higher spiritual well-being levels were associated with lower stigma levels, and people with higher spiritual well-being levels had greater treatment adherence. Since there is a link between stigma, treatment adherence, and spiritual well-being, it can be suggested that treatment teams can improve treatment adherence by undertaking several interventions to reduce stigma and promote spiritual well-being to prevent the adverse individual and social effects of treatment nonadherence. One of the limitations of the study was the high number of items in the questionnaires. Nevertheless, we attempted to minimize this limitation by providing the patients with a rest period while completing the questionnaires.

Ethical Approval and Consent to Participate

This study was approved by the Ethics Committee of the Hamadan University of Medical Sciences, approval no IR.UMSHA.REC.1397.586. This study was conducted in accordance with the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. The subjects were assured of the following: their participation was optional; they could withdraw at any time without facing any negative consequences. All participants provided their written informed consent.

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The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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