

Research Paper

Mental Health Literacy as a Mediator Between Stigma Among Caregivers and Medication Adherence of Psychotic Patients

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ABSTRACT

Objectives: Treatment adherence in patients with psychosis is critical to treatment effectiveness, but stigma toward caregivers may negatively impact adherence. This study aimed to investigate the mediating role of mental health culture between caregiver stigma and treatment adherence in patients with psychosis.

Methods: A descriptive cross-sectional study was conducted at a psychiatric center in Baghdad City, Iraq, involving 150 primary caregivers of patients with psychotic disorders. Data were collected using validated Arabic versions of the mental health literacy scale (MHLS), medication adherence rating scale (MARS), and caregivers' perceived stigma scale (CPMI). Statistical analyses included Pearson's correlation, multiple regression, and mediation analyses.

Results: Significant negative correlations were found between stigma and both MHL ($r=-0.48$, $P<0.01$) and medication adherence ($r=-0.52$, $P<0.01$). MHL positively correlated with medication adherence ($r=0.58$, $P<0.01$). Regression analysis identified MHL as a strong positive predictor ($\beta=0.46$, $P<0.001$) and stigma as a negative predictor ($\beta=-0.41$, $P<0.001$) of adherence. Mediation analysis confirmed that MHL partially mediated the stigma-adherence relationship (indirect effect $B=-0.2$, $P<0.001$).

Discussion: Improving MHL among caregivers reduces the harmful effects of stigma on medication adherence. Targeted psychoeducational interventions are recommended to improve caregivers' knowledge and support adherence to the treatment of patients with psychotic disorders.

Keywords:

Mental health literacy (MHL), Caregiver stigma, Treatment adherence, Psychotic illnesses, Psychoeducation

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Highlights

- MHL significantly mediates the negative impact of caregiver stigma on medication adherence among patients with psychotic illnesses.
- Targeted psychoeducational interventions for caregivers are essential to reduce stigma and improve treatment adherence outcomes.

Plain Language Summary

This study explored how caregivers' mental health literacy (MHL) influences medication adherence among individuals with serious mental illnesses, such as schizophrenia. The findings showed that stigma, manifesting as shame or negative attitudes toward mental illness, was linked to lower levels of MHL, which in turn hindered caregivers' ability to support consistent medication use. Conversely, caregivers with higher MHL were more effective in promoting treatment adherence. Importantly, while MHL partially mediated the relationship between stigma and adherence, stigma still exerted a direct negative impact, likely through emotional distress, withdrawal and reduced caregiving self-efficacy. These results highlight the dual importance of addressing both knowledge gaps and the emotional burden of stigma. This study recommends caregiver-focused educational programs combined with psychosocial support to reduce stigma and improve patient adherence outcomes.

Introduction

Psychotic illnesses, including schizophrenia and schizoaffective disorders, present profound challenges to patients, families, and healthcare systems. One of the most critical components in the management of psychotic disorders is ensuring consistent medication adherence, which is often disrupted by various psychosocial factors [1]. Research indicates that non-adherence to antipsychotic medications is prevalent, with rates ranging from 40% to 60% globally, leading to relapse, hospitalization, and worsening functional outcomes [2]. Caregivers play a crucial role in supporting adherence, especially when patients have limited insight or experience cognitive impairments. However, their attitudes, knowledge, and beliefs, particularly surrounding mental illness, can substantially influence treatment outcomes [3, 4].

Stigma is as a key obstacle among the many barriers to medication adherence. Caregivers may internalize societal stigma or experience public stigma due to their association with individuals diagnosed with psychotic illnesses. This "affiliate stigma" can cause psychological distress and lead to passive or avoidant care behaviors, ultimately undermining patient adherence [5]. Previous research studies have documented that caregivers experiencing higher levels of stigma often feel shame, reduce help-seeking behaviors, and may distance themselves from the patient, further weakening the support system necessary for long-term treatment compliance [6, 7]. In addition, stigma often

correlates with misinformation and poor understanding of psychiatric conditions, thereby increasing the likelihood of negative caregiving outcomes [8].

Emerging literature suggests that mental health literacy (MHL) may be as a protective mediator in this dynamic. MHL refers to knowledge and beliefs about mental disorders that aid recognition, management, and prevention [9, 10]. Caregivers with higher MHL are more likely to adopt supportive, informed, and proactive attitudes toward their caregiving roles. Evidence shows that MHL reduces the impact of stigma and promotes help-seeking behavior, early identification of symptoms, and increased treatment compliance [11, 12]. Furthermore, MHL interventions have demonstrated measurable improvements in caregiver well-being and patient adherence among psychiatric populations [13].

Despite the growing body of research on the roles of stigma and MHL, few studies have explored how MHL mediates the relationship between caregiver stigma and patient medication adherence [13, 14]. Understanding this mediation pathway is critical for developing targeted educational and anti-stigma interventions. If MHL can buffer the adverse effects of caregiver stigma on adherence, public health efforts should prioritize mental health education as a strategic tool for improving psychiatric outcomes. Therefore, this study aimed to investigate the mediating role of MHL in the relationship between stigma among caregivers and medication adherence in patients with psychotic illnesses.

Materials and Methods

Study design and sitting

This study employed a cross-sectional, descriptive-correlational design to investigate the influence of MHL on the medication adherence of patients with psychotic illnesses. The research was conducted at a specialized psychiatric center in Baghdad City, Iraq, between March 1, 2025, and June 30, 2025. This center was selected due to its central role in providing outpatient psychiatric services and ongoing medication management for patients with chronic mental disorders, particularly those diagnosed with psychotic conditions. The location also served a demographically diverse population, making it suitable for exploring variations in caregiver literacy and patient adherence behaviors.

Study sample

A total of 150 caregivers participated in this study. The sample size was determined based on resource feasibility and the expected number of eligible participants during the data collection period. Participants were selected through purposive sampling, targeting primary informal caregivers of patients diagnosed with psychotic disorders, such as schizophrenia and schizoaffective disorder. Caregivers were eligible if they were aged 18 years or older, had been providing care for at least three months, could communicate in Arabic, and were able to provide informed consent. Caregivers were excluded if they had a diagnosed psychiatric illness that could interfere with their ability to respond accurately or if the patient under their care had a co-occurring substance use disorder, which might confound adherence patterns.

Study instruments

The first part of the tool was a demographic and clinical data questionnaire, developed by the researchers to collect background information on both caregivers and patients. The variables included caregiver age, gender, education level, relationship with the patient, and duration of caregiving, as well as patient diagnosis, illness duration, and frequency of clinical follow-up. Three validated instruments were used in this study:

To assess the relationship between caregivers' stigma, MHL, and medication adherence among patients with psychotic illnesses, three validated instruments were employed. The MHL scale (MHLS), developed by O'Connor and Casey, is a 35-item tool used to evaluate knowledge and beliefs about mental disorders, includ-

ing disorder recognition, risk factors, and help-seeking attitudes. This tool has demonstrated reliability in prior studies, with a Cronbach's α of 0.88 [15]. The Arabic version used in this study was culturally adapted using standard forward-backward translation procedures and reviewed by mental health experts, showing excellent internal consistency (Cronbach's $\alpha=0.87$) in the pilot test.

The second instrument was the medication adherence rating scale (MARS), a 10-item scale originally developed by Thompson et al. to assess medication adherence behavior in psychiatric populations. This scale includes items on both behavior and attitudes toward medication and has shown high reliability in previous research, with a Cronbach's α of 0.84 [16]. In the current study, caregivers completed the MARS to report observed patient medication behaviors. The Arabic version was previously validated and yielded strong reliability (intraclass correlation coefficient [ICC]=0.85) in the current context.

The third tool, the caregivers' perceived stigma scale (CPMI), was utilized to measure the stigma experienced by caregivers of individuals with mental illness. This 22-item scale, adapted from the original tool by Chang et al. and modified for caregivers, covers domains such as discrimination, social withdrawal, and emotional burden. The tool has been previously validated, showing high reliability (Cronbach's $\alpha=0.9$) [17]. The Arabic version used in this study was translated and validated by a panel of bilingual mental health professionals. It demonstrated good internal consistency (Cronbach's $\alpha=0.89$) and stability (ICC=0.88) during the pilot testing phase.

Validity and reliability

To ensure linguistic and cultural relevance, all scales were translated into Arabic using the forward-backward translation method by bilingual mental health professionals. The translated instruments were reviewed by a panel of five experts in psychiatric nursing and psychology to ensure conceptual clarity and content validity. A pilot study was conducted with 30 caregivers who were not part of the final sample to evaluate the clarity, feasibility, and reliability. The pilot results demonstrated strong internal consistency for both the MHLS (Cronbach's $\alpha=0.88$) and MARS (Cronbach's $\alpha=0.84$), indicating the instruments were appropriate for use in the Iraqi caregiver population.

Data collection

Data were collected over four months during routine outpatient visits. Literate participants completed the

questionnaires independently in a quiet room at the psychiatric center. At the same time, those with limited literacy received interviewer-administered surveys conducted by trained psychiatric nurses using a standardized script. Each session lasted approximately 20–30 minutes. Written informed consent was obtained from all participants prior to data collection. This study was approved by the Scientific Research Ethics Committee of the College of Nursing, University of Baghdad. Participants were assured of confidentiality, voluntary participation, and the right to withdraw from the study at any time without any impact on their or their patient's care.

Data analysis

Data were analyzed using SPSS software, version version 27. Descriptive statistics, including frequencies, percentages, Mean $\pm$ SD, were used to summarize the socio-demographic characteristics of caregivers and patients. Pearson's correlation coefficient was employed to examine the relationships between caregiver stigma, MHL, and medication adherence. Multiple linear regression analysis was conducted to identify significant predictors of medication adherence, controlling for caregiver education levels. To assess the mediating role of MHL between stigma and medication adherence, a mediation analysis was performed using the bootstrapping method with 5000 samples to calculate the indirect effect and its 95% confidence interval (CI). The Sobel test was also applied to verify the significance of the mediation effect. Statistical significance was set at $P < 0.05$ for all analyses.

Results

The study sample included 150 caregivers, and Table 1 showed that the average age was 51.49 ± 13.35 years. Age groups were distributed as follows: 20–29 years (17.3%), 30–39 years (25.3%), 40–49 years (28%), 50–59 years (16%), and 60+ years (13.4%). Females comprised a slight majority (54.7%) compared to males (45.3%). Regarding education, most caregivers had a secondary school diploma or higher, with 22.7% secondary school, 20% diploma, 24% bachelor's degree, and 13.3% post-graduate studies; 8% were illiterate, and 12% literate. Most caregivers were married (65.3%), while 20% were single, 5.3% separated, and 9.3% widowed. Housewives represented the largest group (38.7%), followed by employees (18.7%), students (14.7%), self-employed individuals (16%), and retired individuals (12%). Most lived in urban (60%) rather than rural areas (40%).

Table 2 presents the Pearson correlation coefficients between stigma, MHL, and medication adherence. The results indicated a significant negative correlation between stigma and both MHL ($r = -0.48$, $P < 0.01$) and medication adherence ($r = -0.52$, $P < 0.01$), suggesting that as perceived stigma increases, both mental health knowledge and adherence to medication decrease. Conversely, a strong positive correlation was found between MHL and medication adherence ($r = 0.58$, $P < 0.01$), indicating that caregivers with higher MHL are more likely to support better adherence to treatment among patients with psychotic illnesses.

Table 3 presents the results of a multiple regression analysis examining the predictors of medication adherence. MHL ($B = 0.42$, $P < 0.001$) emerged as a strong positive predictor, while stigma ($B = -0.31$, $P < 0.001$) was a significant negative predictor of adherence. Additionally, caregiver education levels showed a notable influence: those with secondary education ($B = 0.18$, $P = 0.048$) and those with a bachelor's degree or higher ($B = 0.29$, $P = 0.004$) were more likely to promote higher adherence compared to illiterate caregivers. The model explained 46% of the variance in adherence ($R^2 = 0.46$), and the overall model was statistically significant ($F_{4,145} = 31.04$, $P < 0.001$), highlighting the critical role of both literacy and stigma in shaping medication-taking behavior.

Table 4 presents a mediation analysis investigating whether MHL mediates the relationship between stigma and medication adherence. The total effect of stigma on adherence was significant and negative ($B = -0.47$, $P < 0.001$). When MHL was included in the model, the direct effect of stigma was reduced but remained significant ($B = -0.27$, $P < 0.001$), indicating partial mediation. The indirect effect of MHL was also significant ($B = -0.2$, 95% CI, -0.31%, -0.12%, $P < 0.001$), supported by a significant Sobel test ($z = 4.28$, $P < 0.001$).

Discussion

Understanding the demographic profile of caregivers provides crucial context for interpreting the dynamics of stigma, MHL, and medication adherence. In this study, most caregivers were middle-aged females, with a substantial portion possessing secondary education or higher. This is consistent with previous research indicating that caregiving roles, especially in mental health contexts, are often assumed by middle-aged women with a moderate level of education [18, 19]. These sociodemographic factors can influence health beliefs, perceptions of stigma, and the ability to process mental health information [20].

Table 1. Distribution of caregivers socio-demographic characteristics

Factors	Classification	No. (%)
Age (y)	20-29	26(17.3)
	30-39	38(25.3)
	40-49	42(28)
	50-59	24(16)
	>60	20(13.4)
	Mean±SD	51.49±13.354
Sex	Male	68(45.3)
	Female	82(54.7)
Educational level	Illiterate	12(8)
	Literate	18(12)
	Secondary school	34(22.7)
	Diploma	30(20)
	Bachelor's degree	36(24)
	Postgraduate studies	20(13.3)
Marital status	Single	30(20)
	Married	98(65.3)
	Separated	8(5.3)
	Widowed	14(9.3)
Occupation	Employee	28(18.7)
	Self-employed	24(16)
	Retired	18(12)
	Student	22(14.7)
	Housewife	58(38.7)
Residence	Rural	60(40)
	Urban	90(60)

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Table 2. Correlation matrix between stigma, MHL, and medication adherence

Variables	Stigma	MHL	Medication Adherence
Stigma	1	-0.48*	-0.52*
Mental health literacy	-0.48*	1	0.58*
Medication adherence	-0.52*	0.58*	1

*Pearson's correlation, P<0.01.

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Table 3. Multiple regression analysis predicting medication adherence

Predictor	B	SE	β	T	P
Mental health literacy	0.42	0.08	0.46	5.25	<0.001
Stigma	-0.31	0.07	-0.41	-4.43	<0.001
Caregiver education (ref=Illiterate)	Secondary school	0.18	0.09	2	0.048
	Bachelor's or higher	0.29	0.1	2.9	0.004
$R^2=0.46$, $F_{4,145}=31.04$, $P<0.001$					

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Table 4. Mediation analysis of MHL between stigma and medication adherence

Path	Coefficient (B)	SE	95% CI	P
Total effect (stigma→ medication adherence)	-0.47	0.06	-0.59, -0.34	<0.001
Direct effect (stigma→ adherence, controlling for MHL)	-0.27	0.07	-0.41, -0.14	<0.001
Indirect effect (stigma→ MHL→ adherence)	-0.2	0.05	-0.31, -0.12	<0.001
Sobel test z	4.28			<0.001

Note: Bootstrapped CI based on 5000 samples.

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Correlation analysis demonstrated that stigma was significantly and negatively associated with both MHL and medication adherence. This finding aligns with prior studies showing that high levels of stigma among caregivers can impede the acquisition of mental health knowledge and diminish their motivation or ability to support consistent medication use in psychotic patients [21, 22]. Conversely, MHL was positively correlated with medication adherence, suggesting that more knowledgeable caregivers are better equipped to understand psychiatric conditions and the importance of treatment adherence. This supports evidence from Lee et al. who emphasized that higher MHL is associated with improved care behaviors and health outcomes in psychiatric populations [23].

Regression analysis further reinforced these relationships. MHL emerged as a robust predictor of medication adherence, even after controlling for stigma and education. This aligns with the theory of planned behavior, which posits that knowledge and attitudes influence intentions and actions [24, 25]. Furthermore, the negative predictive role of stigma on adherence corroborates a body of literature suggesting that stigma contributes to avoidance, denial, or resentment toward psychiatric interventions among caregivers and patients [26, 27]. Importantly, caregiver education significantly predicted adherence, suggesting that educational attainment enhances the caregivers' ability to process and implement health-related knowledge [28-30].

The mediation analysis confirmed that MHL significantly mediated the relationship between caregiver stigma and medication adherence. This indicates that stigma can impair medication adherence partly by reducing caregivers' understanding of mental health. This pathway reflects the cognitive-behavioral model of stigma, which suggests that negative attitudes (stigma) reduce knowledge-seeking behavior (MHL), ultimately undermining caregiving efficacy. The partial mediation observed supports previous mediation models, such as that of O'Connor et al. who found that enhancing caregiver knowledge reduced the detrimental effects of stigma on treatment engagement [15].

Nevertheless, stigma retained a significant direct effect on adherence even after accounting for MHL, indicating that its influence extends beyond knowledge-related mechanisms. Stigma may also operate through emotional and psychological pathways; it can induce shame, social withdrawal, and distress in caregivers, which in turn erodes their confidence and self-efficacy in maintaining consistent care practices. Cognitive-behavioral perspectives suggest that these negative self-appraisals and emotions reinforce avoidance behaviors and reduce engagement with treatment, independently of literacy levels. Thus, while improving MHL is crucial, interventions solely targeting knowledge may be insufficient. Holistic approaches that integrate stigma-reduction strat-

egies, emotional support, and caregiver empowerment programs are needed to address both the cognitive and affective dimensions of stigma and thereby maximize adherence [15].

Conclusion

The findings of this study conclude that MHL plays a significant mediating role in the relationship between caregiver stigma and medication adherence among patients with psychotic illnesses. Higher caregiver stigma levels were associated with reduced MHL and, subsequently, lower treatment adherence. Conversely, caregivers with greater MHL significantly supported better medication adherence, highlighting its pivotal role in improving treatment outcomes. These results underscore the importance of reducing stigma and enhancing MHL through targeted educational interventions. Healthcare systems should integrate caregiver-focused psychoeducation programs to improve understanding of psychotic disorders and reduce stigma-related barriers to treatment adherence.

Study limitation

This study has several limitations. First, its cross-sectional design limits the ability to infer causality between variables. Second, data were collected through self-reported questionnaires, which may be subject to social desirability and recall biases. Third, the sample was drawn from a single geographic region, potentially limiting the generalizability of the findings to the broader population. Finally, this study did not account for clinical severity or duration of illness, which may influence medication adherence and caregiver perceptions.

Ethical Considerations

Compliance with ethical guidelines

Ethical approval was obtained from the Research Ethics Committee of the College of Nursing, [University of Babylon](#) (No.: 78; dated 24/3/2025). The Health Authority of Baghdad/Baghdad Health Directorate, Iraq, approved all experimental protocols. During data collection, all permitted guidelines were adhered to.

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Authors' contributions

Conceptualization, supervision, and data collection: Zaman Ahmed Hrefish; Writing the original draft: All authors; Data analysis, review and editing: Saja Hashem Mohammed.

Conflict of interest

The authors declared no conflict of interest.

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