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Predictors of Difficulties in Treatment Adherence in Patients with Mental Health Disorders: Role of Personality and Paranormal Beliefs

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Abstract

Objectives. The decision to use mental health services can be influenced by personality characteristics and casual beliefs that people with different mental health disorders hold about the reasons for their condition. Therefore, the present study aimed to find out the association and predictors of personality traits, paranormal beliefs, and difficulties in treatment adherence in patients with mental health disorders.

Method. The study used a correlational research design. Purposive sampling was used to collect data from 210 patients (Male= 107, Female = 103) from different hospitals in Lahore.

Results. Results showed that neuroticism had a positive association while openness had a negative association with paranormal beliefs and difficulties in treatment adherence. Hierarchical regression showed that age, gender, residential area, neuroticism, and paranormal beliefs are significant positive predictors of difficulties in treatment adherence. Females exhibited more neuroticism, had high paranormal beliefs, and were more vulnerable to having difficulties in treatment adherence as compared to male participants of the research. In terms of mean difference, unemployed patients scored high on difficulties in treatment adherence as compared to patients with occupation. The ANOVA indicated that there was a significant difference in types of disorders in terms of neuroticism and difficulties in treatment adherence.

Conclusion & Implication. The study highlights the need for healthcare professionals to adopt a more patient-centered approach to treatment planning. Mental health practitioners, including psychiatrists, psychologists, and social workers, should assess adherence barriers on an individual basis and implement strategies to enhance compliance.

Keywords: Personality traits, paranormal beliefs, difficulties in treatment adherence, patient, mental health disorder

Introduction

There has been an alarming increase in the frequency of mental health problems as a result several biological, psychological and social factors. These factors can vary from family environment, interpersonal difficulties, lack of effective stress coping mehcanisms and substance use. Change in societal norm and political instability throughout the world also serves as a social stressor for individuals (Nisar et al., 2019).

More than 9 million are living with mental health issues (WHO, 2019). Similarly, 10% of Pakistan's population, or more than 20 million people, are affected by mental illness and the prevalence of non-adherence to this psychiatric illness is 39% (Fawad et al., 2008).

As personality directs actions and habits, both have a significant impact on general mental health (Cummings, 2019). The Big Five is probably the most used framework for the study of personality traits (Anusic & Schimmack, 2016). It provides a clear framework for understanding others and fostering better relations by understanding why people perform the way they do. The idea can even be used to help comprehend others and how to get along with people more effectively (Dienstman, 2018). The Five-Factor Model, which identifies Conscientiousness, Openness, Extraversion, Agreeableness, and Neuroticism as the five main personality qualities, is the most known system of traits (Diener & Lucas, 2022). With high Openness to Experience individuals can quickly adjust to shifting circumstances and look for creative solutions to issues (Ma et al., 2021).

Neuroticism is defined as a person's tendency to experience negative emotions. High tendencies lead to experiencing negative thoughts, low mood, anxiety, and low self-esteem whereas low tendency results in stable emotional state and calmness. It undoubtedly increases the likelihood of many extremely bad life situations and makes it more difficult for people to deal with them appropriately (Alarcon et al., 2021).

In Pakistan, as in other impoverished countries, people mistakenly believe that mental illnesses are caused by supernatural forces, such as Jinn possession, black magic (jadoo), or evil eyes (Widiger & Oltmanns, 2017). There is a lack of understanding about mental health illness in Pakistan. Such illnesses are often seen as a curse, a spell, or a test from God. Since patients and their families frequently place a lot of faith in religious healers, those who experience mental illness frequently turn to them before mental health experts (Karim et al., 2004). This has caused underdiagnosis of illnesses and protracted delays in receiving treatment (Gilani et al., 2005). Such beliefs, particularly diverse paranormal beliefs may impact patients' perceptions and treatment choices. Thus, the decision to adhere to treatment and use mental health services can be influenced by the causal beliefs that people with different mental health disorders hold about the reasons for their condition, depending on their tradition of culture and the conventional methods of healing (Gopalakrishnan, 2018). Depending on the choice of treatment, individuals may approach dealing with their mental issues in very different ways which may poorly affect their mental health and even lead them to a more severe condition. As a result of a lack of adherence to the treatment, they can experience an increase in hospitalization (Dixon et al., 2016).

According to research on treatment adherence, personality characteristics perceptions, and beliefs about mental diseases affect a person's ability to adhere to the treatment guidelines (Emilsson et al., 2020). Therefore, the study aimed to examine the association and find out the predictors of personality traits, paranormal beliefs, and difficulties in treatment adherence in patients with mental health disorders. Moreover, it gives detailed information about how demographics play an important role in shaping beliefs about mental illnesses and treatment choices such as education, gender, socioeconomic status, and types of treatment they believe.

Pakistan is a culturally rich and spiritually connected country with 96% of Muslim population (Zaman, 2018). Due to the religious and spiritual dynamics of the country, it is foreseeable that paranormal beliefs are generated due to spiritual correlation. Due to inclination towards spirituality and spiritual healing, there is a great focus towards spiritual healing, which results in declined treatment adherence of psychological issues. The study aims to understand the role of paranormal beliefs in the treatment adherence of the mental health disorders, with personality being a driving force, which predisposes the tendency to develop paranormal beliefs.

Hypothesis

Hypothesis 1. There is likely to be a relationship between personality traits, paranormal beliefs and difficulties in treatment adherence in patients with mental health disorders

Hypothesis 2. Demographics, personality traits and paranormal beliefs will likely to predict

difficulty in treatment adherence in patients with mental health disorders.

Hypothesis 3. There is likely to be significant mean difference between men and women in terms of study variables.

Hypothesis 4. There is likely to be a significant mean difference between employed and unemployed individuals in terms of study variables

Method

In this study, correlational research design was used to measure the association between personality traits, paranormal beliefs, and difficulties in treatment adherence in patients with different mental health disorders. A sample 210 diagnosed Patients (207 Males, 203 Females) getting treatment from different hospitals in Lahore were made part of the study. A purposive sampling strategy was used to collect the data. The data was collected from both genders. The diagnosed patients who were receiving treatment of medication and therapy for at least 4 months were included in the study. Furthermore, Patients with psychotic disorders and who were in the active phase of the illness were excluded from this study.

Assessment Measures

The following assessment measures were used in the study.

Demographic Form. This form was developed to collect data about the characteristics of the participants. In this form, questions were related to age, gender, education, socioeconomic status, family type, marital status, current treatment duration of the disorder, and types of treatment sought before.

Big Five Inventory Urdu (Khan et al., 2019). In the present study, only openness and neuroticism traits from the five dimensions of Big Five Personality Inventory were used. Literature suggested that openness and neuroticism have a greater impact on paranormal beliefs and difficulties in treatment adherence due to cognitive and emotional processing (Peltzer, 2002). Because of the culture and language barrier the translated Urdu version of this scale was used. This is the self-report measure. Neuroticism consists of 8 items two of them had reverse scoring and openness had 10 items of which 3 items had reverse scoring. This was a 5-point Likert scale ranging from 1= Strongly Disagree to 5= Strongly Agree. The highest scores indicate that a person has those particular personality characteristics. The reliability of the original scale was =.79.

Paranormal Beliefs (Asif & Yousaf, 2021). A scale of supernatural beliefs was used to assess the paranormal beliefs developed by Asif and Yousaf (2021). This was an Indigenous tool that was in the Urdu language. This was a self-report measure containing 49 items. The scoring of this scale is a 7-point Likert scale which ranges from 0= strongly disagree to 7= strongly agree. The highest scores indicate that individuals have strong paranormal beliefs. The reliability of the scale was .71

Difficulties in Treatment Adherence Scale (Shamshad & Sultan, 2023). To measure the difficulties in treatment adherence in patients with mental health disorders, the tool was indigenously developed for this study through exploratory factor analysis. After factor loading, 24 items were extracted. The scale follows 4-point Likert Scoring from 0=never, 1=seldom, 2=often and 3=all the time. The reliability of the scale in this study was noted to be .91

Ethical Consideration. For this research, the ethical guidelines of the Institutional Review Board (IRB) of the University of Management and Technology were used. Permission was given by the scale's authors to use their measures, and permission was given by hospitals to access the psychiatry wards for data collection. The data was collected only from those patients who were in the residual phase of the mental illness and/or were taking follow-ups. They voluntarily participated in the study. The researcher explained the study's purpose, and Informed consent was taken from them. They were assured the confidentiality of the data provided by them. The data was collected, entered and stored confidentially ensuring the safety and privacy of the participants.

Results

The results include the descriptive and inferential analysis of the study variables. Before running the parametric test, normality analysis was conducted to ensure that the data was normally distributed and met the assumptions of the parametric test. In the descriptive analysis, the mean and standard deviation of continuous variables, frequencies, and percentages of categorical variables were included. On the other hand, the Pearson product-moment correlation and hierarchical regression were used to

test the main hypothesis. For testing the secondary hypothesis, T-test and ANOVA were used to check the differences between the demographics in terms of the study variables.

Section I: Demographic variables

The sample consisted of 107 males and 103 females. The average sample data indicated that the participant's age was falling under the age range of 31.45. 112 participants were employed whereas 98 participants were unemployed. 119 participants were married whereas 95 participants were unmarried. talking about the area of residence, it was divided into two categories, urban and rural. 110 participants were from urban areas whereas 100 participants were from rural backgrounds. Furthermore, the demographics showed that 82 participants were diagnosed with mood disorders. This included unipolar and bipolar disorders which 40 participants diagnosed with depression and 41 participants with bipolar disorder. 64 participants were diagnosed with anxiety disorder, 30 participants with conversion disorder and 34 with substance use disorder.

Section II: Testing the main hypothesis

Table 1

Pearson Product Moment Correlation of the Personality Traits, Paranormal Beliefs, and Difficulties in Treatment Adherence in patients with mental health issues (N=210)

Variables	*N*	*M*	*SD*	NEU	OPE	PB	DTA
NEU	210	30.41	10.48	-	-.36**	.61**	.62**
OPE	210	23.47	11.64	-	-	-.22**	-.28**
PB	210	186.87	58.13	-	-	-	.75**
DTA	210	32.48	15.18	-	-	-	-

Note: N= Number of Participants, *M=Mean, SD=Standard Deviation, NEU=Neuroticism, OPE= openness, PB= Paranormal Beliefs, DTA= Difficulties in Treatment Adherence*

**p<.05, **p<.01, ***p<.001*

The Correlation analysis showed that there is a significant relationship between Personality traits, Paranormal beliefs, and Difficulties in Treatment Adherence in patients with mental health disorders. In terms of type of personality, Neuroticism had a significant positive relationship with paranormal beliefs and difficulties in treatment adherence. This shows that patients with high neuroticism have more paranormal beliefs and have faced more difficulty in adhering to the treatment. Whereas, openness had a significant negative correlation with paranormal beliefs and Difficulties in Treatment Adherence. Patients with higher scores on openness had low scores on paranormal beliefs and showed more adherence to the treatment.

furthermore, paranormal beliefs had a significant positive relationship with difficulties in treatment adherence. The more paranormal beliefs an individual has, the more chances of facing difficulties in adhering to the treatment.

Table 2

Hierarchical Regression Analysis of Demographic, Personality Traits, Paranormal Beliefs and Difficulties in Treatment Adherence (N=210)

Variable	B	95% CI		SEB	β	R^2	Δ R^2
		LL	UL				
Step 1						.09***	.09
Constant	7.87	-3.18	18.92	5.60			
Age	.37	.12	.62	.12	.20**		
Gender	8.54	4.49	12.59	2.05	-.28***		
Step 2						.21***	.11
Constant	-3.87	-24.82	17.07	10.62			
Education	-2.15	-8.40	4.08	3.16	.04		
Occupation	1.38	-3.79	6.57	2.62	.09		
Marital Status	2.08	-.80	4.97	1.46	.21**		
Residential Area	7.92	3.16	12.67	2.41			
Step 3						.62***	.41
Constant	-6.00	-21.24	9.24	7.72			
Neuroticism	.33	.16	.50	.08	.23***		
Openness	-.07	-.20	.05	.06	-.05		
Paranormal Belief	.14	.11	.17	.01	.55***		

Note: B = Un-standardized Coefficient Beta, *LL*=Lower Limit, *UL*= Upper Limit, *SEB*= Standardized Error Beta, β=Beta, R^2= R Square, Δ R^2= Adjusted R square**,**

**p<.05, **p<.01, ***p<.001*

To check the predictors of difficulties in treatment adherence, hierarchical regression analysis was used. In Step I, Age (b = .20, p < .01) and Gender (b = .28, p < .001) were found to be the significant predictors of difficulties in treatment adherence. Greater the age of the participants showed an increase in difficulties in treatment adherence. Similarly, female participants were found to have more difficulties in treatment adherence as compared to male participants. Model 1 explained 9% of the variance in Difficulties in treatment adherence (R^2 = .09), with F (2, 206) = 10.90, p < .001.

In Step II, Marital Status was found to be a significant predictor (b = .21, p < .01) of difficulties in treatment adherence. The result shows that married participants had significant difficulty in adhering to the treatment (R^2 = .21) with F (5, 201) = 5.99, p < .001.

In Step III, Neuroticism (b = .23, p < .001) and Paranormal Beliefs (b = .55, p < .001) were found to be the significant predictors of difficulties in treatment adherence, the model explained 62% of the variance (R^2 = .62) with F (3, 198) = 72.54, p < .001.

Section III: Testing the secondary hypothesis

Table 3

Independent Sample t-test for Mean Difference in Gender, Personality Traits, Paranormal Beliefs, and Difficulties in Treatment Adherence (N= 210)

Variable	Men (*N*=107)		Women (*N*=103)				
	M	*SD*	*M*	*SD*	*t* (208)	*p*	Cohen's d
Neuroticism	28.15	11.32	32.73	9.02	-3.22	.00**	0.44
Openness	22.29	11.04	24.70	12.16	-1.50	.13	0.20
PB	173.18	59.03	201.09	53.88	-3.57	.00***	0.49
DTA	28.94	14.40	36.16	15.17	-3.53	.00**	0.48

Note*: M*=Mean, *SD*=Standard Deviation*, PB*= Paranormal Beliefs, *DTA*= Difficulties in Treatment Adherence

**p<.05, **p<.01, ***p<.001*

An Independent sample t-test was used to check the mean difference between male and female participants in terms of the study variables. The results showed that men and women differ significantly in terms of neuroticism, paranormal beliefs, and difficulties in treatment adherence. Furthermore, it was found that females scored more on neuroticism than men. Similarly, females scored more on paranormal beliefs and difficulties in treatment adherence. This shows that female participants having more neuroticism are more likely to have more paranormal beliefs as compared to males which results in difficulty in adhering to the treatment.

Table 4

Independent Sample t-test for Mean Difference in occupation, Personality Traits, Paranormal Beliefs, and Difficulties in Treatment Adherence (N= 210)

Variable	Employed (*N*=112)		Unemployed (*N*=98)				
	M	*SD*	*M*	*SD*	*t* (20)	*p*	Cohen's d
Neuroticism	29.20	10.70	31.78	10.10	-1.78	.07	0.24
Openness	24.21	11.34	22.62	11.98	.98	.32	0.13
PB	179.31	57.26	195.50	58.21	-2.02	.04*	0.28
DTA	29.68	14.25	35.68	15.65	-2.90	.001**	0.40

Note: M=Mean, *SD*=Standard Deviation, *PB*= Paranormal Beliefs, *DTA*= Difficulties in Treatment Adherence

The above table showed significant mean differences in paranormal beliefs and difficulties in treatment adherence. Furthermore, results depicted that there is no significant mean difference in personality traits in terms of neuroticism and openness. Furthermore, unemployed patients were more vulnerable to difficulties following their treatment rather than those patients who were employed, had a source of earnings, and could bear their treatment expenses. In terms of paranormal beliefs, unemployed participants depicted higher paranormal beliefs as compared to the employed participants.

Table 5

- Way Analysis of Variance (ANOVA) For Personality Traits Paranormal Beliefs and Difficulties in Treatment Adherence among Mental Health Disorders (N=210)

Variables	Mood Disorder (N=81)		Anxiety (N=64)		Conversion (N=30)		substance use disorder (N=34)				
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*P*	η^2
NEU	30.47	10.14	33.28	7.64	28.33	12.57	26.68	12.60	3.55	.01**	0.22
OPEN	21.79	10.39	24.13	11.01	23.27	12.74	26.47	14.20	1.39	.24	0.14
PB	177.27	54.72	194.33	59.52	188.80	56.99	194.26	63.55	1.29	.27	0.13
DTA	27.95	13.61	37.25	15.82	34.93	15.34	32.26	14.83	5.07	.00**	0.27

Note. M=Mean, *SD*=Standard Deviation, *p*= significant level, *PB*= Paranormal Beliefs, *DTA*= Difficulties in Treatment Adherence

One-way ANOVA was used to assess the differences in categories of mental health problems in terms of study variables. The categories of mental health problems were mood disorders, anxiety, conversion, and substance use disorder. The results of the one-way ANOVA showed that there was a significant difference in the categories of mental health disorders in terms of neuroticism and difficulties in treatment adherence. The post-hoc analysis shows that participants with anxiety disorders significantly differ in terms of neuroticism from other mental health disorders. This shows that participants with anxiety have more neuroticism as compared to participants with other mental health disorders. Furthermore, anxiety also turned out to be a significant difference from other mental health disorders in terms of difficulties in treatment adherence. This shows that participants with anxiety disorders have more difficulty in seeking treatment for their issues as compared to participants with other disorders.

Discussion

The findings of the present study indicated that neuroticism, paranormal beliefs, and difficulties in treatment adherence had a significant positive relationship with each other. This proves our hypothesis that patients with high levels of neuroticism will result in developing more paranormal beliefs as high neuroticism makes a person think more negatively and given the socio-cultural dynamics, people in Pakistan are more inclined towards having superstitions about paranormal entities. This increase in paranormal beliefs then makes them less adherent to the psychological treatment available to treat mental health disorders. Having high paranormal beliefs also hinders a person's ability's social functioning which also results in social limitations i.e., lack of funds, lack of support, and encouragement to seek treatment.

On the other hand, Openness to change was found to have a negative correlation with neuroticism, paranormal beliefs, and difficulties in treatment adherence. Consistent with the hypothesis, the researchers found that Difficulties in treatment adherence had a positive relationship with paranormal beliefs in psychiatric disorders (Ram et al., 2016). People who believe that there is a supernatural explanation for mental illness may be more prone to reject treatment, have a negative attitude toward it, and believe that magic or religious rituals can be beneficial (Grover et al., 2012). Difficulties in Treatment adherence were found to be positively influenced by neuroticism, suggesting that people who scored highly on this personality trait were more likely to engage in non-adherent behavior (Axelsson et al., 2011).

Age was found significant predictor of difficulties in treatment adherence which depicts that the more age increases will result in difficulties in adherence treatment (Jerant et al., 2010). Moreover, residential Area is also a strong predictor of patient non-adherence (Ghosh et al., 2022). Adherence was higher among residents of urban areas. Urban people adhere to treatment more frequently than rural ones (Lemstra & Rogers, 2021). Likewise, Neuroticism is also a negative predictor of adherence behavior which means that higher scores in neuroticism explain lower adherence to the treatment (Bagherian-Sararoudi et al., 2020). The current study discovered a statistically significant negative association between paranormal belief and adherence, which was in line with our hypothesis and earlier studies. People who believe that there is a paranormal explanation for mental illness may be more prone to believe that magic or religious rituals are beneficial, have a negative attitude towards treatment, and make decisions about whether to continue taking treatment based on these beliefs (Grover et al., 2012).

The gender differences showed that Females exhibited more neuroticism than men experienced paranormal beliefs and were more vulnerable to having difficulties in treatment adherence as compared to men (Ruiz et al., 2008). Furthermore, it was also found that unemployed patients were more vulnerable to having difficulties following their treatment rather than those patients who were employed by occupation (Kang, 2022).

There is a significant difference between disorders in neuroticism and difficulties in treatment adherence. While openness and paranormal beliefs didn't show any significant differences among all categories of mental health disorders. The broad personality trait of neuroticism is strongly correlated with widespread mental disorders, such as anxiety (Stein et al., 2006). Openness traits are higher in patients with substance use disorders which was consistent with previous research (Hazrati-Meimaneh et al., 2020). On the other hand, patients with anxiety disorder and substance use disorders have strong paranormal beliefs. The fact that individuals with high levels of anxiety are known to have a substantial craving for a sense of control may also help to explain why these individuals have a higher level of belief in superstitious practices or constructions (Paudel & Subedi, 2019). Patients with anxiety disorders were also vulnerable to difficulties in treatment adherence more than depression, conversion, and substance use disorders. Patients with anxiety disorders alone had worse adherence rates than patients who also had depression (Thalbourne et al., 1995).

Limitations and Suggestions

One of the major limitation of the study is the relatively small sample size, which restricts the generalizability of the findings to the broader population. A larger sample size in future studies would enhance the statistical power and allow for more robust conclusions. Additionally, this study specifically examined difficulties in treatment adherence among patients diagnosed with neurotic disorders. While this provides valuable insights, it is important to recognize that treatment adherence issues are also prevalent, and perhaps even more pronounced, among individuals with psychotic disorders. Therefore, future research should consider including psychotic patients to gain a more comprehensive understanding of the factors influencing treatment

adherence across different psychiatric conditions. Expanding the scope of the study in this manner could contribute to the development of more tailored interventions and support mechanisms for individuals struggling with treatment adherence.

Conclusion and Implication

From a clinical perspective, understanding treatment adherence difficulties is crucial for improving patient outcomes. Findings from future studies could inform the development of targeted interventions, such as psychoeducation programs, cognitive-behavioral strategies, and medication management plans tailored to the needs of different patient groups. For instance, psychotic patients may benefit from structured adherence training, caregiver involvement, and long-acting injectable medications to mitigate non-adherence risks.

Practically, the study highlights the need for healthcare professionals to adopt a more patient-centered approach to treatment planning. Mental health practitioners, including psychiatrists, psychologists, and social workers, should assess adherence barriers on an individual basis and implement strategies to enhance compliance. Furthermore, policymakers and healthcare institutions should consider integrating adherence-enhancing measures, such as regular follow-ups, mobile health interventions, and community-based support systems, to improve long-term treatment retention. By addressing these challenges proactively, healthcare providers can improve patient well-being, reduce relapse rates, and enhance the overall effectiveness of mental health treatment programs.

Conflict of interest statement

The authors declare no conflict of interest

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Ethics and Permission

The present study was approved by the ethical committee, Department of Clinical Psychology, UMT, Lahore.

Author Contribution Statement

Shamaila Shamshad contributed in literature and discussion whereas Muhammad Umer Sultan contributed the writing the method and results. Maheen contributed in conceptualization

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References

Alarcon, G. M., Capiola, A., & Pfahler, M. D. (2021). The role of human personality on trust in human-robot interaction. In C. S. Nam & J. B. Lyons (Eds.), Trust in human-robot interaction (pp. 159–178). Elsevier Academic Press. https://doi.org/10.1016/B978-0-12-819472-0.00007-1

Anusic, I., & Schimmack, U. (2016). Stability and change of personality traits, self-esteem, and well-being: Introducing the meta-analytic stability and change model of retest correlations. Journal of Personality and Social Psychology, 110(5), 766–781. https://doi.org/10.1037/pspp 0000066

Axelsson, M., Brink, E., Lundgren, J., & Lötvall, J. (2011). The influence of personality traits on reported adherence to medication in individuals with chronic disease: An epidemiological study in West Sweden. PLOS ONE, 6(3), e18241. https://doi.org/10.1371/journal.pone.0018241

Bagherian-Sararoudi, R., Kheirabadi, G., Akashe, Z., & Maracy, M. (2020). The relationship between personality traits and adherence among patients with hypertension. *International Archives of Health Sciences, 7*(1), 43. https://doi.org/10.4103/iahs.iahs_61_ 19

Chen, S. X., & Mak, W. W. (2008). Seeking professional help: Etiology beliefs about mental illness across cultures. Journal of Counseling Psychology, 55(4), 442–450. https://doi.org/10.1037/0022-0167.55.4.442

Cummings, J. A., & Sanders, L. (2019). Introduction to psychology. University of Saskatchewan Open Press. Retrieved from https://openpress.usask.ca/introductiontopsychology

Diener, E., & Lucas, R. E. (2024). Personality traits. In R. Biswas-Diener & E. Diener (Eds.), Noba textbook series: Psychology. Champaign, IL: DEF Publishers. Retrieved from http://noba.to/96u8ecgw

Dixon, L. B., Holoshitz, Y., & Nossel, I. (2016). Treatment engagement of individuals experiencing mental illness: Review and update. *World Psychiatry, 15*(1), 13–20. https://doi.org/10.1002/wps.20306

Emilsson, M., Gustafsson, P., Öhnström, G., & Marteinsdottir, I. (2020). Impact of personality on adherence to and beliefs about ADHD medication, and perceptions of ADHD in adolescents. *BMC Psychiatry, 20*(1), 1–9. https://doi.org/10.1186/s12888-020-02543-x

Gadit, A. A. M. (2007). Psychiatry in Pakistan: 1947–2006: A new balance sheet. JPMA: Journal of the Pakistan Medical Association, 57(9), 453–463. https://pubmed.ncbi.nlm.nih.gov/18072641/

Ghosh, P., Balasundaram, S., Sankaran, A., Chandrasekaran, V., Sarkar, S., & Choudhury, S. (2022). Factors associated with medication non-adherence among patients with a severe mental disorder: A cross-sectional study in a tertiary care center. Exploratory Research in *Clinical and Social Pharmacy, 7*, 100178. https://doi.org/10.1016/j.rcsop.2022.100178

Gilani, A. I., Gilani, U. I., Kasi, P. M., & Khan, M. M. (2005). Psychiatric health laws in Pakistan: From lunacy to mental health. PLOS Medicine, 2(11), e317. https://doi.org/10.1371/journal.pmed.0020317

Gopalkrishnan, N. (2018). Cultural diversity and mental health: Considerations for policy and practice. *Frontiers in Public Health, 6*. https://doi.org/10.3389/fpubh.2018.00179

Grover, S., Kate, N., Kulhara, P., & Nehra, R. (2012). Supernatural beliefs, aetiological models, and help-seeking behavior in patients with schizophrenia. *Industrial Psychiatry Journal, 21*(1), 49–55. https://doi.org/10.4103/0972-6748.110951

Hazrati-Meimaneh, Z., Amini-Tehrani, M., Pourabbasi, A., Gharlipour, Z., Rahimi, F., Ranjbar-Shams, P., Nasli-Esfahani, E., & Zamanian, H. (2020). The impact of personality traits on medication adherence and self-care in patients with type 2 diabetes mellitus: The moderating role of gender and age. *Journal of Psychosomatic Research, 136*, 110178. https://doi.org/10.1016/j.jpsychores.2020.110178

Irwin, H. J. (1993). Belief in the paranormal: A review of the empirical literature. Journal of the American Society for Psychical Research, 87(1), 1–39.

Jerant, A. F., Chapman, B., Duberstein, P., Robbins, J. A., & Franks, P. (2010). Personality and medication non-adherence among older adults enrolled in a six-year trial. British Journal of Health Psychology, 16(1), 151–169. https://doi.org/10.1348/135910710x524219

Kang, W. (2022). Big five personality traits predict illegal drug use in young people. Acta Psychologica, 231, 103794. https://doi.org/10.1016/j.actpsy.2022.103794

Khan, I. A., Khan, A., Nazir, B., Hussain, S. S., Khan, F. G., & Khan, I. A. (2019). Urdu translation: The validation and reliability of the 120-item Big Five IPIP personality scale. Current Psychology, 38, 1530–1541.

Lemstra, M. E., & Rogers, M. (2021). Mental health and socioeconomic status impact adherence to youth activity and dietary programs: A meta-analysis. Obesity Research & Clinical Practice, 15(4), 309–314. https://doi.org/10.1016/j.orcp.2021.05.003

Ma, B., V, A., & O, G. (2021). Can personality traits be related to medical adherence in patients with myocardial infarction? *Journal of Family Medicine, 8*(5). https://doi.org/10.26420/jfammed.2021.1258

Nisar, M., Mohammad, R. M., Fatima, S., Shaikh, P. R., & Rehman, M. (2019). Perceptions about clinical depression in Karachi, Pakistan. *Cureus, 11*(7), e5094. https://doi.org/10.7759/cureus.5094

World Health Organization. (2005). Mental health atlas 2005. Geneva: World Health Organization.

Zaman, M. Q. (2018). Islam in Pakistan: A history (Vol. 68). Princeton University Press.