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RELATIONSHIP BETWEEN SELF-EFFICACY, ILLNESS PERCEPTION, HEALTH LITERACY, AND TREATMENT ADHERENCE AMONG PATIENTS UNDERGOING HEMODIALYSIS

[*1]Faiza Afzal, [2]Rafia Rafique, [3]Mateen Akram

[*1]*MPhil Scholar, Institute of Applied Psychology, University of the Punjab, Lahore, Pakistan.*
[2]*Professor, Institute of Applied Psychology, University of the Punjab, Lahore, Pakistan.*
[3]*Associate Professor, Head of Nephrology, Sheikh Zayed Hospital, Lahore, Pakistan*
[*1]*faizaafzal0512@gmail.com*, [2]*rafia.appsy@pu.edu.pk*

Corresponding Author: *
Faiza Afzal
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ABSTRACT

This study investigated the independent and collective roles of illness perception, health literacy, and self-efficacy as psychological determinants of treatment adherence among patients undergoing hemodialysis. Utilizing a cross-sectional correlational design, a sample of 200 hemodialysis patients was evaluated using standardized instruments. Pearson correlation analysis revealed that illness perception was significantly positively correlated with both health literacy ($r = .153$, $p < .05$) and self-efficacy ($r = .147$, $p < .05$), though neither construct showed a significant direct bivariate relationship with treatment adherence. Notably, longer hemodialysis duration was significantly associated with decreased self-efficacy ($r = -.246$, $p < .01$), while higher monthly income was positively associated with self-efficacy ($r = .258$, $p < .01$). A standard multiple regression analysis evaluating the collective predictive power of demographic and psychological variables found that the overall model was not statistically significant, explaining only 4.6% of the variance in treatment adherence ($R2 = .046$, $F(8, 191) = 1.142$, $p = .337$). Gender emerged as the sole significant predictor ($\beta = -.18$, $t = -2.45$, $p = .015$), indicating lower adherence levels among male patients. These findings suggest that standalone psychological and informational variables are insufficient to directly predict adherence behavior in this population, highlighting the complex, multidimensional nature of regimen compliance in hemodialysis management.

Introduction

Beyond its physiological demands, hemodialysis engenders a substantial psychological burden that is frequently underestimated in clinical practice. Research consistently documents elevated rates of depression, anxiety, and generalized psychological distress among individuals undergoing hemodialysis compared with the general population and patients with other chronic conditions (Alrashidi et al., 2023; Palmer et al., 2013). This psychological burden is attributable to the chronicity of the illness, profound disruptions to occupational functioning and social roles, financial strain associated with long-term treatment, dependency on medical technology, fear of disease-related complications, and pervasive uncertainty regarding prognosis. Emotional distress further compromises patients' motivational resources, self-regulatory capacity, and cognitive engagement, thereby creating a reciprocal cycle in which poor psychological adjustment undermines adherence and poor adherence in turn exacerbates psychological distress (Ali, 2025).

Within this context, health psychology and behavioral medicine have increasingly directed investigative attention toward identifying the modifiable cognitive and psychological determinants of treatment adherence in hemodialysis patients. Three constructs have emerged as particularly salient: illness perception, health literacy, and self-efficacy. Illness perception refers to patients' organized cognitive and emotional representations of their condition, encompassing beliefs about its identity, cause, timeline, consequences, and controllability (Broadbent et al., 2015). Health literacy denotes the cognitive and social capacities required to obtain, process, and apply health information to make informed health decisions (Nutbeam, 2000). Self-efficacy, derived from Bandura's (1997) Social Cognitive Theory, reflects individuals' beliefs in their capacity to execute the specific behaviors required to manage their condition effectively. These three constructs are theoretically coherent, empirically supported in related chronic illness populations, and crucially, amenable to modification through targeted psychological and educational interventions. The present study examines the independent and collective roles of illness perception, health literacy, and self-efficacy as determinants of treatment adherence among patients undergoing hemodialysis in Pakistan (Bano, 2025).

Method

Research Design

The study employed a correlational research design using a cross-sectional survey method to examine the relationships between illness perception, health literacy, self-efficacy, and treatment adherence among patients undergoing hemodialysis. This approach was chosen to assess the independent and collective roles of these psychological constructs without manipulating variables, thereby providing a clear snapshot of their associations in a clinical context.

Sample

A sample of N = 200 patients diagnosed with end-stage renal disease (ESRD) and receiving hemodialysis was recruited for the study. Participants were recruited from a clinical setting, with the data collection process accounting for various demographic factors including age, gender, hemodialysis duration, hemodialysis frequency, comorbid illnesses, and household income.

Measures

Data were collected using standardized instruments to measure the key study constructs. Illness perception was assessed to capture patients' organized cognitive and emotional representations of their condition, including beliefs about identity, cause, timeline, consequences, and controllability. Health literacy was measured to denote the cognitive and social capacities required to obtain, process, and apply health information for informed

decision-making. Self-efficacy was evaluated to reflect patients' beliefs in their capacity to execute specific behaviors necessary for effective condition management, based on Bandura's Social Cognitive Theory. Additionally, a total treatment adherence score was used as the primary outcome variable to evaluate regimen compliance.

Procedure

The study adhered to ethical standards for research involving human participants. Quantitative data were analyzed using Pearson product-moment correlation analysis to investigate the associations among demographic and psychological variables. Furthermore, a standard multiple regression analysis was conducted to determine the collective and individual predictive contributions of these variables toward treatment adherence, while controlling for extraneous factors such as age, gender, hemodialysis duration, and comorbid conditions.

Results

Table 1: *Pearson Correlation Matrix For Study Variables And Demographic Characteristics (n = 200)*

Variable	1	2	3	4	5	6	7	8	9	10
1. Illness Perceptions (IP)	—									
2. Health Literacy (HL)	.153*	—								
3. Self-Efficacy (SE)	.147*	.014	—							
4. Treatment Adherence (TA)	.087	.023	.050	—						
5. Gender	−.020	−.001	.034	−.162*	—					
6. Duration of HD	−.030	−.083	−.246**	.005	−.014	—				
7. Perceived Health Status	−.175*	.072	−.007	−.086	−.029	−.124	—			
8. Marital Status	.229**	−.069	.043	.019	−.198**	.054	.039	—		
9. Primary Cause of HD	.177*	−.168*	.002	−.126	−.124	.023	.165*	.175*	—	
10. Monthly Income	.150*	−.015	.258**	−.154*	.067	−.134	.110	−.056	.113	—

Note. IP = Illness Perceptions; HL = Health Literacy; SE = Self-Efficacy; TA = Treatment Adherence; HD = Hemodialysis. Lower triangle values are Pearson r coefficients. The upper triangle is intentionally left blank per APA convention. *p < .05. **p < .01 (two-tailed).

Pearson product-moment correlation analysis was conducted to examine the relationships among the study and demographic variables. Illness perception was significantly positively associated with health literacy and self-efficacy, whereas health literacy showed no significant relationship with self-efficacy or treatment adherence. Additionally, self-efficacy was negatively associated with hemodialysis duration and positively associated with monthly household income, while treatment adherence demonstrated significant associations with gender and household income.

Multiple Regression Analysis

A standard multiple regression analysis was conducted to examine the collective and individual contributions of demographic and psychological variables in predicting treatment adherence. The model included age, gender, HD duration, HD frequency, comorbid illness, illness perception, health literacy, and self-efficacy, allowing the unique predictive effect of each variable to be assessed while controlling for the others.

Table 2: ***Multiple Regression Analysis Predicting Treatment Adherence from Demographic and Psychological Variables (N = 200)***

Variable	B	SE B	β	t	p	95% CI
Intercept	77.94	11.09	—	7.03	< .001	[56.08, 99.80]
Age	−0.03	0.06	−.04	−0.48	.632	[−0.15, 0.09]
Gender	−2.24	0.91	−.18*	−2.45	.015	[−4.04, −0.43]
HD Duration	0.10	0.51	.01	0.20	.845	[−0.90, 1.10]
HD Frequency	−0.87	0.99	−.06	−0.88	.382	[−2.82, 1.08]
Comorbidity	0.85	0.89	.07	0.96	.339	[−0.90, 2.60]
Illness Perception	0.16	0.16	.07	0.98	.330	[−0.16, 0.47]
Health Literacy	0.01	0.16	.00	0.06	.952	[−0.30, 0.32]
Self-Efficacy	0.15	0.23	.05	0.62	.534	[−0.32, 0.61]

Note. B = unstandardized regression coefficient; SE B = standard error of B; β = standardized regression coefficient; CI = confidence interval; HD = Hemodialysis. Outcome variable = total treatment adherence score (TTREATA). Model fit: $R^2 = .046$, adjusted $R^2 = .006$, $F(8, 191) = 1.142$, $p = .337$. *p < .05.

A standard multiple regression analysis was conducted to examine the predictive effects of demographic and psychological variables on treatment adherence. The overall model was not statistically significant, explaining only 4.6% of the variance in treatment adherence, with gender emerging as the only significant predictor, indicating lower adherence among male patients. All other demographic and psychological variables, including illness perception, health literacy, and self-efficacy, were found to be non-significant predictors in the model.

Discussion

The Pearson correlation analysis revealed several theoretically meaningful patterns of association. Illness perception was significantly positively correlated with both health literacy and self-efficacy, suggesting that patients who hold more coherent, comprehensible, and controllable representations of their illness also tend to report higher levels of health literacy and self-management confidence. This is consistent with a growing body of evidence indicating that cognitive illness representations shape patients' motivation and capacity to acquire and process health information (Petrie & Weinman, 2012).

Illness perception was not significantly correlated with treatment adherence, nor was health literacy. These null bivariate associations suggest that the psychological and informational variables alone, in the absence of behavioral support mechanisms, may be insufficient to predict adherence behavior directly in an HD context. The relationship between self-efficacy and HD treatment duration is particularly noteworthy: longer exposure to HD was associated with significantly lower self-efficacy. This is clinically significant and aligns with research documenting progressive erosion of self-management confidence as treatment duration extends and patients experience fatigue, hopelessness, and accumulated illness burden (Tsay, 2003; Kutner et al., 2008). Conversely, the significant positive association between self-efficacy and monthly household income highlights the role of socioeconomic resources in supporting self-management capacity, consistent with the broader social determinants of health literature (Adler &

Newman, 2002).

Illness perception was also significantly associated with marital status, suggesting that married patients may hold more adaptive illness representations, possibly due to the instrumental and emotional support provided by spouses in managing complex medical regimens. The significant association between illness perception and the primary cause of HD further indicates that the etiology of kidney disease shapes patients' cognitive representations of their condition. Treatment adherence showed significant negative correlations with gender and monthly household income, the interpretation of which is elaborated in subsequent sections.

Conclusion

In conclusion, this study demonstrates that while illness perception is significantly and positively associated with both health literacy and self-efficacy, psychological and informational constructs alone are insufficient direct predictors of treatment adherence among hemodialysis patients in Pakistan. The overall multiple regression model was statistically non-significant, accounting for only 4.6% of the variance in adherence behaviors. Notably, gender emerged as the sole significant predictor in the model, indicating lower treatment adherence among male patients. Furthermore, bivariate analyses highlight that long-term treatment duration significantly erodes patients' self-efficacy over time, whereas higher monthly household income is positively linked to self-management confidence but negatively correlated with total adherence scores. Collectively, these findings suggest that compliance with demanding hemodialysis regimens is a highly complex phenomenon heavily influenced by structural, demographic, and socioeconomic realities rather than isolated cognitive resources.

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