

Navigating Antecedents and Consequences of Patient-Doctor Relationship in Chronic Care Patients

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Abstract

The patient-doctor relationship plays a pivotal role in chronic illness management, influencing how patients adhere to treatment regimens. By identifying and understanding the antecedent's i.e. ego resilience and social support, this study aim is to investigate how these factors can enhance the patient-doctor relationship and which further improve the medication adherence of follow up patients. This study provides a holistic view by linking antecedents (ego resilience and social support) to consequences (medication adherence) through the patient-doctor relationship, offering a clear pathway for improving patient outcomes. To carry out this research correlational research design was employed and data were collected from 245 follow-up patients having chronic illnesses by using purposive sampling method. Standardized assessment measures were used on 5 point Likert scale to get responses from participants along with demographic Performa. The study's findings indicated that the interaction between the patient-doctor relationship and social support was notably significant. Additionally, social support emerged as a crucial moderator in the relationships between the patient-doctor dynamic, ego resilience, and medication adherence. The patient-doctor relationship was a strong predictor of ego resilience, which in turn, significantly predicted medication adherence. This suggests that ego resilience mediates the link between the patient-doctor relationship and medication adherence. Moreover, social support moderates this mediation path, affecting the influence of the patient-doctor relationship on ego resilience and subsequently on medication adherence. This study will be helpful to Emphasizes the need for healthcare professionals to foster and maintain strong relationships with patients, particularly by supporting ego resilience and encouraging social support networks. This can lead to enhanced treatment adherence.

Keywords: ego Resilience, social support, antecedents, medication adherence, purposive.

Introduction

Good health requires a holistic approach that includes a balanced diet, adequate sleep, stress management, regular physical activity, timely medical care, and supportive relationships. The patient-doctor relationship is a critical component of healthcare that involves trust, communication, empathy, and mutual respect between a patient and their healthcare provider (Lange, et.al; 2019). Health refers to a state in which an individual is not affected by illness, injury, or disease. This encompasses physical, mental, and social well-being. It involves not only the absence of diseases but also the capacity to manage and surmount psychological and physical challenges (World Health Organization, 1948). However, the aim of current research is to examine the roles of ego resilience and social support as key antecedents of doctor patient relationship that impact medication adherence of patients with chronic illness. Furthermore, the study aims to explore the interconnected pathways by which ego resilience mediates, and social support moderates, the relationship between patient-doctor interactions and medication adherence. The ultimate goal is to provide insights that can inform interventions designed to strengthen patient-doctor relationships, enhance patient resilience, and leverage social support to improve adherence outcomes.

Medication Adherence as a Consequence

Medication adherence refers to the extent to which patients follow the instructions provided by their healthcare providers regarding their prescribed medications. It is a critical consequence influenced by various factors such as the doctor-patient relationship, social support, and ego resilience among chronic care patients (Aremu, et. al; 2022). The utilization of medications significantly impacts various medical conditions, patient demographics, and healthcare systems. Inadequate adherence to medication has been associated with poorer health outcomes, increased healthcare costs, and diminished quality of life for patients (Mahmoudian, et.al; 2017). In chronic conditions such as diabetes, hypertension, and asthma, where sustained medication use is crucial for symptom management and prevention of complications, adherence remains a critical challenge. Non-adherence to medications in these contexts can lead to higher rates of hospitalizations, emergency room visits, and disease progression (Choudhry, 2011).

A study published in the *Annals of Internal Medicine* in 2012 revealed that the average adherence rate to medications for chronic illnesses is approximately 50%. However, adherence rates vary widely depending on the condition and treatment, ranging from 30% to 80% for diseases such as hypertension, diabetes, and asthma. Poor adherence can lead to serious consequences, including treatment failure, disease progression, increased healthcare costs, and diminished quality of life. Non-adherence compromises treatment effectiveness and can result in suboptimal health outcomes.

Medication adherence describes how well individuals follow their physician's recommendations and take their prescribed drugs. This includes taking medications at the correct dose, frequency, and for the prescribed duration, as well as following any additional guidelines, such as taking the medication with food or avoiding certain activities (Velligan, et.al 2017). Healthcare providers play a crucial role in promoting medication adherence by addressing barriers, simplifying medication regimens, and providing education and counseling. Technological tools, such as mobile apps and smart pillboxes, can also aid in managing medications and improving adherence. The study found a significant connection between the patient-doctor relationship and medication adherence, revealing that patients who more closely adhered to their medication regimens were more satisfied with their healthcare experiences (Hamza, et.al 2023).

There are several factors associated with medication adherence and the patient-doctor relationship, including patient education, communication with healthcare providers, social networking, personal strengths and medication side effects. Healthcare providers play a pivotal role in enhancing adherence by offering clear instructions, educating patients on the importance of adherence, addressing questions or misconceptions, and finding ways to overcome barriers. It is crucial to recognize that medication adherence is complex, with each person facing unique challenges. Therefore, healthcare professionals should tailor treatments and support to meet the specific needs and preferences of each patient (Ogunwande et.al 2016).

Antecedents of Medication Adherence Among Chronic Care Patients

Physical health pertains to the overall condition of the body's physiological functions, encompassing its capacity to carry out daily tasks, resist illnesses, and sustain optimal bodily processes (Kvarnström, et.al 2021). Maintaining physical health is crucial for supporting medication adherence among individuals managing chronic conditions. Practices such as adhering to a balanced diet, engaging in regular physical activity, getting sufficient sleep, and avoiding detrimental habits like smoking or excessive alcohol consumption are essential. These behaviors not only promote overall well-being but also contribute to better health outcomes through improved medication adherence. By optimizing physical health, patients are better equipped to manage their prescribed medication regimens effectively, thereby enhancing their ability to control symptoms, prevent complications, and maintain a higher quality of life (Nieman & Wentz, 2019).

Numerous factors, including lifestyle choices, environmental conditions, healthcare accessibility, and social health obstacles, can impact a person's overall well-being and mental state. These elements may significantly affect an individual's general health and outlook (Wu, et.al 2013). Maintaining physical wellness also involves engaging in preventive care and attending routine checkups. Mental well-being encompasses psychological, social, and emotional health, affecting how we feel, think, and behave, as well as our ability to handle stress, make decisions, and interact with others. Caring for mental health involves seeking support when needed, developing effective stress

management skills, practicing self-care, and participating in activities that promote a sense of well-being (Shahin, Kennedy & Stupans, 2021).

The patient-doctor relationship refers to a patient's subjective evaluation of the quality of medical care they receive. Factors influencing this relationship include communication with healthcare providers, appointment wait times, pain management, and overall treatment outcomes. This relationship significantly impacts patient outcomes, such as treatment adherence and health-related behaviors, making it a crucial component of quality healthcare (Gast, et.al 2019). It also affects the efficiency and reputation of healthcare providers, as well as healthcare costs and system efficiency. Measuring the patient-doctor relationship can be done through surveys, focus groups, and other feedback methods. Regular evaluation is essential to identify areas for improvement in healthcare services and ensure that patients receive high-quality care that meets their needs and expectations (Nieman & Wentz, 2019).

Doctors play a crucial role in delivering precise, evidence-based information to patients. They are responsible for providing clear and understandable explanations regarding diagnoses, available treatments, associated risks, benefits, and expected outcomes. Patient education empowers individuals to make informed decisions, enhances adherence to treatment plans, and enables them to take an active role in managing their health (Waqas, et. al 2014). A positive doctor-patient relationship fosters trust, communication, and collaboration, which in turn encourages patients to adhere to their prescribed medications. Patients who have a good relationship with their healthcare provider are more likely to follow treatment plans consistently (Mammen & Faulkner, 2013)

Social support encompasses psychological, informational, and practical assistance provided by others. Research indicates a positive link between social support and medication adherence. It involves the help, resources, and emotional comfort given by individuals, groups, or organizations within one's social network. This support can take various forms, including material support (such as financial aid or practical help), informational support (such as advice or guidance), and emotional support (such as encouragement or empathy). Social support is crucial for building resilience, sustaining well-being, and managing challenging or stressful situations. Social support from family, friends, or support groups plays a crucial role in medication adherence. Supportive networks provide encouragement, reminders, and practical assistance that help patients manage their medication schedules effectively. It was found that HIV patients with higher levels of social support were more likely to adhere to their antiretroviral treatment regimen (Waqas, et.al; 2016).

A study by Mammen, & Faulkner (2013) on hypertension patients found that those with greater social support were more likely to adhere to their treatment regimen. These findings suggest that interventions focusing on enhancing social support could improve medication adherence. Social support, whether from family, friends, colleagues, support groups, or professionals, is vital for overall well-being, resilience, and coping with challenges. Effective social support is linked to better physical and mental health, higher self-esteem, reduced stress, and improved coping abilities. The

quality and effectiveness of social support depend on factors such as its accessibility, reliability, and responsiveness, and individual preferences for social assistance.

Ego resilience, as defined by Block et al. (1980), refers to an individual's ability to effectively respond to external pressures and stressful situations while maintaining a stable sense of self. It involves managing obstacles, setbacks, and changes without compromising one's psychological well-being. Ego resilience reflects the capacity to adapt, recover, and maintain a positive self-image in the face of challenges, difficulties, or lifestyle changes. Research by Zhang et al. (2019) demonstrated that diabetic patients with higher levels of ego resilience exhibited better glycemic control. These findings suggest that interventions aimed at enhancing ego resilience could contribute to improved medication adherence.

Emotional health involves understanding and managing emotions in a healthy manner. It includes handling stress effectively, maintaining a positive outlook on life, and appropriately recognizing and expressing emotions. Social health refers to the ability to build and sustain positive social connections. This encompasses forming strong interpersonal relationships, showing empathy and respect, and fostering a sense of belonging. Having a supportive social network of family and friends is crucial for overall well-being. Environmental health pertains to how our surroundings affect our well-being. It includes having access to clean food and water, safe housing, and living in a healthy and secure community (Walz, et.al; 2014). Ego resilience refers to an individual's ability to adapt to stress and maintain psychological well-being. Patients with higher ego resilience are better equipped to handle the challenges of chronic illness, including the demands of adhering to complex medication regimens (Xu, et.al; 2017).

Psychological resilience, coping mechanisms, and emotional intelligence are closely intertwined with ego resilience. Factors such as individual character traits, life experiences, social support networks, and coping strategies all contribute to ego resilience (Shahin, Kennedy, & Stupans., 2021). Enhancing ego resilience can lead to improved mental health, overall well-being, and positive outcomes across various aspects of life. The development of ego resilience is a dynamic process that can be nurtured through various approaches, including counseling, self-reflection, fostering supportive relationships, practicing stress-management techniques, and engaging in activities that promote personal growth and wellness. Research indicates that individuals with higher levels of ego resilience often exhibit traits such as adaptability, a positive self-concept, emotional regulation abilities, problem-solving skills, optimism, and strong social support (Xu, et.al; 2017).

The WHO's five-dimension adherence model for long-term therapies guided this study, emphasizing socioeconomic factors, healthcare system factors, condition-related issues, treatment-related factors, and patient-related factors. Patient satisfaction with healthcare, including perceptions of provider competence, responsiveness, and overall care quality, was associated with improved medication adherence. This underscores the critical role of medical psychology in enhancing patient well-being and healthcare outcomes (Shahin, Kennedy, & Stupans., 2021).

Studies focused on heart failure patients consistently found a significant relationship between social support and medication adherence. Conversely, lack of social support emerged as a common barrier to adherence (Zhang, et. al;2019).

The study aims to investigate the intricate pathways through which ego resilience mediates and social support moderates the connections between patient-doctor interactions and medication adherence. The overarching objective is to gain insights that can guide interventions aimed at bolstering patient-doctor relationships, fostering patient resilience, and utilizing social support to enhance adherence outcomes. The finding of this stud will be helpful to endorse positive interactions with doctors can motivate patients to adhere to their treatment plans, as they feel supported and understood.

Health concerns are significant as they can impact an individual's motivation, understanding, and willingness to adhere to prescribed medication schedules. Existing research highlights that factors such as perceived health risks, symptom severity, and awareness of potential complications play crucial roles in influencing a person's decision-making process regarding medication adherence. Understanding these concerns is essential for healthcare providers to tailor interventions that address individual motivations and improve adherence to treatment plans (Gast, et.al; 2019).

Objectives: These objectives outline the aims of the research in exploring the complex interactions between patient-doctor relationship dynamics, ego resilience, social support, and medication adherence within the context of chronic illness management.

1. Explore the interrelationships among Patient-doctor relationship, ego resilience, social support, and medication adherence in follow-up patients managing chronic illnesses.
2. Investigate the moderating role of social support in the relationship between Patient-doctor relationship and ego resilience among follow-up patients with chronic illnesses.
3. Examine the mediating role of ego resilience in the relationship between Patient-doctor relationship and medication adherence among follow-up patients with chronic illnesses.

Theoretical Framework and Hypothesis Development

Albert Bandura's Social Cognitive Theory (SCT) is a psychological framework that underscores the impact of social interactions, observational learning, and self-efficacy on behavior. Applied to medication adherence, SCT suggests that individuals' beliefs, attitudes, and expectations, as well as their social and environmental contexts, significantly influence their medication-taking behaviors (Wu, et.al; 2013). In the context of patient-doctor relationships, SCT proposes that effective communication, trust, and collaborative decision-making can enhance patients' self-efficacy and motivation to adhere to prescribed treatments. Social support, a key component of SCT, provides emotional, informational, and practical assistance that reinforces patients' adherence behaviors. Higher levels of ego resilience, as suggested by SCT, enable individuals to overcome challenges and setbacks related to medication

adherence, fostering persistence and adaptability in managing their health (Velligan et al., 2017). Overall, SCT underscores the complex interplay between personal beliefs, social influences, and self-regulation in shaping medication adherence behaviors. By understanding these dynamics, healthcare providers can implement strategies that promote patient engagement, enhance self-efficacy, and optimize medication adherence outcomes.

Relationship between Doctor Patient Dynamic and Medication Adherence

In previous literature, it has been established that association between patients' satisfaction with physicians, family involvement has a profound positive impact on treatment success for depressed veterans. Specifically, clinicians' responsiveness to patient requests was found to be more critical than the extent of family interaction itself in influencing outcomes. (Xu, et. al; 2017). In the light of this evidence, current research formulates following hypothesis

H1: The patient-doctor relationship directly predicts medication adherence among follow-up patients with chronic illness.

Relationship between Ego Resilience and Medication Adherence

Research among hypertension patients has demonstrated that increased levels of ego resilience is associated with higher adherence to prescribed medication plans (Mammen, & Faulkner, 2013). 2013). Similarly, another study found that diabetic individuals with higher ego resilience tend to have better glycemic control (Zhang et al., 2019). These findings suggest that interventions aimed at enhancing ego resilience could effectively improve medication adherence. On these observations, hypothesis will be:

H2: Ego resilience mediates the relationship between the patient-doctor relationship and medication adherence. A stronger patient-doctor relationship will lead to higher ego resilience, which in turn will result in better medication adherence.

Relationship between Social Support and Ego Resilience

Numerous studies have demonstrated a positive association between social support, ego resilience and medication adherence. Waqas,et. al. (2016) found that HIV patients were more likely to adhere to their antiretroviral medications with greater social support and personal strength. Similarly, Pellowski, et. al. (2013) founded that hypertension patients with stronger social support networks were more adherent to their medication schedules along with their personal resistance. On the basis of these empirical evidences, it is hypnotized that:

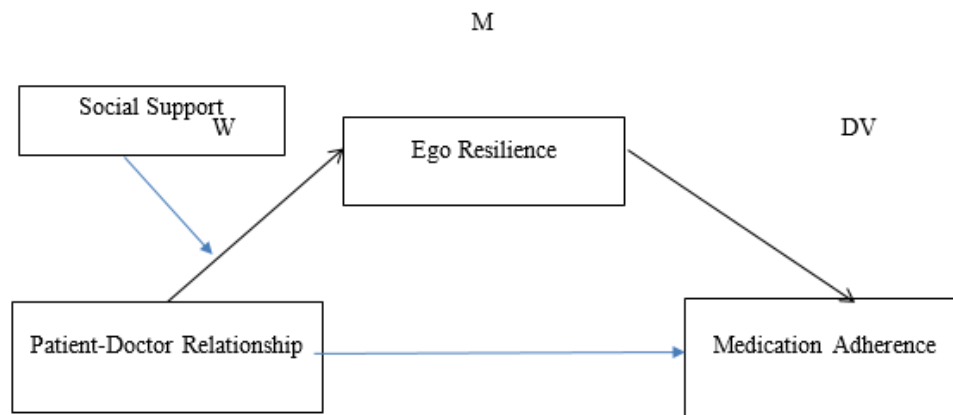
H3: Social support moderates the relationship between the patient-doctor relationship and ego resilience. The impact of the patient-doctor relationship on ego resilience will

vary depending on the level of social support, with higher social support strengthening this relationship.

Moderated Mediation Hypothesis

H4: Social support moderates the indirect effect of the patient-doctor relationship on medication adherence through ego resilience. Specifically, the mediation effect of ego resilience is stronger when social support is high, suggesting that social support enhances the mediating role of ego resilience between the patient-doctor relationship and medication adherence.

Figure 1. Conceptual / Theoretical Model of Research



Social Exchange Theory (Albert Bandura, 1960)

Method

Correlation research design was used for the investigation of relationship between Patient-doctor relationship, ego resilience, social support and medication adherence in follow up patients with chronic illness.

Sample and Sampling Method

The sample comprising of 245 Patients with chronic care. The data was collected only from follow up chronic medical illness patients. The data was collected on the conditions of inclusion criteria of the research. Initially data was collected from 252 patients but due to the incomplete answers 7 responses were discarded. Weekly visit follows up patients having chronic diseases like cancer, heart disease, stomach issues, hepatitis, dialysis and arthritis from government and private sector hospitals were included. Indoor and emergency patients were excluded. Purposive sampling strategy was used in this research. The data was collected on the conditions of inclusion criteria of the research. Patients provided written consent after being informed about the research details. They were briefed on specific aspects of the study, and measures were taken to ensure anonymity and confidentiality. The data was accurately reported according to established protocols.

Demographic Performa: Demographic Information Questionnaire comprised of information about participant's age, gender, nature of disease, number of weekly visits, education, marital status and socio economic status. That is given in below table.

Table 1

Socio-Demographic Characteristics of the Sample, N= 245

Characteristics	N	%
Age		
24-35	156	53.8
35-45	108	46.2
Gender		
Men	131	47.3
Women	114	41.2
Medical illness		
Heart disease	77	37.8

Stomach issues	72	27.0
Hepatitis	58	20.9
Dialysis	25	9.0
Diabetic	13	4.7

Note. N=245; f=frequency ; %= percentage

Table shows that in sample 53.8% patients were men and 46.2% were women. Furthermore, most of the patients were from heart disease and stomach issues with 37% and 27% respectively.

Assessment Measures

The Patient-Doctor Depth of Relationship Scale was developed in 2011 by Dr. Mathew and colleagues at the University of Bristol. This 8-item self-report questionnaire is designed to assess the depth of the relationship between a patient and their doctor. Each item is rated on a 5-point Likert scale, with higher scores indicating a stronger relationship. The scale has demonstrated high internal consistency, with previous studies reporting reliabilities as high as 0.93. In the current sample, the internal consistency was found to be 0.73.

The Ego Resilience Scale, created by Block in 1996, comprises 11 items intended to measure adaptability to environmental changes. Responses are given on a Likert scale, where higher scores reflect greater ego resilience. Previous studies have shown internal consistency ranging from 0.63 to 0.81 in emerging adult samples (Taylor et al., 2014). In the current sample, the internal consistency was 0.70.

Developed by Nancy Dahlem, Sara Zimet, Gordon Farley, and Gregory Zimet in 1998, the Multidimensional Perceived Social Support Scale assesses perceived social support across three domains: family, friends, and significant others. This 12-item scale uses a 7-point Likert scale ranging from "very strongly disagree" (1) to "very strongly agree" (7). It has demonstrated a high internal reliability of 0.92. In the present sample, the internal consistency was 0.89.

The Medication Adherence Scale, developed by Thompson and colleagues in 2000, is a 10-item instrument used to measure medication adherence in patients with chronic conditions. It is rated on a 5-point Likert scale, and previous studies have reported an internal reliability rating of 0.94. The current sample exhibited an internal consistency of 0.72.

Procedure

The research proceeded in two stages: initially, permission was obtained to use the Urdu version of the "Perceived Social Support" scale from its author. The scales for Patient-doctor relationship, Ego resilience, and Medication adherence were translated into Urdu by using the MAPI method, considering the educational background of the target population, many of whom might have difficulty understanding English wording. A pilot study involving 50 participants was conducted to refine the scales. Subsequently, the main stage involved statistical analysis of the data. Before data collection began, permission letters outlining the research nature were submitted to the authorities of selected government and private hospitals, where follow-up patients were chosen based on specified inclusion and exclusion criteria. Participants were

briefed about the study's nature and procedures, and informed consent was obtained from all participants prior to data collection. Participants were assured of confidentiality, anonymity, and their right to withdraw from the research at any time. Only those who signed informed consent and met the inclusion criteria were approached. The questionnaire took approximately 20 minutes to complete, and all assessment measures achieved a response rate of 100%. Participants were thanked for their cooperation following data collection, which was completed within two months. Data was entered into the Statistical Package for Social Sciences (SPSS) for analysis along with Hayes Process, and results were subsequently interpreted.

Results

The results of the statistical analysis involved several steps to test the hypotheses. Descriptive analysis was first conducted to calculate the means, standard deviations, reliability coefficients, and minimum and maximum scores for the scales used. Pearson product-moment correlation analysis followed to explore the relationships among Patient-doctor relationship, ego resilience, social support, and medication adherence among follow-up patients. Furthermore, moderation-mediation analysis using the Hayes process was employed to examine both the moderating role of social support and the mediating role of ego resilience in the relationships between medication adherence and Patient-doctor relationship. These analyses aimed to provide a comprehensive understanding of how these variables interact and influence medication adherence outcomes in the study population.

Table2

Descriptive Statistics and Internal Consistencies of Patient-doctor relationship, Ego Resilience, Social Support and Medication Adherence.

Scales	<i>M</i>	<i>SD</i>	<i>Range</i>	Cronbach's α
Patient-doctor relationship	31.3	3.72	8-40	.73
Ego resilience	35.0	6.01	14-56	.70
Social support	65.3	8.22	12-84	.89
Medication adherence	36.5	6.68	10-50	.72

Table indicates the reliability of all measures used in this study. Patient-doctor relationship scale showed $\alpha=.73$ that is an acceptable reliability, Ego resilience scale showed $\alpha=.70$ which is also acceptable reliability, perceived Social support scale showed $\alpha=.89$ that was a good reliability and medication adherence scale showed $\alpha=.72$ that is a good reliability overall all scales have moderate to good reliability.

Table 4.2

Relationship between Patient-doctor relationship, Ego Resilience, Social Support and Medication Adherence among Follow up Patients.

Variables	1	2	3	4
1. Patient-doctor relationship	-	.22**	.73***	.30**
2. Ego resilience		-	.22**	.50**
3. Social support			-	.23**
4. Medication adherence				-

*Note . **p<.01, *p<.05*

The correlation analysis results revealed several significant relationships: Patient-doctor relationship exhibited a weak positive correlation with social support (r = 0.22) and a strong positive correlation with medication adherence (r = 0.73). Ego resilience also showed a weak positive correlation with social support (r = 0.22) and a good positive correlation with medication adherence (r = 0.50). Additionally, social support demonstrated a weak positive correlation with medication adherence (r = 0.23). These findings highlight the varying strengths of association among Patient-doctor relationship, ego resilience, social support, and medication adherence in the study population.

Moderated Medication through Hayes PROCESS

The study hypothesized that social support would moderate the strength of the mediated relationship between ego resilience and Patient-doctor relationship. Additionally, it proposed that ego resilience serves as a mediator between Patient-doctor relationship and medication adherence. To examine these hypotheses, a moderated mediating analysis was conducted using the Hayes process (2018) to investigate the moderating role of social support in the association between Patient-doctor relationship and ego resilience, which in turn mediates medication adherence.

Table 4

Moderated mediation effect of Patient-doctor relationship, Ego Resilience, Social Support and Medication adherence among Follow up Patients.

Antecedent	Consequent			
	ER (M)		MA (Y)	
	<i>Coeff.</i>	<i>SE</i>	<i>Coeff.</i>	<i>SE</i>

Constant	54.6***	3.1	14.6***	.3.1
PR (X)	.31**	.09	.41***	.06
PR x SS	.07**	.02	-	-
ER (M)	-	-	.12**	.04
	$R^2 = .162$		$R^2 = .217$	
	$F(1,243) = 12.40***, p < .000***$		$F(2,242) = 33.58***, p < .000***$	

Note. PR= Patient-doctor relationship, SS= Social Support, ER= Ego Resilience, MA= Medication Adherence **p<.01; *p<.05

The results of the interaction analysis revealed that social support moderates the relationship between Patient-doctor relationship and ego resilience. This suggests that social support plays a role in influencing both the indirect and direct effects of Patient-doctor relationship on ego resilience. Additionally, ego resilience was found to mediate the relationship between Patient-doctor relationship and medication adherence among follow-up patients. This mediation analysis indicated a significant direct effect of Patient-doctor relationship on ego resilience (path a), and of ego resilience on medication adherence (path b). Moreover, the total effect of Patient-doctor relationship on medication adherence was significant (path c). Overall, the findings suggest that ego resilience partially mediates the relationship between Patient-doctor relationship and medication adherence among follow-up patients. This means that after accounting for ego resilience, the direct effect of Patient-doctor relationship on medication adherence remains statistically significant but is reduced. These results underscore the complex interplay between Patient-doctor relationships, ego resilience, social support, and medication adherence in chronic illness management.

Table 5

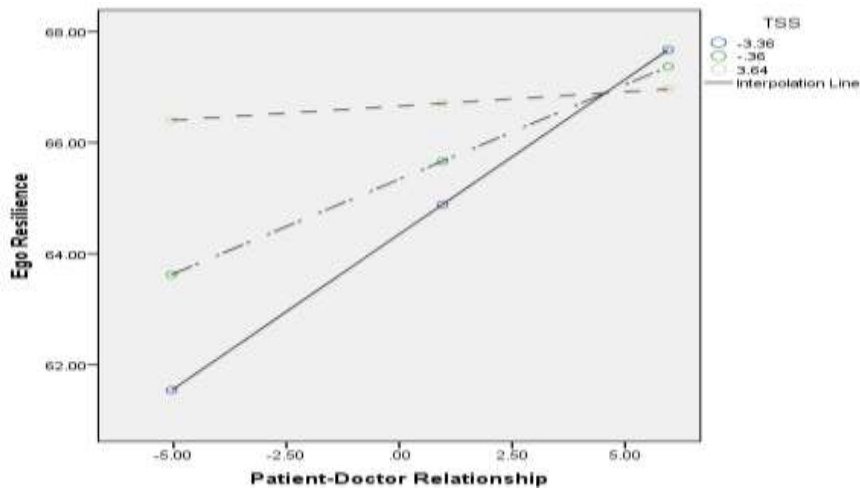
The Standardized indirect effect of Ego Resilience on Patient-doctor relationship and Medication Adherence.

Indirect Path	Estimate	SE	Lower Level	Upper Level
PR→ER→MA	.037	.020	.005	.083

Note, PR= Patient-doctor relationship, ER= Ego resilience, MA= Medication adherence, SE= standardized estimate

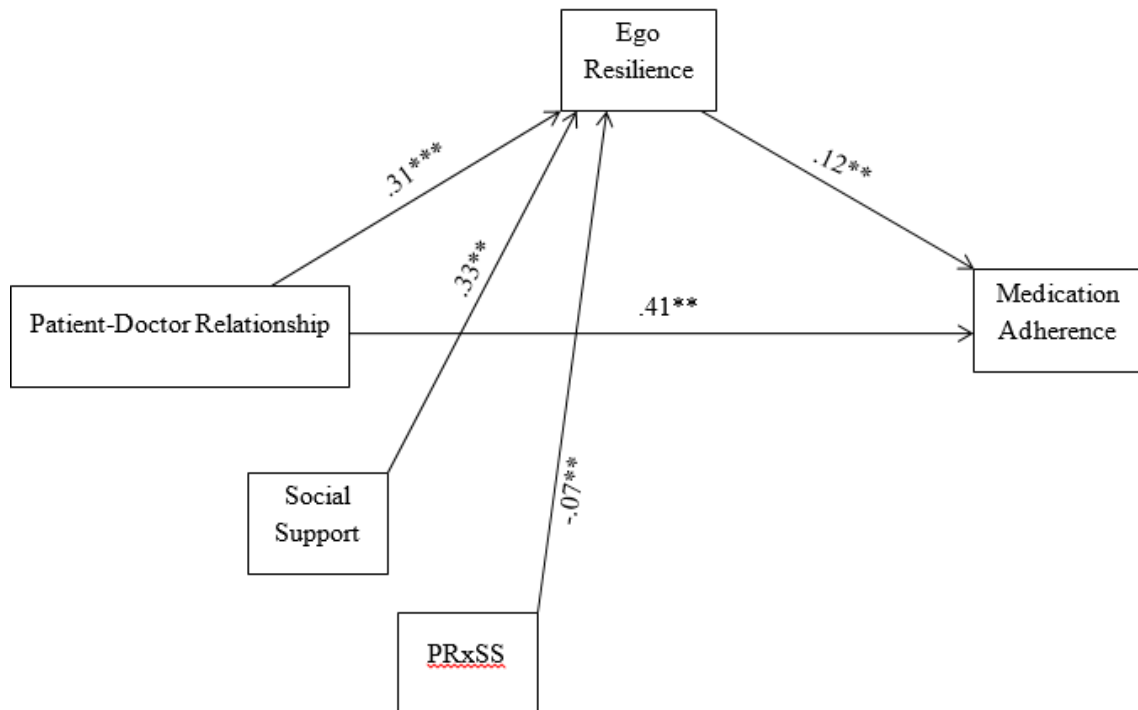
The serial indirect effect results showed that the total indirect effect of Patient-doctor relationship via ego resilience is statistically significant. So it depicts that patient with good ego resilience turned to be regular to their medication adherence.

Figure 2

Graphical Presentation of Moderated mediation analysis

The results indicated a significant interaction effect between Patient-doctor relationship and social support. Specifically, at low and moderate levels of social support, there was a significant association between Patient-doctor relationship and ego resilience. However, at high levels of social support, this association between Patient-doctor relationship and ego resilience was not significant. These findings suggest that social support may moderate the relationship between Patient-doctor relationship and ego resilience, influencing how these factors interact in the context of chronic illness management.

Figure 3**Emerged Model of Research**



Discussion

Despite numerous interventions aimed at improving medication adherence, adherence rates remain persistently low. The World Health Organization's multidimensional adherence model (MAM) identifies socioeconomic factors, health care system-related factors, condition-related factors, treatment-related factors, and patient-related factors as key dimensions influencing adherence (Walz, et. al; 2014).

Finding of the study revealed strong impact of doctor patient relation, social support, ego resilience as antecedents on medication adherence as a results of health related consequences. Research indicates that patient satisfaction with healthcare services, including the quality of the Patient-doctor relationship and perceptions of provider competence and responsiveness, significantly predicts better medication adherence (Kvarnström, et.al; 2021). These findings underscore the importance of healthcare interactions and provider qualities in fostering adherence among patients with chronic illness.

In prior studies involving heart failure patients, a significant correlation was found between social support and medication adherence, with insufficient social support being a common reason for non-adherence (Hamza, et. al; 2023). For tuberculosis (TB) patients, treatment success hinges on several factors including social support, family involvement, peer encouragement, and healthcare provider support (Gast, et.al; 2019). Given the health challenges and dietary adjustments required for TB treatment, nurses and families play a critical role in closely monitoring treatment adherence until patients regain their health (Walz, et. al; 2014).

The results indicated that social support moderates the relationship between Patient-doctor relationship and ego resilience, suggesting that both the indirect and direct effects of Patient-

doctor relationship on medication adherence are influenced by social support. Furthermore, ego resilience was found to mediate the relationship between Patient-doctor relationship and medication adherence among follow-up patients. Previously, a cross-sectional multi-center study involved 305 eligible patients diagnosed with Rheumatoid Arthritis in northeast China. The study's findings indicated that resilience may positively moderate the relationship between social support and fatigue. Additionally, ego resilience, hope, and optimism were identified as partial mediators in this association (Xu et al., 2017).

Previous research indicates that individuals' beliefs about their control over their health outcomes are captured by their health locus of control. Those with an internal locus of control are typically more self-aware and likely to adhere closely to their prescribed medications. In contrast, individuals with an external locus of control may attribute their health outcomes to external factors and thus may exhibit lower adherence to treatment regimens (Mammen, & Faulkner, 2013).

The results indicated a significant interaction effect between Patient-doctor relationship and social support. At low and moderate levels of social support, there was a notable association between Patient-doctor relationship and ego resilience. However, this association was not significant at high levels of social support. In another cross-sectional study involving 300 hypertensive patients in Isfahan, Iran, conducted using multi-stage sampling methods, a relationship was established between patient satisfaction with their doctors and medication adherence. The findings revealed that patients who reported satisfaction with their doctors were more likely to adhere to their medication schedules compared to those who were dissatisfied (Mahmoudian et al., 2017).

Conclusion

In conclusion, the findings underscore the multifaceted nature of factors influencing medication adherence among patients with chronic illnesses. The study highlights the critical role of Patient-doctor relationships, social support, and ego resilience as antecedents to medication adherence, emphasizing their interconnectedness in healthcare outcomes. Patient satisfaction with healthcare interactions, including perceptions of provider competence and responsiveness, emerges as a significant predictor of adherence. Moreover, social support was identified as a key moderator in enhancing the relationship between Patient-doctor relationships and ego resilience. These insights suggest that interventions targeting these factors could potentially improve medication adherence and overall health outcomes for patients managing chronic conditions. Future research should continue to explore and refine strategies that leverage these factors to optimize patient care and treatment adherence.

Limitations and Future Recommendations: The study's sample size may have limited the generalizability of findings to a broader population. While efforts were made to translate scales into Urdu, nuances in language and cultural interpretations could have affected responses. The cross-sectional nature of the study limits the ability to establish causality between variables. Reliance on self-reported data could introduce response biases and inaccuracies. For future research Include diverse populations to enhance generalizability of

findings across different cultural and socio-economic backgrounds. Complement quantitative findings with qualitative research to gain deeper insights into patient experiences and perceptions. Implement and evaluate interventions aimed at enhancing Patient-doctor relationships, boosting ego resilience, and leveraging social support to improve medication adherence.

Implication: Healthcare providers should prioritize enhancing Patient-doctor relationships and fostering open communication to improve medication adherence among patients with chronic illnesses. It is important to emphasizing the role of social support and ego resilience in medication adherence can guide patient education efforts, helping patients better manage their health outcomes. Insights from this study can inform policy initiatives aimed at improving healthcare delivery systems, particularly in enhancing patient satisfaction and support systems. Developing targeted interventions that bolster social support networks, strengthen Patient-doctor relationships, and promote resilience could potentially enhance medication adherence outcomes in clinical settings.

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