Impact of Patient Empowerment on Professional Relationship Outcomes: Mediating Role Medication Adherence in Developing Countries

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Abstract

Many trends have been enhanced to access healthcare information knowledge through social networks. The growth of self-service individuals is playing a key role in their health management. This research aims to find out the relationship between patient empowerment and professional relationship outcomes by incorporating the role of medication adherence as a mediator. The study intends a special correspondence foundation of empowering purchaser construct, demonstrated to affect consumer-service supplier connections. Research data was collected from 686 private hospital patients in the top ten cities of Pakistan. The findings of the study revealed that the role of medication adherence can enhance patient commitment. The novelty of the present study is that it has introduced medication adherence as a mediator between patient empowerment and patient commitment in developing countries.

Keywords: Patient Empowerment; Patient Commitment; Physician Support; Healthcare services

Introduction

Physician support is important in encouraging patients to adhere to medication adherence and patient commitment. The evolving trend in the relationship between doctors and patients is becoming a challenge for healthcare providers. Healthcare services are now moving from disease-centered to patient-centered as there is competition among the healthcare service providers. According to Centor (2007), a good physician treats the illness, and a great physician treats the patient who has the disease. Communication is important for an effective doctor-patient association (Chandra, 2018; Levy,2017; Ward,2018). Every individual has particular needs, feelings, and thoughts. Medical institutions have become more dynamic in recent years due to their organizational form. The numerous developments in the service industries empower customers to the front position. Advancements in information technology facilitate customers to identify services, product prices, and features, manage the revelation of product information, decide service delivery process, and gain knowledge from other customers(Anshari & Almunawar, 2012; Wathieu et al.,2002). Governments, health professionals, academicians, and consumers are paying considerable attention to patient empowerment (Anderson, 1996; Bodenheimer, 2011).

On the other hand, this emerging client pattern is especially evident in particular industry parts. For example, in the banking sector, empowering customers is stimulated by expanded enactment to secure customer privileges; innovation and rivalry are expanding the decision of items and administration suppliers. Moreover, customers are becoming more educated because of the data available on the web, thus remarkably becoming smart to manage their issues (Jayawardhena & Foley, 2000; Callan, 2011; Swami, 2017).

Consumer empowerment peculiarities are noticeable in medicinal services administrations (Dewolf et al.,2013; Vernarec, 1999), basically on account of a shift far from treatment towards preventive well-being and patient personality toward oneself that underscores the commitments patients make to therapeutic meetings (Roter et al., 1988; Szeinbach, 1999; Temimi, 2016). Client activities determine the empowerment of patients. Getting to human services data, particularly through the web, support in self-improvement gatherings, and misbehavior asserts all propose that health awareness production has entered a time of consumer-oriented society (Sharf, 1988). In addition, huge cash and instances used by purchasers on

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substitute medication show customers are captivating human services into their possession (Griscti et al., 2017; Grandinetti, 1999).

Customer empowerment results in numerous benefits. For example, Hjalagerb (2001) recommended that client empowerment in the tourism industry is the main strategy to improve quality, while Jayawardhena et al. (2000) and De Grood et al. (2016) argued that efficiency and cost is gained by empowering the customers in the deliverance of banking services. According to healthcare services, MacStravic (2002) suggested that the empowerment of patients may profit from well-being awareness and oversaw mind associations supplementary to purchasers. This is because it possibly drives patients to settle on decisions, go out on a limb, and invest more of opportunity and cash on indulgence in their relatives and themselves (Temimi, 2016; MacStravic, 2002). On an additional constructive note, expanded customer interest is a chance to lessen pointless health awareness costs and enhance human services results (Jesus & Julia, 2020; Vernarec, 1999). Supporting these, Michie et al. (2003) refer to several experimental researches that have discovered empowering doctor-patient associations is completely connected to health conclusions (Jesus & Julia, 2020; Phillips,2016).

The possible profits to be picked up from client empowerment demand exploration to investigate methodologies that associations can exercise to empower their clients. The primary goal of this research is to exhibit the importance of client empowerment, particularly to expert skills, such as main medical services. The subsequent aim is to depict how clientele grow empowered through their association with expert service providers through medication adherence. Lastly, the third aim is to test the effect of empowering the client cooperation on the association service provider. This is carried out by covering the consequences of our complete overview of patients.

Literature Review

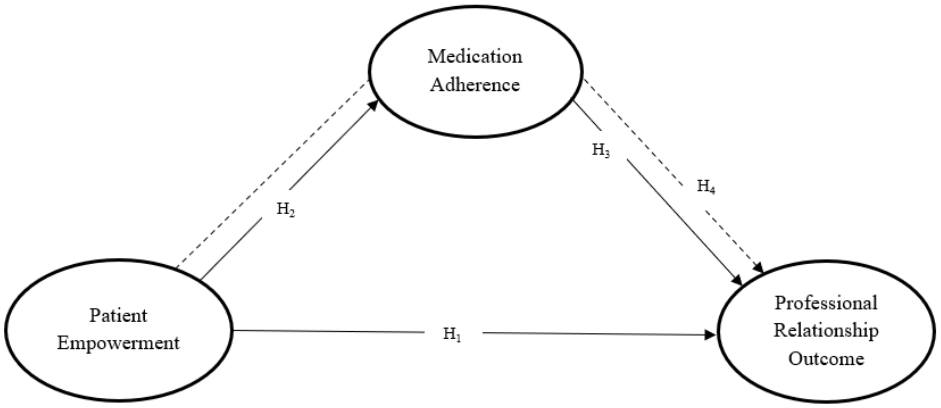
Patient empowerment is an ongoing process that involves collaborating with the healthcare system as partners, both individually and as groups(Calvillo et al., 2013). Van Raaij and Pruyn (1998) suggested that administrations range from provider to client services. It bodes well that client empowerment is prone to be the majority pertinent to services that clients principally control. Nevertheless, clients contrast in their apparent capacity to manage service conclusions (Bradley & Sparks, 2002), and thus, giving clients extra power may not bring about clients' empowerment (Wathieu et al., 2002). However, attributes of a few services oblige clients to assume responsibility. Client power is especially essential services they demand the collaboration of clients (Bitran & Hoech, 1990). For instance, the service result of the doctor counseling the patient basically prescribes the diabetic patient needs to roll out lifestyle improvements (control the eating methodology and exercise frequently) to achieve the glucose level in blood. Precise planning, monitoring, and implementation are required to empower the patients (Bhargava et al., 2012).

The background of this study is professional service expertise since this setting obliges clients to work in a closely coordinated effort with the expert service supplier and participate in thought toward oneself to accomplish alluring results. Particularly, the connection is the patient-doctor association about the quiet's ceaseless ailment conditions, for example, diabetes. The need to participate in far-reaching thinking ahead toward oneself to oversee ceaseless sicknesses daily highlights the importance of patient strengthening in the constant ailment setting (Jesus and Julia et al., 2020; Calvillo, 2013; Feste & Anderson, 1995). Without a cure, patients' satisfaction with incessant disease conditions relies upon their thoughts toward themselves, choice-making abilities, and access to strong health awareness services (Fotaki, 2011; Thorne et al., 2000). Indeed, with the attention on thought toward oneself, patients with interminable sickness conditions still need always to counsel their medicinal doctor. This all is to get to physician-recommended medications, clinical tests, and restorative authorities and consequently oblige a nearby and constant working association with a doctor to have proper medication adherence (Nafradi & Nakamoto, 2017; Wilson et al., 2018; Clark et al., 1995, Anderson, 1995). Accordingly, meetings with the doctor constitute a paramount wellspring of strengthening for patients with constant sickness conditions. Besides, a shared investment association must comprehend the starting points of the medicinal issues and create suitable systems to deal with the

interminable ailment situation (Kennedy, 2007; Shaffer & Sherrell, 1995). The quality of medical facilities was an important factor in selecting a healthcare system (Kobayashi et al., 2013; Nafradi & Nakamoto, 2017). Clients make service esteem by collaborating with service staff and by participating in organizational planning toward self-care (Claycomb et al., 2001; Shahin, 2008). Service experiences with doctors oblige quiet collaboration to attain effective well-being results (Hausman, 2004; Cerezo, 2016). Additionally, inaudible doctor collaborations that concentrate on engaging patients with perpetual sickness conditions, such as diabetes, have been joined to positive well-being results (Michie et al., 2003). This is because dynamic patient investment amid interviews encourages the advancement of customized treatment plans and upgrades quiet feasibility toward oneself, which subsequently helps patients accomplish their objectives (Affinito, 2019; Michie et al., 2003; Anderson & Funnel, 2005; Shahin, 2008). Experimental proof demonstrates that patients with perpetual sicknesses do surely assume an exceptionally dynamic part in medicinal counsels. Patient commitment is attained with the help of physician support through medication adherence (Wilson et al.,2018; Nafaradi et al., 2017). The degree to which patients take their medications as prescribed by their doctors in order to hasten their recovery is known as medication adherence. The mediating role of medication adherence assesses the relationship between physician support and patient commitment. The patient empowerment model suggests that increases in physician support should cause an increase in medication adherence, which in turn should lead to patient commitment over time (Wilson et al., 2018). For instance, Hampson et al. (2004) found that patients of diabetes, by and large, made the same measure of articulations as the specialist and that there was an offset in data giving and positive talk. However, it is dependent upon doctors to create an open environment that encourages persistent support amid restorative experiences (Affinito, 2019; Clark et al., 1995). This is possible by speaking unashamedly with patients (Hausman, 2004) and concentrating on creating patient abilities to question and arrange with doctors (Michie et al., 2003).

To achieve the commitment of patients, doctors need to create a relationship that meets quiet desires regarding being strong and energetically including them in choice-making so that they take their medicines on time (Wilson et al., 2018; Montaglione, 1999). This proposes that patient-patient commitments are joined to enable patient-doctor connections. How a service supplier speaks with a client has been indicated to influence relationship responsibility. For instance, Sharma and Patterson (1999) found that correspondence viability (operationalized as far as keeping customers educated, giving genuine clarifications, clarifying advantages and disadvantages, and giving as much data as customer longings) was the absolute most essential determinant of customer responsibility to a money related guide and the center determinant of customer commitment. In an alternate study by the same creators, the communication's apparent nature expanded customers' dedication to promoting scientists (Moorman et al., 1992). Physician support is needed to improve the commitment of the patients towards them. It helps to steer healthcare effectively. Physicians can lead patients uniquely because of their experience and qualifications (Affinito et al., 2020; Angood & Shannon, 2014). The following area surveys the writing on customer empowerment because strengthening clients is especially important in the healthcare setting and shows a connection with our selected study. It is also observed that medicinal services writing gives a decent hypothetical beginning stage as it applies mental empowerment structures to highlight gimmicks of patient-specialist correspondence that empower patients.

Figure 1. Theoretical model



In this model, physician support measures patient empowerment, professional relationship outcome is measured by patient commitment and medication adherence partially mediates the relationship between these variables. Keeping in view the literature mentioned above and a link between these variables, the following hypotheses have been established for examination:

H_1: Patient empowerment positively impacts the professional relationship outcome.

H_2: Patient empowerment positively impacts medication adherence.

H_3: Medication adherence positively impacts the professional relationship outcome.

H_4: Medication adherence partially mediates the relationship between patient empowerment and professional relationship outcome.

Methodology

A modified questionnaire was used to get the data from patients of private hospitals. Patient empowerment was measured using 28 items scale developed by Roger et al. (1997). Six items were used to measure patient commitment adopted from Duke et al. (2015). The eight-item Morisky Medication Adherence Scale measures medication adherence (Pandey et al., 2015). The top ten cities of Pakistan were selected to collect the data. These cities are developed, and the literacy rate is higher than others. These cities include Karachi, Lahore, Faisalabad, Rawalpindi, Gujranwala, Peshawar, Multan, Hyderabad, Islamabad, and Quetta. (Largest cities of Pakistan, 2020).

1000 questionnaires were sent to all these cities (100 per city). The purpose of the study was communicated to the participants of the study. They were assured about the confidentiality of their responses and information. Out of 1000 questionnaires, 723 were returned, and 686 questionnaires were used for analysis after removing all the outliers in the data and missing information. The study has a 72.3 response rate. The sample size is influenced by variables such as researcher skills, financial resources, and time availability (Saunders et al., 2009). The relationship between the variables and the function of mediation between patient empowerment and the outcome of professional relationships were then ascertained through the application of structural equation modeling. Smartpls 3.0 was used to test the significance of direct and indirect relationships through bootstrapping.

Regression Equation

How X affects Y:

$$Y=b_0+b_1X+\mu$$

How X affects M:

$$M=b_0+b_2X+\mu$$

When we want to know how of M affects Y:

$$Y=b_0+b_4X+b_3M+\mu$$

The equation one can be explained as:

Y=Professional relationship outcome

b = Intercept
X = indicates to patient empowerment
M= mediator (medication adherence)
b_1X= Intercept of patient empowerment
b_3M= Intercept of mediation
μ= Residual term

Data Analysis

Discriminant validity and composite reliability were calculated to analyze the data, and then the structural equation model was applied using bootstrapping and path analysis approaches. The composite reliability acceptance criteria is 0.70 or higher (Alarcon et al., 2015). The current study's findings demonstrate that every value provided is greater than 0.70, proving the validity of the instruments employed. The fact that every value in Table 1 exceeds the permissible threshold attests to the generalizability of the study's findings. The hospital staff and patients in poor nations can benefit from the present study's findings. Convergent validity in a research project is explained by the average variance extracted (AVE) values. The degree of variation and change that a latent variable can explain is measured using AVE. Convergent validity results from the acceptable level of AVE values being equal to 0.5 or greater (Fornell & Larcker, 1981). As a result, all of the latent variable values for the current study are more than 0.5, which proves the convergent validity of the study's instrument. The reliability values of the scale utilized in this study are displayed in Table 2.

Table 1. Reliability Analysis

Variables	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Patient empowerment	0.913	0.942	0.710
Professional relationship outcome	0.879	0.922	0.695
Medication adherence	0.903	0.914	0.737

Discriminant validity is established after an assessment of reliability. Diagonal cell values can be used to identify it; all diagonal values must be greater than the ones below them (Cheung & Wang, 2017). Table 2 presents the Fornell-Larcker Criterion-based discriminant validity for the current study:

Table 2. Fornel-Larcker Criterion

	Representative	Overconfidence	Investment decisions
Patient empowerment	0.794*		
Medication adherence	0.416	0.892*	
Professional relationship outcome	0.323	0.752	0.862*

**Off diagonal values*

Effect Size (F-Squared)

Cohen introduced it, referring to it as "Cohen's F squared." According to Cohen (1992), it determines how well each independent variable explains the dependent variable. When examining the research findings' practical importance, effect size calculation is crucial. The effect size shows to what extent the null hypothesis is rejected as it shows the impact of one variable on another variable" (Fairchild & MacKinnon, 2009). Effect size allows researchers to determine which variables in the model have a greater impact on the dependent variable. During hypothesis testing, the effect magnitude, p-value, and sample size are connected.

Three value criteria are used by F squared to determine how strongly the variables are related to one another. The "small, moderate, and large effect" of the independent factors on the dependent variable is demonstrated by these values. There are three cut-off values for this effect: < 0.02 for the little effect, ≤ 0.15 for the moderate effect, and ≤ 0.35 for the large effect. Even when the independent variable has a substantial p-value, its effect on the dependent variable is modest when the f-squared values are less than 0.02 (Hair et al., 2014). Table 3 shows that medication adherence and patient empowerment moderate the professional relationship outcome, i.e., patient commitment. The values are ≤ 0.15 for medication adherence and patient empowerment.

Table 3: Effect Size

Independent Variables	Investment Decisions
Medication adherence	0.122
Patient empowerment	0.114

Model fit

After effect size, model fit is established to demonstrate the model's goodness. It is computed for hypothesis testing and their significance using SmartPls3.0. Model fit includes measures like "Standardized Root Mean Square Residual (SRMR), Normed Fit Indexed (NFI) that are based on the value of Chi-square (χ^2)," and all these measures must be significant at a 5% level of significance. The acceptance criteria for SRMR are that values should be less than 0.08, and a perfect model fit can be obtained from the '0' SRMR value (Henseler et al., 2015). To satisfy the acceptance criterion, the NFI values must be higher than 0.90; a model is deemed ideal when it approaches '1' (Hair et al., 2014). R^2 values show the influence of predictor variables on the outcome variable. Patient empowerment and medication adherence contribute 77.3% toward the professional relationship outcome or patient commitment. So, our model is fine and statistically fit, as presented in Table 4.

Table 4. Model Fit

Model Fit Measures	Model Values
SRMR	0.005
Chi-Square	37.823
NFI	0.987
R^2	0.773

Mediation Analysis

The following equations represent direct impacts and indirect effects in mediation analysis:

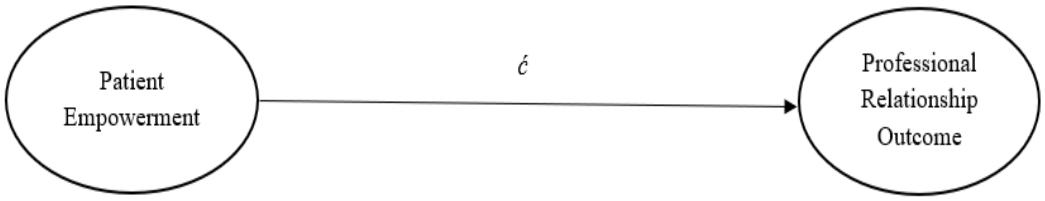
Total effect= direct effect +indirect effect

The total effect is represented by 'c', a direct effect by 'c", and an indirect effect by 'ab'.

$$ab = c - c'$$

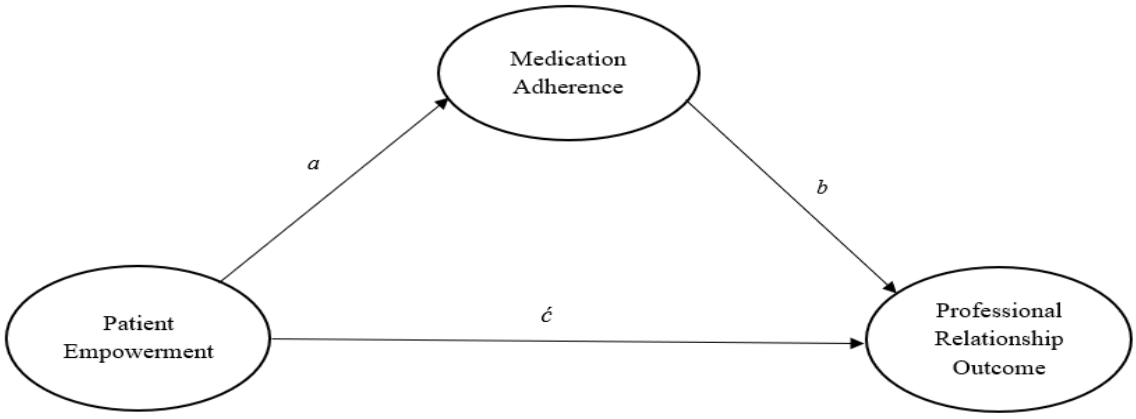
Patient empowerment → Professional relationship outcome = ć

Figure 2. Model with total effect



Patient empowerment →Medication adherence → Professional relationship outcome = *ab*

Figure 3. Model with Process Variable (M)



Medication adherence as a mediator between patient empowerment and professional relationship outcome was examined. To investigate the important role of the mediator between professional outcome and patient empowerment, several computations were carried out, including bootstrapping, path coefficients, total impact, and indirect effect. The outcomes of each of these estimations are shown in Table 5.

Table 5. Direct Effect and Specific Indirect Effect

	Path Coefficients	Standard Deviation	*t-value*	*p-value*
*Patient empowerment -> Professional relationship outcome **(H_1)**	0.552	0.121	4.562	0.000
*Medication adherence -> Professional relationship outcome **(H_2)**	0.276	0.084	3.286	0.005
*Patient empowerment -> Medication adherence **(H_3)**	0.656	0.143	4.587	0.001
** Patient empowerment -> Medication adherence -> Professional relationship outcome **(H_4)**	0.582	0.124	4.694	0.002

**Direct Effect= ć* ***Mediation analysis=ab*

The direct impact of medication adherence and patient empowerment on the results of professional relationships is shown in Table 5. At the 5% significance level, the results show higher t-values than the cut-off values of 1.96. In our instance, it can be concluded that all path coefficient values are high and statistically significant. The association between patient empowerment and medication adherence with outcomes related to professional relationships has been previously discussed, and it has a moderate effect size. Effect size is a tool that researchers can use to explain why a model has partial or complete mediation. According to Hair et al. (2019), the route coefficients are standardized beta coefficients that use standard deviation to explain changes in the dependent variable. The standard error and standard deviation values are the same in SmartPls 3.0 output. Standard deviation values are found in bootstrapping results, which are bootstrapped standard errors. The degree of variance in the collection of values is shown by the standard deviation (Henseler et al., 2016). The effect size of patient empowerment *(55.2%)* is larger and more significant on professional relationship outcomes as values are greater than ≤ *0.35*. The effect size of the medication adherence is moderate, as the value is ≤ *0.35*. Patient empowerment changes the professional relationship outcome *by 55.2%* when other factors remain constant. It means when patients are empowered, their overall commitment is enhanced. Medication adherence brings a *27.6%* variation in professional relationship outcomes when patients are committed to following the advice of their physicians. The effect size of patient empowerment for medication adherence is larger as its value is *65.6%*, which demonstrates that patients correctly follow and comply with the medical advice given to them by their doctors.

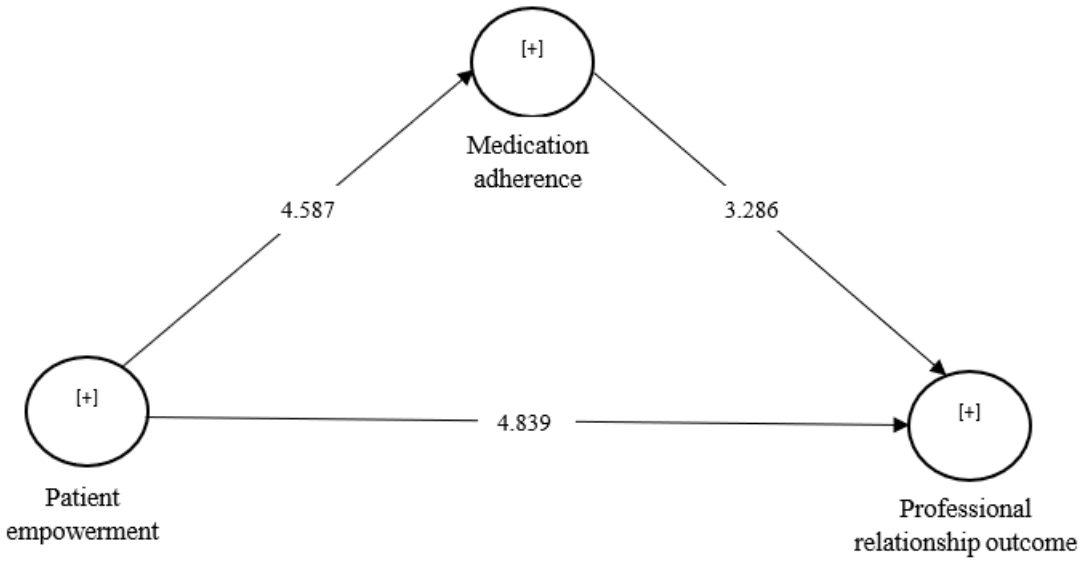
The present study's results illustrate that medication adherence's role as a mediator is partial and statistically significant. Medication adherence partially mediates between patient empowerment and professional relationship outcomes. Since the value of mediation is less than 0.35, its effect size is greater. When combined with the 58.2% overconfidence bias, the representational heuristic's influence on investing decisions rises. Particular indirect outcomes (indicating mediation) of patient empowerment with the professional relationship outcome show how the patient behaves in terms of appropriately and promptly heeding medical advice. They are committed to themselves and show a positive attitude toward their doctors and medical advice. This results in improved health results and recovery quickly.

Pakistani patients are not aware of their unhealthy habits sometimes. They try to avoid the doctors whenever they get ill or have some chronic disease. They cure themselves by staying at home and taking advice from their elders, passed on to them from their grandfathers and elders in their families. It results in bad health conditions, sometimes, and then they run to doctors for medical advice when the situation is out of control. Another worst scenario is that if they go to a doctor and get some medicine on their doctor's advice, they will not follow the doctor's instructions in taking medicine. They will skip the doses if they feel

that they are recovering. Our model shows that if doctors' advice is followed properly, there is a good chance of getting better soon.

In summary, the mediation analysis shows that the association between patient empowerment and the result of professional relationships is partially mediated by medication adherence, and that this complementing mediation is significant at $p \leq 0.05$ and t-values.

Figure 4. Mediation between Patient empowerment and Professional relationship outcome



The mediation impact has been estimated among patient empowerment and Pakistani patients' commitment. Here, '*X*' represents patient empowerment, 'M' represents medication adherence as a mediator, and professional relationship outcomes are represented by '*Y*.' It is visible that t-statists are meeting the acceptance criteria as the value is higher than the threshold value and the p-value is less than *5%* significance level. The path coefficients are positive and statistically significant in the presence of a mediator. Hence, medication adherence has an influential impact on giving patients control over decisions related to their health and patients' commitment to improving health. This empowerment helps patients understand their responsibilities towards maintaining their health by maintaining a positive physician-patient relationship. Doctors must give trust to their patients by listening to them patiently and guiding them according to their nature as self-management. A crucial component of patient empowerment is self-efficacy. Patient empowerment has a positive path coefficient with professional relationship outcomes. When medication adherence is introduced as a mediator between these two, the effect size of the path coefficient increased to *58.2%* from *55.2%.*

Thus, the following hypotheses have been accepted for the current study:

H_1: Patient empowerment positively impacts the professional relationship outcome.

H_2: Patient empowerment positively impacts medication adherence.

H_3: Medication adherence positively impacts the professional relationship outcome.

H_4: Medication adherence partially mediates the relationship between patient empowerment and professional relationship outcome.

Implications for Behavioral Health

All hypotheses have been proved and accepted for the present study, demonstrating the relationship between these three variables. Patient empowerment will lead to patient commitment, and medication adherence is important in achieving patient commitment. The relationship between patient empowerment, medication adherence, and patient commitment is proven to be positive and significant and is supported by studies by Mohiuddin, A. K. (2018) Acerini et al., (2018), Mifsud et al., (2019), Higgins et al., (2017), Audrain-Pontevia et al., (2019), Liu and Kauffman, (2020), Callon et al., (2020), Elbashir (2020) and Cavaco,

A. (2019). This relationship illustrates the importance of the physician in empowering their patients to focus on self-management to improve their health and recover from chronic diseases. The role of medication adherence has been discussed by Meeker et al., (2019), Solomon and Petros (2020), and Anwar et al., (2018). It shows that following doctors' proper instructions can help patients recover quickly.

Conclusion

The study findings indicate the significance of patient empowerment to achieve patient commitment by involving medication adherence as a mediator. It can be noted from the results that Pakistani patients know the importance of the role of doctors in empowering them to get healthy and recover from chronic diseases. Private hospital Medical staff must understand the link between patient empowerment, medication adherence, and patient commitment. This will help them to build trusting relationships with their patients, who are their customers, as they bring profits to hospitals. Doctors need to understand the perspective of their patients and listen to them carefully before advising them about their health management. This study provides a new perspective for hospital administration, healthcare providers, and healthcare staff to focus on the needs of patients and give them advice accordingly so they can follow and recover soon. Doctors need to inculcate confidence among their patients about themselves to encourage them towards self-management and self-efficacy.

Future researchers can use the same model to compare developing countries. More mediators and moderators, like education level, medical literacy, physician role, etc, can be added to the same model.

Compliance with Ethical Standards

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Conflict of Interest: None

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