

# Exploring Doctor-Patient Dynamics: The Mediating Role of Doctor's Empathy and the Moderating Effect of Treatment Effectiveness on Doctor-Patient Communication, Trust, and Satisfaction

Hailey Hwiram Kim<sup>1</sup> and Seontaik Kim<sup>#</sup>

<sup>1</sup>Marriotts Ridge High School, USA

<sup>#</sup>Advisor

## ABSTRACT

This research investigates a conceptual model proposing how doctor-patient communication, doctor's empathy, and treatment effectiveness influence patient-doctor trust and satisfaction. Conducting quantitative analyses of survey responses from 250 participants in the United States, the study tests these hypotheses. The findings demonstrate that effective doctor-patient communication significantly increases patient-doctor trust and satisfaction. Doctor's empathy is identified as a crucial mediating factor that intensifies this impact of communication on trust. Interestingly, the study reveals a notable moderating effect of treatment effectiveness, suggesting that higher treatment effectiveness diminishes the dependence on a foundation of doctor-patient trust when achieving patient satisfaction. These findings emphasize the interdependent role of empathetic communication and effective treatment in patient care. The research contributes significantly to healthcare and medicine literature, offering valuable insights for researchers and practitioners focused on understanding and improving patient satisfaction, healthcare delivery, and outcomes.

## **Introduction**

Patient satisfaction is a comprehensive measure reflecting various healthcare delivery aspects, including interpersonal patient-doctor relationship dynamics and the broader organizational and systemic performance of healthcare services (Batbaatar, Dorjdagva, Luvsannyam, Savino, & Amenta, 2017). Patient satisfaction often mirrors the quality of care provided, serving as a valuable metric for doctors to evaluate their practice (Zgierska, Rabago, & Miller, 2014). Therefore, understanding the factors contributing to patient satisfaction enables healthcare providers to enhance their approach to patient care. The critical role of patient satisfaction in driving healthcare quality, efficiency, and effectiveness positions it as a key focus in healthcare research, policy, and practice (Peng, Yin, Deng, & Wang, 2020). The factor of patient-doctor trust is vital in medical practice, affecting outcomes ranging from individual patient health to the broader efficiency and effectiveness of healthcare systems (Peng et al., 2020). Consequently, establishing and maintaining trust is a central role for doctors, as trust influences their professional effectiveness, patient relationships, and overall satisfaction with their practice (Ward, 2018; Wu, Jin, & Wang, 2022).

Effective doctor-patient communication is another vital factor, going beyond clinical interactions to become a cornerstone of effective, efficient, and compassionate care delivery (Dalton et al., 2019). Effective doctor-patient communication encompasses a range of skills that contribute to accurate diagnosis, the reduction of medical errors, and the establishment of robust therapeutic relationships, all of which enhance professional satisfaction and help mitigate burnout among healthcare providers (Makoul & van Dulmen, 2015). Effective

communication is at the center of patient-centered care, ensuring that healthcare delivery aligns with patient needs and preferences. Doctor's empathy is also crucial in healthcare, leading to improved patient health outcomes, increased satisfaction, and greater treatment compliance (Derksen et al., 2013). Empathy not only enhances job satisfaction and reduces burnout but also bolsters diagnostic and treatment skills, deepening patient connections and trust (Wu et al., 2022). It also makes healthcare resource use more efficient, contributing to better public health outcomes (Derksen et al., 2013; Gertsman et al., 2023). Finally, the effectiveness of a doctor's treatment is paramount, impacting patient recovery, quality of life, and chronic condition management (Kim et al., 2017; O'Neill et al., 2023). For doctors, effective treatment boosts professional competence, patient trust, and satisfaction while shaping their professional reputation (O'Neill et al., 2023). Therefore, treatment effectiveness is a metric for healthcare quality, reflecting not just individual skill but an effective healthcare system.

Previous research has primarily focused on factors influencing patient satisfaction, such as quality of care (Szeverenyi et al., 2018), patient involvement in treatment (Ashraf et al., 2013; O'Neill et al., 2023), and doctor's responsiveness (Wong, Mavondo, & Fisher, 2020). Studies have also explored outcomes of patient-doctor trust, like patient adherence and compliance with treatments and fostering a collaborative shared decision-making process (Ashraf et al., 2013). However, there has been limited research investigating how factors such as doctor-patient communication, the doctor's empathy, and the effectiveness of treatment independently influence the patient-doctor trust relationship and overall patient satisfaction. Investigating the nature of these impacts is imperative, as empathetic communication and treatment effectiveness are key to the patient-doctor relationship (Wu et al., 2022). Moreover, there is a lack of empirical evidence on how and why communication influences patient-doctor trust and patient satisfaction. To address the gaps in existing literature, this research aims to develop and test a new model that includes the mediating effect of doctor's empathy and the moderating effect of doctor's treatment effectiveness.

To address the gaps in existing literature, this research aims to develop and test a new model that includes the mediating effect of doctor's empathy and the moderating effect of doctor's treatment effectiveness. This model is designed to explain and predict how and why doctor-patient communication can influence both patient-doctor trust and patient satisfaction. This model is designed to explain and predict how and why doctor-patient communication can influence both patient-doctor trust and patient satisfaction. The implications of this study are broad and impactful across the healthcare sector. It provides researchers with a novel framework to more deeply understand the complex dynamics of patient-doctor interactions. Healthcare practitioners, including doctors, can utilize insights from this model to improve their communication skills and empathy, thereby enhancing patient care and satisfaction. Also, this research can contribute to healthcare policy and training programs by highlighting the importance of empathy and effective communication in medical practice. By exploring these key relational dynamics, the healthcare system can shift towards more patient-centered approaches, ultimately benefitting patients with improved care experiences and outcomes, while also helping healthcare providers refine their practices for enhanced patient relationships and professional satisfaction. This research builds upon social exchange theory and empirical findings from various disciplines, including healthcare and medicine, to provide conceptual and empirical support for the hypotheses. Subsequently, the paper outlines the survey methods and data analyses used to report the results of the hypotheses. The paper concludes with a discussion, conclusion, limitations, and acknowledgments.

## Literature Review & Hypothesis Development

### Patient-Doctor Trust

Doctor-patient trust refers to a contractual relationship that evolves through ongoing interactions between both parties (Peng et al., 2020). Trust between a doctor and a patient is the cornerstone of clinical medicine, alleviating conflicts between doctors and patients, enhancing patient adherence, and fostering a harmonious relationship between doctors and patients (Peng et al., 2020). For example, patients might trust their oncologist to prescribe the most effective cancer treatment based on their expertise and success in treating similar cases. Similarly, patients trust their surgeon's honesty in openly discussing the potential benefits and risks of a surgical operation. Additionally, when a patient divulges sensitive personal information, the patient does so with the trust that the doctor will use this information exclusively to improve their healthcare. Patients trust their primary care physicians to consistently follow up on test results and manage ongoing treatment plans.

Previous research has underscored the importance of understanding patient-doctor trust for designing interventions and practices that enhance care quality, health outcomes, and patient experiences. Specifically, research has linked trust in the doctor to higher adherence rates to prescribed treatments (Georgopoulou, Nel, Sangle, & D'Cruz, 2020; Wu et al., 2022). Patients who trust their doctors are more likely to take medications as prescribed, follow recommended lifestyle changes, and attend follow-up appointments. Studies have also indicated that a higher level of trust in the patient-doctor relationship leads to better physical health outcomes for patients (Clarke et al., 2016; Tan & Goonawardene, 2017). Trust can reduce anxiety and stress, which negatively impact health (Bennion, Hardy, Moore, & Millings, 2017). Furthermore, when patients trust their doctors, they are more likely to share crucial health information, leading to more accurate diagnoses and effective treatment plans (Asan, Yu, & Crotty, 2021). Research has also shown that trust is essential for shared decision-making, where patients and doctors collaborate on healthcare decisions (Bukstein, Guerra Jr, Huwe, & Davis, 2020; Saba et al., 2006). This process respects patient autonomy and is more likely to result in choices that align with the patient's values and preferences (Amir, McCarthy, & Tong, 2021), making trust critical for patients to feel comfortable engaging in this process.

## Doctor-Patient Communication

Doctor-patient communication refers to exchanging information and meaning between doctors and their patients (Kurtz, 2002; Makoul & van Dulmen, 2015). This exchange includes discussions about symptoms, diagnosis, treatment options, and prognosis, taking into account aspects such as whether the doctor clearly explained things, listened attentively, provided easy-to-understand instructions, was aware of the patient's significant medical history, demonstrated respect and allocated sufficient time for the patient (Altin & Stock, 2016). For example, effective communication, like asking open-ended questions and actively listening, may lead a doctor to learn that a patient's headaches, which come with visual symptoms and are predominantly on one side, are likely migraines rather than tension headaches.

Existing literature has addressed how doctor-patient communication influences diagnosis, treatment effectiveness, patient understanding, emotional well-being, and overall healthcare quality. Effective communication enables doctors to gather comprehensive and precise information about a patient's medical history, which is essential for current diagnosis (Dalton et al., 2019; Van der Velden, Bell, Sessa, Duerden, & Altiner, 2013). Research has shown that effective communication can foster patient engagement and compliance with healthcare (Dalton et al., 2019). For instance, effective communication about diabetes management can lead patients to faithfully follow their dietary and medication plans more faithfully. Furthermore, effective communication is crucial for patient understanding of treatment benefits and risks (Ralston, Hauser, Paskins, & Ralston, 2022; Street Jr, Makoul, Arora, & Epstein, 2009). Clear communication can reduce confusion and associated stress (Brooks et al., 2020; Fusco et al., 2020), fostering peace of mind by ensuring patients have a clear grasp of their medical condition and treatment outcomes.

This research suggests that doctor-patient communication fosters trust in the patient-doctor relationship. Social Exchange Theory posits that effective communication and trust in doctor-patient interactions are

nurtured through a reciprocal exchange of benefits and costs, with trust building gradually (Raju et al., 2022; Sobierajski, Rzymiski, Małecka, & Augustynowicz, 2023). Patients perceive effective communication as a benefit provided by the doctor. When doctors communicate effectively, patients feel more informed, heard, and understood, which are perceived as benefits. When patients feel understood, they are more likely to share crucial health information with the doctor. This sharing of information benefits the doctor by providing them with a more comprehensive understanding of the patient's condition and history, which can lead to better diagnosis and treatment decisions. Empirical evidence also suggests that doctor-patient communication fosters trust because it builds a strong relationship that can create a bond of trust (Hong & Oh, 2019; Petrocchi et al., 2019). Based on this theoretical and empirical support, the following hypothesis is proposed:

H1: Doctor-patient communication has a positive effect on patient-doctor trust.

## Doctor's Empathy

Doctor's empathy refers to a doctor's ability to understand, be sensitive to, and vicariously experience the feelings, thoughts, and experiences of their patients (Byrd et al., 2021). It extends beyond clinical detachment, encompassing a genuine concern for the patient's well-being and emotional state (Decety, 2020; Gleichgerrcht & Decety, 2013). For instance, in pediatrics, an empathetic approach towards a child apprehensive about an injection can be highly beneficial. By acknowledging the child's fear and explaining the procedure in comforting, comprehensible terms, the doctor can ensure a calmer experience and improved cooperation. Empirical research has examined the determinants and outcomes of doctor's empathy in enhancing patient care and overall healthcare. Burks and Kobus (2012) found that altruistic and humanistic doctors are more likely to demonstrate empathy. Shi and Du (2020) identified emotional intelligence and gratitude as factors contributing to the development of empathy in medical students. Education and training programs emphasizing empathetic communication skills and patient-centered care help nurture this empathy (Lee & Ihm, 2021). Overall, empathetic doctor-patient interactions are linked to improved patient outcomes, such as better chronic condition management, increased satisfaction, and enhanced well-being (Gertsman et al., 2023; Licciardone, Ganta, Goehring, Wallace, & Pu, 2022). It can also mitigate burnout by fostering meaningful doctor-patient relationships (Byrd et al., 2021).

This research suggests that a doctor's expression of empathy during communication plays a central role in developing a patient's trust. Social exchange theory and empirical evidence point to empathy as a critical mechanism in how communication affects trust. Empathy can be seen as a rewarding element in social exchange, valued by patients seeking healthcare providers who provide medical expertise and genuine care, essential for trust-building (Cook, Cheshire, Rice, & Nakagawa, 2013). Empirical studies support that empathy in communication strengthens patient trust (Wu et al., 2022), crucial for treatment adherence. Combining a doctor's effective communication about treatment and empathy with a patient's concerns contributes to building trust (Derksen et al., 2013; L. Tan et al., 2021). Based on this theoretical and empirical foundation, the following hypothesis is proposed:

H2: Doctor's empathy mediates the effect of doctor-patient communication on patient-doctor trust.

## Patient Satisfaction

Patient satisfaction refers to how patients feel their healthcare experiences meet or exceed their expectations, encompassing aspects like clinical care, communication, access, responsiveness, and emotional support (Batbaatar et al., 2017; Kim et al., 2017). Satisfaction may arise from receiving an accurate diagnosis and effective treatment, exemplifying the doctor's professional skill, or quick and efficient pain management during a hospital stay. Emotional support from doctors, especially in difficult situations, can contribute to a patient's satisfaction. Previous research has explored factors influencing patient satisfaction. The quality of clinical care,

including competence, expertise, and treatment effectiveness, is known to improve satisfaction (Basch, 2017; Batbaatar et al., 2017; Manary, Boulding, Staelin, & Glickman, 2013). Szeverenyi et al. (2018) found that innovative nonpharmacologic techniques in pain management enhance satisfaction in orthopedic surgeries. In a Children's Hospital setting, doctor's communication practices like clarity, listening, and immediacy were found to impact satisfaction with communication and medical care (Wanzer, Booth-Butterfield, & Gruber, 2004). Ashraf et al. (2013) suggest that increased patient involvement through informed or shared decision-making approaches enhances overall satisfaction. Wong et al. (2020) systematic review shows that responsiveness, coordination, and access to care are key determinants of patient satisfaction. Social exchange theory (Cook et al., 2013) posits that trust in doctors is perceived by patients as a valuable element of their relationship, significantly impacting their overall satisfaction with healthcare. Trust, developed from positive interactions and effective communication, can alleviate stress and anxiety, fostering a satisfying patient-doctor relationship. Empirical evidence supports this, showing that trust positively influences satisfaction. Shan et al. (2016) found patient trust to be a significant predictor of satisfaction with hospital inpatient care. AIRuthia et al. (2020) suggested that gaining the trust of diabetes patients is crucial for their satisfaction, as it helps lower depression and anxiety. Based on this theoretical and empirical background, the following hypothesis is proposed:

H3: Patient-doctor trust has a positive effect on patient satisfaction.

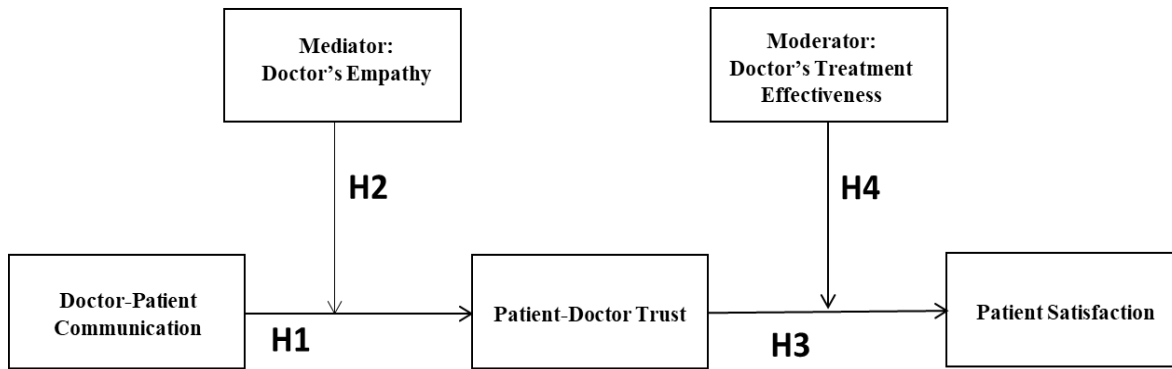
### Doctor's Treatment Effectiveness

Doctor's treatment effectiveness is defined as the degree to which a treatment prescribed or recommended by a doctor achieves the anticipated health outcomes (Kim et al., 2017; McDonald, Garg, & Haynes, 2002). This concept focuses on the patient's perception of how well the treatment addresses their medical condition. For instance, in treating diabetes, effectiveness might be measured by how closely the doctor follows medical guidelines, such as prescribing insulin or oral hypoglycemic agents and recommending lifestyle changes, with success indicated by the maintenance of blood sugar levels within the desired range. Effective treatment is also characterized by minimal side effects (Vaughn et al., 2019). For example, a hypertension treatment that effectively lowers blood pressure without causing significant side effects is deemed effective. Similarly, the effectiveness of antibiotics in treating bacterial infections is assessed by how quickly and completely the infection is cured, as shown by lab test results and symptom reduction.

Research has explored the role of doctor's treatment effectiveness in understanding and improving healthcare delivery. A doctor's medical knowledge, clinical skills, and continuous learning are crucial for treatment effectiveness (Spring, 2007), including proficiency in diagnosing conditions and prescribing appropriate treatments (Spring, 2007), including proficiency in diagnosing conditions and prescribing appropriate treatments (Smith et al., 2018). The availability of healthcare infrastructure also influences treatment effectiveness (Castro et al., 2019). Effective treatments enhance patient health outcomes, symptom relief, disease management, recovery, and quality of life (Hamine, Gerth-Guyette, Faulx, Green, & Ginsburg, 2015) and contribute to public health, such as in managing infectious diseases like COVID (Assefa et al., 2022). This study suggests a moderating role of doctor's treatment effectiveness in the relationship between patient-doctor trust and patient satisfaction. As the perceived effectiveness of the doctor's treatment increases, its impact on patient satisfaction can diminish the influence of trust. This hypothesis is supported by Social Exchange Theory, which posits that increased perceived treatment effectiveness becomes more prominent in the patient-doctor exchange, reducing the relative importance of trust on patient satisfaction. Therefore, the following hypothesis is proposed:

H4: Doctor's treatment effectiveness moderates the effect of patient-doctor trust on patient satisfaction, such that the role of trust in determining satisfaction decreases when treatment effectiveness increases.

Based on the literature outlined above, the proposed conceptual model is presented in Figure 1.



**Figure 1.** Conceptual Model

## Methods

### Sample, Data Collection, and Measures

Participants were recruited through an online panel from Amazon Mechanical Turk (MTurk), which provides a diverse and large pool of respondents for conducting healthcare surveys. To enhance the relevance and reliability of the sample, MTurk's system qualifications were employed, specifying the location as the United States and requiring participants to be over 18 years old. Screening questions were also administered to exclude individuals under 18 and those who had not visited a doctor in the past twelve months in the United States. The participants were asked to answer the questionnaire based on their most recent healthcare experiences. Those who completed the survey received \$2 as compensation. A total of 250 survey participants were gathered, of whom over 90% had visited a doctor in the past six months. Among these, 70% had done so in the previous month.

All measures used in the survey were operationalized using measurement scales validated in previous literature. Survey response options for all the measures employed a 7-point Likert-type scale, ranging from (1) 'strongly disagree' to (7) 'strongly agree.' Doctor-patient communication was measured using four items (Altin & Stock, 2016; Dyer, Sorra, Smith, Cleary, & Hays, 2012). A sample item is "My doctor explained things clearly." Patient-doctor trust was assessed using four items (Altin & Stock, 2016; Peng et al., 2020). A sample item is "If my doctor tells me something is so, then it must be true." Doctor's empathy was measured using five items adapted from Byrd et al.'s (2021) study. A sample item is "My doctor understood my feelings and concerns." Doctor's treatment effectiveness was measured using three items from Kim et al.'s (2017) study. A sample item is "Treatment was reliable." Patient satisfaction was measured using six items (Kim et al., 2017; Torres, Vasquez-Parraga, & Barra, 2009). A sample item is "Overall, I am satisfied with my experiences with the doctor."

## Results

Reliability tests were conducted to assess the consistency of responses across multiple items meant to measure the same constructs. The reliability of constructs used in this study was strong, well above the cut-off point of 0.70 based on Cronbach's alpha: Doctor-patient communication ( $\alpha = 0.853$ ), patient-doctor trust ( $\alpha = 0.871$ ), doctor's empathy ( $\alpha = 0.902$ ), doctor's treatment effectiveness ( $\alpha = 0.841$ ), and patient satisfaction ( $\alpha = 0.901$ ). Therefore, the measurements in this study were consistent and reliable, forming a sound basis for drawing valid conclusions about the relationships between variables.

Hypotheses were tested using linear regression and the Hayes (2022) PROCESS macro. Linear regression tested H1, examining the direct effect of doctor-patient communication on patient-doctor trust, and H3, examining the effect of patient-doctor trust on patient satisfaction. PROCESS macro Model 4 assessed the mediating effect of doctor’s empathy for H2, and Model 1 tested H4, investigating the moderating effect of treatment effectiveness. As expected, results showed a significant positive effect of doctor-patient communication on patient-doctor trust ( $t = 18.499, p = 0.000$ ), supporting H1. The results demonstrated doctor’s empathy’s mediating effect on the impact of doctor-patient communication on patient-doctor trust (indirect effect = .462,  $CI.95 = [0.260, 0.629]$ ). The 95% Confidence Interval (CI) did not include zero, so the indirect effect is considered significant, thereby supporting H2. This means that doctor’s empathy affected how doctor-patient communication influences trust in the doctor, suggesting that the empathy shown by the doctor is the fundamental factor that affects the patients’ trust. The mediation analysis results are in Table 1. A significant negative moderation was found of doctor’s treatment effectiveness on the effect of patient-doctor trust on patient satisfaction ( $\beta = -0.055, p = 0.003, CI.95 = [-0.092, -.019]$ ), supporting H4. This suggests that high treatment effectiveness leads to high patient satisfaction regardless of trust levels in the doctor, whereas lower effectiveness makes this trust more crucial for patient satisfaction. The moderation analysis results are presented in Table 2, and the interaction plots in Figure 2.

**Table 1.** Mediation Analysis

Total, Direct, & Indirect Effects	Mediating Effect of Doctor’s Empathy (PROCESS model 4: testing H2)				
	Effects	$\beta$	SE	$t$ -value	LLCI
Total Effect: Doctor-Patient Communication → Patient-Doctor Trust (Before including mediator)	0.752	0.041	18.499 ( $p$ -value = 0.000)	0.672	0.832
Direct Effect: Patient-Doctor Trust (After including the mediator)	0.290	0.062	4.704 ( $p$ -value = 0.000)	0.169	0.411
Indirect Effect: Doctor’s Empathy	$\beta$ 0.462	SE 0.096	LLCI 0.256	ULCI 0.632	

Note: All  $t$ -values reported are statistically significant at the  $p < 0.001$  level for a two-tailed test.  
 $\beta$  = coefficient, SE = standard error, LLCI: lower limit confidence interval, ULCI (upper limit confidence interval)

**Table 2.** Moderation Analysis

Moderating Effect of Doctor’s Treatment Effectiveness (PROCESS model 1: testing H4)						
	$\beta$	SE	$t$ -value	LLCI	ULCI	
Constant	5.833	0.033	177.691	5.768	5.897	

Patient Satisfaction				( <i>p</i> -value = 0.000)		
	Patient-Doctor Trust	0.411	0.045	9.177 ( <i>p</i> -value = 0.000)	0.323	0.499
	Treatment Effectiveness	0.392	0.042	9.502 ( <i>p</i> -value = 0.000)	0.311	0.473
	Patient-Doctor Trust × Treatment Effectiveness	-0.055	0.019	-2.981 ( <i>p</i> -value = 0.003)	-0.092	-0.019

Note: All *t*-values reported are statistically significant at the  $p < 0.01$  level for a two-tailed test.

$\beta$  = coefficient, SE = standard error, LLCI: lower limit confidence interval, ULCI (upper limit confidence interval)

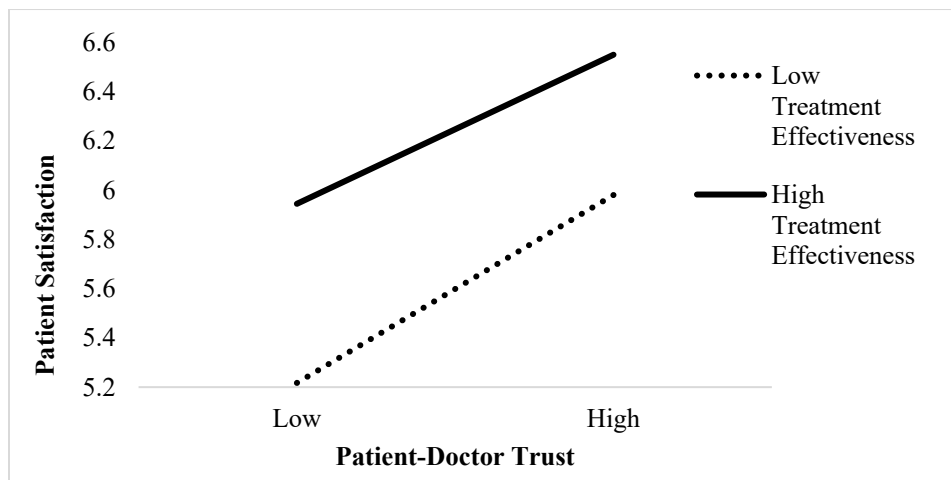


Figure 2. Moderating effect of doctor's treatment effectiveness.

## Discussion

The results show that all hypotheses, developed based on theory and empirical support, were confirmed by the survey data. They establish a direct relationship between doctor-patient communication and patient-doctor trust, as well as between patient-doctor trust and patient satisfaction. These results reinforce social exchange theory, emphasizing the importance of effective communication in building trust and the crucial role of trust in achieving patient satisfaction. Also, they provide empirical evidence that connects communication, trust, and satisfaction in healthcare research (Asan et al., 2021; Peng et al., 2020; Shan et al., 2016). Understanding the direct impact of communication on trust and satisfaction allows for more effective integration of these skills into medical education (Lee & Ihm, 2021). Interestingly, by identifying doctor's empathy as a mediator, the research suggests that how a doctor communicates with a patient and the degree of empathy shown can influence the patient's trust level. Empathy is seen as a central factor affecting this trust. Therefore, even with good communication, patient trust may not be as strong if a doctor does not demonstrate empathy. Conversely, high levels



of doctor empathy can enhance patient trust, even if other communication aspects are less than ideal. This finding underscores the importance of training doctors in effective communication and empathetic engagement, suggesting that medical education curricula focus more on developing these soft skills alongside clinical skills (Lee & Ihm, 2021). Also, by understanding the role of empathy in mediating the effect of communication on trust, healthcare providers can adopt strategies that enhance empathetic interactions, potentially leading to increased patient trust and satisfaction (Gertsman et al., 2023). These insights can inform healthcare policy, emphasizing the importance of patient-centered communication strategies. Healthcare systems can implement policies that encourage and reward empathetic communication.

Furthermore, this research suggests that doctor's treatment effectiveness negatively moderates the effect of patient-doctor trust on patient satisfaction. The negative interaction indicates a shift in the factors more influential in determining patient satisfaction under different conditions of treatment effectiveness. It suggests that while building trust is essential, ensuring high treatment effectiveness can also be a key strategy in maintaining high patient satisfaction, even when trust levels are not optimal. In other words, the importance of trust in determining satisfaction decreases when treatment effectiveness increases. When treatment is highly effective and leads to good health outcomes, patient satisfaction tends to be high regardless of trust level. In such cases, the treatment's effectiveness reduces trust's impact on satisfaction. Conversely, in situations where treatment is less effective, the level of trust a patient has in their doctor plays a more significant role in determining satisfaction. In such cases, the emotional and psychological support provided by a trusting doctor-patient relationship could be more influential in how patients perceive their care and satisfaction. These findings have important implications for healthcare practices, suggesting that while building trust is crucial, its impact on satisfaction can vary depending on treatment outcomes (Kim et al., 2017; Shan et al., 2016; Sobierajski et al., 2023). For treatments with variable or uncertain effectiveness, fostering strong patient-doctor relationships might be particularly vital. Understanding the balance between trust and treatment effectiveness can help healthcare providers and institutions strategize care delivery to maximize patient satisfaction. These findings can inform healthcare policies and system designs that prioritize developing trust and delivering effective treatments as critical components of patient care.

## Conclusion

This research investigates the relationships among doctor-patient communication, doctor's empathy, patient-doctor trust, doctor's treatment effectiveness, and patient satisfaction, underscores the interconnectedness and significance of these elements in healthcare. These elements collectively shape the patient experience and are crucial for delivering high-quality, patient-centered care. This paper suggests the fundamental role of effective doctor-patient communication in building trust, with doctor's empathy identified as a critical mediator in this process. The study also confirms a direct link between patient-doctor trust and patient satisfaction, highlighting trust as a critical determinant of patient satisfaction. Notably, it reveals the moderating effect of treatment effectiveness, suggesting that the influence of trust on patient satisfaction varies with the perceived effectiveness of treatment. This unique finding implies that while trust is crucial, its impact on satisfaction can be lessened by high treatment effectiveness. Overall, these insights emphasize the need for a holistic approach in healthcare, integrating effective communication, empathetic engagement, and high-quality treatment to enhance patient satisfaction and care outcomes. Therefore, the findings can foster cross-disciplinary research, integrating concepts from healthcare, psychology, communication studies, and medicine, thus enriching the understanding in these fields. The theoretical and practical implications of this research are vast, offering valuable insights for academic research and benefits for healthcare practice, including enhancing the quality of patient care, improving healthcare provider training and policy, and advancing our understanding of the crucial elements in the patient-doctor relationship.

## Limitations

The cross-sectional design of this study, capturing survey responses at a single point in time, limits the ability to infer causality or track the evolution of relationships among doctor-patient communication, doctor's empathy, patient-doctor trust, doctor's treatment effectiveness, and patient satisfaction. This limitation could hinder understanding of these relationships' dynamics over time. Also, the focus on a U.S. sample in this study might restrict cultural and systemic generalizability, as patient perceptions might be heavily influenced by global cultural differences and healthcare systems. Future research would employ longitudinal designs and include diverse cultural samples to better understand these factors in healthcare. Exploring additional factors that may influence these relationships would also be crucial for enriching healthcare research.

## Acknowledgments

I would like to extend a heartfelt thanks to my advisor, who, through his expertise and unwavering support, guided me throughout my research process. This research could not have been imaginable without his guidance, and for this, I am deeply grateful.

## References

- AlRuthia, Y., Alwhaibi, M., Almalag, H., Almosabhi, L., Almuhaaya, M., Sales, I., . . . & Asiri, Y. (2020). The relationship between trust in primary healthcare providers among patients with diabetes and levels of depression and anxiety. *Plos one*, *15*(9), e0239035.
- Altin, S. V., & Stock, S. (2016). The impact of health literacy, patient-centered communication and shared decision-making on patients' satisfaction with care received in German primary care practices. *BMC health services research*, *16*(1), 1-10.
- Amir, N., McCarthy, H. J., & Tong, A. (2021). A working partnership: A review of shared decision-making in nephrology. *Nephrology*, *26*(11), 851-857.
- Asan, O., Yu, Z., & Crotty, B. H. (2021). How clinician-patient communication affects trust in health information sources: Temporal trends from a national cross-sectional survey. *Plos one*, *16*(2), e0247583.
- Ashraf, A. A., Colakoglu, S., Nguyen, J. T., Anastasopoulos, A. J., Ibrahim, A. M., Yueh, J. H., . . . Lee, B. T. (2013). Patient involvement in the decision-making process improves satisfaction and quality of life in postmastectomy breast reconstruction. *Journal of Surgical Research*, *184*(1), 665-670.
- Assefa, Y., Gilks, C. F., Reid, S., van de Pas, R., Gete, D. G., & Van Damme, W. (2022). Analysis of the COVID-19 pandemic: lessons towards a more effective response to public health emergencies. *Globalization and Health*, *18*(1), 10.
- Basch, E. (2017). Patient-reported outcomes-harnessing patients' voices to improve clinical care. *New England Journal of Medicine*, *376*(2), 105-108.
- Batbaatar, E., Dorjdagva, J., Luvsannyam, A., Savino, M. M., & Amenta, P. (2017). Determinants of patient satisfaction: a systematic review. *Perspectives in public health*, *137*(2), 89-101.
- Bennion, M., Hardy, G., Moore, R., & Millings, A. (2017). E-therapies in England for stress, anxiety or depression: what is being used in the NHS? A survey of mental health services. *BMJ open*, *7*(1), e014844.
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*, *395*(10227), 912-920.

- Bukstein, D. A., Guerra Jr, D. G., Huwe, T., & Davis, R. A. (2020). A review of shared decision-making: a call to arms for health care professionals. *Annals of Allergy, Asthma & Immunology*, 125(3), 273-279.
- Burks, D. J., & Kobus, A. M. (2012). The legacy of altruism in health care: the promotion of empathy, prosociality and humanism. *Medical education*, 46(3), 317-325.
- Byrd, J., Knowles, H., Moore, S., Acker, V., Bell, S., Alanis, N., . . . Wang, H. (2021). Synergistic effects of emergency physician empathy and burnout on patient satisfaction: a prospective observational study. *Emergency Medicine Journal*, 38(4), 290-296.
- Castro, M. C., Massuda, A., Almeida, G., Menezes-Filho, N. A., Andrade, M. V., de Souza Noronha, K. V. M., ... & Atun, R. (2019). Brazil's unified health system: the first 30 years and prospects for the future. *The Lancet*, 394(10195), 345-356.
- Clarke, M. A., Moore, J. L., Steege, L. M., Koopman, R. J., Belden, J. L., Canfield, S. M., . . . Kim, M. S. (2016). Health information needs, sources, and barriers of primary care patients to achieve patient-centered care: A literature review. *Health informatics journal*, 22(4), 992-1016.
- Cook, K. S., Cheshire, C., Rice, E. R., & Nakagawa, S. (2013). Social exchange theory. *Handbook of social psychology*, 61-88.
- Dalton, L., Rapa, E., Ziebland, S., Rochat, T., Kelly, B., Hanington, L., ... & Richter, L. (2019). Communication with children and adolescents about the diagnosis of a life-threatening condition in their parent. *The Lancet*, 393(10176), 1164-1176.
- Decety, J. (2020). Empathy in medicine: what it is, and how much we really need it. *The American journal of medicine*, 133(5), 561-566.
- Derksen, F., Bensing, J., & Lagro-Janssen, A. (2013). Effectiveness of empathy in general practice: a systematic review. *British journal of general practice*, 63(606), e76-e84.
- Dyer, N., Sorra, J. S., Smith, S. A., Cleary, P. D., & Hays, R. D. (2012). Psychometric properties of the Consumer Assessment of Healthcare Providers and Systems (CAHPS®) clinician and group adult visit survey. *Medical care*, 50, S28-S34.
- Fusco, N., Bernard, F., Roelants, F., Watremez, C., Musellec, H., Laviolle, B., . . . Boulon, N. (2020). Hypnosis and communication reduce pain and anxiety in peripheral intravenous cannulation: Effect of Language and Confusion on Pain During Peripheral Intravenous Catheterization (KTHYPE), a multicentre randomised trial. *British journal of anaesthesia*, 124(3), 292-298.
- Georgopoulou, S., Nel, L., Sangle, S. R., & D'Cruz, D. P. (2020). Physician–patient interaction and medication adherence in lupus nephritis. *Lupus*, 29(10), 1168-1178.
- Gertsman, S., Ene, I. C., Palmert, S., Liu, A., Makkar, M., Shao, I., . . . Williams, C. (2023). Clinical empathy as perceived by patients with chronic illness in Canada: a qualitative focus group study. *Canadian Medical Association Open Access Journal*, 11(5), E859-E868.
- Gleichgerrcht, E., & Decety, J. (2013). Empathy in clinical practice: how individual dispositions, gender, and experience moderate empathic concern, burnout, and emotional distress in physicians. *Plos one*, 8(4), e61526.
- Hamine, S., Gerth-Guyette, E., Faulx, D., Green, B. B., & Ginsburg, A. S. (2015). Impact of mHealth chronic disease management on treatment adherence and patient outcomes: a systematic review. *Journal of medical Internet research*, 17(2), e52.
- Hong, H., & Oh, H. J. (2019). The effects of patient-centered communication: exploring the mediating role of trust in healthcare providers. *Health communication*.
- Kim, C. E., Shin, J. S., Lee, J., Lee, Y. J., Kim, M. R., Choi, A., ... & Ha, I. H. (2017). Quality of medical service, patient satisfaction and loyalty with a focus on interpersonal-based medical service encounters and treatment effectiveness: a cross-sectional multicenter study of complementary and alternative medicine (CAM) hospitals. *BMC complementary and alternative medicine*, 17(1), 1-12.

- Kurtz, S. M. (2002). Doctor-patient communication: principles and practices. *Canadian Journal of Neurological Sciences*, 29(S2), S23-S29.
- Lee, M., & Ihm, J. (2021). Empathy and attitude toward communication skill learning as a predictor of patient-centered attitude: a cross-sectional study of dental students in Korea. *BMC medical education*, 21(1), 1-11.
- Licciardone, J. C., Ganta, S., Goehring, L., Wallace, K., & Pu, R. (2022). Analysis of the patient-physician relationship, race, and pain control and physical function among adults with chronic low back pain. *JAMA Network Open*, 5(6), e2216270-e2216270.
- Makoul, G., & van Dulmen, S. (2015). What is effective doctor-patient communication? Review of the evidence. *Clinical communication in medicine*, 30-39.
- Manary, M. P., Boulding, W., Staelin, R., & Glickman, S. W. (2013). The patient experience and health outcomes. *The New England journal of medicine*.
- McDonald, H. P., Garg, A. X., & Haynes, R. B. (2002). Interventions to enhance patient adherence to medication prescriptions: scientific review. *Jama*, 288(22), 2868-2879.
- O'Neill, A., Hughes, C., McClure, P., Rainey, C., McLaughlin, L., & McFadden, S. (2023). Patient engagement with radiation therapists: Patient perspectives, challenges, and opportunities. A systematic review. *Radiography*.
- Peng, Y., Yin, P., Deng, Z., & Wang, R. (2020). Patient-physician interaction and trust in online health community: the role of perceived usefulness of health information and services. *International Journal of Environmental Research and Public Health*, 17(1), 139.
- Petrocchi, S., Iannello, P., Lecciso, F., Levante, A., Antonietti, A., & Schulz, P. (2019). Interpersonal trust in doctor-patient relation: Evidence from dyadic analysis and association with quality of dyadic communication. *Social science & medicine*, 235, 112391.
- Raju, S. A., Ching, H. L., Jalal, M., Lau, M. S., Rej, A., Tai, F. D., ... & Sanders, D. S. (2022). Does reverse mentoring work in the NHS: a feasibility study of clinicians in practice. *BMJ open*, 12(11), e062361.
- Ralston, K. A., Hauser, B., Paskins, Z., & Ralston, S. H. (2022). Effective communication and the osteoporosis care gap. *Journal of Bone and Mineral Research*, 37(11), 2049-2054.
- Saba, G. W., Wong, S. T., Schillinger, D., Fernandez, A., Somkin, C. P., Wilson, C. C., & Grumbach, K. (2006). Shared decision making and the experience of partnership in primary care. *The Annals of Family Medicine*, 4(1), 54-62.
- Shan, L., Li, Y., Ding, D., Wu, Q., Liu, C., Jiao, M., ... Hao, J. (2016). Patient satisfaction with hospital inpatient care: effects of trust, medical insurance and perceived quality of care. *Plos one*, 11(10), e0164366.
- Shi, M., & Du, T. (2020). Associations of emotional intelligence and gratitude with empathy in medical students. *BMC medical education*, 20(1), 1-8.
- Smith, D. R., Dolk, F. C. K., Pouwels, K. B., Christie, M., Robotham, J. V., & Smieszek, T. (2018). Defining the appropriateness and inappropriateness of antibiotic prescribing in primary care. *Journal of Antimicrobial Chemotherapy*, 73(suppl\_2), ii11-ii18.
- Sobierajski, T., Rzymski, P., Małeczka, I., & Augustynowicz, E. (2023). Trust in Physicians in the Context of HPV Vaccination of Children from the Perspective of Social Exchange Theory: A Representative Study of Polish Parents. *Vaccines*, 11(10), 1618.
- Spring, B. (2007). Evidence-based practice in clinical psychology: What it is, why it matters; what you need to know. *Journal of clinical psychology*, 63(7), 611-631.
- Street Jr, R. L., Makoul, G., Arora, N. K., & Epstein, R. M. (2009). How does communication heal? Pathways linking clinician-patient communication to health outcomes. *Patient education and counseling*, 74(3), 295-301.

- Szeverenyi, C., Kekecs, Z., Johnson, A., Elkins, G., Csernatony, Z., & Varga, K. (2018). The use of adjunct psychosocial interventions can decrease postoperative pain and improve the quality of clinical care in orthopedic surgery: a systematic review and meta-analysis of randomized controlled trials. *The Journal of Pain, 19*(11), 1231-1252.
- Tan, L., Le, M. K., Yu, C. C., Liaw, S. Y., Tierney, T., Ho, Y. Y., . . . Ngeow, C. (2021). Defining clinical empathy: a grounded theory approach from the perspective of healthcare workers and patients in a multicultural setting. *BMJ open, 11*(9), e045224.
- Tan, S. S.-L., & Goonawardene, N. (2017). Internet health information seeking and the patient-physician relationship: a systematic review. *Journal of medical Internet research, 19*(1), e9.
- Torres, E., Vasquez-Parraga, A. Z., & Barra, C. (2009). The path of patient loyalty and the role of doctor reputation. *Health marketing quarterly, 26*(3), 183-197.
- Van der Velden, A., Bell, J., Sessa, A., Duerden, M., & Altiner, A. (2013). Sore throat: effective communication delivers improved diagnosis, enhanced self-care and more rational use of antibiotics. *International Journal of Clinical Practice, 67*, 10-16.
- Vaughn, V. M., Flanders, S. A., Snyder, A., Conlon, A., Rogers, M. A., Malani, A. N., . . . Nagel, J. (2019). Excess antibiotic treatment duration and adverse events in patients hospitalized with pneumonia: a multihospital cohort study. *Annals of internal medicine, 171*(3), 153-163.
- Wanzer, M. B., Booth-Butterfield, M., & Gruber, K. (2004). Perceptions of health care providers' communication: relationships between patient-centered communication and satisfaction. *Health communication, 16*(3), 363-384.
- Ward, P. (2018). Trust and communication in a doctor-patient relationship: a literature review. *Arch Med, 3*(3), 36.
- Wong, E., Mavondo, F., & Fisher, J. (2020). Patient feedback to improve quality of patient-centred care in public hospitals: a systematic review of the evidence. *BMC health services research, 20*, 1-17.
- Wu, Q., Jin, Z., & Wang, P. (2022). The relationship between the physician-patient relationship, physician empathy, and patient trust. *Journal of general internal medicine, 37*(6), 1388-1393.
- Zgierska, A., Rabago, D., & Miller, M. M. (2014). Impact of patient satisfaction ratings on physicians and clinical care. *Patient preference and adherence, 4*37-446.