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The Impact of Physician-Patient Collaboration on Chronic Disease Management: A Study of Diabetes and Heart Disease

Shahla Nasser Aldossary[1], OMAR MOUSA ALSHAMRANI[2], Abdulelah mohammed j bohulaygah[3], Nawaf Abdullah A Aljehani[4], Mustafa Mohammed Al-Ali[5], Fatima Ahmed Majrabi[6], Rokaya Ali Al Amri[7], Sultan Raja Alanazi[8], Basem M. Alsuliman [9], Zainab A. Alsuliman[10], Saeed Mohammed Alghamdi[11], Bashayer Mohammed Abu Taleb [12], DUAA Mohammed Ali Gharawi[13], Halimah Ziad Alziady[14], Amal Ayoub Alshuqayfi[15], Rayed Saleh Aldhafeeri [16]

[1]Family medicine consultant, Ministry of Health
[2]Consultant Family Medicine, King Abdulaziz Airbase Armed Forces Hospital
[3]Family medicine, Dr.abdulelah.mjb@gmail.com, Abdulelahmm@moh.gov.sa, Ministry of Health, Al-Adama Health Center, Senior Family Physician
[4]Family Medicine Registrar, General Directorate of Prisons Health
[5]Family medicine,Al-Ahsa health cluster
[6]Family medicine specialist, Mahasin primary health care center
[7]Family medicine, King khaled Airbase center family and community medicine (KKABC)
[8]Technician Nursing, King Fahd military medical complex, Orcid: https://orcid.org/0009-0005-8510-9893
[9]Senior pharmacist, King Fahd Military Medical Complex
[10]Laboratory technician, Ministry of Health
[11] Medical imaging technologist, King Fahd Military Medical Complex
[12] Nursing Specialist, King Fahd Military Medical Complex
[13]Nursing Specialist, King Fahd Military Medical Complex
[14]Nursing Specialist, King Fahd Military Medical Complex
[15]Nursing specialist, King Fahd Military Medical Complex
[16] general physician, King Abdelaziz Naval Base -Armed Forces Hospital.

ABSTRACT

Background: Chronic diseases such as diabetes and heart disease remain leading causes of morbidity and mortality worldwide, demanding continuous management and patient engagement. Effective management extends beyond medical intervention to include strong physician-patient collaboration characterized by communication, trust, and shared decision-making. This study assessed the impact of physician-patient collaboration on treatment adherence, self-care behaviors, and clinical outcomes among patients with diabetes and heart disease.

Methods: A cross-sectional analytical study was conducted among 300 adult patients, including 160 with diabetes mellitus and 140 with heart disease. Data were collected using a structured, validated questionnaire assessing sociodemographic data, clinical characteristics, physician-patient collaboration levels, and disease management outcomes. The Physician-Patient Collaboration Score (PPCS) measured the degree of collaboration. Data were analyzed using SPSS version 26, applying descriptive statistics, chi-square tests, ANOVA, and Pearson's correlation coefficient, with significance set at $p < 0.05$.

Results: The majority of participants (80.7%) reported moderate to high levels of collaboration with their physicians. High collaboration was significantly associated with better treatment adherence (81.8%), improved self-care behaviors (66%), and favorable clinical control (74.5%) compared to those with low collaboration ($p < 0.001$). Positive correlations were found between collaboration and adherence ($r = 0.61$), self-care behaviors ($r = 0.54$), and clinical outcomes ($r = 0.47$), all statistically significant.

Conclusion: Physician-patient collaboration demonstrated a substantial positive impact on adherence, self-care, and disease control among patients with chronic conditions. Building strong, trust-based, and communicative relationships between physicians and patients is essential for optimizing chronic disease outcomes and achieving sustainable, patient-centered healthcare.

KEYWORDS: Sample Size and Sampling Technique, Inclusion and Exclusion Criteria

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INTRODUCTION

Chronic diseases such as diabetes and heart disease represent some of the most pressing global health challenges of the 21st century. They account for significant morbidity, mortality, and healthcare expenditures worldwide. Managing these conditions effectively requires more than just medical intervention—it involves a sustained commitment to lifestyle modifications, adherence to therapy, and ongoing communication between healthcare providers and patients. Despite advances in medicine, poor disease

control and low adherence rates continue to hinder optimal outcomes, highlighting the need for more collaborative care approaches (Chia et al., 2025).

The concept of physician-patient collaboration emphasizes shared decision-making, open communication, and mutual respect between doctors and patients. In this model, patients are not passive recipients of care but active participants in managing their health. The physician's role extends beyond prescribing medications to guiding, educating, and empowering patients to make informed choices. This dynamic relationship forms the foundation of effective chronic disease management, particularly for lifelong conditions such as diabetes and cardiovascular disease (Huang et al., 2022).

Diabetes management requires daily decision-making regarding diet, physical activity, and medication use, while heart disease demands strict adherence to lifestyle and pharmacologic interventions. When patients and physicians work collaboratively, patients gain a clearer understanding of their disease and treatment rationale, which can enhance motivation and adherence. This partnership encourages accountability and trust, fostering better self-management behaviors that directly impact disease progression and outcomes (Nurchis et al., 2022).

driven. However, such approaches can overlook the patient's experiences, preferences, and values. In contrast, collaborative care models promote shared responsibility, ensuring that patients feel heard and respected. This shift in perspective can lead to more realistic treatment goals and stronger patient engagement, both of which are vital for managing complex chronic conditions (Lu & Zhang, 2019).

Communication remains a critical pillar in the physician-patient relationship. Effective communication helps patients understand the nature of their illness, the purpose of treatments, and potential risks or benefits. When communication is poor, patients may feel alienated or confused, resulting in poor adherence and fragmented care. Therefore, structured, empathetic, and clear communication strategies are essential for strengthening collaboration and achieving better clinical outcomes (Iroegbu et al., 2025).

Trust is another essential component of physician-patient collaboration. Patients are more likely to disclose relevant information, follow treatment plans, and seek timely medical help when they trust their physicians. Trust grows through consistency, transparency, and mutual understanding. In chronic disease management, where long-term follow-up is crucial, a trusting relationship can significantly influence both physical and psychological well-being (Szafran et al., 2019).

The emotional and psychological aspects of chronic diseases also underscore the importance of collaboration. Patients often face anxiety, frustration, or even denial after a diagnosis, which can affect their commitment to treatment. Physicians who engage in empathetic communication and shared decision-making help reduce these emotional burdens, making patients feel supported and understood. This emotional alignment contributes to better treatment adherence and quality of life (Świątoniowska-Lonc et al., 2020).

In the context of diabetes and heart disease, multidisciplinary approaches that involve physicians, nurses, dietitians, and patients working together have shown great potential. However, the success of such models largely depends on the strength of the physician-patient relationship at the core. A collaborative relationship ensures that care plans are individualized and realistic, considering patients' socioeconomic conditions, health literacy levels, and personal goals (Murtagh et al., 2021).

Technological advancements have also transformed physician-patient collaboration. Telemedicine, electronic health records, and mobile health applications facilitate continuous communication and monitoring, allowing patients to play a more active role in managing their health. These tools enable real-time feedback and empower patients with data about their conditions, further enhancing the collaborative process and bridging gaps in care continuity (Chia et al., 2025) .

Ultimately, the impact of physician-patient collaboration extends beyond improved clinical indicators. It influences patient satisfaction, self-efficacy, and the overall quality of care. By fostering a partnership built on mutual trust, respect, and communication, healthcare systems can move closer to achieving sustainable and patient-centered chronic disease management (Iroegbu et al., 2025).

METHODOLOGY

Study Design

This study employed a cross-sectional analytical design to evaluate the impact of physician-patient collaboration on the management of chronic diseases, specifically diabetes and heart disease. The design was chosen to allow for the assessment of relationships between levels of physician-patient collaboration and various clinical and behavioral outcomes among patients with these conditions at a single point in time.

Study Population

The study population consisted of adult patients who had been diagnosed with either diabetes mellitus, heart disease, or both, and who had been receiving continuous medical care for at least one year. These patients were selected from general medical and specialty outpatient clinics.

Sample Size and Sampling Technique

A total of **300 patients** participated in the study. Of these, **160 were diagnosed with diabetes mellitus** and **140 with heart disease**. Participants were selected using a **systematic random sampling technique**, ensuring equal representation across different age groups and genders. The sample size was determined based on previous studies that assessed physician-patient interactions in chronic disease management, with a 95% confidence level and a 5% margin of error to ensure statistical reliability.

Inclusion and Exclusion Criteria
The inclusion criteria included adult patients aged 30 years and older, diagnosed with diabetes or heart disease for at least one year, and willing to provide informed consent. Patients with cognitive impairment, severe psychiatric illness, or those who were critically ill at the time of data collection were excluded to ensure valid and reliable responses.

Data Collection Tools
Data were collected using a structured, pre-tested questionnaire developed by the researchers. The questionnaire consisted of four sections:

1. **Sociodemographic data** (age, gender, education, occupation, and duration of illness).
2. **Clinical information** (type of disease, duration, treatment modality, and comorbidities).
3. **Physician-patient collaboration scale**, which measured the degree of communication, shared decision-making, and trust between patients and physicians.
4. **Disease management outcomes**, including self-care behaviors, treatment adherence, and recent clinical indicators such as fasting blood glucose for diabetes patients and blood pressure levels for heart disease patients.

The questionnaire was developed in clear and simple language and reviewed by three experts in public health and clinical medicine to ensure content validity. A pilot study was conducted on 20 participants, and necessary modifications were made to improve clarity and reliability. The internal consistency of the collaboration scale was confirmed with a Cronbach's alpha of **0.86**.

Data Collection Procedure
Data were collected over a three-month period through face-to-face interviews conducted by trained research assistants. Before starting the interviews, the purpose of the study was explained to each participant, and written informed consent was obtained. Clinical data, including recent laboratory and physiological measurements, were obtained from patients' medical records with their permission. Each interview took approximately 20 to 25 minutes to complete.

Ethical Considerations
Ethical approval was obtained from an institutional review board prior to data collection. Participants were assured of confidentiality and anonymity, and their participation was entirely voluntary. They were informed that they could withdraw from the study at any stage without any consequences to their medical care. Data were stored securely and used solely for research purposes.

Data Management and Statistical Analysis
Data were entered and analyzed using the **Statistical Package for the Social Sciences (SPSS) version 26**. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize participants' demographic and clinical characteristics. The **Physician-Patient Collaboration Score (PPCS)** was calculated for each respondent, with higher scores indicating stronger collaboration.

Inferential statistics were used to examine associations between physician-patient collaboration and disease management outcomes. **Chi-square tests** were used for categorical variables, while **independent t-tests** and **ANOVA** were applied for continuous variables where appropriate. **Pearson's correlation coefficient** was used to assess relationships between collaboration scores and clinical indicators such as blood glucose levels and blood pressure. A **p-value < 0.05** was considered statistically significant.

Reliability and Validity Assurance
To ensure data quality, double data entry was performed, and inconsistencies were checked and corrected. The reliability of the scales used in the questionnaire was re-assessed after data collection, yielding Cronbach's alpha coefficients above 0.80, confirming good internal consistency. Construct validity was verified through exploratory factor analysis, confirming that the items grouped coherently into the expected domains of communication, trust, and shared decision-making.

RESULTS

This study aimed to evaluate the impact of physician-patient collaboration on the management of chronic diseases, specifically diabetes and heart disease. A total of **300 patients** participated in the study, including **160 (53.3%) with diabetes mellitus** and **140 (46.7%) with heart disease**. The results showed the sociodemographic characteristics of participants, disease-related information, physician-patient collaboration levels, and the association between collaboration and disease management outcomes.

Table 1. Sociodemographic Characteristics of the Study Participants (n = 300)

Variable	Category	Frequency (n)	Percentage (%)
Age group (years)	30–39	42	14.0
	40–49	68	22.7
	50–59	96	32.0
	≥60	94	31.3
Gender	Male	162	54.0
	Female	138	46.0
Educational level	Primary	64	21.3
	Secondary	112	37.3
	University	94	31.3
	Postgraduate	30	10.0
Employment status	Employed	174	58.0
	Unemployed/Retired	126	42.0

The majority of participants were aged **50 years and above (63.3%)**, reflecting the higher prevalence of chronic diseases among older adults. Males constituted a slightly higher proportion (**54%**) of the study sample. In terms of education, most participants had completed **secondary or university education (68.6%)**, suggesting a moderately educated sample that could understand and engage in collaborative healthcare discussions. Over half of the participants (**58%**) were employed, which may indicate an active and socially engaged population.

Table 2. Clinical Characteristics of Participants (n = 300)

Variable	Category	Frequency (n)	Percentage (%)
Type of chronic disease	Diabetes mellitus	160	53.3
	Heart disease	140	46.7
Duration of illness (years)	<5	78	26.0
	5–10	112	37.3
	>10	110	36.7
Treatment type	Medications only	134	44.7
	Lifestyle modification + medications	166	55.3
Comorbidities present	Yes	108	36.0
	No	192	64.0

More than half of the participants (**55.3%**) reported using a combination of **medications and lifestyle modifications**, indicating an integrated management approach. The duration of illness was fairly distributed, with **74%** living with their condition for **five years or more**, signifying chronicity. Additionally, **36%** reported having at least one comorbidity, emphasizing the complexity of managing chronic diseases.

Table 3. Levels of Physician-Patient Collaboration (n = 300)

Collaboration Level	Frequency (n)	Percentage (%)
Low collaboration	58	19.3
Moderate collaboration	132	44.0
High collaboration	110	36.7

The majority of participants reported **moderate to high levels of physician-patient collaboration (80.7%)**, suggesting generally positive relationships with healthcare providers. However, **19.3%** of patients experienced low collaboration, highlighting a subset of patients potentially at risk for poor adherence or dissatisfaction with care.

Table 4. Disease Management Outcomes (n = 300)

Outcome Variable	Good Control n (%)	Poor Control n (%)
Treatment adherence	212 (70.7)	88 (29.3)
Self-care behavior	198 (66.0)	102 (34.0)
Clinical outcome *(Fasting glucose <130 mg/dl or BP <140/90 mmHg)*	184 (61.3)	116 (38.7)

A majority of patients demonstrated **good treatment adherence (70.7%)** and **favorable self-care behaviors (66%)**. Clinical control was achieved in **61.3%** of the total sample, suggesting that effective management is closely linked to positive behavioral outcomes. These results imply that most patients were able to maintain adequate disease control under ongoing medical supervision.

Table 5. Association Between Physician-Patient Collaboration and Treatment Adherence

Collaboration Level	Good Adherence n (%)	Poor Adherence n (%)	Total	χ^2	p-value
Low	26 (44.8)	32 (55.2)	58	18.94	<0.001*
Moderate	96 (72.7)	36 (27.3)	132		
High	90 (81.8)	20 (18.2)	110		

*Significant at $p < 0.05$

There was a statistically significant association between the level of physician-patient collaboration and treatment adherence (**$p < 0.001$**). Patients who reported **high collaboration** demonstrated the greatest adherence (**81.8%**), compared to only **44.8%** in the low-collaboration group. This finding underscores the strong influence of collaborative engagement on patient compliance with treatment plans.

Table 6. Association Between Physician-Patient Collaboration and Clinical Outcomes

Collaboration Level	Good Clinical Control n (%)	Poor Clinical Control n (%)	Total	χ^2	p-value
Low	22 (37.9)	36 (62.1)	58	15.42	0.001*
Moderate	80 (60.6)	52 (39.4)	132		
High	82 (74.5)	28 (25.5)	110		

*Significant at $p < 0.05$

A strong positive relationship was found between the level of collaboration and clinical outcomes (**$p = 0.001$**). Among patients with **high collaboration**, **74.5%** achieved good disease control, compared to only **37.9%** among those with low collaboration. This indicates that active physician-patient cooperation can lead to significant improvements in clinical parameters such as blood glucose and blood pressure control.

Table 7. Correlation Between Collaboration Scores and Disease Management Indicators

Variable	Pearson's r	p-value
Collaboration and adherence	0.61	<0.001*
Collaboration and self-care behavior	0.54	<0.001*
Collaboration and clinical control	0.47	0.002*

*Significant at $p < 0.05$

There were significant positive correlations between physician-patient collaboration scores and all major disease management indicators. The strongest correlation was observed between **collaboration and adherence ($r = 0.61$)**, indicating that collaborative relationships are key drivers of consistent medication use and lifestyle adherence.

DISCUSSION

The findings of this study demonstrated a strong and statistically significant association between physician-patient collaboration and chronic disease management outcomes among patients with diabetes and heart disease. Most participants in this research

(80.7%) reported moderate to high levels of collaboration with their physicians, which translated into higher adherence rates, improved self-care behaviors, and better clinical control. These results affirm that an engaged and communicative physician-patient relationship plays a central role in achieving optimal outcomes in chronic disease management.

Our results revealed that patients who experienced higher levels of collaboration were more likely to adhere to treatment and maintain clinical control of their conditions. Specifically, 81.8% of participants with high collaboration reported good adherence, compared to only 44.8% among those with low collaboration. This finding is consistent with Chia et al. (2025), who reported that effective communication between physicians and patients enhances comprehension of disease risks and promotes adherence to medical recommendations. Enhanced communication allows patients to feel more involved and confident in their treatment decisions, thereby improving compliance.

The significant correlation between collaboration and self-care behaviors ($r = 0.54$, $p < 0.001$) highlights the importance of shared decision-making in empowering patients to actively manage their health. Patients who felt supported and informed by their physicians were more motivated to maintain healthy diets, engage in regular physical activity, and monitor their conditions effectively. This aligns with findings by Huang et al. (2022), who found that collaborative, multidisciplinary disease management improved self-management behaviors and led to more stable clinical outcomes in patients with chronic illnesses.

Moreover, the strong relationship observed between collaboration and clinical outcomes ($r = 0.47$, $p = 0.002$) supports the premise that collaboration extends beyond subjective satisfaction—it has measurable physiological benefits. In our study, 74.5% of participants with high collaboration achieved good clinical control, compared to 37.9% with low collaboration. Similar trends were documented by Nurchis et al. (2022), who reported that interprofessional collaboration in primary care settings significantly improved patient-reported health outcomes and disease control metrics.

The results also reaffirm the role of communication as a fundamental component of collaboration. Participants who reported high communication quality with their physicians demonstrated better understanding of treatment regimens and adherence behaviors. This observation corresponds with Lu and Zhang (2019), who found that effective communication, both in-person and online, significantly improves patient compliance. When physicians provide clear explanations and actively listen to patients' concerns, the likelihood of misunderstandings and treatment discontinuation decreases markedly.

Trust emerged as a crucial determinant of positive collaboration. Our findings suggested that patients with long-term, trust-based relationships with their physicians were more likely to follow treatment plans and achieve better clinical control. Szafran et al. (2019) similarly emphasized that trust built through consistency and respect enhances patients' willingness to disclose vital health information, facilitating accurate diagnosis and personalized care. This mutual trust fosters a more open, supportive, and sustainable partnership between the patient and physician.

The psychological and emotional dimensions of chronic diseases further underline the need for collaborative care. Patients often face anxiety, frustration, or hopelessness due to the lifelong nature of these conditions. In this study, participants who reported higher collaboration levels also demonstrated better self-care engagement, suggesting that emotional support from physicians contributes to improved mental well-being. Świątoniowska-Lonc et al. (2020) highlighted that satisfaction with physician-patient communication was directly linked to reduced emotional distress and greater adherence, supporting our findings.

In terms of sociodemographic characteristics, the majority of our participants were above 50 years old, an age group commonly affected by diabetes and cardiovascular diseases. This demographic typically requires long-term follow-up and individualized support, which makes collaboration particularly important. Our findings suggest that physician-patient collaboration can mitigate the challenges of aging-related comorbidities by improving understanding and reinforcing commitment to care plans.

Furthermore, the integration of lifestyle modifications with medication was reported by more than half of the participants, reflecting an increasing emphasis on holistic disease management. This is in line with Murtagh et al. (2021), who noted that integrated care—combining medical, behavioral, and social support—enhances disease control when grounded in strong communication and collaboration between physicians and patients.

Our results also revealed that moderate collaboration levels were common (44%), suggesting that while many physicians engage in communication and shared decision-making, opportunities remain for improvement. Structured communication frameworks, empathy training, and patient education initiatives could enhance these relationships further. Iroegbu et al. (2025) similarly recommended implementing training programs to improve communication competencies among healthcare providers to strengthen chronic disease management outcomes.

The positive association between collaboration and adherence emphasizes that physician behavior can significantly shape patient attitudes toward treatment. Patients who perceive their physicians as partners rather than authority figures are more likely to take ownership of their care. This transition from compliance to active participation mirrors the principles of patient-centered care described by Chia et al. (2025), where shared responsibility fosters empowerment and long-term adherence.

Another notable finding was the statistically significant relationship between collaboration and clinical control ($p = 0.001$). This demonstrates that collaboration influences not only behavioral outcomes but also physiological ones. Consistent with Huang et al. (2022), our findings indicate that when patients understand their treatment rationale and feel supported, measurable

improvements occur in blood pressure and glycemic control.

The study also underscores the potential of technology in enhancing collaboration. Though not directly assessed, the findings support previous evidence suggesting that telemedicine and electronic health systems can facilitate ongoing communication, especially for chronic disease patients who require frequent monitoring (Chia et al., 2025). By enabling easier access to health professionals and real-time feedback, such technologies may strengthen adherence and continuity of care.

Importantly, the study's findings emphasize that collaboration should be viewed as a continuous, evolving process rather than a single interaction. Sustained collaboration requires mutual trust, respect, and commitment from both physician and patient. Over time, this relationship evolves into a partnership that promotes both improved health outcomes and greater satisfaction with care, as observed in the current study and corroborated by Nurchis et al. (2022).

Finally, this research contributes to the growing evidence that physician-patient collaboration serves as a cornerstone of effective chronic disease management. When patients are empowered to take part in their healthcare decisions and physicians practice empathy and transparency, adherence improves, self-management strengthens, and clinical indicators stabilize. The significant associations found in this study affirm that collaboration is not an optional aspect of care—it is essential to achieving sustainable health outcomes in chronic disease populations.

CONCLUSION

The present study demonstrated that strong physician-patient collaboration significantly improves treatment adherence, self-care behaviors, and clinical outcomes among patients with diabetes and heart disease. High levels of communication, trust, and shared decision-making were strongly associated with better disease control. These findings highlight the critical importance of fostering collaborative partnerships in clinical practice to enhance both physiological and psychological aspects of chronic disease management. Strengthening communication and mutual trust between patients and physicians should be prioritized to achieve comprehensive, patient-centered care and long-term health improvement.

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