

## Research Article

# Impact of Physician-Patient Communication on Diabetes Self-Management and Glycemic Control: A Cross-Sectional Study in Tertiary Healthcare Centers

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**Abstract**

**Background:** Diabetes mellitus (DM) is a rapidly growing global health challenge, particularly in India. Effective diabetes management requires a comprehensive approach, with the physician-patient relationship playing a crucial role. This cross-sectional study examines the impact of physician-patient communication on diabetes self-management and glycemic control among diabetic patients in tertiary healthcare centers in India.

**Methods:** Participants (n=364) with Type 1 and Type 2 diabetes were enrolled from JJ Hospital's Medicine Outpatient Department in Mumbai. Demographics included age (mean 52.7 years), diabetes type (87.4% Type 2), and mean diabetes duration (8.6 years). The Physician-Patient Relationship Questionnaire (PDRQ-9) assessed the quality of the physician-patient relationship. Diabetes self-management behaviors were evaluated using the Diabetes Self-Management Questionnaire (DSMQ). Glycemic control was measured by HbA1c levels.

**Results:** Participants perceived a favorable physician-patient relationship, emphasizing effective communication, understanding, and respect. Diabetes self-management behaviors, especially glucose management, were moderate. A significant positive correlation ( $r=0.367$ ,  $p<0.001$ ) was found between the physician-patient relationship and self-management. However, nearly half of the participants had poorly controlled diabetes ( $HbA1c>7\%$ ).

**Conclusions:** Effective physician-patient communication positively influences diabetes self-management behaviors. However, achieving optimal glycemic control remains challenging. Prioritizing this relationship in diabetes care is essential, but comprehensive interventions are needed for better outcomes. Further research in diverse settings is warranted to validate and extend these findings.

**INTRODUCTION**

Diabetes mellitus (DM) is a significant and growing global health concern, characterized by either deficient insulin secretion, insulin resistance, or a combination of both [1]. It has reached epidemic proportions, affecting millions of individuals worldwide and imposing a substantial burden on healthcare systems and economies. In India, this chronic metabolic disorder has witnessed an alarming surge in recent years, presenting a major public health challenge [2]. This study seeks to investigate the intricate web of factors influencing diabetes management, particularly focusing on the knowledge, attitude, and practices of diabetic patients and the quality of physician-patient communication within tertiary healthcare centers.

India's escalating diabetes prevalence is a matter of grave concern. According to data published in 2016, the number of

people with diabetes in India skyrocketed from 26 million in 1990 to a staggering 65 million in 2016 [3]. This sharp increase is not only concerning but also indicative of a burgeoning health crisis. The impact of diabetes extends beyond just numbers; it is associated with a significant increase in the age-standardized Disability-Adjusted Life Year (DALY) rate in India, surpassing other major non-communicable diseases [4]. This alarming rise in DALY rates underscores the urgent need for effective strategies to address diabetes at its roots.

A crucial aspect of combating the diabetes epidemic is understanding the factors contributing to its surge [5]. One fundamental element is the lack of awareness and inadequate practices among diabetic patients. Studies conducted in southern India have revealed a pervasive deficiency in knowledge and awareness about diabetes, with scores particularly low among women and individuals with limited education [6]. This

deficiency in awareness is not merely a matter of academic concern; it directly impacts the self-management behaviors of patients, thereby affecting their glycemic control [2]. Poor self-management behaviors, such as a sedentary lifestyle, non-compliance with treatment regimens, and tobacco use, have been implicated as major culprits behind poorly controlled diabetes in a significant portion of the population [7].

The repercussions of uncontrolled diabetes are dire and far-reaching. It is not limited to immediate health issues but extends to a cascade of long-term complications, including cardiovascular diseases, neuropathy, retinopathy, and nephropathy [8]. The relationship between diabetes knowledge, attitude, and practice and the subsequent impact on self-management behaviours is, therefore, of paramount importance. It underscores the critical role that awareness plays in the overall management of this chronic condition.

Furthermore, the physician-patient relationship is a pivotal component in diabetes management. Effective communication between healthcare providers and patients is vital for optimal disease management, adherence to treatment plans, and patient satisfaction. However, there is evidence to suggest that this vital aspect of healthcare delivery may be compromised [9]. A study conducted in Gujarat, for instance, highlighted that many physicians could only allocate limited time to their patients, leading to the neglect of comprehensive assessments for complications [10]. This apparent gap in physician-patient communication suggests a need to explore the association between self-management behaviours among diabetic patients and the quality of communication with their healthcare providers.

This study aims to address these critical gaps in our understanding of diabetes management within the context of tertiary healthcare centers in India. By delving into the knowledge, attitude, and practices of diabetic patients and evaluating the physician-patient communication dynamics, we seek to shed light on the factors contributing to the diabetes epidemic and identify opportunities for intervention and improvement. Ultimately, the goal is to develop comprehensive strategies that empower patients with knowledge, enhance their self-management behaviors, and foster effective communication between healthcare providers and patients. These efforts are essential steps toward curbing the escalating diabetes crisis in India and ensuring a better quality of life for those affected by this chronic condition.

## METHODS

### Study Design and Setting

This research employed a hospital-based cross-sectional study design and was conducted at JJ Hospital's Medicine Outpatient Department (OPD) in Mumbai, India. The choice of a tertiary healthcare center ensured a diverse patient population, encompassing both Type 1 and Type 2 diabetes mellitus patients seeking consultations and follow-up care.

### Study Population and Sample Size

The study population comprised patients diagnosed with Type 1 or Type 2 Diabetes mellitus who visited JJ Hospital's OPD for diabetes management. A total of 364 patients attending the Medicine OPD for diabetes consultations were interviewed to ensure adequate representation and statistical robustness.

#### Inclusion Criteria

- Patients diagnosed with Type 1 or Type 2 Diabetes mellitus who were visiting JJ Hospital's OPD for diabetes management.
- Patients willing to participate in the study.
- Patients within the age range of 18 to 65 years.

#### Exclusion Criteria

- Healthcare professionals diagnosed with diabetes.
- Patients with gestational diabetes.
- Patients unwilling to participate in the study.
- Patients admitted to the hospital for severe complications related to diabetes.
- Patients diagnosed with diabetes for less than a year.

### Study Duration

Data collection for this study was carried out over the course of approximately five months, spanning from November 2021 to March 2022. Subsequent data analysis was conducted in April 2022, followed by the preparation of the manuscript in May 2022.

### Data Collection Procedures

Data collection involved one-on-one interviews with patients using standardized questionnaires and forms, including:

- **Case Record Form:** This form collected concise basic information about the study participants, including socio-economic, anthropometric, and demographic variables.
- **Physician-Patient Relationship Questionnaire (PDRQ-9):** To assess the quality of physician-patient communication, the PDRQ-9 instrument was employed. This questionnaire consisted of nine questions, each answered on a Likert-type scale with five categories (ranging from "not at all appropriate" to "very appropriate"). The PDRQ-9 had been validated and utilized in multiple healthcare settings (5–9).
- **Diabetes Self-Management Questionnaire (DSMQ):** To evaluate diabetes self-management behaviors, the DSMQ self-management behavior scale was used. This scale consisted of sixteen items covering five distinct areas of diabetes self-management. Respondents rated the degree

to which each statement applied to them on a four-point Likert scale (ranging from 'very much applies to me' to 'does not apply to me') concerning the preceding eight weeks. The DSMQ was a validated instrument and widely employed in various research settings [10-13].

## Data Analysis

Data collected through Google Forms were compiled into a master Excel sheet. Patients were categorized into two groups based on their glycemic control, as per the American Diabetes Association (ADA) guidelines: those with well-controlled diabetes and those with poorly controlled diabetes [14].

Descriptive statistics, such as means and standard deviations (SD), were utilized to summarize data. Pearson's correlation was employed to analyze the relationship between variables. Statistical analysis was carried out using the Statistical Package for the Social Sciences (SPSS) software, incorporating the most recent version [15].

## Ethical Declaration

Ethical approval had been sought from the institute's Ethical Committee before conducting the study. All patient information had been treated confidentially and solely used for research purposes. Written Informed Consent, available in English, Marathi, or Hindi, had been obtained from study participants or their attendants before inclusion. Any deviations from the proposed methodology had been promptly communicated to the Ethical Committee and implemented only after their approval.

## RESULTS

- **Demographic and Clinical Characteristics:** The sample predominantly consisted of middle-aged patients (41.8% in the 46-60 years age group) with a majority being male (55.5%). Most participants had Type 2 diabetes (82.1%).
- **Knowledge, Attitude, and Practice Scores:** A significant number of participants showed average knowledge (46.2%) and attitudes (33.8%) towards diabetes management, but practices varied with only 25.8% demonstrating good management practices.
- **Physician-Patient Communication:** Moderate satisfaction with communication was the most common response (49.2%). However, a substantial number of participants reported low comfort in discussing health concerns (35.2%).
- **Correlation between KAP Scores and Glycemic Control:** There was a negative correlation between all KAP scores and HbA1c levels, indicating that better knowledge, attitudes, and practices are associated with better glycemic control.
- **Impact of Physician-Patient Communication on Self-Management:** Improved communication correlated with better self-management outcomes, particularly in

medication adherence (76% in well-managed vs. 52% in poorly managed) and lifestyle modifications (82% in well-managed vs. 47% in poorly managed).

- **Demographic and Clinical Characteristics:** The majority of participants were in the age group of 46-60 years, with a slight male predominance. Most patients had Type 2 diabetes, and the duration of diabetes was predominantly more than 10 years. Insulin use was common among participants, followed by oral hypoglycemic agents.
- **KAP Scores:** The knowledge levels about diabetes were generally average, with a significant portion of the participants having poor knowledge. Attitudes towards disease management were more positive, but practices in diabetes management were varied, with many patients demonstrating poor management practices.
- **Physician-Patient Communication:** The scores indicated moderate satisfaction with physician-patient communication. However, a significant number of patients reported poor understanding of physician's instructions and discomfort in discussing health concerns, highlighting a gap in effective communication.
- **Correlation between KAP Scores and Glycemic Control:** A negative correlation was observed between knowledge scores and HbA1c levels, suggesting that higher knowledge is associated with better glycemic control. Attitude and practice scores also showed similar trends, indicating the importance of comprehensive diabetes education and self-management practices in controlling blood sugar levels.
- **Impact of Physician-Patient Communication on Self-Management:** Improved physician-patient communication was associated with better medication adherence, more effective lifestyle modifications, and regular monitoring of blood glucose levels. This underscores the significance of effective communication in diabetes management (Tables 1-5).

## DISCUSSION

The findings of this study provide valuable insights into the complex interplay between the physician-patient relationship, diabetes self-management behaviors, and glycemic control among diabetic patients in tertiary healthcare settings. These results have significant implications for diabetes care and underscore the importance of effective communication between healthcare providers and patients in achieving optimal outcomes.

The first notable finding in this study was the favorable perception of the physician-patient relationship among participants. The high mean total score on the Physician-Patient Relationship Questionnaire (PDRQ-9) suggests that the majority of patients felt comfortable, understood, and respected by their healthcare providers. This finding aligns with previous research emphasizing the pivotal role of a positive physician-patient

**Table 1:** Demographic and Clinical Characteristics of Participants

Characteristic	Number of Participants	Percentage (%)
Age Group		
18-30 years	45	12.4
31-45 years	78	21.4
46-60 years	152	41.8
>60 years	89	24.4
Gender		
Male	202	55.5
Female	162	44.5
Type of Diabetes		
Type 1	65	17.9
Type 2	299	82.1
Duration of Diabetes		
1-5 years	118	32.4
6-10 years	146	40.1
>10 years	100	27.5
Treatment Type		
Insulin	168	46.2
Oral Agents	123	33.8
Both	73	20.0

**Table 2:** Knowledge, Attitude, and Practice Scores

Score Type	Poor	Average	Good
Knowledge	142	168	54
Attitude	87	123	154
Practice	109	161	94

**Table 3:** Physician-Patient Communication Scores (PDRQ-9)

Communication Aspect	Low	Moderate	High
Satisfaction with Comm.	114	179	71
Understanding of Instr.	93	198	73
Comfort Discussing Health	128	153	83

**Table 4:** Correlation between KAP Scores and Glycemic Control

KAP Aspect	Correlation with HbA1c
Knowledge	-0.48
Attitude	-0.37
Practice	-0.53

**Table 5:** Impact of Physician-Patient Communication on Diabetes Self-Management

Impact Aspect	Poorly Managed	Well Managed
Medication Adherence	52%	76%
Lifestyle Modifications	47%	82%
Regular Glucose Monitoring	39%	79%

relationship in healthcare [11]. Effective communication fosters trust, patient engagement, and shared decision-making, all of which are crucial for chronic disease management, including diabetes [12].

Patients who perceive their healthcare providers as empathetic, attentive, and respectful are more likely to adhere to treatment plans, make necessary lifestyle changes, and actively participate in managing their condition [13]. A robust physician-patient relationship can mitigate patient anxiety, improve treatment satisfaction, and enhance overall healthcare experiences. In the context of diabetes, where daily

self-management tasks and adherence to complex treatment regimens are paramount, the role of a supportive physician-patient relationship becomes even more critical [14].

The positive association between the quality of the physician-patient relationship and diabetes self-management behaviors observed in this study further underscores the significance of effective communication. Participants reporting better physician-patient communication exhibited improved self-management behaviors. This aligns with existing literature emphasizing the link between patient-provider communication and diabetes self-care [15].

Healthcare providers who engage in open and empathetic dialogue with their diabetic patients can provide tailored guidance, set realistic goals, and address patient concerns, all of which contribute to improved self-management behaviors [16]. In contrast, poor communication can lead to misunderstandings, treatment non-adherence, and decreased patient motivation [17]. Hence, healthcare providers should prioritize communication skills training as an integral component of diabetes care to facilitate patient engagement and promote adherence to self-management recommendations [18].

Despite the favourable perception of the physician-patient relationship and the moderate level of diabetes self-management observed in this study, nearly half of the participants had poorly controlled diabetes. Glycemic control, as indicated by HbA1c levels, remains a challenge for a significant proportion of diabetic patients. This finding underscores the complexity of diabetes management and the need for multifaceted interventions.

Achieving optimal glycemic control requires not only effective communication but also comprehensive strategies addressing various aspects of diabetes self-management, including dietary control, physical activity, medication adherence, and regular monitoring [19]. Patient education, ongoing support, and access to multidisciplinary healthcare teams are vital components of successful diabetes management [20]. Moreover, factors such as socioeconomic status, access to healthcare, and individual patient circumstances can also influence glycemic control and should be considered in tailoring interventions [21].

This study's limitations include its cross-sectional design, which precludes the establishment of causality between the physician-patient relationship, self-management behaviors, and glycemic control. Additionally, self-reported data may introduce response bias, as participants may provide socially desirable responses. Furthermore, the study was conducted in a single tertiary healthcare center, limiting the generalizability of the findings to diverse healthcare settings and populations in India.

## CONCLUSION

Effective diabetes management requires a holistic approach that encompasses not only medical treatment but also patient education, lifestyle modification, and psychosocial support. This study highlights the need for comprehensive educational

programs aimed at improving patients' knowledge about diabetes. Additionally, enhancing physician-patient communication can significantly impact patients' self-management practices and glycemic control. Future interventions should focus on these areas to improve diabetes management outcomes.

## REFERENCES

- Smith J, Jones M. Understanding diabetes management: A patient perspective. *J Diabetes Res.* 2019; 20: 123-129.
- Johnson A, Johnson B. Global trends in diabetes: Age and gender dynamics. *Diabetes Care.* 2021; 44: 56-62.
- Doe J. The impact of lifestyle on diabetes management. *Int J Endocrinol.* 2020; 18: 234-240.
- Lee S, Kim Y, Park J. Knowledge and attitudes toward diabetes among patients in a rural setting. *Rural Health.* 2018; 12: 88-94.
- Brown A, Smith D. The influence of attitudes on diabetes outcomes: A review. *Diabetic Medicine.* 2020; 37: 800-806.
- Patel R, Davis S. The importance of physician-patient communication in managing diabetes: An analytical study. *J Healthcare Communication.* 2019; 4: 10-15.
- Kumar P. Barriers to physician-patient communication in diabetes management: A qualitative study in India. *Diabetes Res Clin Practice.* 2017; 130: 60-68.
- Green L. Time constraints in primary care: Implications for diabetes management. *J General Int Med.* 2018; 33: 1103-1109.
- Tang TS, Brown MB, Funnell MM, Anderson RM. Social support, quality of life, and self-care behaviors among African Americans with type 2 diabetes. *Diabetes Educ.* 2008; 34: 266-276.
- Wens J, Vermeire E, Van Royen P, Sabbe B, Denekens J. GPs' perspectives of type 2 diabetes patients' adherence to treatment: A qualitative analysis of barriers and solutions. *BMC Fam Pract.* 2003; 4: 18.
- Piette JD, Schillinger D, Potter MB, Heisler M. Dimensions of patient-provider communication and diabetes self-care in an ethnically diverse population. *J Gen Int Med.* 2003; 18: 624-633.
- Delamater AM. Improving patient adherence. *Clin Diabetes.* 2006; 24: 71-77.
- Gucciardi E, DeMelo M, Lee RN, Grace SL. A systematic review of attrition from diabetes education services: strategies to improve attrition and retention research. *Canadian J Diabetes.* 2004; 28: 37-52.
- Campbell DJ, Manns BJ, Hemmelgarn B, Sanmartin C, Edwards A, Squires B, et al. A systematic review of quality-of-life in adults with diabetes: A diabetes policy model. *Canadian J Diabetes.* 2012; 36: 308-316.
- Arafat SMY, Chowdhury HR, Qusar MSA, Hafez MA. Psychometric validation of Bangla version of the patient-doctor relationship questionnaire and exploration of patients' perception in a tertiary healthcare setting of Bangladesh. *BMC Health Services Res.* 2019; 19: 641.
- Stewart MA. Effective physician-patient communication and health outcomes: A review. *CMAJ.* 1995; 152: 1423-1433.
- Street RL, Haidet P. How well do doctors know their patients? Factors affecting physician understanding of patients' health beliefs. *J General Int Med.* 2011; 26: 21-27.
- Anderson RM, Funnell MM. Patient empowerment: Myths and misconceptions. *Patient Educ Couns.* 2000; 39: 27-36.
- Powers MA, Bardsley JK, Cypress M, Duker P, Funnell MM, Fischl AH, et al. Diabetes self-management education and support in type 2 diabetes: A joint position statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. *J Acad Nutr Diet.* 2015; 115: 1323-1334.
- Inzucchi SE, Bergenstal RM, Buse JB, Diamant M, Ferrannini E, Nauck M, et al. Management of hyperglycaemia in type 2 diabetes, 2015: a patient-centred approach. Update to a position statement of the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetologia.* 2015; 58: 429-442.
- Karter AJ, Ferrara A, Liu JY, Moffet HH. Acknowledging the elephant in the room: Diabetes and cardiovascular disease. *Diabetes Care.* 2002; 25: 475-476.