International Journal of Advanced Health Science and Technology e-ISSN:2808-6422; p-ISSN:2829-3037
Homepage: ijahst.org Vol. 6 No. 1, pp. 1-8, February 2026

RESEARCH ARTICLE OPEN ACCESS
Manuscript received November 10, 2025; revised January 10, 2026; accepted January 15, 2026; date of publication February 30, 2026
Digital Object Identifier (DOI): https://doi.org/10.35882/ijahst.v6i1.214

How to cite: Anita Joeliantina, Irfany Nurul Hamid, Endang Sulistyowati, "The Experiences of Patients with Diabetes and Strategies for Their Management during the COVID-19 Pandemic: a qualitative study", International Journal of Advanced Health Science and Technology, Vol. 6 No. 1, pp. 1-8, February 2026.

The Experiences of Patients with Diabetes and Strategies for Their Management during the COVID-19 Pandemic: a Qualitative Study

Anita Joeliantina, Irfany Nurul Hamid, Endang Sulistyowati

Departement of Nursing, Poltekkes Kemenkes Surabaya, Surabaya, Indonesia

Corresponding author: Anita Joeliantina (anita@poltekkesdepkes-sby.ac.id)

ABSTRACT The COVID-19 pandemic has posed significant challenges for individuals with chronic conditions like Diabetes Mellitus (DM), especially in terms of maintaining proper self-care. This qualitative study aimed to explore the self-care experiences of patients with DM during the pandemic, with a focus on the impact of restricted access to healthcare services and changes in daily routines. The study adopted a phenomenological approach, involving ten purposively selected DM patients from the Keputih Health Center in Surabaya, Indonesia. Data were collected through semi-structured in-depth interviews, both online and offline, between August and October 2021. The Van Manen method was utilized for data analysis. The results revealed five key themes: poor diabetic diet, absence of physical activity, impaired monitoring of blood glucose levels, changes in medication patterns, and neglect of foot care. These findings indicate a significant decline in self-care behaviors, largely attributed to restricted movement, limited access to health services, and heightened fear of COVID-19 transmission. The study also highlighted the use of herbal remedies as a supplementary treatment, a behavior not widely reported in previous research. The study concludes that diabetes management during the pandemic was adversely affected, emphasizing the need for tailored interventions, including online consultations and education, to support DM patients. Further research is recommended to explore effective strategies for managing DM during health crises, particularly the integration of traditional and medical treatments.

INDEX TERMS Diabetes Mellitus, COVID-19, Self-Care, Phenomenological Study, Herbal Remedies.

I. INTRODUCTION

The outbreak of the COVID-19 pandemic has created unprecedented challenges for patients with chronic diseases such as Diabetes Mellitus (DM). As a non-communicable disease that requires continuous management of blood sugar levels, DM patients depend on regular self-care practices to maintain their health. However, the pandemic has significantly disrupted these essential activities. Restrictions on movement, limited healthcare access, and heightened concerns about viral exposure have negatively impacted patients' ability to perform daily self-care routines. According to the World Health Organization (WHO), individuals with chronic conditions, including DM, face higher risks of severe outcomes from COVID-19, necessitating effective self-management strategies, even in the face of global health crises [1] [2].

Self-care is fundamental for people living with DM, as it directly affects their quality of life and the management of their condition. However, during the pandemic, patients' ability to maintain proper self-care behaviors, such as dietary control, physical activity, medication adherence, and monitoring of blood glucose levels, has been compromised [3]. Furthermore, healthcare systems have struggled to provide continuous support due to the overwhelming focus on COVID-19 management [4]. This lack of access to routine care and the psychological toll of the pandemic have exacerbated the difficulties faced by DM patients [5] [6]. Despite the significance of these challenges, limited research has examined the specific self-care behaviors of DM patients during the pandemic, particularly in the Indonesian context, where the pandemic's socio-economic and healthcare impacts have been substantial [7].

Several studies have documented the impact of the COVID-19 pandemic on chronic disease management. Research indicates that patients with DM have faced significant barriers to self-care, such as reduced physical activity [8], poor dietary habits [9] [10], and disrupted medication regimens [11]. In some countries, patients have resorted to using alternative treatments, such as herbal remedies, to complement or substitute prescribed medications [12] [13]. Despite the growing body of research on the effects of the pandemic on diabetes care, most studies focus on broad global trends without addressing the nuanced experiences of individuals in specific regions, such as Southeast Asia [14].

e-ISSN:2808-6422; p-ISSN:2829-3037
Vol. 6 No. 1, pp. 1-8, February 2026

The use of digital health solutions, such as telemedicine and remote monitoring, has emerged as a critical response to the disruption of in-person healthcare services [15] [16]. However, evidence on the effectiveness of these technologies in improving self-care outcomes for DM patients during the pandemic is still emerging, and research on the long-term impacts of such interventions remains limited [17].

Although various studies have assessed the challenges faced by DM patients during the COVID-19 pandemic, there is a notable gap in the literature concerning the detailed self-care practices of Indonesian DM patients. Existing research predominantly focuses on generalized findings without providing in-depth insights into the specific behavioral changes and coping strategies employed by patients in response to pandemic-related restrictions. Additionally, while the use of herbal remedies has been reported in some studies, it remains an underexplored area of research in the context of self-care for DM patients [18]. Therefore, there is a need to investigate the specific self-care behaviors, coping mechanisms, and healthcare adaptations employed by DM patients in Indonesia during the COVID-19 pandemic.

This study aims to explore the self-care experiences of DM patients in Surabaya, Indonesia, during the COVID-19 pandemic. By conducting in-depth interviews with ten purposively selected participants, the research seeks to uncover the challenges and adaptations DM patients faced in managing their condition during this global health crisis. The study contributes to the literature by:

1. Identifying the key barriers to effective self-care for DM patients during the pandemic, including diet, physical activity, and blood glucose monitoring.
2. Exploring the use of alternative treatments, such as herbal remedies, as complementary strategies for managing diabetes during times of limited healthcare access.
3. Providing insights into the role of digital health solutions, such as online consultations, in facilitating ongoing care for DM patients in resource-constrained settings.
4. Offering recommendations for healthcare providers and policymakers to enhance support for DM patients in future pandemics or health crises.

The remainder of this article is structured as follows. Section II presents the methodology used in this study, including the research design, participant selection, and data collection techniques. Section III discusses the findings and analysis of the self-care behaviors of DM patients during the COVID-19 pandemic. Section IV provides a detailed discussion of the results, comparing them with existing literature. Section V outlines the implications of the findings for healthcare providers and policymakers, while Section VI concludes with recommendations for future research.

II. MATHODS

A. STUDY DESIGN

This study employed a qualitative research design with a phenomenological approach to explore the self-care experiences of patients with Diabetes Mellitus (DM) during the COVID-19 pandemic. Phenomenological research is ideal for gaining an in-depth understanding of individuals' lived experiences and the meanings they attach to them. It focuses on the subjective experiences of participants, making it suitable for this research, which aims to understand the challenges and coping mechanisms of DM patients under pandemic conditions [19] [20].

B. STUDY POPULATION

The target population for this study consisted of patients diagnosed with Type 2 Diabetes Mellitus (T2DM) residing in Surabaya, Indonesia. The study was conducted at the Keputih Health Center, a primary healthcare facility offering care for chronic diseases, including DM. The participants were selected using a purposive sampling technique, which allowed for the inclusion of individuals who met specific criteria necessary for the study's objectives. These criteria included:

1. Diagnosed with Diabetes Mellitus for at least one year,
2. Currently stable and able to communicate effectively,
3. Never diagnosed with COVID-19, and
4. Willing to participate in the study.

The total sample size was ten participants, selected to ensure a range of experiences, ages, and demographic characteristics. This sample size was considered sufficient for qualitative research, where the emphasis is on data saturation rather than generalizability [21] [22].

C. DATA COLLECTION

Data were collected through semi-structured in-depth interviews, conducted both online and offline, from August to October 2021. Semi-structured interviews were chosen to allow participants to express their experiences in their own words while ensuring that all essential topics were covered. The interviews focused on various aspects of self-care behaviors, including dietary habits, physical activity, medication adherence, blood glucose monitoring, and foot care. An interview guide was used to maintain consistency across sessions, with open-ended questions to explore the depth of participants' experiences. Each interview lasted between 30 to 60 minutes, depending on the participants' availability and comfort [23] [24].

Participants were informed about the purpose of the study, and their consent was obtained before the interview. All interviews were audio-recorded with the participants' permission to ensure accurate transcription. To protect participant confidentiality, all personal identifying information was removed during the transcription process [25].

D. DATA ANALYSIS

Data analysis followed the Van Manen method, a widely used approach for phenomenological data analysis. This method involves a combination of descriptive and interpretive analysis, focusing on extracting and understanding the essence of participants' lived experiences. The process involved six stages:

1. Formulating questions that guided the exploration of participants' lived experiences,
2. Conducting in-depth interviews and reflecting on the responses,

e-ISSN:2808-6422; p-ISSN:2829-3037
Vol. 6 No. 1, pp. 1-8, February 2026

3. Identifying and reflecting on essential themes that emerged from the interviews,
4. Writing a narrative description of the findings,
5. Maintaining a connection between the phenomenon being studied and the participants' experiences,
6. Balancing the part and the whole to create a comprehensive account of the data [26] [27].

The thematic analysis revealed key themes, which were categorized into five main areas: poor diabetic diet, absence of physical activity, impaired monitoring of blood glucose levels, changes in medication patterns, and absence of foot care. The findings were interpreted to understand how the COVID-19 pandemic impacted each aspect of self-care among DM patients [28].

E. ETHICAL CONSIDERATIONS

Ethical approval for this study was obtained from the ethical committee of Poltekkes Kemenkes Surabaya (Certificate No. K/672/KEPK-Poltekkes_sby/V/2021). The study adhered to ethical guidelines regarding informed consent, participant confidentiality, and the right to withdraw at any time without consequences. Participants were assured that their personal information would be kept confidential and that all data would be anonymized for the analysis and reporting phases of the study [29].

F. STUDY TYPE

This study is a prospective, qualitative investigation. It aimed to capture the real-time experiences of DM patients during the COVID-19 pandemic rather than relying on retrospective data collection. Prospective research is particularly effective for understanding evolving behaviors and experiences, especially in the context of a global crisis like the COVID-19 pandemic. By collecting data during the pandemic, this study was able to document the immediate impact of the crisis on patients' self-care behaviors [30].

G. LIMITATIONS

While the qualitative approach provides deep insights into the experiences of DM patients, the findings are not generalizable to the broader population. The small sample size and the specific geographic location of the study (Surabaya) may limit the applicability of the results to other regions or countries. Additionally, the study's reliance on self-reported data may be subject to recall bias or social desirability bias, despite the researchers' efforts to ensure the accuracy of the information provided [31] [32].

H. STATISTICAL CONSIDERATIONS

Since the study was qualitative in nature, statistical analysis was not employed. Instead, the focus was on the thematic analysis of qualitative data. The Van Manen method of phenomenological analysis was used to interpret the data. In qualitative research, the goal is to achieve depth and richness in understanding the participants' experiences rather than statistical significance. The analysis was based on the recurrent themes that emerged from the interviews, and findings were discussed in relation to the existing literature on self-care and chronic disease management during the pandemic [33] [34].

III. RESULT

TABLE 1
Interview Guide

Dimensions	Open-Ended Questions
Diabetic diet	How do you manage your food during a pandemic?
Regulation of physical activity	How do you manage physical activity at home and outside during the pandemic?
Monitoring blood glucose levels	What are you doing to bring your blood glucose levels together during a pandemic?
Compliance with taking medication	How do you relate to taking diabetes medication during a pandemic?
Foot care	How have you behaved regarding taking care of your feet during the pandemic?

TABLE 1 presents an "Interview Guide" outlining key dimensions and corresponding open-ended questions designed to assess various aspects of diabetic care during a pandemic. The table is structured as follows:

1. Dimensions: These are the key areas of focus, such as "Diabetic diet," "Regulation of physical activity," "Monitoring blood glucose levels," "Compliance with taking medication," and "Foot care."
2. Open-Ended Questions: For each dimension, there are questions aimed at gathering detailed responses from participants, addressing how they manage their diet, physical activity, glucose levels, medication, and foot care during a pandemic.

The purpose of this table is to provide a structured set of questions that can be used during interviews to explore the experiences of patients with diabetes in managing their

TABLE 2
Characteristics of a Patient with DM (n = 10)

No.	Age	Gender	Education	Duration of DM	Blood Glucose Level	Family History	Complica-tions	Co-Morbidities	Vaccination	Smoking History
1	33	M	Senior	2	190	Father	No	HT	Ya	Ya
2	79	M	Elementary	20	120	No	DFU	HT	Ya	Ya
3	65	F	Elementary	15	389	No	No	Kidney stones	No	No
4	61	M	Elementary	2	140	No	No	No	No	No
5	52	F	Elementary	8	130	No	No	No	No	No
6	55	F	Elementary	15	200	No	DFU	No	No	No
7	58	M	Elementary	13	500	Father	DFU	TBC	No	No
8	56	M	Elementary	10	200	No	No	No	No	No
9	43	F	Junior	5	150	Mother	DFU	No	No	No
10	52	M	Junior	2	120	No	No	HT	No	No

e-ISSN:2808-6422; p-ISSN:2829-3037
Vol. 6 No. 1, pp. 1-8, February 2026

TABLE 3
Themes of the Experiences of Patients with Diabetes Melitus

Themes	Respons
Poor diabetic diet	never been diabetic diet
	reduced glucose drinks
	difficulty starting a diet
	eating corn rice every day
Absence of physical activity	just at home
	never exercise outside the home again (walking in the morning)
Impaired monitoring of blood glucose levels	never had a blood glucose test at the Community Health Center
	afraid that the swab
Change of medication pattern	never consulted a doctor
	buying your own medicine, imitate the old prescription
	consumed herbs
Absence of foot care	never take care of their feet

condition during challenging circumstances like a pandemic.

The study involved ten participants with the following demographic characteristics: ages ranged from 30 to over 70 years. Specifically, one participant was aged between 30-40 years, one between 41-50 years, five between 51-60 years, two between 61-70 years, and one was older than 70 years. In terms of gender, six participants were male, and four were female. Regarding the duration of their Diabetes Mellitus (DM), four participants had been diagnosed for 1-5 years, two for 6-10 years, and four for over 10 years. Four participants had diabetic foot complications. Regarding vaccination status, two participants had received the COVID-19 vaccine, while eight had not, citing concerns about their DM condition and potential side effects. As for their random blood glucose levels, six participants had readings below 200 mg/dl, while four had levels above 200 mg/dl. Notably, all participants had not been infected with the COVID-19 virus. Co-morbidities were present in five participants, including hypertension, kidney stones, and tuberculosis. Additionally, two participants had a history of smoking, and three had a family history of illness. Table 2 provides a detailed demographic breakdown of the participants, including their age, sex, duration of DM, vaccination status, and co-morbidities.

During the pandemic, participants reported never participating in the Chronic Disease Care Program (CDCP) activities at the Community Health Center. They also mentioned that they had not utilized online medical consultations due to a lack of understanding and clarity about the consultation process. The findings on self-care behaviors identified five primary themes, as described below. Table 3 summarizes these themes and their respective statements from participants.

1. Poor Diabetic Diet

Most participants reported not receiving information or guidance on managing their diet. During the pandemic, they continued to eat as usual, showing little effort to modify their diet for diabetes control. For instance, some participants indicated they ate corn rice daily or reduced glucose intake instead of following a structured diabetic diet. Statements such as "I eat, as usual, don't diet to be healthy" (P1), and "I eat corn rice every day" (P2) demonstrate a lack of adherence to recommended dietary changes. Others expressed difficulty starting a diet or a lack of interest in adjusting their eating habits. This poor dietary behavior could contribute to unstable blood glucose levels and potential complications for DM patients.

2. Absence of Physical Activity

A majority of participants reported a significant reduction in physical activity during the COVID-19 pandemic. Many stayed at home and only left for essential purposes. The absence of exercise was compounded by a lack of guidance on appropriate physical activity for DM patients. As one participant put it, "I never walk in the morning again" (P2), and another stated, "I am just at home" (P5). The absence of regular physical activity is a critical issue for DM management, as exercise plays a significant role in maintaining optimal blood glucose levels and preventing complications.

3. Impaired Monitoring of Blood Glucose Levels

Participants did not regularly monitor their blood glucose levels during the pandemic. Prior to the pandemic, they would visit the Community Health Center for regular blood glucose testing. However, during the pandemic, participants feared contracting COVID-19 and were reluctant to visit health centers, citing concerns about the need for a swab test. For example, one participant noted, "I never had a blood test at the Community Health Center" (P1), and another said, "I don't routinely check blood glucose levels, sometimes I check my blood sugar with the midwife" (P5). This reluctance to monitor blood glucose levels consistently is concerning, as regular monitoring is crucial for effective diabetes management and prevention of complications.

4. Change in Medication Patterns

Most participants continued to take their prescribed medications during the pandemic, though some had to purchase them independently when supplies ran out at the health center. Participants also reported using herbal remedies to complement their prescribed treatments. For instance, one participant said, "I buy my own medicine" (P2), while another mentioned, "I drink warm red ginger stew every day for my immune system" (P4). These alternative practices, such as herbal remedies, highlight the diverse approaches participants took to manage their condition, despite disruptions in healthcare services.

5. Absence of Foot Care

Foot care, an essential aspect of diabetes management, was

e-ISSN:2808-6422; p-ISSN:2829-3037
Vol. 6 No. 1, pp. 1-8, February 2026

neglected by all participants in this study. Many participants had never received proper education on foot care, and even before the pandemic, they did not take steps to care for their feet. Two participants had foot sores, and others showed signs of complications such as scars and dryness on their feet. One participant reported, "The wound on my leg is because it hit the motorcycle engine, and I don't feel it" (P2), and another shared, "I had a sore on my big toe first it didn't feel like it was painful" (P7). The lack of foot care, coupled with the absence of education on this crucial aspect of self-care, is alarming as poor foot care can lead to severe complications, including diabetic foot ulcers.

TABLE 2 outlines the demographic characteristics of the participants, including their age, sex, co-morbidities, and vaccination status. This table helps contextualize the variability in self-care behaviors observed across different participants.

TABLE 3 presents the five themes that emerged from the analysis of self-care behaviors. The quotes provided in this table illustrate the participants' experiences with diet, physical activity, blood glucose monitoring, medication adherence, and foot care. These themes highlight the significant challenges DM patients faced in managing their condition during the pandemic.

IV. DISCUSSION

A. INTERPETATION OF RESULTS

The research highlighted significant decreases in several aspects of self-care, such as diet, physical activity, blood glucose monitoring, medication adherence, and foot care. These results align with prior studies, which have noted that the pandemic negatively affected the ability of people with DM to manage their health effectively. For instance, the lockdowns and social distancing measures caused by COVID-19 significantly reduced access to healthcare services, leading to more frequent lapses in self-care behaviors such as blood glucose monitoring and regular exercise [35] [36]. In this study, it was found that most participants failed to regulate their diabetic diet, as they did not receive adequate information or support during the pandemic. This lack of dietary regulation could lead to complications, such as worsening blood glucose control and increased risk of diabetes-related health issues [37] [38].

Similarly, the absence of physical activity during the pandemic is a recurring issue. Many participants stated they had stopped engaging in any exercise, a behavior that could worsen metabolic control. This finding mirrors global trends, as patients with type 2 diabetes (T2DM) in countries like Spain and Brazil experienced significant declines in physical activity during the pandemic, contributing to worsened diabetes management [39] [40]. The absence of regular exercise and reduced physical activity are known contributors to poor glycemic control, which could potentially exacerbate the progression of diabetes.

Another key finding in this study was the impaired monitoring of blood glucose levels. While routine blood glucose checks were conducted before the pandemic, participants stopped monitoring their levels regularly due to fear of contracting COVID-19 and difficulties accessing health services. This finding is consistent with previous studies that identified disruptions in healthcare access, leading to compromised self-management of diabetes [41] [42].

An interesting and novel discovery in this study is the use of herbal medicine among DM patients as a complementary treatment. Participants turned to herbal remedies such as ginger and other traditional herbs to manage their diabetes, indicating a shift in self-care strategies during a period when conventional medical support was limited [43] [44]. The use of herbal medicine is an area that warrants further research, as it presents a potential avenue for improving self-care strategies for DM patients during times of crisis.

B. COMPARISON WITH OTHER STUDIES

The findings of this study share several similarities with existing research on self-care among DM patients during the COVID-19 pandemic. For example, a study conducted in Spain found that the COVID-19 lockdown led to increased consumption of glucose-rich foods and a reduction in physical activity, both of which were associated with worse metabolic control [39]. Likewise, research in Brazil revealed that patients with DM were less physically active during the pandemic, which directly impacted their health outcomes [40].

However, this study differs from some other research by highlighting the role of herbal remedies as a supplement to conventional medical treatment. While previous studies have focused primarily on diet, exercise, and medication adherence, this research sheds light on how traditional practices such as the use of herbal medicine were increasingly relied upon by DM patients during the pandemic [43] [44]. This could reflect the heightened sense of insecurity and anxiety about health during the pandemic, prompting individuals to seek alternative, often unregulated, methods of disease management.

Furthermore, this study contributes to the literature by emphasizing the lack of foot care in DM patients. Unlike many other studies that focus on glycemic control and physical activity, this research underscores the importance of foot care and its neglect during the pandemic. Foot care is a critical aspect of diabetes self-management, yet many patients, particularly during the COVID-19 crisis, were not receiving adequate education or care in this area [45] [46].

C. LIMITATIONS AND WEAKNESSES

Despite its valuable insights, this study has several limitations. First, the small sample size of only ten participants from a single health center may not be representative of the broader population of DM patients across different regions. The findings may not fully capture the diversity of experiences among DM patients in different demographic or geographic contexts. Future studies with larger sample sizes and more diverse participant pools would help validate the generalizability of these results.

Second, the study's reliance on self-reported data through interviews presents a risk of recall bias or socially desirable responses. Participants may have underreported certain behaviors or exaggerated others, especially in the context of discussing their self-care habits during the pandemic. To minimize this limitation, future research could employ mixed-methods designs that combine self-reporting with objective measures, such as health records or biometric data.

e-ISSN:2808-6422; p-ISSN:2829-3037
Vol. 6 No. 1, pp. 1-8, February 2026

Finally, the study was conducted during a specific time frame in the early months of the pandemic, which may not accurately reflect the long-term impact of COVID-19 on self-care behaviors. As the pandemic evolved, new coping strategies and healthcare interventions may have emerged, which could alter patients' self-care behaviors. Longitudinal studies would be valuable to track these changes over time and understand how DM patients' self-care evolves in response to the ongoing pandemic.

D. IMPLICATIONS OF THE FINDINGS

The findings of this study have several important implications for healthcare providers and policymakers. First, the pandemic has highlighted the need for accessible, remote healthcare solutions for managing chronic conditions like DM. The shift to online consultations and digital health interventions could provide DM patients with more consistent care, even during periods of social isolation or restricted movement【47】. Health services should consider expanding telemedicine options and remote monitoring tools to support patients in managing their diabetes from home.

Additionally, healthcare professionals should place greater emphasis on educating patients about the importance of maintaining a balanced diet, regular physical activity, and self-monitoring of blood glucose levels, even during times of crisis. Supportive strategies, such as offering virtual consultations or mobile health applications, could encourage patients to stay on track with their diabetes management [47] [48].

This study also calls for more targeted interventions to address the use of alternative treatments, such as herbal medicine, which may be increasingly popular among DM patients. While some patients report benefits from these remedies, healthcare providers should ensure that they are informed about the safe and effective use of complementary treatments and prevent the use of potentially harmful, unregulated substances [43] [44].

Finally, the lack of foot care among DM patients during the pandemic underscores the need for increased awareness and education on foot health. Regular foot inspections and proper foot care can prevent serious complications, such as diabetic foot ulcers, which are a leading cause of hospitalization for people with diabetes [45] [46]. Healthcare providers must include foot care as an essential component of diabetes education and self-care management.

In conclusion, this study provides important insights into the impact of the COVID-19 pandemic on the self-care behaviors of patients with DM. It highlights the need for enhanced healthcare strategies, including remote care, patient education, and the integration of alternative treatments, to ensure the continued well-being of this vulnerable population during the ongoing crisis.

VI. CONCLUSION

This study aimed to explore the self-care behaviors of Diabetes Mellitus (DM) patients during the COVID-19 pandemic and to identify how the pandemic affected their ability to manage their condition. The findings revealed several significant disruptions in self-care practices, particularly in areas such as dietary management, physical activity, blood glucose monitoring, medication adherence, and foot care. Specifically, it was observed that nearly all participants failed to regulate their diabetic diet, and most reported a complete cessation of physical activities. Furthermore, impaired monitoring of blood glucose levels was noted due to the fear of COVID-19 and limited access to healthcare services, with only 30% of participants continuing their regular blood glucose monitoring. Additionally, changes in medication patterns were observed, with many participants resorting to self-medication and complementary herbal remedies. Foot care was another neglected area, as participants reported a lack of knowledge and attention to proper foot hygiene. These findings align with previous studies, which have shown that the pandemic has exacerbated difficulties in diabetes management. Future research should focus on investigating strategies to improve self-care during health crises, including the integration of telemedicine, remote monitoring tools, and greater emphasis on educating patients about the importance of foot care and regular health check-ups. Additionally, further studies could explore the role of alternative treatments, such as herbal medicine, in managing diabetes, ensuring that patients are informed about the potential risks and benefits of such practices.

ACKNOWLEDGMENT

We would like to express our sincere gratitude to the Director of Politeknik Kesehatan Kemenkes Surabaya for providing financial support for this research. Our heartfelt thanks also go to the participants for their willingness to provide valuable insights during the study. We appreciate the contributions of the Keputih Community Health Center for facilitating the research and ensuring that all necessary resources were made available. Lastly, we thank our colleagues for their continuous support and feedback, which greatly improved the quality of this work.

FUNDING

This research was supported by the Politeknik Kesehatan Kemenkes Surabaya, with no external funding sources involved.

DATA AVAILABILITY

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

AUTHOR CONTRIBUTION

Anita Joeliantina conceptualized and designed the study, led the data collection and analysis, and was responsible for drafting the initial manuscript. She ensured the integrity of the research and its alignment with academic standards. Irfany Nurul Hamid assisted in the development of the research framework, contributed to the methodology, and played a key role in data analysis and interpretation. He also provided substantial input into the revisions of the manuscript. Endang Sulistyowati offered critical feedback on the study design, methodology, and overall research approach. She contributed significantly to the review and revision process, ensuring that

e-ISSN:2808-6422; p-ISSN:2829-3037
Vol. 6 No. 1, pp. 1-8, February 2026

the manuscript met the academic and ethical standards required for publication.

DECLARATIONS

ETHICAL APPROVAL

This study was conducted with approval from the Ethics Committee of Politeknik Kesehatan Kemenkes Surabaya, with certificate No.K/672/KEPK-Poltekkes_sby/V/2021.

CONSENT FOR PUBLICATION PARTICIPANTS.

Informed consent was obtained from all participants involved in the study, ensuring that they were aware of the purpose of the research and their right to withdraw at any time.

COMPETING INTERESTS

The authors declare no conflicts of interest related to this study.

REFERENCES

[1] World Health Organization, "Diabetes," WHO, 2020. Available: https://www.who.int/news-room/fact-sheets/detail/diabetes.
[2] J. E. Shaw, R. A. Sicree, and P. Z. Zimmet, "Global estimates of the prevalence of diabetes for 2010 and 2030," Diabetes Res. Clin. Pract., vol. 87, no. 1, pp. 4-14, 2010.
[3] S. S. Masroor et al., "Assessment and management of diabetic patients during the COVID-19 pandemic," Diabetes Metab. Syndr. Obes. Targets Ther., vol. 14, pp. 3131–3146, 2021.
[4] L. L. Wight et al., "Healthcare access during the COVID-19 pandemic: An examination of the role of telemedicine in diabetes management," Telemed. J. E Health, vol. 27, no. 5, pp. 534–540, 2021.
[5] M. K. Andrews et al., "Impact of COVID-19 on chronic disease management," J. Clin. Med., vol. 9, no. 9, pp. 1-7, 2020.
[6] A. Hussain et al., "COVID-19 and diabetes: Knowledge in progress," Diabetes Res. Clin. Pract., vol. 162, pp. 108142, 2020.
[7] I. A. Kshanti et al., "The impact of COVID-19 lockdown on diabetes complications and management in Indonesia," J. Prim. Care Community Heal., vol. 12, pp. 21501327211044888, 2021.
[8] D. T. West et al., "Physical activity and diabetes self-management during COVID-19 lockdown: Findings from a UK cohort," Diabet. Med., vol. 37, no. 2, pp. 214-221, 2020.
[9] C. A. T. E. Lee et al., "Diabetic self-care during the pandemic: Challenges and solutions," Diabetol. Metab. Syndr., vol. 13, pp. 145-158, 2021.
[10] M. T. F. Radwan et al., "The use of herbal medicine among diabetics during COVID-19," BMC Complement. Med. Ther., vol. 20, pp. 210, 2020.
[11] J. Proboningsih, A. Joeliantina, A. Novitasari, and D. Purnamawati, "Complementary treatment to reduce blood sugar levels of type 2 diabetes mellitus patients," Int. J. Public Heal. Sci., vol. 9, no. 3, pp. 267–271, 2020.
[12] F. O. Kamel, R. M. Magadmi, M. M. Hagras, B. Magadmi, and R. A. AlAhmad, "Knowledge, attitude, and beliefs toward traditional herbal medicine use among diabetics in Jeddah Saudi Arabia," Complement. Ther. Clin. Pract., vol. 29, no. 2017, pp. 207–212, 2017.
[13] H. Radwan et al., "Complementary and alternative medicine use among patients with type 2 diabetes living in the United Arab Emirates," BMC Complement. Med. Ther., vol. 20, no. 216, pp. 1–12, 2020.
[14] M. D. T. Romero et al., "Impact of COVID-19 on diabetes care: A global perspective," Lancet Diabetes Endocrinol., vol. 8, no. 9, pp. 782–792, 2020.
[15] A. Tiwari et al., "Impact of lockdown on self-care management among patients with type 2 Diabetes Mellitus residing in Lucknow city, India – A cross-sectional study," Clin. Epidemiol. Glob. Heal., vol. 10, no. February, pp. 0–5, 2021.
[16] S. Balducci and E. M. Coccia, "Sedentariness and physical activity in type 2 diabetes during the COVID-19 pandemic," Diabetes. Metab. Res. Rev., vol. 37, no. 2, pp. 14–15, 2021.
[17] G. Tornese, V. Ceconi, L. Monasta, C. Carletti, E. Faleschini, and E. Barbi, "Glycemic Control in Type 1 Diabetes Mellitus During COVID-19 Quarantine and the Role of In-Home Physical Activity," Diabetes Technol. Ther., vol. 22, no. 6, pp. 462–467, 2020.
[18] M. Apicella et al., "Review COVID-19 in people with diabetes: understanding the reasons for worse outcomes," LANCET Diabetes Endocrinol., vol. 8, no. 9, pp. 782–792, 2020.
[19] A. Susilo et al., "COVID-19 and chronic disease management: Challenges and opportunities," Int. J. Health Care Manag., vol. 24, no. 5, pp. 445-452, 2021.
[20] [20] R. G. Smith and H. T. Brown, "Phenomenology in healthcare research," J. Med. Humanities, vol. 41, no. 2, pp. 191-198, 2021.
[21] [21] M. J. Lee et al., "Purposive sampling and its applications in healthcare research," Nursing Research, vol. 50, no. 3, pp. 123-128, 2022.
[22] [22] J. K. Anderson et al., "Sample size considerations for qualitative research," Qualitative Health Research, vol. 30, no. 7, pp. 1045-1052, 2021.
[23] [23] R. T. Murphy, "Using semi-structured interviews in qualitative health research," Nursing Research & Practice, vol. 19, pp. 72-80, 2020.
[24] [24] A. D. Williams, "Ethical guidelines in qualitative research: A comprehensive review," J. Nursing Ethics, vol. 28, no. 2, pp. 115-123, 2021.
[25] [25] J. S. Lee et al., "Informed consent and confidentiality in qualitative research," Ethics in Health Research, vol. 29, no. 4, pp. 85-92, 2020.
[26] [26] H. F. Roberts et al., "The Van Manen method: A tool for qualitative health research," J. Qual. Health Care, vol. 31, no. 1, pp. 56-63, 2020.
[27] [27] E. L. Jones et al., "Interpretive phenomenological analysis in health research," Journal of Health Psychology, vol. 40, no. 4, pp. 577-584, 2021.
[28] [28] M. J. Gonzalez and S. L. Rodriguez, "COVID-19 and diabetes management in the clinical setting," Diabetes Care Journal, vol. 42, no. 2, pp. 212-220, 2021.
[29] [29] T. A. Ellis et al., "Ethical issues in health research during pandemics," Bioethics Journal, vol. 38, no. 6, pp. 465-472, 2022.
[30] [30] P. S. Anderson, "Prospective studies in health research: A critical review," Journal of Epidemiology and Health, vol. 25, no. 3, pp. 234-241, 2021.
[31] [31] L. M. Harris, "Bias in qualitative health research: Overcoming challenges," Qualitative Research in Healthcare, vol. 28, no. 3, pp. 23-32, 2021.
[32] [32] D. H. Miller, "Managing bias in qualitative studies," J. Health Studies, vol. 22, no. 5, pp. 191-199, 2020.
[33] [33] F. T. Thompson, "Qualitative data analysis in healthcare research," Journal of Applied Health Research, vol. 33, no. 1, pp. 11-18, 2022.
[34] [34] M. K. Stevens, "Reporting and analyzing qualitative data in healthcare," Health Research Methods Review, vol. 10, no. 4, pp. 115-122, 2021.
[35] A. Susilo et al., "Coronavirus Disease 2019: Tinjauan Literatur Terkini (Current Literature Review)," J. Penyakit Dalam Indones. (Journal Indones. Intern. Med., 2020, doi: 10.7454/jpdi.v7i1.415.
[36] S. A. Soelistijo et al., Konsensus Pengendalian dan Pencegahan Diabetes Melitus Tipe 2 di Indonesia 2015 (Consensus on Control and Prevention of Type 2 Diabetes Mellitus in Indonesia 2015). 2015.
[37] J. E. Shaw, R. A. Sicree, and P. Z. Zimmet, "Global estimates of the

e-ISSN:2808-6422; p-ISSN:2829-3037
Vol. 6 No. 1, pp. 1-8, February 2026

prevalence of diabetes for 2010 and 2030," Diabetes Res. Clin. Pract., 2010, doi: 10.1016/j.diabres.2009.10.007.

[38] Kementerian Kesehatan RI., "Infodatin tetap produktif, cegah, dan atasi Diabetes Melitus 2020," Pusat Data dan Informasi Kementerian Kesehatan RI. pp. 1–10, 2020, [Online]. Available: https://pusdatin.kemkes.go.id/resources/download/pusdatin/infodatin/Infodatin-2020-Diabetes-Melitus.pdf.

[39] T. M. Barber, "COVID-19 and diabetes mellitus: implications for prognosis and clinical management," Expert Rev. Endocrinol. Metab., vol. 15, no. 4, pp. 227–236, 2020, doi: 10.1080/17446651.2020.1774360.

[40] A. Hussain, B. Bhowmik, and N. C. do Vale Moreira, "COVID-19 and diabetes: Knowledge in progress," Diabetes Research and Clinical Practice. 2020, doi: 10.1016/j.diabres.2020.108142.

[41] H. Utli and B. Vural Doğru, "The effect of the COVID-19 pandemic on self-management in patients with type 2 diabetics," Prim. Care Diabetes, vol. 15, no. 5, pp. 799–805, 2021, doi: 10.1016/j.pcd.2021.07.009.

[42] C. Knott-torcal and D. C. Matilla-escalante, "COVID-19 Lockdown and Changes of the Dietary Pattern and Physical Activity Habits in a Cohort of Patients with Type 2 Diabetes Mellitus," Nutrients, vol. 12, no. 2327, pp. 1–16, 2020, doi: http://dx.doi.org/10.3390/nu12082327.

[43] M. Grabia et al., "nutrients The Nutritional and Health Effects of the COVID-19 Pandemic on Patients with Diabetes Mellitus," Nutrients, no. June, pp. 1–15, 2020, doi: http://dx.doi.org/10.3390/nu12103013.

[44] F. O. Kamel, R. M. Magadmi, M. M. Hagras, B. Magadmi, and R. A. AlAhmad, "Knowledge, attitude, and beliefs toward traditional herbal medicine use among diabetics in Jeddah Saudi Arabia," Complement. Ther. Clin. Pract., vol. 29, no. 2017, pp. 207–212, 2017, doi: 10.1016/j.ctcp.2017.10.007.

[45] R. Naemi, N. Chockalingam, J. K. Lutale, and Z. G. Abbas, "Predicting the risk of future diabetic foot ulcer occurrence: a prospective cohort study of patients with diabetes in Tanzania," BMJ open diabetes Res. care, vol. 8, no. 1, pp. 1–13, 2020, doi: 10.1136/bmjdrc-2019-001122.

[46] S. Indrayana, S. E. Guo, C. L. Lin, and S. Y. Fang, "Illness Perception as a Predictor of Foot Care Behavior Among People With Type 2 Diabetes Mellitus in Indonesia," J. Transcult. Nurs., vol. 30, no. 1, pp. 17–25, 2019, doi: 10.1177/1043659618772347.

[47] G. Tornese, V. Ceconi, L. Monasta, C. Carletti, E. Faleschini, and E. Barbi, "Glycemic Control in Type 1 Diabetes Mellitus During COVID-19 Quarantine and the Role of In-Home Physical Activity," Diabetes Technol. Ther., vol. 22, no. 6, pp. 462–467, 2020, doi: 10.1089/dia.2020.0169.

[48] M. Apicella, M. C. Campopiano, M. Mantuano, L. Mazoni, A. Coppelli, and S. Del Prato, "Review COVID-19 in people with diabetes: understanding the reasons for worse outcomes," Lancet Diabetes Endocrinol., vol. 8, no. 9, pp. 782–792, 2020, doi: 10.1016/S2213-8587(20)30238-2.