

## Diabetes Mellitus Patients' Experiences in Managing Diet during the COVID-19 Pandemic

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### KEYWORDS

diabetes mellitus, diet, covid-19 pandemic, phenomenology, patient experience.

### ABSTRACT

The COVID-19 pandemic has brought significant changes in people's lives, especially for patients with chronic diseases such as Diabetes Mellitus (DM). Consistent diet management is an important component of DM control, but the pandemic situation presents new challenges. This study aims to explore the experiences of DM patients in managing their diet during the COVID-19 pandemic. The research uses a qualitative approach with a phenomenological design. Data were collected through in-depth interviews, questionnaires, and observations of seven purposively selected type 2 DM patients. The results of the study showed that the majority of patients had difficulty maintaining a regular diet due to limited access to healthy food, psychological pressure, and changes in daily routines. Family support helps maintain dietary discipline, while nutritional counseling services have been very limited during the pandemic. The average score of the questionnaire showed low consistency in the consumption of vegetables and fruits, as well as the low frequency of nutritional consultations. Observations of the home environment also show the dominance of instant food and a lack of healthy meal planning. In conclusion, the pandemic exacerbated the dietary management challenges in DM patients. Community-based interventions, sustainable nutrition education, and family involvement are needed to support effective management of DM in times of crisis.

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### Introduction

The COVID-19 pandemic has become one of the biggest global health challenges in modern history. (Utli & Dođru, 2021). Since its emergence in late 2019, the SARS-CoV-2 virus has spread around the world, affecting millions of lives and shaking up the global health system. (Kwon & Rahmati, 2022). Various policies such as regional quarantine, large-scale social restrictions (PSBB), and lockdowns were enforced as an effort to suppress the rate of spread of the virus. While these measures have proven to be effective in controlling infections, the consequences for public health cannot be ignored, especially for those with chronic diseases such as Diabetes Mellitus (DM) (Lin et al., 2021).

Diabetes Mellitus is one of the non-communicable diseases (NCDs) that has a high prevalence around the world (Dedov et al., 2019; Gomes & Negrato, 2014, 2015). Data from the International Diabetes Federation (IDF) shows that in 2021, there were more than 537 million adults living with diabetes, and this figure is projected to increase to 643 million by 2030 (IDF, 2021) (Niazi et al., 2025). In Indonesia itself, the prevalence of diabetes has increased

significantly. Riskesdas 2018 reported a prevalence of diabetes of 10.9% in the population aged  $\geq 15$  years, an increase from 6.9% in Riskesdas 2013 (Ministry of Health of the Republic of Indonesia, 2018). Diabetes is the main cause of morbidity and mortality due to complications such as heart disease, stroke, kidney failure, and blindness (Rabiu Abubakar et al., 2022).

Effective diabetes management relies heavily on consistent and disciplined dietary control. A balanced diet and as recommended, is a key component in controlling blood glucose levels and preventing complications (Aas et al., 2023; Dämon et al., 2011). However, in the context of the COVID-19 pandemic, dietary management efforts have become much more complex. (Al-Ahmad et al., 2024).

Mobility restrictions, limited access to healthy foodstuffs, changes in daily routines, psychological stress, and decreased frequency of visits to health facilities are significant barriers for diabetic patients in maintaining a regular and healthy diet. (Thakur & Mathur, 2025).

Previous research has revealed that the COVID-19 pandemic in general has hurt the self-management of patients with chronic diseases. A study by D'Souza et al. (2021) showed that during the pandemic, many diabetic patients experienced increased consumption of high-calorie foods, decreased physical activity, and increased emotional stress that interfered with their glycemic control. In addition, research from (Yeoh et al., 2021) Also shows that DM patients experience great challenges in following a diet plan during lockdown, due to limited healthy foodstuffs, increased consumption of instant food, and decreased self-motivation (Lichtenstein et al., 2021).

Although various studies have examined the impact of the pandemic on the clinical condition of diabetic patients, there are still very limited studies that specifically explore the subjective experiences of patients, especially from the aspect of qualitative diet management. (Singh & Saxena, 2023). A deep understanding of the patient experience can help healthcare workers design more personalized, contextual, and sustainable interventions. By understanding how patients are adjusting to changes during the pandemic, particularly in dietary aspects, rich information can be obtained to strengthen future health education, mentoring, and policy efforts. (Alwreikat et al., 2021).

The urgency of this research is even more evident given the large diabetes population in Indonesia and the new challenges brought by the pandemic. With drastic lifestyle changes during the pandemic, diabetes management is not only the responsibility of individual patients but also the support systems around them, including family, community, and health services. When diet management is disrupted, the risk of hyperglycemia and hypoglycemia increases, which can worsen the patient's prognosis, even increasing the risk of severe COVID-19 infection. Therefore, it is important to voice the experiences of those who are living lives with diabetes during this global health crisis. (Singhai et al., 2020).

The novelty of this study lies in a qualitative approach that focuses on the subjective experience of diabetic patients in managing their diet in the midst of an unprecedented situation. Unlike quantitative studies that focus on glucose or weight levels, numbers, and statistics, this approach leaves room for individual narratives to be expressed in depth. This research will answer questions such as: how did patients cope with limitations during the pandemic? What strategies do they use to regulate dieting? Who is their source of support? These findings will be an important contribution to understanding the complexities of diabetes management in health emergencies.

The purpose of this study is to explore the experiences of Diabetes Mellitus patients in managing their diet during the COVID-19 pandemic. This study aims to identify the challenges they face, the adaptation strategies carried out, and the role of the social environment and health services in supporting the success of diet management.

The benefits of this research are as follows:

1. Theoretical benefits: Increasing the scientific literature in the field of community nursing and chronic disease management based on a qualitative approach.
2. Practical benefits: Provide input for nurses, physicians, and other health practitioners in developing nutrition education and dietary planning programs that are more responsive to patients' conditions in times of crisis.
3. Policy benefits: Provide recommendations to policymakers in designing community-based interventions that pay attention to the sustainability of healthy lifestyles in times of emergency.

The implications of this research are very broad, especially in strengthening the capacity of the health service system in dealing with future emergency situations. By understanding the patient experience holistically, healthcare professionals can design approaches that are not only curative but also promotive and preventive. The results of this research can also be used as a basis for the development of real-life experience-based education modules, which are more grounded and easily accepted by patients with diverse social and cultural backgrounds.

## **Method**

### **Research Design**

This study uses a qualitative approach with a phenomenological design. This design was chosen to delve deeply into the subjective experiences of Diabetes Mellitus patients in managing their diet during the COVID-19 pandemic. The main focus of the research is to understand the meaning contained in patients' life experiences, as well as how they interpret and adapt to the challenges of managing diet amid the limitations of the pandemic. (Creswell & Poth, 2016).

### **Location and Research Subject**

The research was carried out in the work area of Puskesmas X in City Y, which has a fairly high number of Diabetes Mellitus patients and is directly affected by social restrictions during the pandemic. The selection of locations is carried out purposively based on data access and the support of local health institutions.

The subjects in this study were adult patients who had been diagnosed with type 2 Diabetes Mellitus, aged between 30–65 years, and had undergone at least one year of dietary management. Inclusion criteria include:

1. Patients who actively follow the control measures at the Health Center during the pandemic.
2. Patients who can communicate verbally and are willing to be participants.
3. Patients who experience changes or difficulties in managing their diet during the pandemic.

The number of participants was determined by purposive sampling and adjusted to the principle of data saturation. In this study, as many as 7 participants were interviewed until no significant new information was found.

## **Research Instruments**

The main instrument in this study is the researcher himself as a key instrument (human instrument), which plays a role in collecting, analyzing, and interpreting data. To support the data collection process, the researchers used a semi-structured interview guide, which was tested first on a single trial participant. The interview guide contains open-ended questions that include:

1. How do you manage your diet during the pandemic?
2. What are some of the difficulties you have in choosing or getting healthy food?
3. Have there been any changes to your eating habits before and during the pandemic?
4. Who helped you manage your diet during this time?

## **Data Collection Techniques**

Data is collected through three main techniques:

### **In-depth interview**

The interview process is carried out in person or through online media (Zoom/WhatsApp call), depending on the health and safety conditions of the participant. Each interview lasted 30–60 minutes and was recorded with the permission of the participants.

### **Non-participatory observation**

The researcher observed the participants' eating habits at home, if possible, or through verbal descriptions in interviews. This helps to provide a contextual picture of the patient's eating environment.

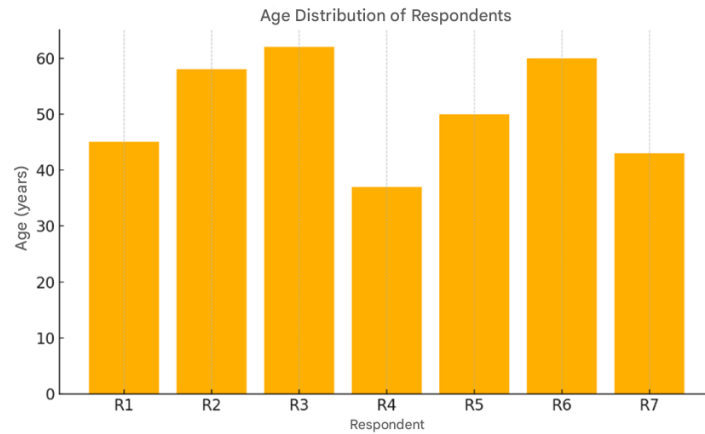
### **Documentation**

Documentation in the form of meal diaries of several participants, photos of groceries, and simple medical records (if obtained) were used to corroborate the interview data.

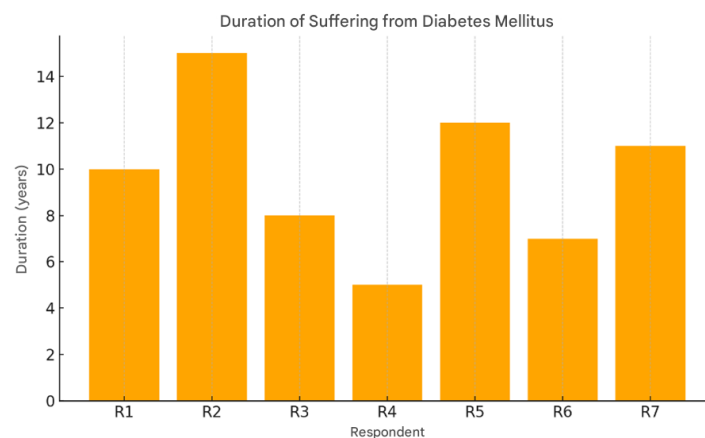
All data were analyzed using thematic analysis techniques. (Braun & Clarke, 2025), through stages: data transcription, repeat reading, encoding, grouping of codes into themes, and interpretation of meaning. To maintain the validity of the data, source triangulation techniques (comparing data from interviews, observations, and documentation) and member checking were used by asking for confirmation from participants on the results of their interviews.

## **Results and Discussion**

This study involved seven respondents of type 2 Diabetes Mellitus (DM) patients who met the inclusion criteria. Respondents consisted of four males and three females, ranging in age from 37 to 62 years. The length of suffering from DM varies between 5 to 15 years. This data illustrates the diversity of experiences based on age and duration of illness, which provides a contextual dimension in the analysis of dietary management experiences during the pandemic.



**Figure 1. Age Distribution of Respondents**



**Figure 2. Duration of Suffering from Diabetes Mellitus**

Based on the results of in-depth interviews with seven respondents, it was revealed that the COVID-19 pandemic has had a major influence on the diet of Diabetes Mellitus (DM) patients, both directly and indirectly. One of the dominant themes that emerged was changes in access to foodstuffs. The majority of respondents said that during the social restriction period, they had difficulty getting healthy foodstuffs such as vegetables and fresh fruits. The early closure of markets or shops and the rise in the price of staples have forced them to consume junk food, some of which even rely on instant food as an alternative. For example, one respondent said that he was forced to eat instant noodles more often because the stall near his house was closed, and it was difficult to find vegetables.

This condition also affects the discipline of respondents in carrying out a diet prescribed by medical professionals. Three respondents admitted that they experienced a decrease in discipline in maintaining their diet during the pandemic. Feelings of boredom, stress, and changes in daily routines make them more easily tempted to eat foods that are not recommended by dietary recommendations. One of the respondents mentioned that he became more frequent snacking and did not pay attention to the sugar content in food because he felt mentally tired due to the pressure of the pandemic situation.

However, some respondents admitted that they still try to maintain their diet with help and support from their families, especially their spouses. Four out of seven respondents said

that family members have an important role in helping prepare meals as recommended, including limiting foods high in sugar and fat. This support is not only in the form of physical, such as cooking or shopping, but also emotional motivation to stay healthy during times of crisis.

Changes in consumption patterns are also evident in the narratives conveyed by the respondents. Some of them often buy finished food or order food online, because they are worried about contracting the virus if they leave the house. However, this decision also raises another concern, namely, uncertainty about the content of the food. One of the respondents admitted that she often ordered food online, although she was not sure if the food was in line with her dietary needs as a diabetic.

Overall, these in-depth interviews illustrate the major challenges DM patients face in maintaining a healthy diet during the COVID-19 pandemic. They not only struggle physically to get the right food, but also mentally to stay consistent in living a healthy lifestyle amid stress and limitations.

### Findings from the Respondent Questionnaire

The questionnaire was given to evaluate the extent to which respondents maintained aspects of diet management based on a Likert scale of 1–5 (1 = very inappropriate, 5 = very appropriate). The indicators measured include: frequency of regular meals, consumption of vegetables/fruits, avoidance of sugar, and regularity of nutrition consultations.

**Table 1. Average Score of Dietary Management Indicators of Diabetes Mellitus Patients During the COVID-19 Pandemic**

Indicator	Average Score
Eat 3 meals a day regularly	3.4
Daily consumption of vegetables and fruits	2.9
Avoid the consumption of sugary foods	3.1
Nutrition consultation during the pandemic	2.4

Source: Data Processed

The lowest score was found in the nutrition consultation indicator, showing the existence of barriers to access and adaptation to health services during the pandemic.

### Observation Results

The results of observations carried out, both directly and through verbal explanations from respondents, show that the physical and social environment around patients has a great influence on their eating habits during the COVID-19 pandemic. In some cases, it was found that respondents did not have a regular meal schedule. Mealtimes often shift due to changes in daily routines, such as waking up later in the day or feeling less hungry due to a lack of physical activity. This causes the diet to be inconsistent, both in the amount and time of consumption.

In addition, the results of observations of the home environment showed that most of the respondents' household kitchens did not provide food ingredients that supported the diabetic diet optimally. In some homes, researchers noted that the food available in storage cabinets and refrigerators is more in the form of instant food, canned food, and sweetened drinks.

Respondents admitted that they save these types of foods because they are practical and have a longer shelf life, especially at a time when their mobility is limited during the pandemic. In one case, a respondent kept a large amount of sweetened beverages at home to "stock during the PPKM period", despite realizing that the drinks were risky for her blood sugar levels.

Observations also show that some respondents did not have access to accurate sources of nutrition information during the pandemic. They rely more on memories or old habits in preparing food, which is not necessarily in accordance with the latest dietary recommendations for people with DM. In this context, the limitations of education and assistance from health workers seem to be one of the important factors that affect the effectiveness of diet management.

### **Visualization of Findings**

Based on the questionnaire data distributed to the respondents, an overview of their level of discipline in carrying out their diet according to medical recommendations was obtained. Scores from several key indicators show moderate to low trends. For example, the level of regularity in eating three meals a day only achieved an average score of 3.4 on a scale of 5, while daily consumption of vegetables and fruits had a lower average score of 2.9. This indicates that although patients have awareness of the importance of a healthy diet, its implementation has not been optimal.

The most striking findings emerged from the indicators of regularity of nutrition consultations, which only obtained an average score of 2.4. This shows that during the pandemic, many patients did not have access to nutrition counseling services, either due to limited health facilities or ignorance about alternative online services. These findings are in line with in-depth interviews that revealed that some respondents felt they had no place to ask about safe and healthy food choices during the pandemic.

In relation to individual discipline levels, further analysis showed variation between respondents. Some respondents were able to maintain a fairly high level of discipline, especially those with strong family support and adequate knowledge of the diabetic diet. Meanwhile, other respondents showed low levels of compliance, often due to psychological distress, economic stress, or limited access to appropriate food.

From all these findings, it can be seen that the COVID-19 pandemic not only challenges the physical aspects of disease management but also the social, psychological, and structural aspects that influence the daily eating decisions of DM patients. Visualization of quantitative data, which was originally prepared in the form of score graphs, now shows that behind these numbers, there is an experiential complexity that requires a more personalized and contextual approach to intervention.

This research reveals that the COVID-19 pandemic has had a significant impact on the experience of Diabetes Mellitus patients in managing their diet. From the in-depth interviews, questionnaires, and observations conducted, it appears that the majority of respondents face various challenges that affect the consistency and quality of their diet. Limited access to healthy foodstuffs, changes in daily routines, and psychological stress during the pandemic have caused some patients to be unable to maintain their diet according to medical recommendations.

Although some patients show adaptive efforts, such as replacing groceries with available alternatives or relying on family support, the reality is that not all have enough resources or

knowledge to make adjustments effectively. Some respondents even admitted that they often consume instant food or order food online without paying attention to the nutritional content, as a form of practical response to limited movement and anxiety about being exposed to the virus outside the home.

From the questionnaire data, it can be seen that aspects of diet management, such as eating regularity, consumption of vegetables and fruits, and avoidance of sweet foods, are not carried out optimally. The nutrition consultation indicator even showed the lowest value, reflecting the lack of access to education and health services during the pandemic. Respondents' environmental observations reinforced these findings, where most households do not provide adequate amounts of healthy foodstuffs and do not have regular eating habits.

### **Interpretation of Interview Results**

Based on the results of in-depth interviews, it can be concluded that the experience of Diabetes Mellitus (DM) patients in managing their diet during the COVID-19 pandemic is greatly influenced by social, emotional, and environmental changes. Most respondents said that there were difficulties in accessing healthy foodstuffs, due to mobility restrictions, rising prices of staples, and the closure of shops or markets. This experience shows that the pandemic has disrupted the daily support system that previously allowed patients to maintain a consistent diet.

More than that, the psychological aspect also appears as a determining factor in diet management. Respondents revealed stress, anxiety, and boredom due to prolonged isolation, which led to changes in eating behaviors such as increased snacking frequency, decreased motivation to maintain a diet, and consumption of foods high in sugar. As shown by R1 and R5, emotional stress makes them eat more often as a form of venting. This supports the theory that the management of chronic diseases depends not only on medical intervention, but also on the stability of the patient's mental state. (Pfefferbaum & North, 2020).

However, family support has proven to be one of the protective factors in maintaining a healthy diet. Respondents who had a partner or family member who actively assisted in preparing meals showed a better level of adherence to the principles of the diabetic diet. This is in line with a study by (Gu et al., 2025), which stated that the presence of a support system in the household can significantly improve dietary adherence in DM patients.

### **Discussion of Questionnaire Results**

From the results of the questionnaire, it is known that several of the main indicators of diet management show moderate to low scores. The level of regularity of eating three meals a day was at an average of 3.4 (out of a scale of 5), while the consumption of vegetables and fruits obtained a score of 2.9. This score illustrates the gap between knowledge and ideal dietary practices. In fact, maintaining a meal schedule and fiber consumption from vegetables is an important component in preventing drastic blood glucose spikes (ADA, 2020).

The most worrying finding was the low regularity score in nutrition consultations (average 2.4). The pandemic has disrupted access to primary health services, including nutrition services, so that some patients do not receive adequate education or guidance in adjusting their diet during crisis situations. This makes it clear that health services during the

pandemic are still very focused on the curative aspects and handling of COVID-19, while chronic disease management has been neglected.

### **Analysis of Observation Results**

The observations made showed that the respondents' household conditions did not fully support the diabetic diet. Many instant foods, high-sugar snacks, and sugary drinks were found in the kitchens and refrigerators of respondents' homes. Although most respondents stated that they had the intention to maintain a diet, their home environment did not reflect a willingness to support it.

In addition, the absence of a scheduled eating routine clearly indicates that patients face difficulties in maintaining regularity, both due to internal factors such as lack of motivation, and external factors such as the instability of family schedules during the pandemic. This observation reinforces the results of interviews and questionnaires that diet management during the pandemic requires a more comprehensive approach that focuses not only on individual education but also on improving the home environment.

The results of this study are in line with a study conducted by (Mahmoud et al., 2022), which stated that the pandemic has caused disruption of diet management and physical activity in patients with chronic diseases. They reported that 53% of patients experienced weight gain during the pandemic due to changes in eating behavior. These findings are also supported by (Yeoh et al., 2021), who found that 41% of DM patients experienced a decrease in the frequency of nutrition consultations during lockdown.

However, this research provides added value by exploring the subjective experience of patients in depth through a phenomenological approach. While previous studies have tended to be quantitative and focus on physiological impacts, this study shows the psychological and social dynamics that influence patients' eating behavior. This reinforces the argument that DM management during a pandemic should be seen as a multidimensional issue.

The findings of this study have far-reaching implications, especially for health workers such as community nurses, nutritionists, and doctors. First, it is necessary to strengthen community-based nutrition education services that can continue to run even in crisis conditions. The use of digital media, such as online nutrition consultation applications or educational WhatsApp groups, can be an alternative solution when direct visits are restricted. Second, family-based interventions need to be prioritized. Education is not only focused on patients, but also on family members who live in the same house. This is important because daily eating decisions are often influenced by the people closest to them. Families can act as agents of change in maintaining diet consistency and providing a supportive environment. Third, primary service systems such as health centers need to expand the scope of home-based chronic disease management programs. During the pandemic, a pick-up approach or home visit-based assistance can be an important alternative to maintain the sustainability of health services for DM patients.

While this study provides an in-depth look at DM patients' experiences in managing their diet during the pandemic, there are some limitations to note. First, the limited number of participants (7 people) limited the generalization of the findings. Second, the use of online interviews on some respondents may affect the depth of the data obtained, especially when

compared to face-to-face interviews. Third, not all data can be verified through direct observation, due to mobility restrictions during the pandemic.

In addition, the economic aspect and the educational background of the respondents were not used as the main variables in this study, even though both have great potential to affect the ability to manage diet. For further research, it would be very useful if a multi-method approach were carried out with a wider sample coverage and included other contextual variables.

## Conclusion

This study shows that the COVID-19 pandemic has had a real and complex impact on the experience of Diabetes Mellitus patients in managing their diet. Through a qualitative approach with in-depth interviews, questionnaires, and observations, it was found that patients faced significant challenges in maintaining dietary discipline due to limited access to healthy foodstuffs, changes in routines, psychological pressure, and lack of nutrition counseling services. Although there is awareness from patients about the importance of maintaining a diet, the reality is that not all are able to carry out the diet according to medical recommendations consistently. Family support has proven to be an important protective factor that can help patients stay disciplined in managing their diet, while home environment and the unavailability of healthy food are major barriers.

The results of the questionnaire and observation reinforced the findings of the interview, that most of the patients experienced a decrease in discipline in the aspects of regular eating, vegetable consumption, and nutritional consultation. Thus, diabetes management during the pandemic needs to involve a more holistic approach that not only focuses on medical education but also pays attention to social, environmental, and emotional aspects. This study emphasizes the importance of strengthening community-based primary health services, increasing nutritional literacy through online media, and family involvement in dietary interventions for patients with chronic diseases. On the other hand, the limitations of the study, such as the limited number of participants and contextual variables that have not been explored, indicate the need for follow-up studies with a broader approach and scope.

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