

## Self-Management of COVID-19 at home: A case study of a patient with Diabetes and the community health policy on vulnerable groups

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### Abstract

**Introduction:** The global COVID-19 pandemic has posed significant challenges to healthcare systems worldwide. Vulnerable populations, such as individuals with underlying health conditions, are particularly at risk. This study focuses on the self-management of COVID-19 at home among patients with diabetes, a high-risk group, and its alignment with community health policies aimed at protecting vulnerable populations.

**Aim:** The aim of this case study was to explore the experiences of a patient with diabetes who self-managed COVID-19 symptoms at home and to analyze the extent to which community health policies address the needs of vulnerable groups in the context of the pandemic.

**Method:** A qualitative case study design was employed to gain in-depth insights into the self-management journey of a patient with diabetes who contracted COVID-19. Semi-structured interviews were conducted with the patient, using a policy review approach. Thematic analysis was utilized to identify key themes in the patient's experience and policy documents.

**Results:** The findings revealed that the patient faced unique challenges in managing both diabetes and COVID-19 symptoms at home. While the patient demonstrated resourcefulness and adaptability, several barriers emerged, including limited access to healthcare resources and the absence of specific guidelines for vulnerable groups. The analysis of community health policies highlighted the need for more targeted interventions to support vulnerable populations during the pandemic.

**Conclusions:** Self-management of COVID-19 among individuals with diabetes requires tailored support and guidance. Existing community health policies should be updated to address the specific needs of vulnerable groups, ensuring equitable access to resources and information. This case study underscores the

*importance of a comprehensive and inclusive approach to pandemic response and highlights opportunities to enhance the resilience of healthcare systems in the face of similar challenges in the future.*

## INTRODUCTION

It has been studied that since the outbreak of the COVID-19 pandemic, populations belonging to high-risk groups, including individuals with Type 1 and Type 2 Diabetes, have an increased likelihood of developing COVID-19, often with severe symptoms.<sup>1</sup> According to Gupta et al.,<sup>2</sup> patients with diabetes who exhibit symptoms such as sore throat, runny nose, cough, and difficulty breathing should initially communicate with their treating physician and subsequently undergo diagnostic testing (Rapid test or molecular PCR test). Depending on the result, they should follow hygiene protocols and observe a 14-day isolation period, now revised to 7 days, as per specialist guidelines. Studies have shown that a significant proportion of patients with mild symptoms of the infection can manage their condition at home, provided they have secured the necessary supplies for their condition, such as glucose meters, test strips, insulin, and medications.<sup>3</sup>

As advocated by Hanlon et al.,<sup>4</sup> telehealth played a crucial role during the pandemic in facilitating self-management and self-care among individuals facing health challenges. With the advancement of technology, in addition to glucose meters and insulin pumps, individuals now also utilize mobile applications installed on their smartphones and connected to digital watches. These applications display, for example, caloric expenditure due to physical activity, medication reminders, and hydration prompts (e.g., drinking a glass of water every hour) to ensure adequate hydration.<sup>5</sup>

Furthermore, as suggested by Whitelaw et al.,<sup>6</sup> during the COVID-19 pandemic, especially when individuals with diabetes were under home quarantine, video conferencing via platforms like Skype significantly assisted in maintaining communication between patients and healthcare providers. These virtual consultations facilitated discussions regarding the patient's health status and treatment plan outside of hospital settings. However, several research gaps emerge from this study, highlighting areas where further investigation is warranted.<sup>6</sup>

While the study provides insights into the challenges faced by a patient with diabetes during COVID-19 self-management, there is a

need for a broader examination of self-management guidelines and strategies specific to this high-risk group. Exploring effective self-care practices, resources, and information tailored to individuals with diabetes and COVID-19 could offer valuable guidance to both patients and healthcare providers.<sup>7</sup>

A more in-depth exploration of health disparities affecting vulnerable groups, particularly those with chronic conditions, is warranted. Understanding the underlying factors contributing to disparities in access to healthcare resources and self-management support could inform targeted interventions and policy changes.<sup>8</sup>

Investigating the extent to which policies address vulnerable groups' needs, considering variations across different healthcare systems and jurisdictions, could provide a comprehensive overview of policy effectiveness and gaps.

This study acknowledges the challenges of remote self-management for patients with diabetes during the pandemic. However, further investigation into the utilization and effectiveness of digital health tools, telemedicine, and remote monitoring technologies in supporting individuals with chronic conditions during COVID-19 self-management is needed. Exploring barriers, facilitators, and outcomes of digital health solutions could inform their integration into future pandemic response strategies.<sup>7-9</sup>

Yet, there is a research gap concerning the long-term implications of the pandemic on chronic disease management and the lasting effects on vulnerable populations. Investigating the impact of disrupted healthcare services, delayed interventions, and changes in self-management behaviors could provide insights into the pandemic's broader health consequences.<sup>5</sup>

To provide a comprehensive understanding, future research could incorporate the viewpoints of healthcare providers and policymakers. Exploring the challenges, barriers, and strategies identified from these different angles could offer a more holistic view of the complex interactions between patients, providers, and policies.<sup>10</sup>

Addressing these research gaps could enhance the understanding of self-management practices, policy effectiveness, and healthcare disparities among vulnerable groups during the COVID-19 pandemic. Such insights are essential for developing targeted interventions, policy recommendations, and sustainable strategies to improve the well-being and health outcomes of individuals with chronic conditions in times of crisis.

## METHOD

The qualitative approach of a case study was selected for this investigation due to its suitability for the research topic. This methodological choice, as explained by Noor, allows researchers to concentrate on a single instance and present the perspectives of a specific case from various angles. The researchers opted for this method because their primary objective was anthropological in nature. The term 'case study' refers to the examination of a single case or a small group within a broader topic or issue. This approach falls under qualitative research methods, as it does not aim to involve a large number of participants, collect data from extensive or representative groups, or generalize its findings. The method shares similarities with ethnographic research. Its primary value lies in the extensive data it yields, obtained through meticulous observation, recording, and subsequent analysis. While it typically does not commence with a hypothesis, one or more hypotheses may emerge after data evaluation, prompting further exploration through alternative research methodologies.

### Sample

The participant in the research was a 26-year-old woman named Agni. She was diagnosed with Type 1 Diabetes at the age of 18. She resides in Kastoria, living in her paternal home with her parents and a younger sister.

### Research Procedure

The research procedure adhered to guidelines issued by the Greek Ministry of Education and Religions in 2008 for successful interviews. The researchers explained the interview's purpose, ensured personal data confidentiality, and obtained consent for recording. A warm-up phase preceded the main questions to establish rapport. The interview, lasting an hour and involving the participant's physical presence, was conducted while maintaining a calm environment to mitigate interview-related stress. The researchers took notes and recorded the session with the individual's agreement.

### Data Collection

For data collection, a nonstructured interview was employed in this study. This choice aligns with Robson's assertion that an interview can serve as the sole or predominant tool in a case study. A semi-structured interview format was adopted, utilizing predetermined questions that allowed interviewers to maintain flexibility.

Five one-hour sessions took place in a suitable and private setting at the participant's home, ensuring uninterrupted discussions. Semi-structured interviews commenced with open-ended conversations about the patient's emotions, experiences, and concerns related to the disease, involving both the patient and a close family member. Audio recording captured verbal responses and emotional nuances. Demographic information and a family genealogy were also documented.

### Data Analysis

Thematic analysis, commonly used in qualitative research with limited prior understanding of the subject, was employed to detect and explore data patterns. This approach allows participants' data to drive knowledge production rather than being guided by predetermined constructs. Data analysis formed the basis for nursing assessment and identification of the patient's nursing needs within the nursing process. Nursing care plans were developed to recognize present and anticipated needs or risks.

### Validity and Reliability

Ensuring the research's validity and reliability involved alignment of the chosen approach with research objectives and consultations with other academics. Reinterviewing the same individual could yield similar results. Furthermore, questions were designed based on global literature data and aligned with the study's objectives. Credibility, transferability, dependability, and conformability were considered for a robust study. Credibility measures the alignment of research approach and findings, which conform to accepted standards and observations. Transferability gauges the degree of generalizability of research findings to other contexts. Dependability ensures research results remain unaffected by temporal changes. To ensure conformability, strategies included rechecking data procedures and revealing contrary cases that challenged initial observations.

### Ethical Considerations

Ethical considerations were stringently followed throughout the research process. Participants provided informed consent, both written and verbal, and were assured of voluntary participation. Anonymity and personal information protection were emphasized, and participants were informed of their freedom to withdraw from the study at any point. The researcher documented events extensively, maintaining

records of notes, photographs, and dialogue with participant consent.

## RESULTS

### Case Description

Agni K. resides in Kastoria, specifically in a village located 10 km away from the city center. She lives in her paternal home with her parents and her sister, who is three years younger. Agni is 26 years old and holds a degree from the Law School of the Aristotle University of Thessaloniki. She was diagnosed with Type 1 Diabetes Mellitus at the age of 18. Suspicion about her health arose when she lost 4 kilograms in two weeks without following any diet. She also experienced significant fatigue, along with polyuria and subsequent polydipsia. Consequently, she decided to consult her family doctor, who recommended blood and urine tests. The results revealed her diagnosis of Type 1 Diabetes Mellitus. It is likely that this autoimmune process had manifested in her body at least three years earlier, as 80% of her pancreas's  $\beta$ -cells were already destroyed. Based on the test outcomes, she needed to adhere to appropriate treatment, including antidiabetic medications and insulin therapy, alongside a diabetes-adapted diet and regular physical exercise.

### Family Health History

Agni K.'s family enjoys a relatively comfortable standard of living. Her parents both completed secondary education. Specifically, her father is an automobile mechanic with a workshop in Kastoria, while her mother manages household tasks. Additionally, Agni has a sister who graduated from the Classical Philology department at the University of Ioannina. Their parents treat Agni and her sister equally, regardless of Agni's health condition. They work to maintain a balanced environment where Agni doesn't feel "different" from the rest of the family. Initially, upon learning about Agni's condition, they experienced moments of distress, wondering, "Why our child and not us?" Nevertheless, with time, they adapted, placing trust in medical advice and providing support to their daughter.

The following information was gathered from the interview with the participant:

*"I am Agni K., and I reside in Maniakoi, Kastoria. I am among those with Type 1 Diabetes. The day I was diagnosed with diabetes, my life changed drastically. It was the year I graduated from high school. I realized I had lost 4 kilograms in a short span without intentionally dieting. Initially, I attributed it to stress from the nationwide exams*

*and the fatigue I was experiencing. Yet, I also felt an unexplained, persistent thirst. My mother grew concerned about the sudden weight loss and fatigue, speculating that it might be due to low iron levels. We consulted our family doctor, and I described my symptoms, leading to a referral for blood tests."*

*At first, I cried. The idea of diabetes was always associated with old people, those aged 70 and above. I was just 18 years old.*

*I was facing various conditions that I had generally heard about concerning diabetes from others—vision loss, occasional weight gain, and even limb amputations. This started to instill a deep fear in me about what my future might hold. Initially, I tried to ignore the things I heard about diabetes. It was not only confusing but also distressing. My doctor was the only one I truly trusted, and thankfully, he was very supportive.*

*At first, the idea of pricking my fingers to measure my blood sugar and injecting insulin into my stomach didn't sit well with me. It seemed daunting, and I felt like all eyes were on me.*

*My daily life is quite normal, with the only difference being that I need to be mindful of what I eat, the quantities I consume, and keeping my blood sugar in check through insulin doses. That's the extent of the change.*

*I use an insulin pump, so I don't need to manually inject before meals. I just calculate the insulin dose, and it's automatically delivered at the right time. I've caught strangers staring at me, but I've learned not to care and not to apologize for it.*

*Presently, I'm filled with fear. The doctors have all come out and emphasized that vulnerable groups like mine need to be cautious. If we get infected, there's a direct path to the ICU, and they've even mentioned the possibility of death.*

*Even though I've barely left the house, I still got infected. My parents, mainly my dad, who would come from work, would have brought it in. I don't hold him responsible, of course.*

*This was before the vaccines were even available. Just think about it. Even scientists were searching for answers.*

*I experienced symptoms akin to the flu—intense congestion, a sore throat, and a fever that reached up to 38 degrees.*

*Following the well-known rapid test, I followed the recommended quarantine guidelines and informed my doctor. It's no secret that I used an oximeter on my finger, mostly for psychological reassurance. I was afraid of experiencing breathlessness, given what I had heard. I made sure to eat well, stay hydrated, and once I recovered from the fever, I resumed my home workouts.*

*In life, my ultimate goal is to find happiness, but above all, I aim to stay healthy, even while managing diabetes. Staying informed is crucial. I also want to raise awareness about health issues, emphasizing prevention. Organizing informational sessions in schools and spiritual centers seems simple but incredibly important to me".*

## DISCUSSION

The insights shared by Agni K. through her interview provide valuable context for understanding the lived experience of managing Type 1 Diabetes Mellitus (T1DM) in the context of the COVID-19 pandemic. Agni's journey captures the emotional and practical challenges that individuals with diabetes encounter while navigating the intricacies of their condition during a global health crisis.

Agni's initial reaction to her diagnosis of T1DM at the age of 18 underscores a common misconception – that diabetes primarily affects older adults. This perception, as supported by previous literature, reflects the need for increased awareness and education about diabetes across all age groups.<sup>11</sup> Her experience of fearing potential complications such as vision loss, weight gain, and limb amputations aligns with the emotional burden that often accompanies diabetes, highlighting the importance of mental health support and comprehensive education for patients.<sup>12</sup>

Agni's reliance on her doctor's guidance echoes the significance of establishing a strong patient-provider relationship in diabetes management.<sup>4</sup> This bond not only fosters trust but also encourages adherence to treatment plans. Her hesitation in adopting self-monitoring practices, such as blood sugar testing and insulin administration, resonates with existing research that acknowledges the psychological barriers associated with these routines.<sup>6,13</sup>

The adoption of an insulin pump by Agni signifies a positive transition in her diabetes management, as it streamlines the process of insulin administration and minimizes the social stigma attached to manual injections. This aligns with studies that emphasize the impact of technological advancements in improving the quality of life for individuals with diabetes.<sup>1,6</sup> Agni's resilience in facing public scrutiny while using the insulin pump exemplifies the broader theme of destigmatizing chronic conditions, which is vital in promoting inclusivity and acceptance.<sup>8</sup>

The interview also highlights the intersecting vulnerabilities of individuals with diabetes during the COVID-19 pandemic. Agni's concerns about the heightened risk of severe illness align with recent literature underscoring the increased susceptibility of individuals with diabetes to COVID-19 and its complications. Her account of isolation and the challenges of maintaining strict quarantine measures despite living with family further underscores the broader social implications that vulnerable populations face.<sup>12</sup>

Agni's self-monitoring practices, including using an oximeter, reflect her determination to stay informed and proactive about her health during the pandemic. This parallels the general shift toward personal responsibility and empowerment in healthcare decision-making, as observed in studies emphasizing self-management strategies.<sup>2,14</sup>

In Agni's aspirations for her future – happiness, health, and advocacy – we see a testament to the resilience and hope that individuals with chronic conditions possess. Her desire to share knowledge and promote health awareness, especially in schools and spiritual centers, aligns with recent discussions on the importance of community engagement and peer support in diabetes management.<sup>1,5</sup>

In conclusion, Agni's interview highlights the multifaceted challenges faced by individuals managing diabetes in the context of the COVID-19 pandemic. Her experiences resonate with existing literature on the emotional, psychological, and practical aspects of living with diabetes and navigating a global health crisis. Agni's narrative underscores the need for comprehensive patient education, robust support systems, and targeted interventions to ensure the well-being of individuals with diabetes in times of adversity.

**Conflicts of Interest:** The authors declare no conflicts of interest.

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