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Research Article

Continuous Glucose Monitoring Systems in Diabetes Management: A Qualitative Analysis Based on User Experiences

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Abstract

Aim: Continuous glucose monitoring systems are widely employed in diabetes management to improve blood glucose control and reduce the risk of hypoglycemia. These technologies enable real-time monitoring of glucose levels, thereby optimizing treatment processes. However, user-based data regarding the effectiveness and usability challenges of continuous glucose monitoring systems remain limited. This study aims to analyze the experiences of individuals using continuous glucose monitoring systems by examining the role of these devices in diabetes management, their advantages, and the issues encountered.
Material and Method: A total of 193 user comments collected from Reddit, YouTube, and Şikayetvar platforms were evaluated through content analysis.
Results: The results indicate that continuous glucose monitoring systems enhance users' quality of life, facilitate glucose tracking, and contribute positively to hypoglycemia management. Nevertheless, technical and design-related issues—such as fluctuations in sensor accuracy, connectivity problems, high costs, and skin irritations—were frequently reported. In particular, false hypoglycemia alarm notifications were found to be especially bothersome.
Conclusion: Users call for improvements in calibration procedures, the development of customizable alarm systems, and the provision of longer-lasting, cost-effective sensors. The findings offer valuable feedback for enhancing continuous glucose monitoring systems and provide recommendations for manufacturers and healthcare professionals to optimize the use of this technology in diabetes management. Future research should focus on more comprehensive studies to evaluate the long-term effectiveness of continuous glucose monitoring systems.

Keywords: Continuous glucose monitoring system, diabetes, diabetes management, health technology hypoglycemia

INTRODUCTION

Diabetes is a widespread public health issue globally and is one of the chronic diseases that adversely affect individuals' quality of life. Diabetes mellitus is a high-cost disease associated with increased mortality due to both its acute and vascular complications (1). Consequently, ensuring and sustaining effective care for the growing diabetic population remains an important concern for health systems worldwide (2). Effective management of diabetes—including the control of diabetes-related complications—is therefore essential. The primary goal in treating this disease is to maintain blood glucose within normal limits through optimal glycemic control. Achieving this objective requires patient education, appropriate dietary support, sufficient physical activity, regular self-monitoring of blood glucose, and consistent adherence to prescribed medications (3).

Self-monitoring of blood glucose (SMBG) is pivotal in attaining target blood glucose levels for diabetic individuals using insulin, oral antidiabetics, or medical nutrition therapy. The frequency of home SMBG is determined on an individual basis. For patients administering insulin several times a day, SMBG is required 3–4 times daily; for type 1 diabetic patients under basal-bolus insulin therapy, pregnant women, insulin pump users, and uncontrolled type 2 diabetic patients, 3–4 measurements per day are recommended; whereas for other type 2 diabetic patients, 3–4 measurements per week are generally advised. Furthermore, in diabetic individuals whose fasting and preprandial glucose levels are controlled yet who do not

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reach target levels of glycated hemoglobin (HbA1c), SMBG is recommended during dietary and pharmacological treatment aimed at balancing postprandial glycemia (4). Self-monitoring enables the early detection of hypoglycemia and hyperglycemia, facilitates timely intervention, and is also critical for the early diagnosis and prevention or delay of complications. Increased frequency of home blood glucose monitoring is associated with improved glycemic control in the course of type 1 diabetes. In situations with high glycemic fluctuations, unrecognized hypoglycemia may occur. Some patients deliberately reduce or skip their insulin dose due to fear of hypoglycemia. In cases suspected of Munchausen syndrome (where patients intentionally manipulate treatment to their detriment), patients may intentionally manipulate their treatment. In such cases, even temporary CGM systems are the most effective option for blood sugar tracking (5).

Self-monitoring of blood glucose is a key element of effective diabetes management. Diabetic individuals typically use glucometers at home to monitor their blood glucose levels; however, measurement errors can occur. Many of these errors are related to device performance and user operation. Inaccurate measurements affecting glycemic control may lead to inappropriate treatment, emphasizing the importance of proper usage techniques.

Conventional glucometers measure glucose in capillary blood obtained from the fingertip. The discomfort associated with repeated measurements throughout the day, along with the risk of skin injuries resulting from erroneous or multiple punctures (6) and the inability to provide continuous monitoring, has led to the replacement of this method with less invasive, more comfortable, and uninterrupted glucose monitoring sensors (7). This technological advancement enables diabetic patients to monitor their glucose levels in real time and to respond more swiftly to fluctuations.

Glucose sensors are distinguished by the convenience they offer compared to fingertip measurements and the enhanced sense of security they provide in managing blood glucose. In addition to tracking instantaneous glucose levels, these devices offer data on glucose trends, rates of change, and directional shifts, thereby delivering a more comprehensive approach to diabetes management (8). These features allow users to optimize their diet, exercise, and medication regimens, demonstrating that these sensors are effective tools for long-term diabetes management (9).

Continuous glucose monitoring systems provide significant benefits, particularly for patients with type 1 diabetes and other groups. Individuals who perform frequent and regular SMBG, those with diminished hypoglycemia awareness or recurrent hypoglycemic episodes, patients experiencing marked glycemic variability, and those whose HbA1c levels remain above target can benefit substantially from CGM usage (10). Moreover, CGM offers valuable support for individuals experiencing discrepancies between CGM readings and HbA1c levels, for athletes, and for those employed in high-risk professions prone to hypoglycemia (11).

Continuous glucose monitoring systems represent a rapidly advancing technological trend. Wearable, minimally invasive CGM sensors are capable of monitoring blood glucose levels almost in real time over several consecutive days, thereby providing a significant innovation in diabetes management. This technology is increasingly becoming prevalent among diabetic individuals requiring insulin therapy, as continuous monitoring enhances the effectiveness of the treatment process.

Devices used in continuous glucose monitoring consist of three main components. First, a small sensor—with an adhesive patch—that is placed under the skin (typically on the abdomen or arm) to secure its position; these are known as disposable sensors. Alternatively, implantable sensors, which are inserted into the body, are also used. CGM sensors estimate interstitial glucose levels and need to be replaced at specific intervals depending on their type (often every few weeks). The second component is a transmitter, which wirelessly sends data to the third component—a receiver device (or a software program on a smartphone or insulin pump) where the data are stored and displayed.

Glucose sensors are widely utilized by diabetic individuals, and user feedback based on personal experience varies. The benefits of CGM have been demonstrated in numerous studies involving both type 1 and type 2 diabetic patients, showing improvements in HbA1c, reductions in hypoglycemic events, decreased glycemic variability, and alleviation of diabetes-related distress (12-14). In the literature, studies have predominantly focused on controlling blood glucose levels with CGM systems (15,16). However, there is a limited amount of research addressing the issues or complications arising from their use. User reviews provide valuable insights into the effectiveness, ease of use, challenges encountered, reliability, and impact on quality of life associated with these devices.

The Importance of Continuous Glucose Monitoring Systems in Nursing

Continuous glucose monitoring sensors have become a critical component in diabetes management within nursing practice. With the use of these sensors, nurses can more effectively assess patients' glycemic control and detect hypoglycemic or hyperglycemic episodes at an early stage, enabling timely intervention (17). This is particularly advantageous for nurses working in intensive care, endocrinology, and home care settings, as monitoring patients' real-time glucose values aids in optimizing medication and insulin dosages (18,19).

Moreover, issues such as false alarms and measurement errors are among the challenges that nurses must address during patient education. Strengthening educational programs is essential to enhance patient safety and treatment adherence. By providing training on CGM systems, nurses can increase patients' awareness regarding proper sensor usage, alarm settings, and strategies to improve

blood glucose measurement accuracy. The effective use of glucose sensors not only reinforces the role of nurses in diabetes management but also contributes to higher quality patient care and the prevention of complications.

This study aims to conduct a qualitative analysis of user comments related to glucose sensors. The research seeks to evaluate the effectiveness of the devices, the technical issues encountered during their use, and the adaptation of individuals to this technology based on user experiences. The findings are expected to offer recommendations for the improvement of glucose sensors as well as to contribute to understanding how diabetic patients approach this technology. In this context, the study intends to present a new perspective on diabetes management and technology integration by examining patient experiences with glucose sensor use within a scientific framework.

The following research questions were addressed in this study:

- What is the effectiveness of the devices?
- What difficulties are encountered during use?
- What is the level of technical reliability of the devices?
- How do glucose sensors affect users' quality of life?

Ethical Considerations of the Study

This study did not require ethics committee approval, as it was compiled from anonymous and publicly accessible data sources. Nonetheless, all data were handled anonymously, and only general evaluations that did not contain any personal information were performed. The research was conducted in accordance with the ethical principles governing qualitative research.

MATERIAL AND METHOD

Research Design

This study was designed as a qualitative, cross-sectional investigation to examine user experiences with CGM systems. The research aimed to uncover the advantages, disadvantages, and challenges encountered during the use of these devices by analyzing user comments. Within the framework of qualitative research, the study employed an interpretative phenomenological approach, which was chosen for its focus on understanding individuals' lived experiences. The analysis was conducted using content analysis, with data systematically evaluated through an inductive approach to develop meaningful themes. The inductive method was preferred because the analysis was based entirely on user comments without reference to any pre-established theory. Content analysis is an approach for drawing objective and systematic inferences from verbal or written sources, and it aims to reveal general trends related to the subject under investigation (20).

Research Universe and Sample

The research universe comprised users who employ continuous glucose monitoring systems and post comments about these devices online. The sample was drawn from data obtained on platforms where CGM users are highly active, specifically Reddit, YouTube, and Şikayetvar.com.

Data Sources

Reddit: One hundred comments meeting the inclusion criteria were collected from discussions where diabetic patients and CGM users share their experiences and recommendations. Notably, the r/diabetes subreddit is an active platform for such exchanges. [https://www.diabetesdaily.com/forum/forums/continuous-glucose-monitors-SGİs.84/page-2]

YouTube: Sixty comments were retrieved from video descriptions and comment sections related to user experiences with continuous glucose monitors, using keywords such as "Continuous Glucose Monitor User Experiences" and "Glukoz izleme sensörü kullanımı."

Şikayetvar (Türkiye): Thirty-three comments that met the inclusion criteria were collected from the Şikayetvar.com platform, where Turkish users express their complaints regarding CGM devices.

These platforms were selected due to their ability to capture experiences from participants across various geographical regions and socio-economic backgrounds.

Participant Profile

No direct participants were involved in the study; instead, anonymous user comments from online platforms served as the data source. These comments represent the diverse experiences of individuals from various age groups, genders, and diabetes types. The written expressions predominantly reflect experiences from groups such as patients with type 1 and type 2 diabetes, individuals diagnosed with prediabetes, and parents of children with diabetes.

Data Collection Process

Between January 2024 and December 2024, a total of 193 comments relevant to the study's objectives were included. Data collection was terminated once repetitive comments began to appear and data saturation was reached. The comments and complaints were thematically selected from publicly accessible platforms and compiled anonymously. The selection criteria for the comments were as follows:

Inclusion Criteria

Comments must contain detailed experiences related to CGM systems.

They should provide information about advantages, disadvantages, or user recommendations.

They must address technical issues, user satisfaction, design and comfort aspects, cost and accessibility challenges, or potential improvements suggested by users.

The comment must have been posted within the last year (2024).

Exclusion Criteria

Comments that are not directly related to CGM systems or contain superficial information have been excluded.

Single-word comments or those with disconnected statements have been excluded.

Comments with commercial intent, brand promotions, or sponsored content have not been included.

Comments containing personal health information, private patient details, or violating patient privacy have been excluded.

Comments with meaningless, incoherent, or machine-translated inconsistencies have been excluded.

Comments containing profanity, insults, or offensive language have been excluded.

Data Analysis

The data obtained from glucose sensor users were analyzed using Microsoft Word, following these steps:

1. Data Compilation

Comments from platforms such as Reddit, YouTube, and Şikayetvar were collected and grouped under separate headings for each platform (Table 1). These comments were consolidated into text files, which served as the primary dataset for the study.

2. Coding and Thematic Classification

First-Level Coding: The comments were carefully read, and primary themes were identified. These themes were defined as main headings in a Word document.

Second-Level Coding: Under each identified theme, more specific sub-themes were classified. Each comment was categorized accordingly (Table 2).

3. Grouping of Comments

The comments were organized into tables as evidence supporting the relevant themes, using the "Insert > Table" function in Word.

4. Summarization of Themes

For each theme, a summary of the corresponding findings was prepared. This section was structured using headings (e.g., "User Satisfaction and Positive Experiences"), and the supporting findings for each sub-theme were listed as bullet points.

Table 1. Summary of CGMS data by source and codes

Main theme	User satisfaction and positive experiences (n)	Technical issues and perceived deficiencies (n)	Ease of use and design issues (n)	Solution suggestions and needs of users (n)	Practical applications of results (n)
Reddit (n=100)	34	59	10	4	20
Şikayet var (n=33)	3	18	6	3	7
Youtube (n=60)	13	15	3	10	44

n: Number of user comments; Data is taken from Reddit, YouTube, and Şikayet var; Some comments were included in all relevant categories because they addressed more than one theme

Table 2. Thematic classification of glucose sensor user comments

Main theme	Sub themes
User satisfaction and positive experiences	Impact on quality of life; tracking trends; alert mechanisms
Technical issues and perceived deficiencies	Accuracy problems; alarm systems; connection and calibration deficiencies
Ease of use and design issues	Sensor placement; adhesives; cost barriers
User solution suggestions and needs	Calibration demands; customizable alarms; improved designs
Practical applications of results	Role in diabetes management; improvements by manufacturers

RESULTS

Although continuous glucose monitoring systems offer significant advantages in diabetes management, they also involve various technical and design challenges based on user experiences. The findings of this study provided a comprehensive evaluation of user satisfaction, the problems encountered, and the suggested solutions. All the outputs obtained are presented in Table 3. The study reached the following findings:

1. User Satisfaction and Positive Experiences

- **Sub-themes and Key Findings:**

Impact on Quality of Life: Glucose sensors have increased quality of life by reducing the need for finger pricking.

Blood Glucose Tracking: They have provided the opportunity to track blood glucose trends. By ensuring continuous monitoring of blood glucose, they have facilitated adherence to diets.

Alarm Systems: Users have indicated that they are satisfied with the alerts for hypoglycemia and hyperglycemia.

2. Technical Problems and Perceived Shortcomings

- **Sub-themes and Key Findings:**

Accuracy Problems: It has been reported that the sensors work less accurately during the first 24 hours and on the last day.

Alarm Systems: The alarm systems (especially at night) giving false alarms have caused discomfort.

Connectivity and Calibration Shortcomings: Bluetooth connectivity issues and calibration deficiencies have been frequently mentioned.

3. Ease of Use and Design Problems

- **Sub-themes and Key Findings:**

Sensor Placement: Difficulties in sensor placement and, in some cases, pain have been reported.

Sensor Adhesiveness: Allergic reactions and skin irritation have occurred due to the adhesive materials.

Cost Barriers: The high cost of sensors has created accessibility issues for individuals with low income.

Data Saturation

Data saturation was achieved as the data began to exhibit recurring themes without adding any new information. Comments from different platforms have enhanced the generalizability of the findings.

Table 3. Content Analysis Table Based on Sensor User Experiences

Main themes	Sub-themes	Main findings/inferences
User satisfaction and positive experiences	Impact on quality of life; tracking trends; alert mechanisms	Sensors improve quality of life by reducing the need for finger pricks and providing real-time glucose monitoring; alerts create a sense of security.
Technical issues and perceived deficiencies	Accuracy problems; alarm systems; connection and calibration deficiencies	Accuracy issues in measurements, especially on the first and last days; frequent false alarms; Bluetooth connection drops.
Ease of use and design issues	Sensor placement; adhesives; cost barriers	Difficulty in installation; allergic reactions to adhesive; high cost limits access.
Users' solution suggestions and needs	Calibration demands; customizable alarms; improved designs	Users demand calibration features, customizable alarms, and durable adhesives; the need for longer life and lower cost is paramount.
Practical applications of results	Role in diabetes management; improvements by manufacturers	Design and calibration improvements can increase user satisfaction; findings provide a roadmap for technology development.
User comments were analyzed thematically from Reddit, YouTube and Şikayetvar platforms		

DISCUSSION

This study aimed to examine the user experiences of individuals using continuous glucose monitoring systems, thereby elucidating the role, advantages, encountered challenges, and technical issues of these devices in diabetes management. Although the positive effects of CGM systems on glycemic control have been widely investigated in the literature, qualitative studies based on user experiences remain limited. This research offers a comprehensive perspective on the practical use of these devices by analyzing user comments from various platforms.

User Satisfaction and Positive Experiences

The findings indicate that CGM systems provide significant benefits in terms of enhancing quality of life, facilitating blood glucose monitoring, and contributing to the management of hypoglycemia/hyperglycemia. Users reported that these systems reduce the need for finger pricking, thereby making the diabetes management process less invasive and more comfortable. Additionally, by offering the opportunity to monitor blood glucose trends, they have helped individuals improve adherence to dietary and physical activity regimens. The alarm systems for hypoglycemia and hyperglycemia have generally been positively evaluated by users and have been highlighted as an important feature that increases the sense of security.

These findings are consistent with studies in the literature showing that CGM improves HbA1c levels, reduces hypoglycemic events, and stabilizes glycemic variability (7,12,15). For example, the study titled Multiple Daily Injections and Continuous Glucose Monitoring in Diabetes highlights the important role of sensors in lowering HbA1c levels and improving blood glucose control (13). It has been observed that these systems provide more detailed information about glycemic variability by detecting fluctuations in glucose levels, their duration, and frequency (21). The study's findings support these results in terms of diabetic individuals' adaptation to technology and the long-term effects of continuous glucose monitoring.

Technical Problems and Perceived Shortcomings

The findings of the study have revealed that, despite the many advantages of CGM systems, they also encompass certain technical issues and design deficiencies. One of the most frequently mentioned problems by users is fluctuations in sensor accuracy. In particular, users reported that measurements are less reliable during the first 24 hours and in the final days of the sensor's lifespan. This situation is consistent with the existing concerns in the literature regarding the accuracy and calibration requirements of CGM systems. For instance, a study conducted on critically ill patients after abdominal surgery and solid organ transplantation determined that real-time continuous glucose monitoring required additional calibration during the first 24–48 hours (22). It was considered that the participants in that study might have experienced accuracy errors due to their inexperience with calibration (22). However, in the present study,

individuals who have been diabetic for many years and have been using CGM systems attributed the inaccurate measurements to deficiencies in the devices' calibration processes. These findings indicate that there remain areas needing improvement in the accuracy and reliability of CGM systems, and that calibration processes, in particular, have a decisive impact on the user experience.

In the comments included in the study, it was reported that the sensors' measurement errors are particularly higher during the first days and decrease over time. Additionally, some users stated that the devices give false alarms and continuously report low glucose levels, especially during the night. This situation indicates that, despite the ease of use of CGM systems, users are still prompted to verify with fingertip glucose measurements.

There are studies in the literature that investigate the accuracy of CGM devices (23-25). A systematic review revealed that the accuracy of various CGM sensors available on the market—both in terms of numerical accuracy and clinical accuracy measured by error grids—is sufficient in the overall glycemic and hyperglycemic range. However, the accuracy rates in hypoglycemia were found to be limited (25). Another limitation of CGM is that glucose levels are measured from the interstitial fluid rather than from the blood. Since it takes time for glucose to pass from the bloodstream to the interstitial fluid, there is a natural delay between the actual blood glucose level and the level measured by the CGM. This delay varies by user and device, but is generally between 5 and 15 minutes (24). A measurement taken during this period may be erroneously evaluated. However, it has been argued that deviations of more than ±40 mg/dl in these measurements might be unacceptable (26). Therefore, when providing CGM training to diabetic patients, education should cover both calibration techniques (for models requiring calibration) and the need to consult healthcare professionals for deviations exceeding ±40 mg/dl.

Almost all CGM systems perform less accurately during hypoglycemic episodes and provide the most accurate measurements during hyperglycemia (23). However, the comparative performance among systems may vary significantly among patients. In situations where glucose levels change rapidly or where symptoms do not match the readings in the hypoglycemic range, it is very important to verify glucose values with blood glucose measurements (27).

In the study, false alarm notifications emerged as a significant issue. Users reported that the false alerts from hypoglycemia or hyperglycemia alarm systems, especially during nighttime, adversely affected their sleep quality. Such false alarms may be caused by factors such as the individual lying on the arm where the sensor is located, leading to compression-induced low readings or pressure-induced sensitivity reductions resulting in false hypoglycemia readings (28,29). In some devices, alarm functions are available to warn users of a hypoglycemic condition, and people tend to rely on these alarms. The National Institute for Health and Care Excellence recommends verifying hypoglycemic values with a finger-prick test (30). CGM systems are not sufficiently accurate to detect hypoglycemia, a common side effect of diabetes treatment (31). Therefore, individuals using these sensors should be educated on hypoglycemia alarm settings and proper sensor usage. In the study, users indicated that they adjusted these false alarms by configuring the alarm thresholds; some users even reported that they turned off the alarms while sleeping.

The higher the hypoglycemia threshold is set, the higher the likelihood of detecting hypoglycemia. However, this increased threshold also raises the risk of false alarms (32). There are costs associated with this suboptimal alarm performance. The irritation caused by false alarms and additional finger-pricking tests may lead some patients to opt for the comfort of a lower alarm setting rather than the safety of a higher one. Recently, the concept of "alarm fatigue" has emerged to describe this situation (33). Alarm fatigue occurs when a CGM user is exposed to a high frequency of alarms that are no longer perceived as important—especially false or ineffective alarms—resulting in a risk of neglecting real alerts. Education should start with wise alarm settings. In most cases, the selected hypoglycemia alarm threshold is approximately 70 mg/dl, and this setting allows for a reduction of more than 50% in the time spent in hypoglycemia (34). However, this alarm threshold is not universal and should be adjusted in collaboration with the healthcare team according to age, medical history, and the individual's hypoglycemia awareness threshold. It is also possible to enable alarms only during periods when hypoglycemia occurs more frequently (e.g., at night, during intense physical activities, while fasting, etc.). When the hypoglycemia alarm is deactivated, an emergency low blood sugar alarm (<54 mg/dl), which is non-adjustable or cannot be disabled (factory setting), is triggered depending on the device (34). Therefore, optimizing the hypoglycemia alarm thresholds of CGM systems according to individual needs and ensuring that users receive proper education to manage these alarms effectively emerges as a necessity for system reliability and patient safety.

Ease of Use and Design Issues

CGM users have reported that the sensor placement process is challenging and, in some cases, can cause pain. It has been reported that some individuals experience allergic reactions and skin irritation due to the adhesive materials used to secure the sensor to the skin. In the literature, skin reactions associated with CGM use have been identified as a significant concern, particularly among individuals with sensitive skin (35). In a study conducted by F. Lambardo et al. (2022) involving 64 children and adolescents with type 1 diabetes who used insulin pumps and continuous glucose monitoring devices, 27.8% of participants exhibited symptoms such as a history of allergic diseases, itching, discharge, and edema, with this skin irritation being attributed to the sensor adhesives (36). In fact, there is still no developed precaution to prevent skin problems. It has been observed that individuals with

sensitive skin are satisfied with sensors applied with a hydrocolloid patch or topical corticosteroid skin barrier spray (37). Raising awareness among CGM users about alternative adhesive materials, protective barrier products, and measures appropriate for their individual skin types could be effective in minimizing skin reactions and enhancing both user comfort and treatment adherence.

Another significant issue is the high cost of sensors and accessibility limitations. Users have reported that the high prices of CGM devices make them difficult to access, particularly for low-income individuals. This situation indicates that cost-reducing measures are necessary to promote the widespread use of CGM. In a recent study by Messer et al. (2020), cost was identified as the greatest barrier to diabetes device usage among adolescents (38). Similarly, a survey among pediatric and adult clinicians emphasized that cost is the most significant factor hindering the widespread use of these devices, with approximately 50% of healthcare professionals considering it a major problem for patients (39). In fact, for adult type 1 diabetic patients using multiple daily injections and experiencing poor glycemic control, although the initial cost of CGM is high, it has been shown to be a cost-effective option in the long term by improving glucose control and reducing the risk of non-severe hypoglycemia (40). However, as is the case with any new technology in healthcare, cost and insurance coverage remain potential barriers to accessing these devices. In order for CGM technology to reach a broader audience, policies aimed at reducing costs, expanding insurance coverage, and minimizing access barriers need to be developed.

User Solutions and Expectations

The user comments included in the study demonstrate that they offer some suggestions for making CGM systems more user-friendly. Users, in particular, have emphasized needs such as:

- Improving calibration systems,
- Developing customizable alarm systems,
- Producing sensors that can be used for a longer period and at a lower cost,
- Resolving technical issues related to connectivity and data transfer.

These suggestions are regarded as important considerations for future product development processes by CGM manufacturers and healthcare providers.

Strengths and Limitations of the Study

This study offers an important contribution as one of the first qualitative analyses based on user experiences with CGM technologies. By collecting user comments from various platforms (Reddit, YouTube, and Şikayetvar), it has enabled a comprehensive analysis of the experiences of individuals from different geographical regions and socio-economic backgrounds.

The sample is based solely on data obtained from online platforms, and therefore may not represent the entire population of CGM users. Because the participants are anonymous, detailed demographic information (such as age, gender, and duration of diabetes) could not be determined. Since the user comments are based on personal experiences, they may be subjective and require support from clinical validations. Only data collected from specific platforms were examined, and other social media or patient forums were not included. Considering these limitations, it is recommended that future studies include surveys or semi-structured interviews with a broader user base.

CONCLUSION

In conclusion, glucose sensors provide a valuable alternative in situations where finger-pricking is challenging (e.g., in cases of neuropathy or manual dexterity issues) and make diabetes management more accessible. These innovations, which enhance user satisfaction, are considered an important step towards better glycemic control and improved quality of life. However, issues such as technical shortcomings, high cost, and fluctuations in sensor accuracy need to be addressed.

In this regard, the following recommendations are proposed:

- CGM manufacturers should implement technological improvements to enhance sensor accuracy.
- Customizable alarm systems should be developed to prevent false alarms.
- Sensor adhesives should be developed using more skin-friendly materials.
- The cost of CGM systems should be reduced to ensure broader accessibility for users.
- More comprehensive clinical studies should be conducted to examine the long-term effectiveness of CGM technologies in detail.

For diabetic individuals to effectively monitor their glucose levels, it is crucial for healthcare professionals to provide guidance that takes into account factors such as cost and accessibility, which will significantly contribute to improved patient compliance and treatment efficacy.

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