

Exploring Challenges to Medication Adherence and the Role of Pharmacists in Managing Type 2 Diabetes Mellitus Patients

Elaine Bonga¹, Wendy Grace Esponilla¹, Christy Marie Heyasa¹,
Sonia S. Morales²

¹Student Researchers, College of Pharmacy and Chemistry, University of the Immaculate Conception, Davao City, Philippines

²Faculty Researcher, College of Pharmacy and Chemistry, University of the Immaculate Conception, Davao City, Philippines

Corresponding Author(s): Sonia S. Morales (smorales@uic.edu.ph)

Abstract

Background: Medication adherence is essential for effective management of Type 2 Diabetes Mellitus (T2DM) and the prevention of its complications, which continue to pose a major public health challenge. Despite its importance, many patients struggle to follow their prescribed treatment plans.

Objective: This study explored the challenges patients with T2DM face in adhering to their medications and the role of pharmacists in promoting adherence.

Methods: This qualitative research was conducted in Bacolod City and involved in-depth interviews with ten individuals diagnosed with T2DM.

Results: Through thematic analysis, we identified key factors influencing medication adherence, including side effects of antidiabetic medications, financial problems, and emotional and psychological burdens. Findings also revealed that patients use various coping strategies, including lifestyle modifications. In this regard, pharmacists play an important role in supporting patients' medication needs living with chronic conditions such as T2DM.

Conclusion: the results also indicated that pharmacists' expertise was often unrecognized, with patients mainly depending on doctors for medication advice.

Keywords: *Medication adherence, Type 2 Diabetes Mellitus, challenges, Pharmacist role, qualitative research, Bacolod City, Philippines*

Acknowledgments: The authors would like to express their sincerest gratitude to their advisers, panel of reactors, and the Dean of the College of Pharmacy and Chemistry.

Funding/support: None

Conflicts of interest: None

INTRODUCTION

Medication adherence continues to be a significant challenge for individuals with Type 2 Diabetes Mellitus (T2DM) despite advances in treatment. Many patients struggle to adhere to their prescribed regimens, leading to severe long-term complications such as kidney failure, nerve damage, and cardiovascular disease. Poor medication adherence in patients with T2DM remains a widespread issue due to contributing factors like psychological resistance, regimen complexity, and a lack of health literacy (Polonsky & Henry, 2016). To address these challenges, pharmacists play a crucial role by providing comprehensive drug counseling, enhancing patient education, and supporting appropriate medication administration.

Globally, pharmacists are recognized as key members of interprofessional diabetes care teams, with advanced credentials such as the Certified Diabetes Care and Education Specialist (CDCES) demonstrating their capacity to manage and educate patients with chronic conditions (Association of Diabetes Care & Education Specialists, 2025). In the Philippines, this expanded role is supported by national continuing professional development programs that train pharmacists in diabetes management and self-monitoring of blood glucose (Professional Regulation Commission, 2018). Together, these international standards and local training initiatives reinforce the pharmacist's growing capacity to improve T2DM outcomes.

According to the International Diabetes Federation (2024), an estimated 589 million adults worldwide are living with diabetes. A primary obstacle in managing this global burden is poor medication adherence, which significantly increases the risk of severe complications. Studies internationally demonstrate that non-adherence stems from complex factors, including mistrust in healthcare providers, deeply held personal beliefs, reliance on home remedies, and a lack of health literacy regarding disease management (Rezaei et al., 2019; Sweileh et al., 2014).

This challenge is equally pronounced in the Philippines, where diabetes affects approximately 4.3 million individuals (Cando et al., 2024). At the community level, patients face distinct structural and psychological barriers. In urban settings such as Barangay Mansilingan in Bacolod City, non-adherence is compounded by local healthcare system constraints—such as inconsistent government medication supply—as well as psychological stressors like depression and chronic stress (Department of Health, 2022).

To address these localized challenges, this study aimed to explore the specific barriers to medication adherence among individuals with T2DM in Barangay Mansilingan, Bacolod City. By examining these lived experiences, this research seeks to inform the local healthcare landscape and provide actionable insights for targeted interventions. Ultimately,

these findings may serve as a framework for diabetes management strategies across other barangays in Bacolod City facing similar public health demands.

MATERIALS AND METHODS

Research Design

This study used a qualitative, phenomenological approach to better understand the real-life challenges faced by people with T2DM in Bacolod City when it comes to taking their medications as prescribed. This design was chosen because it captured individuals' lived experiences, allowing researchers to view the issue through the eyes of those living with the condition (Teherani et al., 2015). Through this approach, one could listen closely to patients as they shared their personal stories, thoughts, emotions, and everyday struggles. These conversations helped uncover the specific barriers they face with medication adherence.

Research Locale

The research was conducted in Barangay Mansilingan, Bacolod City, Negros Occidental, Philippines. City Health reports indicate that approximately 110 individuals are living with T2DM (Department of Health, 2022). This barangay provided a meaningful setting to explore real-life experiences related to medication adherence and healthcare access. The focus on this area allowed the research to reflect several perspectives from people of varying socio-economic backgrounds. Mansilingan was chosen because of the limited medical support available to many of its diabetic residents, making it an important site for understanding their challenges.

Research Participants

The researchers interviewed 10 respondents diagnosed with T2DM in Barangay Mansilingan, Bacolod City, to identify their challenges in adhering to their medication regimens and their interactions with pharmacists. Respondents were selected based on age: adults aged 18 to 70 were eligible to participate, as were those willing to share personal experiences related to medication adherence and challenges.

The 10 respondents who received codes from P01 to P10 and participated in the study were females aged 27 to 69 years. Participants have different durations of living with Type 2 Diabetes Mellitus, ranging from one year to as long as 21 years since being diagnosed, providing various perspectives in managing their chronic condition.

Data Gathering Procedures

The researchers conducted an in-depth interview (IDI) with individuals diagnosed with the target disease. The interviews were scheduled at a convenient time and location for the participants, ensuring a comfortable and private setting. Before conducting the interview, the researchers required the respondents to read the Informed Consent Form (ICF) and ensure they understood and signed it. The researchers noted that respondents had the right to withdraw from the study at any time during the interview without consequences or penalties. To comply with the Data Privacy Act of 2012, all transcripts and personal

information were stored securely, with access restricted to the researchers, and data will be deleted or destroyed three years after the study's completion.

A semi-structured interview guide was developed based on the study objectives and relevant literature concerning medication adherence, barriers to medication use, diabetes self-management, and the role of pharmacists in supporting patients with chronic conditions. The guide consisted of open-ended questions designed to elicit participants' experiences with medication use, challenges affecting adherence, strategies used to manage these challenges, and interactions with healthcare professionals, particularly pharmacists. Before data collection, the interview guide was reviewed by three institutional experts for content relevance, clarity, appropriateness of language, and alignment with the research objectives. The researchers revised the guide based on the reviewers' recommendations before conducting the interviews.

The semi-structured IDI format allowed flexibility, encouraging participants to share their personal stories while ensuring key topics were covered, such as challenges they faced in adhering to their medication regimens. The researchers ensured a safe, non-judgmental space through empathetic listening, neutral language, and a private setting. When discussing sensitive topics, participants might have experienced emotional distress, fatigue, or privacy concerns. To address this, trigger warnings were given before sensitive questions, breaks or shorter sessions were allowed, and participants were informed that they could skip any uncomfortable questions.

The researchers actively listened and engaged with the participants, probing further where necessary to gain deeper insights. They took detailed notes and audio-recorded the interviews with the participants' consent to ensure accurate data collection. Codes and pseudonyms (P01-P10) were used to maintain anonymity during data collection. Their participation was one-time only, which means researchers met them only during the interviews.

Because the study focused on participants' lived experiences, reports of medication-related symptoms were recorded according to participants' own perceptions and descriptions. Participants were asked to describe the symptoms they experienced in relation to their medication use and how these experiences affected their medication-taking behavior. No clinical adjudication or diagnostic procedure was undertaken to independently establish whether an individual symptom was attributable to a specific medication, diabetes mellitus, or another comorbid condition. Accordingly, reports of medication-related symptoms were interpreted as participants' perceived experiences rather than confirmed adverse drug reactions.

Thematic Analysis

The interview data were analyzed using thematic analysis following the approach described by Braun and Clarke (2006). The analysis involved familiarization with the data through repeated reading of the interview transcripts, generation of initial codes, organization of related codes into potential themes, review and refinement of themes, definition and naming of the final themes, and production of the final analytic account. The

University of the Immaculate Conception

themes were derived from recurring patterns in participants' accounts concerning medication adherence, coping strategies, and interactions with healthcare professionals. The researchers manually reviewed the transcripts and compared coded segments with the developing themes to ensure that the themes remained grounded in the participants' accounts. Representative quotations were selected to illustrate the findings and were identified using participant codes (P01–P10).

Ethical Statement

This study was submitted for ethical review and clearance to the Research Ethics Committee of the University of the Immaculate Conception. It was assigned the protocol code UG-FR-01-25-0052 and received clearance on 17 February 2025 through a full board review.

RESULTS

Table 1 highlights the essential themes and core ideas related to the lived experiences of patients with Type 2 Diabetes Mellitus (T2DM) as they manage their condition. These themes emphasize medication delays due to side effects, financial constraints, and emotional factors that patients endure as they live with T2DM.

Table 1
Lived Experiences of Patients in Adhering to their Anti-Diabetic Medications

Core Ideas	Essential Themes
Dizziness, nausea, bloating, headaches, sleep disturbances, fatigue, drowsiness, frequent urination, and thirst	Medication delays due to side effects
Financial Stress	Financial constraints
- Fear, isolation, and denial - Low motivation due to lack of visible health progress - Stress	Emotional factors

The first theme, medication delays attributed by participants to perceived medication-related symptoms, reflects how participants' experiences of physical discomfort influenced their medication-taking behavior. Participants described symptoms including dizziness, nausea, headaches, bloating, fatigue, sleep disturbances, frequent urination, and thirst. These symptoms were described by participants in connection with their medication use and, in some cases, contributed to delaying or skipping medication intake. For example, one participant stated, “Some of the medications I've been prescribed have caused side effects like dizziness, nausea, or headaches, which can make me feel even

worse than the diabetes itself" (P06). Another participant described sleep disturbance, frequent urination, and thirst: "Sometimes, I can't sleep or wake up in the middle of the night because I feel the urge to urinate and feel thirsty" (P04).

Importantly, these accounts represent participants' perceptions of medication-related symptoms rather than clinically confirmed adverse drug reactions. The qualitative interviews captured participants' interpretations of their experiences, but the study did not independently determine whether each reported symptom was caused by a medication, diabetes itself, or another coexisting condition. Thus, the findings should be interpreted as perceived medication-related symptoms that influenced medication-taking behavior rather than as clinically adjudicated medication adverse effects.

The second theme, financial constraints, underscores the economic burden associated with long-term diabetes management. Participants consistently reported difficulty covering medication costs, often prioritizing other essential needs such as food and household expenses. As reflected in Table 1, financial stress emerged as a central issue influencing adherence. One participant stated,

"One of the biggest challenges I face is the cost of the medications... sometimes I have to choose between paying for my meds and other essentials like food or bills" (P06).

Another participant echoed this concern, sharing,

"The price makes it difficult for me to drink my medicine... I have other expenses and bills to pay" (P10).

Financial strain also led to psychological stress, which further complicated adherence. For instance, a participant expressed,

"I feel stressed... especially the financial aspect, because there are unexpected expenses" (P08).

Despite recognizing the consequences of non-adherence, participants were often forced to make difficult decisions due to limited resources.

The third theme, emotional factors, highlights the psychological challenges participants face in managing their condition. Feelings of fear, denial, isolation, and low motivation were evident, particularly during the early stages of diagnosis. One participant described the difficulty of acceptance, stating,

"When I first started taking my medication... it was even harder for me to accept that I had to take medicine" (P01).

Another participant shared feelings of fear and vulnerability, saying *"When I was first diagnosed, I felt fear... But I realized that I had to be strong and face reality" (P03).*

Over time, some participants demonstrated emotional adaptation, as one expressed *"At first, I couldn't accept it... but now, I have come to accept it" (P04).* However, lack of visible improvement also contributed to decreased motivation, with one participant stating,

"It's hard to stay motivated when I don't see immediate improvements despite taking my medication" (P06).

These findings indicate that emotional well-being plays a critical role in influencing adherence behaviors.

The coping strategies adopted by participants are summarized in Table 2, which identifies two major themes: (1) adopting lifestyle modifications and (2) a holistic approach to treatment.

Table 2
Coping Mechanisms of Patients with Type 2 Diabetes Mellitus

Core Ideas	Essential Themes
- Reducing Sugar Intake, More Vegetable Intake, and Meal Planning. - Exercise and Physical Activity Engagement	Adopting lifestyle modifications
- Use of dietary supplements and herbal products as complementary treatments - Consulting a doctor before using herbal supplements	Holistic approach to treatment

The first theme reflects participants' efforts to manage their condition through behavioral changes. These included reducing sugar intake, increasing vegetable intake, meal planning, and incorporating physical activity into daily routines. These lifestyle changes were perceived as essential strategies to complement medication adherence and improve overall health outcomes. Participants described these changes as challenging yet necessary for disease control. One participant shared,

"I no longer eat donuts or cake, I strictly control myself" (P01).

Another participant explained dietary adjustments, stating,

"I tried reducing sugar... and eating more vegetables" (P05).

Physical activity was also emphasized, with one participant noting,

"I do Zumba every Wednesday... and it makes me feel really good" (P04).

The second theme highlights the use of alternative therapies such as herbal supplements and dietary products as complementary strategies. Financial limitations and social influences were key factors driving this approach. As indicated in Table 2, participants reported using herbal remedies alongside prescribed medications. One participant stated,

"Because of the high cost of my maintenance medicines, I also tried using herbal supplements" (P10)

Another shared,

"When you're short on money, you'll try all kinds of remedies, even herbal ones" (P08).

Recommendations from family and peers also influenced this practice, as one participant noted,

"They often offer herbal medicines and remedies like 'pito-pito'" (P09).

Despite this, some participants demonstrated caution and emphasized the importance of professional guidance, with one stating,

"Before taking herbal medicine, I always ask my doctor first" (P04).

These findings suggest that while alternative therapies are commonly explored, medical consultation remains an important consideration for some patients.

Table 3 highlights the essential theme and core ideas related to the Insights of Type 2 Diabetes Mellitus Patients in Understanding and Managing Adherence to their Medications.

Table 3
Insights of Patients in Understanding and Managing Adherence to Medications

Core Ideas	Essential Theme
• Seek Guidance and consultation from pharmacists on Medication • Reliance primarily in doctors for medication-related information	Understanding adherence to diabetes medication in daily routines

Participants demonstrated varying levels of engagement with healthcare providers, particularly pharmacists, in managing their medications. As shown in Table 3, some participants actively sought guidance from pharmacists to better understand their prescriptions and explore cost-effective options. One participant shared,

"I ask about my prescription... they suggest alternatives and cheaper brands" (P04).

Another participant highlighted the educational role of pharmacists, stating,

"They teach me what the medicine is for... and provide all the information I need" (P10).

These interactions contributed to improved understanding and confidence in medication use.

However, other participants reported limited interaction with pharmacists and relied primarily on physicians for medication-related information. One participant stated,

"I have not received any advice because I have never directly consulted a pharmacist" (P03).

Similarly, another noted,

"I just presented my prescription... the doctor already explained it to me" (P05).

This reliance on physicians suggests a gap in the recognition of pharmacists' role in patient care.

DISCUSSION

This study explored the challenges to medication adherence among Type 2 Diabetes Mellitus (T2DM) patients, their coping mechanisms, and their insights into managing adherence within their daily lives. The findings revealed that medication adherence is influenced by a complex interplay of physical, financial, and emotional factors, while patients employ various adaptive strategies to manage these challenges. Furthermore, the role of pharmacists emerged as both significant and underutilized in supporting adherence.

In terms of lived experiences, perceived medication-related symptoms emerged as an important factor associated with delayed or skipped medication intake. Participants described dizziness, nausea, headaches, gastrointestinal discomfort, fatigue, and sleep disturbances and connected these experiences with difficulties in maintaining their medication routines. This finding is consistent with previous research showing that patients' perceptions of adverse effects can contribute to non-adherence to antihyperglycemic medications (Chao et al., 2007; Piragine et al., 2023). However, the present study did not clinically establish the cause of each reported symptom. The findings therefore represent participants' perceptions of medication-related symptoms rather than confirmed adverse drug reactions. This distinction is important because symptoms such as fatigue, thirst, and frequent urination may also occur in relation to diabetes or other health conditions. Nevertheless, regardless of the clinical cause, participants' perception that their medicines were responsible was itself relevant to their medication-taking behavior and should be considered when providing medication counseling.

Financial constraints were another prominent barrier influencing medication adherence. Participants described the burden of sustaining long-term medication costs, often forcing them to prioritize basic necessities over their prescribed treatment. These findings align with a previous study, which emphasized that socioeconomic factors, particularly low income, are strongly associated with poor adherence among T2DM patients (Kim et al., 2021). The study also supports the findings of Polonsky and Henry (2016), who identified the cost of treatment as a key modifiable factor affecting adherence. Additionally, it was underscored that financial and logistical barriers significantly hinder patients' ability to consistently access medications (Kvarnström et al., 2021). In this study, participants expressed that financial stress not only limited their ability to purchase medications but also contributed to psychological strain, further complicating adherence. Despite awareness of the consequences of non-adherence, patients were often compelled to make difficult financial decisions, highlighting the economic vulnerability of this population.

Emotional factors also played a critical role in shaping adherence behaviors. Participants reported experiencing fear, denial, stress, and low motivation, particularly during the early stages of diagnosis. These findings are supported by Hoogendoorn et al. (2024), who noted that emotional distress is associated with reduced treatment adherence among T2DM patients (Hoogendoorn et al., 2024). Similarly, it was emphasized that psychosocial factors, including stress and emotional burden, negatively influence adherence (Świątoniowska-Lonc et al., 2021). In this study, participants described difficulty accepting their condition and sustaining motivation, especially when immediate improvements were not observed. The importance of setting achievable goals and providing emotional support is vital to maintaining patient engagement, as evidenced by the participants' gradual acceptance and adaptation over time (Delessandro, 2023). The presence or absence of social support systems also influenced how patients coped emotionally, further emphasizing the need to address psychological aspects in diabetes management.

Regarding coping mechanisms, participants adopted lifestyle modifications as their primary strategy for managing their condition. These included dietary changes, such as reducing sugar intake and increasing vegetable consumption, as well as engaging in physical activities like walking and Zumba. These findings are consistent with Uusitupa et al. (2019), who demonstrated that dietary modifications, particularly reduced intake of added sugars, improve glycemic control. Similarly, a study emphasized the benefits of regular physical activity in enhancing insulin sensitivity and overall metabolic health (Colberg et al., 2016). In this study, participants viewed lifestyle modifications as essential complements to their medication regimen, although they acknowledged the challenges associated with maintaining these changes consistently.

Another coping strategy identified was adopting a holistic approach to treatment, including herbal supplements and alternative remedies. This practice was largely influenced by financial limitations and recommendations from family or peers. Morris & Chasens (2017) explained that financial barriers often lead patients to seek alternative, more affordable treatment options, which may affect adherence to prescribed therapies. Additionally, McBenedict et al. (2024) highlighted that integrating alternative therapies requires proper guidance from healthcare professionals to ensure safe and effective use. In this study, while some participants relied on herbal remedies, others demonstrated caution and emphasized the importance of consulting healthcare providers before using such alternatives. This reflects a balance between cultural practices, economic realities, and medical guidance in managing chronic conditions.

In terms of patient insights, the findings revealed that understanding medication adherence as part of daily routines is influenced by access to information and healthcare support. Participants who actively engaged with pharmacists reported a better understanding of their medications, including proper usage and availability of more affordable alternatives. This aligns with a previous study that emphasized the importance of patient education in improving adherence and overall disease management (Fekadu et

al., 2019). Furthermore, Lokhande et al. (2022) highlighted the critical role of pharmacists as accessible healthcare professionals who provide counseling and support to patients with chronic conditions (Lokhande et al., 2023). However, the study also found that some participants relied primarily on physicians for medication-related information and did not recognize the role of pharmacists. This is consistent with the findings of others, who identified limited pharmacist engagement as a barrier to maximizing their contribution to patient care (Alsairafi et al., 2019). The lack of awareness regarding pharmacists' roles suggests a need to strengthen their visibility and integration within the healthcare system.

This study has several limitations that should be considered when interpreting the findings. First, the study involved only 10 participants from a single barangay in Bacolod City; therefore, the findings are context-specific and should not be considered statistically representative of the broader population of people with T2DM in Bacolod City or the Philippines. Second, the study relied on participants' self-reported experiences and perceptions of medication use. In particular, reported symptoms attributed to medications were not clinically adjudicated, and the study therefore cannot establish causal relationships between specific medicines and reported symptoms. Third, the qualitative findings may have been influenced by the language used during interviews and the process of transcription or translation where applicable. Finally, the study did not systematically examine participants according to duration of diabetes or regularity of physician supervision; consequently, these factors could not be evaluated as potential influences on medication-adherence experiences. Future studies may include a larger and more diverse sample and examine these characteristics more systematically.

Overall, this study's findings demonstrate that medication adherence among T2DM patients is influenced by multidimensional factors, including physical side effects, financial limitations, and emotional challenges. While patients employ various coping mechanisms such as lifestyle modifications and alternative treatments, the support provided by healthcare professionals, particularly pharmacists, remains crucial. Addressing these barriers through patient-centered interventions, improved access to affordable medications, and enhanced healthcare collaboration may significantly improve adherence and health outcomes among individuals living with Type 2 Diabetes Mellitus.

CONCLUSION

Based on the findings of the study, medication adherence among patients with Type 2 Diabetes Mellitus (T2DM) is influenced by multiple interrelated factors, including medication side effects, financial constraints, and emotional well-being. These factors significantly hinder patients' ability to consistently follow their prescribed treatment regimens and adversely affect their overall quality of life. Despite these challenges, patients employ various coping mechanisms, such as lifestyle modifications, holistic approaches, and seeking professional consultation, to manage their condition. The integration of these

strategies, along with support from the healthcare team, helps patients navigate and mitigate the challenges of medication adherence.

Furthermore, the findings highlight the essential role of pharmacists in addressing medication-related challenges among T2DM patients. Beyond the traditional function of medication dispensing, pharmacists contribute to patient care through counseling, cost-effective alternative prescribing, reinforcement of healthy practices, and emotional support. By engaging with patients and understanding their lived experiences, pharmacists play a significant role in enhancing patients' comprehension of medication adherence and facilitating the effective integration of diabetes management into their daily routines.

REFERENCES

- Alsairafi, Z., Waheedi, M., & Alsaleh, F. (2019). <p>The perspectives of patients and physicians on the role of pharmacists in improving medication adherence in type 2 diabetes: A qualitative study</p>. *Patient Preference and Adherence*, 13, 1527–1543. <https://doi.org/10.2147/PPA.S218068>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Cando, L. F. T., Quebral, E. P. B., Ong, E. P., Catral, C. D. M., Relador, R. J. L., Velasco, A. J. D., Alcazar, R. M. U., Reyes, N. A. L., Pilotin, E. J. B., Ornos, E. D. B., Paz-Pacheco, E., & Tantengco, O. A. G. (2024). Current status of diabetes mellitus care and management in the Philippines. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 18(2), 102951. <https://doi.org/10.1016/j.dsx.2024.102951>
- Chao, J., Nau, D. P., & Aikens, J. E. (2007). Patient-reported perceptions of side effects of antihyperglycemic medication and adherence to medication regimens in persons with diabetes mellitus. *Clinical Therapeutics*, 29(1), 177–180. <https://doi.org/10.1016/j.clinthera.2007.01.014>
- Colberg, S. R., Sigal, R. J., Yardley, J. E., Riddell, M. C., Dunstan, D. W., Dempsey, P. C., Horton, E. S., Castorino, K., & Tate, D. F. (2016). Physical Activity/Exercise and Diabetes: A Position Statement of the American Diabetes Association. *Diabetes Care*, 39(11), 2065–2079. <https://doi.org/10.2337/dc16-1728>
- Delessandro, A. (2023). *What I Wish I Knew About the Weight Stigma I'd Have to Fight to Get the Type 2 Diabetes Care I Needed*. Health. <https://www.health.com/what-i-wish-i-knew-weight-stigma-and-type-2-diabetes-7377126>
- Department of Health. (2022). *2021 LGU Health Scorecard Annual Report*. Department of Health. <https://caro.doh.gov.ph/wp-content/uploads/2024/07/2021-LGU-HSC-Annual-Report.pdf>
- Fekadu, G., Bula, K., Bayisa, G., Turi, E., Tolossa, T., & Kasaye, H. K. (2019). Challenges And Factors Associated With Poor Glycemic Control Among Type 2 Diabetes Mellitus Patients At Nekemte Referral Hospital, Western Ethiopia. *Journal of Multidisciplinary Healthcare*, 12, 963–974. <https://doi.org/10.2147/JMDH.S232691>
- Hoogendoorn, C. J., Krause-Steinrauf, H., Uschner, D., Wen, H., Presley, C. A., Legowski, E. A., Naik, A. D., Golden, S. H., Arends, V. L., Brown-Friday, J., Krakoff, J. A., Suratt, C. E., Waltje, A. H., Cherrington, A. L., Gonzalez, J. S., & GRADE

- Research Group. (2024). Emotional Distress Predicts Reduced Type 2 Diabetes Treatment Adherence in the Glycemia Reduction Approaches in Diabetes: A Comparative Effectiveness Study (GRADE). *Diabetes Care*, 47(4), 629–637. <https://doi.org/10.2337/dc23-1401>
- International Diabetes Federation. (2024). Facts & figures. *International Diabetes Federation*. <https://idf.org/about-diabetes/diabetes-facts-figures/>
- Kim, H., Sereika, S. M., Lingler, J. H., Albert, S. M., & Bender, C. M. (2021). Illness Perceptions, Self-efficacy, and Self-reported Medication Adherence in Persons Aged 50 and Older With Type 2 Diabetes. *Journal of Cardiovascular Nursing*, 36(4), 312. <https://doi.org/10.1097/JCN.0000000000000675>
- Kvarnström, K., Westerholm, A., Airaksinen, M., & Liira, H. (2021). Factors Contributing to Medication Adherence in Patients with a Chronic Condition: A Scoping Review of Qualitative Research. *Pharmaceutics*, 13(7), 1100. <https://doi.org/10.3390/pharmaceutics13071100>
- Lokhande, S. S., N, R. V., S, M. S., & S, P. S. (2023). Role of Pharmacist in Prevention and Management of Diabetics. *Asian Journal of Pharmaceutical Research*, 13(2), 95–98. <https://doi.org/10.52711/2231-5691.2023.00019>
- McBenedict, B., Orfao, A. L., Goh, K. S., Yau, R. C. C., Alphonse, B., Machado Lima, J., Ahmed, H. A., Ienaco, G. P., Cristina de Souza, E., Lima Pessoa, B., Hauwanga, W. N., Valentim, G., de Souza Chagas, M., & Abrahão, A. (2024). The Role of Alternative Medicine in Managing Type 2 Diabetes: A Comprehensive Review. *Cureus*, 16(6), e61965. <https://doi.org/10.7759/cureus.61965>
- Morris, J. L., & Chasens, E. R. (2017). Financial Difficulty- A Barrier to Self-Care in Patients with Diabetes. *The Diabetes Educator*, 43(3), 247–248. <https://doi.org/10.1177/0145721717703486>
- Piragine, E., Petri, D., Martelli, A., Calderone, V., & Lucenteforte, E. (2023). Adherence to Oral Antidiabetic Drugs in Patients with Type 2 Diabetes: Systematic Review and Meta-Analysis. *Journal of Clinical Medicine*, 12(5), 1981. <https://doi.org/10.3390/jcm12051981>
- Polonsky, W. H., & Henry, R. R. (2016). Poor medication adherence in type 2 diabetes: Recognizing the scope of the problem and its key contributors. *Patient Preference and Adherence*, 10, 1299–1307. <https://doi.org/10.2147/PPA.S106821>
- Rezaei, M., Valice, S., Tahan, M., Ebtekar, F., & Gheshlagh, R. G. (2019). <p>Barriers of medication adherence in patients with type-2 diabetes: A pilot qualitative study</p>. *Diabetes, Metabolic Syndrome and Obesity*, 12, 589–599. <https://doi.org/10.2147/DMSO.S197159>
- Sweileh, W. M., Zyoud, S. H., Abu Nab'a, R. J., Deleq, M. I., Enaia, M. I., Nassar, S. M., & Al-Jabi, S. W. (2014). Influence of patients' disease knowledge and beliefs about medicines on medication adherence: Findings from a cross-sectional survey among patients with type 2 diabetes mellitus in Palestine. *BMC Public Health*, 14(1), 94. <https://doi.org/10.1186/1471-2458-14-94>
- Świątoniowska-Lonc, N., Tański, W., Polański, J., Jankowska-Polańska, B., & Mazur, G. (2021). <p>Psychosocial Determinants of Treatment Adherence in Patients with Type 2 Diabetes – A Review</p>. *Diabetes, Metabolic Syndrome and Obesity*, 14, 2701–2715. <https://doi.org/10.2147/DMSO.S308322>

- Teherani, A., Martimianakis, T., Stenfors-Hayes, T., Wadhwa, A., & Varpio, L. (2015). Choosing a Qualitative Research Approach. *Journal of Graduate Medical Education*. <https://doi.org/10.4300/JGME-D-15-00414.1>
- Uusitupa, M., Khan, T. A., Vigiliouk, E., Kahleova, H., Rivellesse, A. A., Hermansen, K., Pfeiffer, A., Thanopoulou, A., Salas-Salvadó, J., Schwab, U., & Sievenpiper, J. L. (2019). Prevention of Type 2 Diabetes by Lifestyle Changes: A Systematic Review and Meta-Analysis. *Nutrients*, 11(11), 2611. <https://doi.org/10.3390/nu11112611>