

Original Research Article

Primary care visits, medication refill adherence, and blood glucose monitoring routine of reverse referral patients

Agnes Christie Rinda^{1,2}, Umi Athiyah^{3,4*}, Andi Hermansyah^{3,4,5}

¹Doctoral Program of Pharmaceutical Science, Faculty of Pharmacy, Universitas Airlangga, Surabaya, ²Department of Pharmacy, Faculty of Health, Universitas Sari Mulia, Banjarmasin, ³Department of Pharmacy Practice, Faculty of Pharmacy, Universitas Airlangga, Surabaya, ⁴Innovative Pharmacy Practice and Integrated Research Outcomes (INACORE), Faculty of Pharmacy, Universitas Airlangga, Surabaya, ⁵Research Center in Advancing Community Healthcare (REACH), Universitas Airlangga, Surabaya, Indonesia

*For correspondence: **Email:** umi-a@ff.unair.ac.id; **Tel:** +62-8123249338

Sent for review: 19 March 2025

Revised accepted: 2 October 2025

Abstract

Purpose: To examine primary care visits, medication refill adherence, and blood glucose and HbA1c monitoring routine in reverse referral patients with type 2 diabetes mellitus.

Methods: A retrospective study was conducted from September to December 2022 using medical records and pharmacy record databases of patients with type 2 diabetes mellitus from 11 selected Public Health Centers and 5 selected pharmacies in Banjarmasin, Indonesia. Descriptive statistics were applied to analyze the data.

Results: A total of 105 patients were identified, and only 47 % of them made regular visits as scheduled. Most patients (55 %) failed to adhere to medication refills, indicating medication undersupply or treatment gaps. This study also demonstrated that only 13 % of patients took regular monitoring through monthly blood glucose testing, and 10 % of patients had biannual HbA1C testing.

Conclusion: This study identifies the gaps in the continuity of care for diabetes patients in the reverse referral program due to lack of patient adherence to primary care visits, medication refills, and blood glucose monitoring, which did not meet the current standard.

Keywords: Blood glucose monitoring, Diabetes mellitus, Medication refill, Primary care

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited.

Tropical Journal of Pharmaceutical Research is indexed by Scopus, Chemical Abstracts, Embase, Index Copernicus, EBSCO, African Index Medicus, JournalSeek, Directory of Open Access Journals (DOAJ), African Journal Online, Bioline International, Open-J-Gate and Pharmacy Abstracts

INTRODUCTION

Diabetes mellitus is a long-term metabolic disease characterized by elevated blood glucose concentrations, which leads to serious organ damage and is responsible for increased mortalities and disabilities. Approximately 537 million adults have diabetes worldwide, and this may significantly rise to 783 million by 2045. The disease accounted for 6.7 million deaths in 2021, resulting in USD 966 billion of health expenditure loss. This number has

increased extremely over the last 15 years [1]. Patients with diabetes mellitus require continuity of care and regular monitoring of their glycemic state [2]. In Indonesia, continuity of care to diabetic patients was provided under the National Health Insurance program through Public Health Center (PHC). When the patients experience an alarming situation, they will be directed to receive hospital care (referral process). Once the patients are indicated as stable and can be discharged, they will be returned to primary care to receive diabetes care under the responsibility

of the PHC (reverse referral process). Patients will need to refill their medication at the assigned community pharmacies that collaborate with the PHC for diabetes care [3]. Therefore, a routine visit to primary care is necessary for patients with diabetes. When primary care is routinely accessed, it may prevent the risk of hospitalizations, provide appropriate health care management for chronic disease, and be considered cost-effective. Preventive care has been known to decrease both the prevalence and progression of diabetes [4].

Routine visits are effective if patients have access to the medicine, emphasizing the critical role of adherence to medication refills in maintaining continuity of care. Medication refill adherence can be indirectly measured by using proxy information, such as insurance claims information or individual pharmacy databases, which provide an objective and inexpensive source of information about medication adherence [5]. For diabetes patients, it also becomes a critical point to assess and monitor the efficacy and safety of medications continuously using blood glucose and HbA1C testing to evaluate individual responses to medication and guide adjustments of drug dose or therapy for better diabetes management [2].

There is a lack of data that investigates problems in care continuity in terms of patient adherence to regular visits, medication refills, and blood glucose monitoring, especially in the setting of reverse referral program in National Health Insurance, which separates PHC as the setting for care and community pharmacy as the place for obtaining medicines. Therefore, the purpose of this study was to determine the routine of primary care visits, medication refill adherence, and monitoring through blood glucose and HbA1C testing in patients diagnosed with type 2 diabetes mellitus.

METHODS

Design

This study employed a retrospective database analysis design to determine primary care visits, medication refill adherence, and blood glucose monitoring routine among patients with type 2 diabetes mellitus enrolled in the reverse referral program of National Health Insurance in Indonesia.

Setting of the study

The study was conducted in Banjarmasin, Indonesia, involving 11 Public Health Centers

(PHCs) and 5 community pharmacies. The pharmacies were selected based on two criteria: First, serving prescriptions for the reverse referral program of Indonesian National Health Insurance from PHCs, and second, willingness to provide access to relevant patient documents for research purposes. Patient records from these pharmacies were traced to their originating PHCs, resulting in a total of 11 PHCs being included.

The inclusion criteria were patient records of Indonesian National Health Insurance members aged ≥ 18 years diagnosed with type 2 diabetes mellitus who had been reverse-referred from a hospital to a PHC for a minimum period of three months, while the exclusion criteria were records of patients newly enrolled in reverse referral program (less than three months). They were entitled to receive medicine from selected pharmacies every month and obtain monitoring through monthly blood glucose testing and biannual HbA1C testing as a part of the insurance coverage.

Data sources included medical records from the PHCs, prescriptions, and pharmacy record databases. No direct patient contact was made. The study protocol was approved by the Ethical Committee of Medical Research of Universitas Lambung Mangkurat (approval no. 298KEPK-FKULM/EC/IX/2022).

Assessment

Data were obtained from September to December 2022 through an observation sheet to evaluate patients' adherence to primary care visits and medication refills and availability of regular monitoring of blood glucose and HbA1C. If the data from medical records showed that patients consulted a doctor in PHC regularly every month, they were labeled as "regular visits"; otherwise, they were labeled as "irregular visits". The data from medical records were also used to determine whether the patients received regular monitoring consisting of monthly blood glucose testing and biannual HbA1C testing according to the Indonesian National Health Insurance's standard care. To assess the medication refill adherence, patients were followed up for the last three months of the medication dispensation until September 2022, when the data were collected. The real number of days between each fill was determined and compared with the number of treatment days that were recommended. Refills that were dispensed during 80 – 120 % of the prescribed treatment time were considered to have satisfactory refill adherence. Ideally, the patients would obtain

medications for 30 days from a pharmacy with a 30-day interval between two refills (medication refill adherence 100 %). A deviation of less than 20 % indicated that refill adherence levels were < 80%, demonstrating treatment gaps or medication undersupply. Otherwise, a divergence above (+ 20 %) with refill adherence levels > 120% means medication oversupply.

Data analysis

The general characteristics of the patients and study results are reported using descriptive statistics, which consisted of regular primary care visits, medication refill adherence, and routine monitoring of blood glucose and HbA1C.

RESULTS

A total of 105 patients diagnosed with type 2 diabetes mellitus enrolled in the reverse referral program of Indonesian National Health Insurance, to 11 selected PHCs were involved in this study. Of the 105 patients, 64 % were female, and the average age was 62 ± 9.75 . Most of them (60 %) were diagnosed with diabetes mellitus and hypertension, and the average number of medications received was 3.5 ± 1.36 . The detailed information on the patient's baseline characteristics is presented in Table 1.

According to this study, only 47 % of patients made regular visits to PHC as scheduled, and around 55 % of the patients had an undersupply

of medication. Forty-five percent of them had an appropriate supply of medication. The majority of patients (87 %) also underwent fasting blood glucose testing irregularly, which is recommended to be provided every month, and a smaller portion (10 %) received biannual HbA1C testing according to the care standard by the National Health Insurance in Indonesia. The detailed result is presented in Table 2.

DISCUSSION

Having a routine visit to primary care may reflect a planned and proactive approach to care that can strengthen the patients' relationship with healthcare providers, especially for patients with chronic disease, who need long-term and continuous management of their disease and medication. Trusting relationship emerges from this relational continuity, which tends to promote empathetic and cooperative consultations. This condition empowers and enables the patient to increase medication adherence by creating better support for understanding and managing their conditions [6]. A study conducted by Barker *et al* reported that patients who routinely saw the same doctor had 13 % fewer hospital admissions than patients with less continuity of care [7]. The other study by Rose *et al* showed that patients with regular primary care visits had fewer emergency department visits and hospitalizations and lower total expenditures than those who had more irregular visit patterns. It also helps the healthcare provider to provide proactive patient management, preventing follow-up loss [4].

Table 1: Baseline characteristics of the patients

Patient characteristic	Number of patients (n = 105)	Percentage
Gender		
Male	38	36
Female	67	64
Age in years (mean $\pm$ SD)	62 ± 9.75	
30-40	2	2
41-50	9	9
51-60	28	27
61-70	50	47
71-80	13	12
81-90	3	3
Health conditions		
Diabetes Mellitus	23	21
Diabetes Mellitus + Hypertension	63	60
Diabetes Mellitus + Hyperlipidemia	8	8
Diabetes Mellitus + Hypertension + Hyperlipidemia	9	9
Diabetes Mellitus + Cerebral Artery Dissection	1	1
Diabetes Mellitus + Cerebral Infarction	1	1
Number of medication patients received (mean $\pm$ SD)	3.5 ± 1.36	
1-3 medications	53	50
4-6 medications	47	45
> 6 medications	5	5

Table 2: Regular primary care visit, medication refill adherence, and regular monitoring of blood glucose and HbA1c

Variable	Number of patients (n = 105)	Percentage
Primary care visits in the last three months		
Regular visits	49	47
Irregular visits	56	53
Medication refill adherence		
< 80% (undersupply)	58	55
80-120% (appropriate supply)	47	45
> 120% (oversupply)	0	0
Monthly fasting blood glucose testing		
Yes	14	13
No	91	87
Bianually HbA1C testing		
Yes	8	10
No	97	90

This is in accordance with the concept of the “gatekeeper function” of primary care in the Health Care System of Indonesia, which consists of first contact, continuity, comprehensiveness, and coordination. Consequently, the system may serve as the foundation for the high-quality healthcare that patients with chronic disease require [8].

The other important part of the patient care process for reaching continuity of care is medication adherence, which can be defined as the “act of conforming to a provider recommendation/prescription based on timing, dosage, and frequency of medication use” [9]. Medication adherence begins with acceptance when the patient initiates the prescribed medication regimen from a doctor, followed by persistence that predicts the time duration throughout continuous treatment from the start of therapy until its discontinuation. Then, the patient follows the medication regimen. In other words, medication non-adherence arises when there is the behavior of non-acceptance, non-persistence, or improper execution of prescribed medication [10]. One of the indirect methods to measure medication adherence is a secondary database analysis of pharmacy records or prescriptions to assess medication refill adherence, which is classified based on the medication supply and treatment gap [11].

According to the Indonesian National Health Insurance’s guideline for reverse referral programs, diabetes patients are recommended to visit the primary care physician every month for medicine prescription, examination, and diabetes education to manage the disease. After that, they have to fill the prescriptions at a pharmacy. However, in this study, more than half of the patients (53 %) failed to visit the PHC periodically as scheduled, and there were only

45 % of the patients had satisfactory refill adherence, indicating that they had an appropriate supply of the medication. Meanwhile, the other 55 % had undersupplied medication because they failed to fill the prescriptions and initiate medications. Undersupply likely indicates deficiencies in the provision of patients’ medications because they do not have available medicine during the treatment periods, especially for patients with chronic diseases who need continuous therapy. Therefore, they tend to be non-adherent to medications. The previous study also revealed similar findings, indicating issues in the continuity of reverse referral services, such as problems with patients’ regular visits to primary care, informational continuity in diabetes management, and monitoring of the patients [12]. Adherence to medication refills is critical, particularly in the setting of continuity of care in a reverse referral program, because there is separate access for patients to obtain healthcare services from PHC and medicine from community pharmacies. This condition may serve as a barrier to adherence with medication refill because patients might have the issue of traveling to the pharmacy to obtain medicines. Patient’s lack of knowledge and awareness or being busy on certain occasions can also be possible barriers to medication refill adherence [13].

Previous studies showed that patients’ economic status, medication cost, and health insurance availability were the major factors in making decisions regarding their continuous medication and long-term care. Low economic status and lack of health insurance coverage are linked to medication non-adherence, as these factors can hinder patients’ ability to purchase the prescribed medicine [14,15]. However, in this study, medication costs are

highly unlikely to be a barrier to patients' adherence to regular visits and medication refills since all the patients involved in this study were members of the Indonesian National Health Insurance. Thus, all their medication costs, physician services fees, testing supplies, and non-physician supportive care are covered by the insurance. The insurance provides 30 days of medication every month for chronic disease patients, and the medication costs are included in the capitation component paid by the insurance, so the patients do not have to pay any fees when they refill the medication [3]. This suggests that non-adherence could happen due to the many other factors that influence the patient's ability and willingness to utilize healthcare services, such as accessibility to healthcare facilities, patient-provider relationship and interaction, availability of the patient's follow-up from healthcare providers, and accessibility to diabetes drugs without prescription [16-18].

Access to healthcare facilities in terms of location or transportation is also an important factor influencing the regularity of clinical visits and medication refill adherence. Lack of transport, for example, disfavors the underprivileged community and has a negative influence on health services utilization [16]. In this study, most of the patients were elderly, so their attendance at PHC and pharmacy depended on the availability of transportation and assistance from their caregivers. Patients also need to discuss their illness and barriers to their medication with a healthcare provider. Unfortunately, there is not sufficient time in a short consultation. This can lead to poor patient-provider relationships that influence the behavior of clinical visit adherence.

Although many PHCs are available in the community, this does not imply that the facility will be used regularly by the patients. Health services utilization is a result of dynamic interactions between healthcare providers and patients, where communication skills, non-judgmental and supportive behavior, and empathy from healthcare providers drive the health service utilization. The research by Gabrani *et al* has shown that poor attitudes or practices have a negative influence on the quality of services and decrease the number of regular visits of the patients [16]. Previous studies have highlighted the importance of continuous patient engagement to maintain regular clinical visits. Wang *et al* revealed that lack of telephone follow-up and household visits are factors that caused infrequent clinical visits. This finding indicates that the use of reminders

sent via a short message or telephone service and home visits to follow up with the patients can increase trust and relationship between the healthcare provider and patients, which may increase patients' willingness to visit primary health care [17]. In Indonesia, patients' follow-up and monitoring through reminders sent via a short message on social media has already been stated in the Indonesian National Health Insurance guidelines. However, the implementation has not been running optimally since many patients do not have access to social media, especially the elderly and underprivileged patients.

This study demonstrated that out of 58 patients who had undersupplied medication, 56 of them were the same patients who did not make routine PHC visits as scheduled. This is somewhat expected as the patients will get a prescription after they meet the primary care physician. In other words, if they did not visit the primary care, they would not get the prescription that could be filled at a pharmacy. Furthermore, in Indonesia, diabetes medicine can be easily purchased without a prescription at pharmacies, so many patients choose to go directly to the pharmacy to buy the medication rather than going to PHC [18]. However, visiting the PHC is important because the health care providers need to examine the patients and determine whether additional therapy, dose, therapy changes or discontinuation of therapy are needed based on the clinical status of patients. For patients with diabetes, glucose monitoring is the key to achieving glycemic targets, which is assessed through the blood glucose monitoring (BGM), HbA1C measurement, as well as glucose management indicator (GMI) and/or continuous glucose monitoring (CGM) [2]. The primary assessment of glycemic control is conducted through the HbA1C test and becomes the guide of glucose management related to its predictive value as a marker of high risk for complications of diabetes. On the other hand, the CGM and BGM can promptly indicate the effects of exercise, diet, drugs, and stress on the patients' blood glucose level that can be used to prevent hypoglycemia and guide the medication, medical nutrition therapy, and physical activity management [2,19].

BGM is vital as an effective instrument for controlling blood glucose and inhibiting complications in diabetes management. It helps patients to have a better understanding of their medical conditions and make appropriate adjustments to drugs and behavior. It can also provide an evidence-based clinical decision for

health care professionals [20]. Therefore, routine HbA1C testing should be implemented in all diabetes patients as a part of continuity of diabetes management. For patients with type 2 diabetes with stable glycemic control and who achieve the treatment goals, HbA1C testing or other assessment of blood glucose can be provided twice each year. In contrast, patients with unstable conditions who have not achieved the goal of therapy should undergo more frequent testing (every three months with supplementary assessments as required) [2].

In the reverse referral program of National Health Insurance in Indonesia, patients with diabetes mellitus were supposed to get monthly fasting blood glucose and biannual HbA1C testing, which are provided to monitor the effectiveness and safety of the medication. However, in this study, only 13 % of patients underwent regular monitoring through monthly blood glucose testing, and 10 % of them had biannual HbA1C testing.

A qualitative study conducted by Ong *et al* showed that the cost of test strips and needles was the main reason why patients did not conduct routine blood glucose testing [21]. In line with that, a study by Hall *et al* revealed that factors related to insurance and cost were the most frequently cited by the participants as a barrier to conducting blood glucose testing regularly. Participants conveyed that a high number of insurance providers only had limited testing coverage for a certain patient or did not provide any coverage [22]. These show the association between the cost of testing and the regularity of routine blood glucose and HbA1C monitoring. However, for the patients in this study, these tests were free of charge because the costs are also included in the capitation component paid by the insurance. This suggests that there are other factors hindering patients from taking regular blood glucose and HbA1C testing. These factors are likely to be patient-related, such as fear of needles and pain, anxiety related to high blood glucose reading, patient inconvenience, lack of motivation, self-efficacy, and lack of knowledge [21]. Patient non-adherence to regular visits and medication prescribed may lead to negative health consequences, including an increase in morbidity and mortality, as well as medical condition exacerbations [23]. In line with this, without regular monitoring of blood glucose and HbA1C as an assessment of glycemic control, it is difficult for healthcare professionals to make clinical decisions based on scientific evidence for better glucose management.

The study has several limitations. First, medication refill adherence analysis has inherent constraints because when patients refill their medication, it does not mean that they will definitely take the medicine as prescribed for them, especially for those who buy directly from pharmacies without visiting the doctor. Nevertheless, these medication refill patterns offer valuable information about the possible consumption patterns of medication, especially for patients with long-term therapy like diabetes [24]. Second, the study did not identify the factors that contribute to the patient's irregular visits to primary care, medication refills, non-adherence, and irregular monitoring of blood glucose and HbA1C. These limitations should be considered when interpreting the study findings. Therefore, future research requires more investigation to identify and analyze the main factors that contribute to this problem.

CONCLUSION

This study highlights substantial gaps in the continuity of care for reverse referral patients with type 2 diabetes mellitus. Less than half of the patients adhered to regular primary care visits, and medication refill adherence was notably low, indicating potential treatment gaps. Furthermore, the proportion of patients undergoing regular blood glucose and HbA1C monitoring was minimal. The study results highlight the urgent need for strategies to improve visit regularity, ensure consistent medication supply, and enhance routine monitoring to optimize diabetes management in this patient population.

DECLARATIONS

Acknowledgement/Funding

The authors would like to acknowledge the staff of Public Health Centers and Pharmacies that provide the data. This study received a Mandate Research Grant 2020 (1081/UN3.14/PT/2020) from Universitas Airlangga.

Conflict of interest

No conflict of interest is associated with this work.

Ethical approval

Ethical approval was granted by the Ethical Committee of Medical Research of Universitas

Lambung Mangkurat, Indonesia on September 5th, 2022 (No. 298KEPK-FKULM/EC/IX/2022).

Contribution of authors

The authors confirm that the work was conducted by those listed in this article, who take full responsibility for its content.

Availability of data and materials

The datasets used and/or analyzed during the present study are available from the corresponding author upon reasonable request.

REFERENCES

1. International Diabetes Federation (IDF). *IDF Diabetes Atlas, 10th edition*. Brussels, Belgium, 2021. Available from: <https://diabetesatlas.org> (accessed: 21 August 2024).
2. American Diabetes Association. *Standards of Medical Care in Diabetes—2022*. *Diabetes Care*. 2022;45.
3. Badan Penyelenggara Jaminan Sosial Kesehatan. *Panduan Praktis Program Rujuk Balik Bagi Peserta JKN 2016*.
4. Rose AJ, Timbie JW, Setodji C, Friedberg MW, Malsberger R, Kahn KL. Primary care visit regularity and patient outcomes: an observational study. *J Gen Intern Med* 2019; 34(1): 82–89.
5. Duncan CL, Mentrikoski JM, Wu YP, Fredericks EM. Practice-based approach to assessing and treating non-adherence in pediatric regimens. *Clin Pr Pediatr Psychol* 2014; 2(3): 322–336.
6. World Health Organization. *Continuity and coordination of care: A practice brief to support implementation of the WHO Framework on integrated people-centred health services* 2018; 76. Available from: <https://apps.who.int/iris/bitstream/handle/10665/274628/9789241514033-eng.pdf?ua=1> (accessed on 16 September 2024).
7. Barker I, Steventon A, Deeny SR. Association between continuity of care in general practice and hospital admissions for ambulatory care sensitive conditions: Cross-sectional study of routinely collected, person-level data. *BMJ* 2017; 356.
8. Badan Penyelenggara Jaminan Sosial Kesehatan. *Gate keeper concept* 2012.
9. Vrijens B, De Geest S, Hughes DA, Przemyslaw K, Demonceau J, Ruppert T, Dobbels F, Fargher E, Morrison V, Lewek P, et al. A new taxonomy for describing and defining adherence to medications. *Br J Clin Pharmacol* 2012; 73(5): 691–705.
10. Basu S, Garg S, Sharma N, Meghachandra SM. Improving the assessment of medication adherence: Challenges and considerations with a focus on low-resource settings. *Tzu Chi Med J* 2019; 31(2): 73–80.
11. Lam WY, Fresco P. Medication adherence measures: An overview. *Biomed Res Int* 2015; 2015.
12. Rinda AC, Athiyah U, Hermansyah A. Problems in continuity of care for patients with type 2 diabetes mellitus. *Pharm Educ* 2023; 23(4): 238–241.
13. Kvarnström K, Westerholm A, Airaksinen M, Liira H. Factors contributing to medication adherence in patients with a chronic condition: A scoping review of qualitative research. *Pharmaceutics* 2021; 13(7): 1–41.
14. Panahi S, Rath N, Hurley J, Sundrud J, Lucero M, Kamimura A. Patient adherence to health care provider recommendations and medication among free clinic patients. *J Patient Exp* 2022; 9: 1–7.
15. Brundisini F, Vanstone M, Hulan D, DeJean D, Giacomini M. Type 2 diabetes patients' and providers' differing perspectives on medication nonadherence: A qualitative meta-synthesis. *BMC Health Serv Res*. 2015; 15(1).
16. Gabrani J, Schindler C, Wyss K. Factors associated with the utilisation of primary care services: A cross-sectional study in public and private facilities in Albania. *BMJ Open* 2020; 10(12): 5–12.
17. Wang J, Zuo H, Chen X, Hou L, Ma J. Analysis of factors influencing the frequency of primary care visits among diabetic patients in two provinces in China. *BMC Public Health* 2019; 19(1): 1267.
18. Widayanti AW, Sigalingging KK, Dewi FP, Widyakusuma NN. Issues affecting medication-taking behavior of people with type 2 diabetes in Indonesia: A qualitative study. *Patient Prefer Adherence* 2021; 15: 989–998.
19. Raoufi AM, Tang X, Jing Z, Zhang X, Xu Q, Zhou C. Blood glucose monitoring and its determinants in diabetic patients: A cross-sectional study in Shandong, China. *Diabetes Ther* 2018; 9(5): 2055–2066.
20. Lin M, Chen T, Fan G. Current status and influential factors associated with adherence to self-monitoring of blood glucose with type 2 diabetes mellitus patients in grassroots communities: a cross-sectional survey based on information-motivation-behavior skills model in China. *Front Endocrinol (Lausanne)* 2023; 14: 1–13.
21. Ong WM, Chua SS, Ng CJ. Barriers and facilitators to self-monitoring of blood glucose in people with type 2 diabetes using insulin: A qualitative study. *Patient Prefer Adhere* 2014; 8: 237–246.
22. Hall T, Warman MK, Oser T, Filippi MK, Manning B, Carroll JK, Nease DE, Staton EW, Oser S. Clinician-reported barriers and needs for implementation of continuous glucose monitoring. *J Am Board Fam Med* 2024; 37(4): 671–679.
23. Aremu TO, Oluwale OE, Adeyinka KO, Schommer JC. Medication adherence and compliance: recipe for improving patient outcomes. *Pharmacy* 2022; 10(5): 106.
24. Galozy A, Nowaczyk S. Prediction and pattern analysis of medication refill adherence through electronic health records and dispensation data. *J Biomed Informatics* 2020; 6-7: 100075.