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# Pharmacist's perceived barriers in providing counseling services to ambulatory type 2 diabetes mellitus patients: A qualitative phenomenological study in Bali, Indonesia

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**ABSTRACT**

Type 2 diabetes mellitus (T2DM) is one of the chronic diseases that requires long-term medical control. Ambulatory T2DM patients are at risk of experiencing adverse events. The safety of patients undergoing therapy is the responsibility of health workers. Pharmacists are essentially professionals who can contribute to overseeing patient safety. Pharmacist counseling activities for T2DM patients as preventive and promotive efforts are considered very important and beneficial. Pharmacist counseling services for ambulatory diabetes mellitus patients do not work because there are barriers to implementing them. This study aimed to map the pharmacist's perceived barriers in providing counseling services to ambulatory T2DM patients. A qualitative phenomenological study was carried out as a study design. Pharmacists were interviewed to obtain an overview of the barriers faced while providing counseling services to T2DM patients. The data were processed through verbatim transcription, coding, theming, and synthesis of the thematic framework. There were six categories of barriers found, including personal-perceived barriers, barriers from patients, interprofessional barriers, barriers due to health facility policies, barriers due to health facility infrastructure, and barriers due to government policies and regulations. The barriers have been successfully mapped. Strategic efforts need to be made to overcome these barriers.

## INTRODUCTION

Diabetes mellitus (DM) is one of the chronic diseases that requires long-term and continuous medical care [1,2]. Complications of diabetes mellitus are the third highest cause of death in Indonesia after coronary heart disease and stroke. At the same time, at the global level, Indonesia has the second-highest percentage of deaths due to diabetes after Sri Lanka [3,4]. Intensive blood sugar management is a step that people living with diabetes must take to prevent or delay complications, reduce the incidence of hospitalization and mortality due to diabetes mellitus, and improve their quality of life [5–8]. Ambulatory diabetes mellitus patients are actually at risk of experiencing adverse events. The safety of patients undergoing ambulatory therapy is the responsibility of health workers, and this can be done through preventive and promotive efforts [1,7,9,10].

Patient safety is always an important part of healthcare providers around the world. Patient safety is a system that makes patient care safer, including risk assessment, risk management, incident reporting and analysis, the ability to learn from incidents and their follow-up, and the implementation of solutions to minimize the risk of preventing injuries caused by acting or not taking action that should be taken [5,11–13]. The implementation of patient safety in healthcare facilities is often not optimal due to the lack of collaboration between healthcare workers, managers, and healthcare support staff in implementing ideal patient safety [3,14].

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Pharmacists are essentially professionals who can contribute to overseeing patient safety, especially for DM patients who return home with antidiabetic agents, in addition to being directly involved in blood glucose management, reviewing patient medication, monitoring medication, and ensuring the effectiveness of patient therapy [14–17]. Pharmacist counseling activities for DM patients as a preventive and promotive effort are considered very important and beneficial for them. In a meta-analysis study, it was reported that the presence of pharmacists in providing counseling to DM patients can influence improving patients' HbA1c (MD = −0.70), LDL-C (MD = −5.51), SBP (MD = −4.58), DBP (MD = −1.90), BMI (MD = −0.47), and FBG (MD = −19.82). In addition, medication adherence was significantly improved [18].

However, in reality, Indonesian society in general has not felt the role of a pharmacist in managing the chronic disease they are suffering from. This situation is because there are barriers to carrying out pharmaceutical practices in Indonesia, one of which is in providing counseling services. There are no reported data or mapping related to the barriers pharmacists feel when providing counseling services to DM patients. This issue causes the need to map these barriers through qualitative studies so that the phenomenon of pharmacist barriers in providing pharmaceutical services to patients can be portrayed in detail. The results of this study will be useful for policymakers in overcoming the problems pharmacists face. Thus, the results of this study are expected to be useful as preliminary data on the urgency of the need for specialist pharmacists who have a more specific role in pharmaceutical services.

## MATERIALS AND METHODS

### Qualitative approach and research paradigm

This study employed a qualitative methodology known as phenomenology, in which researchers recount the experiences of pharmacists who have encountered the same phenomenon, that is, the experience of offering pharmacist counseling services to patients with type 2 diabetes who are ambulatory. This study employed constructivism/naturalistic inquiry as its research paradigm. Pharmacists were asked to talk about the barriers they encountered when offering pharmacist counseling services.

### Researcher characteristics and reflexivity

Four people who work at a university or other educational institution comprised the researchers' group. Additionally, the researchers worked as clinical pharmacists. Every researcher has over 5 years of experience working as a clinical pharmacist with patients in health services. One professor in clinical pharmaceutical pharmacology, two associate professors in clinical and community pharmacy, and a PhD student specializing in clinical and community pharmacy comprise the researcher panel. Respondents and researchers had a connection similar to that of other pharmacists. Pharmacists were asked to participate in the study and be interviewed. During the interview procedure, the pharmacist's remarks were not thought to be influenced by reflexivity. They were allowed to express their opinions, experiences, and constructive criticism without intervention or pressure from the interviewer.

### Study context

The research setting in this study was a healthcare facility that included a hospital, primary care, community pharmacy, private clinic, and, more specifically, an outpatient pharmacy installation in Bali Province. Interviews were conducted with pharmacists employed in outpatient pharmacy installations to find out what factors hindered them from offering counseling services to patients with type 2 diabetes. When it came to providing ambulatory T2DM patients with pharmaceutical counseling services, pharmacists were also allowed to express their expectations.

### Participant recruitment and sampling strategy

Pharmacist candidates were invited to participate in the study. The qualifications of pharmacists in this study were pharmacists who have graduated with a bachelor's degree and a professional pharmacist study program with a study duration of 5 years. The sampling strategy chosen was consecutive sampling, in which subjects who met the inclusion criteria were included in the study for a certain time. Pharmacist inclusion criteria were those who had experience providing counseling services to ambulatory T2DM patients and had at least 2 years of pharmacist practice experience. Exclusion criteria were pharmacists who were unwilling to participate in the study.

### Ethical consideration

Since the study was a component of a bigger project, data collection was carried out appropriately. The Ethics Commission of Udayana University's Faculty of Medicine in Bali gave its approval under ethical clearance number 1165/UN.14.2.2.VII.14/LT/2024. The study was carried out in accordance with the Declaration of Helsinki, and confidentiality was upheld at all times, including informed consent.

### Data collection methods

Direct interviews were employed as the data-gathering approach. The interview process was carried out over 4 months from August to November 2024. In order to get detailed answers about the difficulties they have while offering counseling services to patients with T2DM, the interview questions were open-ended and included probing inquiries. The type of data collected was audio data from two-way interviews; after that, audio data were transcribed into verbatim data. Short notes were taken during the interview to record non-verbal communication. Researchers prepared a questionnaire for personal use related to variables suspected to be barriers for pharmacists to practice counseling on T2DM patients. This paper was created to guide the interview so that it stays on course with the desired outcome. In order to assess the coherence of pharmacists' claims on the barriers that had been communicated, researchers also included iterative questions.

### Data collection instruments and technologies

An Android-based voice recorder with cloud-synchronized data served as the tool to facilitate data collecting. The voice recorder aided the verbatim transcribing procedure. Provalis Research's qualitative data analysis (QDA) Miner Lite was the program used to process the data.

### Data processing

The steps involved in data processing include recording interviews on audio, verbatim transcription, review by all researchers, reading in-depth during online meetings, coding using QDA Miner Lite, theming, and finally, the synthesis thematic framework stage.

### Data analysis

Analysis and descriptive presentations of the data were made. The original form of certain significant pharmacist utterances was presented. Pharmacist demographics, theme framework synthesis, and pharmacist expectations on current hurdles, percentages, and total data were displayed in tabular form. Diagrammatic representations of the study's theoretical approach were provided. Thematic synthesis was done by grouping coding that refers to the formation of a theme. Building a theme was based on a literature study with related topics and a focus group discussion involving all authors. Theme synthesis was carried out using a drawing together of codes approach from one or more transcripts to present the findings of qualitative research in a coherent and meaningful way.

### Techniques to enhance trustworthiness

The member-checking approach was the strategy employed to boost the data analysis's legitimacy and trustworthiness. Every author independently validated every step, beginning with verbatim transcription, coding, and synthesis. Until the forum findings were collected, the verification results were debated online. The outcomes of every conversation were documented and are available for preservation as auditable records.

### Standard reporting

The standards for reporting qualitative research (SRQR) principles for qualitative research design served as the foundation for the presentation of the study's reports. We reference the Improving the Quality and Transparency of Health Research (Equator Network) reporting guidelines on their official website. Consolidated criteria for reporting qualitative research COREQ and SRQR are the two reporting standards that are available on the website. Because it more accurately reflects the qualitative technique approach used in this study, SRQR was selected [19].

## RESULTS

### Characteristics of a pharmacist

A total of 46 pharmacists working in outpatient pharmacy installations were involved in the study. The ratio of pharmacists was more female than male, with an average age of 30 years. Most of them practice in hospitals and have more than 5 years of experience as pharmacists. The detailed characteristics are shown in Table 1.

Pharmacists involved in the study had experience in counseling patients with chronic diseases, including DM. Interviews focused on their experiences in providing counseling related to DM therapy management in ambulatory patients.

### Pharmacist barriers to providing counseling services

In this study, we found six thematic categories related to the barriers that pharmacists face in providing counseling services for ambulatory T2DM patients.

#### *Personal perceived barrier*

In-depth interviews were conducted to explore the barriers that hinder pharmacists from providing counseling services for ambulatory T2DM patients. Interviews were conducted face-to-face with researchers one by one in a closed room so that pharmacists could freely share their views and experiences related to the provision of counseling services. Several statements from pharmacists that researchers considered important to report in this study are presented as follows.

*I do not have sufficient qualifications and capabilities to provide counseling to ambulatory T2DM patients, especially patients with multiple complex comorbidities. (P1, female, 28 y.o).*

(Interview 1)

*My communication skills are not good. This situation makes me feel unconfident because I find it difficult to convince patients during counseling. (P2, female, 33 y.o).*

(Interview 2)

*I feel less confident in doing counseling. I realize this lack of confidence is due to our lack of experience in counseling T2DM patients. (P2, female, 33 y.o).*

(Interview 3)

*My motivation is lacking because the pharmacist's current job is still focused on managing supplies. I must first*

**Table 1.** Characteristics of pharmacists involved in the study.

| No | Pharmacist's characteristics | Value (*n*%) |
|---|---|---|
| 1 | Gender | |
| | Male | 14 (30.43) |
| | Female | 32 (69.57) |
| 2 | Ages (years) | |
| | Mean ± SD | 30 ± 6.65 |
| | 25–30 | 35 (76.09) |
| | 31–35 | 6 (13.04) |
| | 36–40 | 2 (4.35) |
| | 41–45 | 0 (0.00) |
| | 46–50 | 2 (4.35) |
| | 51–55 | 0 (0.00) |
| | 56–60 | 1 (2.17) |
| 3 | Place of pharmacy practice | |
| | Hospital | 27 (58.70) |
| | Primary care | 6 (13.04) |
| | Community pharmacy | 7 (15.22) |
| | Private clinic | 6 (13.04) |
| 4 | Pharmacy practice experience (years) | |
| | < 5 | 21 (45.65) |
| | > 5 | 25 (54.35) |

*ensure that discharged patients can bring their outpatient medications. (P3, male, 30 y.o).*

(Interview 4)

More than 60% of pharmacists feel unable to provide counseling services due to limited knowledge, communication skills, and their lack of confidence in providing these services. They stated that the scope of pharmacists' work is currently on supply management services and ensuring the availability of drugs and medical devices for patients. When pharmacists have not been involved in counseling services to patients, especially T2DM patients, for a long time, there is difficulty in recalling knowledge. Likewise, communication skills decrease due to a lack of experience. Ultimately, pharmacists' motivation will also decrease as a final impact.

**Barriers from patients**

An interesting finding was found related to the barrier that came from the T2DM patients themselves. Nearly 70% of pharmacists involved in the study had experienced the condition. The following is a statement from a pharmacist that supports this finding.

*T2DM patient motivation to get counseling services is low. I am always asked by patients why they have to get an education like this again with a pharmacist because the problem has already been confirmed with the doctor and nurse. (P4, male, 28 y.o).*

(Interview 5)

*Patients do not understand the role of pharmacists. Patients have a mindset that visiting a pharmacist is only to pick up prescribed medication. Most patients have a mindset that the pharmacist's job is only to prepare, compound, and dispense medicines for them. (P5, female, 37 y.o).*

(Interview 6)

*Patient knowledge about their diabetes affects their motivation and mindset in undergoing therapy, obtaining comprehensive services, and their adherence. (P7, female, 27 y.o).*

(Interview 7)

*Patients who have certain behaviors and beliefs find it difficult to accept pharmacist counseling regarding their medication. (P8, female, 26 y.o).*

(Interview 8)

*Patients who are still productively working often refuse pharmacist counseling because of the limited time they have. (P9, male, 25 y.o).*

(Interview 9)

*Some patients stated that they trust the doctor treating their illness more than the pharmacist. (P7, female, 27 y.o).*

(Interview 10)

The keywords that we can map from the statement were the lack of motivation from patients to get pharmacist counseling services, not understanding the role of pharmacists, patient knowledge related to diabetes and their self-management needs, their habits and beliefs in their community, their availability of time to participate in pharmacist counseling activities, and the lack of mutualistic relationships between patients and pharmacists. Barriers that come from patients are a challenge for pharmacists to increase their existence, introduce the role of a pharmacist, and increase patient trust by providing the best service for them.

***Interprofessional perceived barrier***

The category we explored related to pharmacists' statements was the lack of interprofessional collaboration. Around 87% of pharmacists stated that interprofessional partnerships had not been fully implemented optimally. Here are pharmacists' statements regarding this matter.

*Many health workers do not understand the role of pharmacists. They generally know the duties of pharmacists, only managing pharmaceutical supplies, compounding, and dispensing. (P10, female, 30 y.o).*

(Interview 11)

*Communication between health workers, especially pharmacists, is still lacking. Pharmacists who provide pharmaceutical services for diabetes mellitus patients do not understand the patient's condition comprehensively. Misunderstandings often occur regarding the patient's treatment regimen. (P11, female, 32 y.o).*

(Interview 12)

*Counseling related to disease, treatment, safety, and self-management of T2DM ambulatory patients is the responsibility of all parties, including all health workers, such as doctors, nurses, nutritionists, and pharmacists. Overlapping roles cannot be avoided. This situation makes me feel that they no longer need to provide counseling services. (P12, male, 34 y.o).*

(Interview 13)

Pharmacists were known as medical support personnel who only carried out pharmaceutical inventory management, including drug ingredients, medical devices, and hazardous materials. There was no understanding that pharmacists also have a role in direct patient services, such as providing medication counseling services to ensure medication safety. This perception was held by almost all health personnel, patients, and caregivers. In reality, according to Indonesian government regulations, it has been clearly stated that pharmacists are health workers who not only focus on drug-oriented but also patient-oriented care, which is carried out by clinical pharmacists. The lack of intensive communication between professions, overlapping roles, and perceptions related to the inappropriate focus of pharmacists' work was considered important components in the barriers of health workers for pharmacists to provide counseling services to T2DM patients.

**Barriers due to health facility policies**

Facilities and regulations of health care facilities also play a role as a barrier in pharmacist counseling services for T2DM patients. Several statements from pharmacists related to this were presented as follows.

*We do not receive any service fees for counseling activities for Ambulatory T2DM patients. Generally, fees for*

*services include preparation, compounding, and dispensing services. Whether we provide counseling services or not, the fee we receive is the same, but the effort to do counseling is greater. (P13, female, 58 y.o).*

(Interview 14)

*Health facility policies do not regulate pharmacist's counseling activities. Counseling is recommended, but no detailed standard operational procedures are available for this activity. (P13, female, 58 y.o).*

(Interview 15)

*The main role of pharmacists in healthcare facilities is to ensure the quality and availability of pharmaceutical supplies for patients. So, when this role has not been fully handled perfectly, the role of pharmacists in clinical aspects cannot run optimally. (P14, female, 50 y.o).*

(Interview 16)

***Barriers due to health facility infrastructure***

A total of 79% of pharmacists stated that barriers came from healthcare facility regulations, and 63% of barriers came from the incomplete infrastructure available. The fee for service was the most discussed component. A major concern was that pharmacists providing counseling services to ambulatory T2DM patients received no compensation for their time or effort. The lack of a fee-for-service approach in healthcare policy intensifies the problem. The absence of compensation for these services may diminish pharmacists' motivation to participate in counseling despite its essential role in diabetes care. This highlights a broader concern with the undervaluation of pharmacists' contributions to patient care and health outcomes.

*The availability of pharmacists in healthcare facilities is still lacking. Healthcare facility management prioritizes the availability of medical personnel first, such as general*

**Table 2.** Thematic framework on pharmacist perceived barriers in providing counseling services to ambulatory type 2 diabetes mellitus patients.

| No | Thematic category | Codes | Coding Frequency ($n$ = 46) |
|---|---|---|---|
| 1 | Pharmacist's personal perceived barrier. | Knowledge | 18 (39.13%) |
| | | Communication skill | 33 (71.74%) |
| | | Motivation | 44 (95.65%) |
| | | Confidence | 22 (47.83%) |
| | | Average coding frequency | 29 (63.59%) |
| 2 | Barriers from patients. | Motivation | 41 (89.13%) |
| | | Mindset | 38 (82.61%) |
| | | Knowledge | 22 (47.83%) |
| | | Behavior and belief | 33 (71.74%) |
| | | Time | 39 (84.78%) |
| | | No trust in pharmacists | 19 (41.30%) |
| | | Average coding frequency | 32 (69.57%) |
| 3 | Interprofessional perceived barrier. | Unclear role of pharmacists | 43 (93.48%) |
| | | Poor interprofessional communication and collaboration | 36 (78.26%) |
| | | Overlap roles | 40 (86.96%) |
| | | Average coding frequency | 40 (86.23%) |
| 4 | Barriers due to health facility policies. | No fee for service. | 46 (100.00%) |
| | | Standard operating procedures are not yet available. | 27 (58.70%) |
| | | Pharmacist's role still focuses on pharmaceutical inventory management. | 32 (69.56%) |
| | | Lack of pharmacists on duty | 40 (86.96%) |
| | | Average coding frequency | 36 (78.80%) |
| 5 | Barriers due to health facility infrastructure. | No counseling instruments are available. | 22 (47.83%) |
| | | The integrated healthcare management information system is partially available. | 36 (78.26%) |
| | | Average coding frequency | 29 (63.04%) |
| 6 | Barriers due to government policies and regulations. | Dynamic on health administrative rules and regulations. | 28 (60.87%) |
| | | Patient referral policy. | 27 (58.70%) |
| | | Average coding frequency | 28 (59.78%) |

*practitioners, specialist doctors, subspecialist doctors, and dentists. (P15, female, 48 y.o).*

(Interview 17)

*I rarely prepare counseling materials for diabetes mellitus patients. Many efforts must be made, such as how to start treatment, how to use medication, especially basal-bolus insulin complete with its demo tools, how to do self-management, how to do first aid in emergency hypoglycemia, make counseling notes, create personal medication reports, and conduct monitoring and evaluation. To do all of these things requires qualified infrastructure. (P16, male, 28 y.o).*

(Interview 18)

*In today's technological advancement, I need digital infrastructure support to conduct counseling. The infrastructure in question can help in writing counseling notes, creating personal medication records for patients, providing self-report facilities to patients, and providing telemedicine services. This information system is not difficult to implement because the basic infrastructure already exists. The unavailability of an integrated information system that pharmacists can utilize can be a barrier to comprehensive counseling services. (P17, female, 29 y.o).*

(Interview 19)

A significant obstacle was the insufficient cooperation from healthcare facilities regarding infrastructure. Pharmacists encountered challenges in tasks that included documenting counseling notes, managing personal medication records, and employing demonstrations to instruct patients regarding their condition. These responsibilities are crucial for providing

**Table 3.** Pharmacist's expectations to overcome existing barriers.

| No | Thematic category | Pharmacist's expectations on existing barriers | Coding Frequency (*n* = 46) |
|---|---|---|---|
| 1 | Pharmacist personal perceived barrier. | The existence of role models from senior pharmacists or specialist pharmacists. | 31 (67.39%) |
| | | Sustainable training skills, specifically communication skills, and updates on topics related to diabetes management. | 46 (100.00%) |
| | | Average Coding Frequency | 39 (83.70%) |
| 2 | Barriers from patients. | Give pharmacists the opportunity to show their existence. | 21 (45.65%) |
| | | Average Coding Frequency | 21 (45.65%) |
| 3 | Interprofessional perceived barrier. | Involve pharmacists in making specific decisions on drug use in diabetic patients. | 46 (100.00%) |
| | | Establish direct communication with pharmacists as well as indirect communication through patient medical records. | 33 (71.74%) |
| | | Understanding each other's roles among health workers. | 40 (86.96%) |
| | | Average Coding Frequency | 40 (86.23%) |
| 4 | Barriers due to health facility policies. | Establish fee-for-service and fee-for-performance policies for pharmacist performance. | 46 (100.00%) |
| | | Provide special assignments for pharmacists who will provide patient-based pharmaceutical services. | 26 (56.52%) |
| | | Separate roles and job descriptions for pharmacists who carry out tasks in inventory management and patient-oriented services. | 36 (78.26%) |
| | | Policies related to interprofessional collaboration must be emphasized in the rules and regulations in health facilities. | 27 (58.70%) |
| | | Provide support for the role of pharmacists, not only focusing on pharmaceutical supplies/inventory but also on patient orientation. | 33 (71.74%) |
| | | Average Coding Frequency | 34 (73.04%) |
| 5 | Barriers due to health facility infrastructure. | Give pharmacists more access to health information systems. | 35 (76.09%) |
| | | Infrastructure support to improve patient safety by involving pharmacists. | 27 (58.70%) |
| | | Support the implementation of standard operational procedures for counseling patients with type 2 diabetes mellitus until goal therapy is achieved. | 24 (52.17%) |
| | | Average Coding Frequency | 29 (62.32%) |
| 6 | Barriers due to government policies and regulations. | Prepare the infrastructure to switch to fully online administration on National Health Insurance so that the pharmaceutical service process for patients is easier, faster, and the focus can be shifted to disease management and patient safety. | 31 (67.39%) |
| | | Avoid sudden regulatory changes on National Health Insurance that inconvenience patients and healthcare workers. | 33 (71.74%) |
| | | Provide infrastructure that bridges patient health information at primary and secondary health facilities. | 27 (58.70%) |
| | | Average Coding Frequency | 30 (65.94%) |

quality care, yet they become considerably more challenging in the absence of the requisite mechanisms.

This study emphasizes the necessity for healthcare systems to advance and facilitate the involvement of pharmacists in the management of chronic diseases such as T2DM. There is an immediate necessity for cohesive healthcare policies that acknowledge and remunerate pharmacists for their counseling services, alongside investments in infrastructure to facilitate improved communication and information exchange. By mitigating these obstacles, healthcare institutions could enable pharmacists to enhance their contributions to patient care, hence improving health outcomes for patients with T2DM.

**Barriers due to government policies and regulations**

Although not many respondents stated this, on average, 59% of respondents mentioned central government regulations related to national health insurance services, which is locally called Badan Penyelenggara Jaminan Sosial Kesehatan (BPJS Kesehatan), as one of the factors that contributed to the barriers to providing diabetes management counseling services by pharmacies. The pharmacist's statement related to this matter is presented as follows.

*The National Health Insurance Administration made me focus more on this. Complicated and dynamic administrative rules are an obstacle to providing patient-oriented pharmaceutical services. If the patient's administration is not correct or incomplete, drug services may not be provided. This administration issue is considered more essential than pharmacist counseling services, which are not very important for some patients. (P19, female, 26 y.o).*

(Interview 20)

*Patients with stable conditions should be immediately referred to primary care. Patients with poor prognosis are referred back to advanced health facilities. The absence of infrastructure that bridges counseling services from primary to advanced health facilities causes lost follow-up. In my opinion, this is an obstacle to implementing comprehensive and sustainable counseling services. (P20, female, 30 y.o).*

(Interview 21)

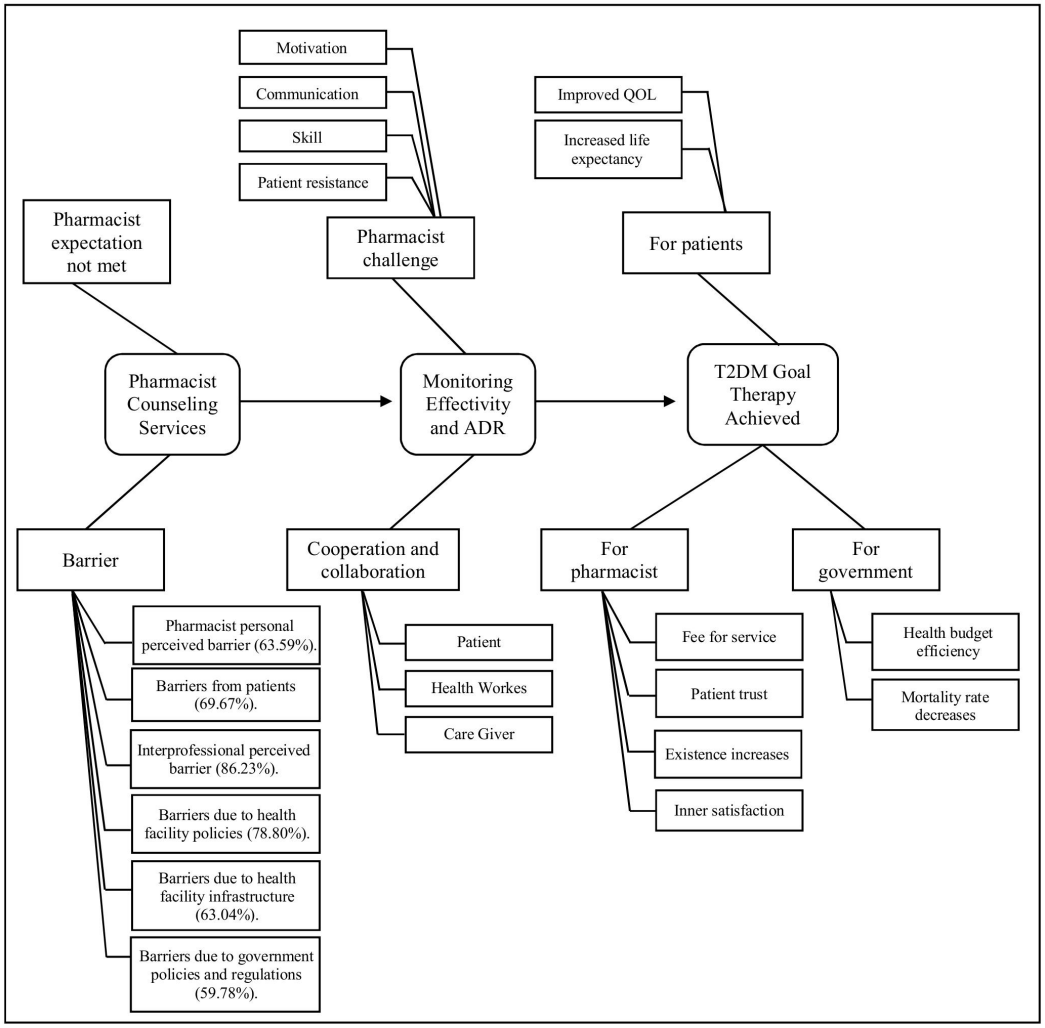


**Figure 1.** Thematic framework on the phenomenology of essential pharmaceutical counseling for ambulatory T2DM patients.

Dynamic regulations, too many administrative matters, and strict referral provisions cause pharmacists to focus too much on administrative issues, which will unconsciously reduce the intensity of counseling services. The thematic framework was produced from data mining reported in Table 2.

**Pharmacists' expectations of barriers**

At the end of the interview, the researcher asked about the expectations of pharmacists to face barriers in providing counseling services, especially for people with T2DM. All pharmacists in this study ($n$ = 46) expressed three uniform expectations at the end of the interview. The first was that they hoped for a sustainable training skills program, specifically communication skills, and updates on topics related to diabetes management provided by healthcare facilities. The second was that they wished to involve pharmacists in making specific decisions on drug use in diabetic patients (interprofessional collaboration). The third was that they hoped to establish fee-for-service and fee-for-performance policies for pharmacist performance provided by healthcare facilities. Some of their other expectations are described in more detail in Table 3.

**Thematic framework on the phenomenological of this study**

Based on the phenomena found in this study, a thematic framework on the phenomenon of essential pharmaceutical counseling for ambulatory T2DM patients can be synthesized. This framework provides a holistic picture of the importance of pharmacist counseling services for ambulatory T2DM patients as an effort to accelerate goal therapy and improve the safety of outpatients. The framework in question is shown in Figure 1.

In order to achieve their goal of therapy, ambulatory T2DM patients must undergo therapy that can be monitored. Monitoring the effectiveness of treatment and minimizing adverse drug reactions are the main steps that must be taken. Pharmacists can basically play a role in maintaining patient safety through comprehensive pharmaceutical counseling services and follow-ups with patients every month. However, in its implementation, pharmacists will be faced with barriers, challenges, and discrepancies between ideal conditions and the reality they face.

## DISCUSSION

This study explores, in-depth and personally, the barriers faced by pharmacists providing pharmaceutical counseling services to outpatients with T2DM. Counseling services by pharmacists in chronic disease patients have been widely reported to reduce medication errors, adverse drug reactions, and accelerate goal therapy [14,20–25]. The presence of pharmacists to be involved in T2DM therapy management is considered important. Not all pharmacists can carry out their role of providing patient-focused services due to many considerations. The findings in this study can provide an overview of this phenomenon. The results of the qualitative analysis showed that six main categories were barriers for them in providing counseling services to patients.

**Pharmacist personal perceived barrier**

The National Pharmaceutical Education Association in Indonesia and the Federation International Pharmaceutical have set a pharmacist education curriculum that can focus on industry and health services. Pharmacists who practice in health facilities are basically those who are considered to have sufficient education to provide health services to patients, including pharmaceutical counseling services [26,27].

This study found statements from pharmacists who felt they did not have the competence and capability to offer counseling services to T2DM patients. Their motivation to provide services also tends to be low due to the work overload that predominantly focuses on pharmaceutical products and supplies. This prolonged situation was very likely to cause a decrease in their knowledge, communication skills, and self-confidence due to a lack of experience. This problem is like a vicious circle [14,28,29]. It is highly recommended that efforts be made to break this cycle. Pharmacists must be motivated to carry out their role so that all parties, such as patients, healthcare, government, and pharmacists themselves, will feel its benefits.

Simple efforts that can be taken to increase pharmacist motivation are to separate the job descriptions between pharmacists who are in charge of pharmaceutical supply management and pharmacists who are in charge of patient services. Pharmacists who are in charge of patient services should not be given responsibility for pharmacy inventory management. Providing incentives and rewards is also considered important to maintain pharmacist motivation [7,9,12,14,16,27,30]. Sustainable training skills, specifically communication skills, and updates on topics related to diabetes management are considered mandatory to be provided by healthcare facilities as part of the lifelong learning that health workers must carry out [1,14,18,28,29,31].

**Barriers from patients**

Barriers to providing DM counseling services by pharmacists that come from patients are a challenge for pharmacists in increasing pharmacist trust in patients. Pharmacists who can establish good communication with patients and provide pharmaceutical services wholeheartedly can build trust in the pharmacist profession [32–36]. This issue is considered the most important to be built first. Barriers from patients related to their mindset, knowledge, behavior, belief, and lack of time will slowly improve when trust in the pharmacist profession has been built from patients [7,14,28].

**Interprofessional perceived barrier**

Interprofessional collaboration is the most important thing to do in providing health services to patients. Basically, one health professional cannot provide comprehensive health services individually. All health personnel have a role to provide the best service to patients. Overlap roles are unavoidable, but overlapping roles can be resolved with good and wise communication between health professionals [37,38].

The findings in this study show that pharmacists appear not to be involved in patient-oriented services. Communication between pharmacists and doctors, nurses, nutritionists, laboratories, and other health workers has not been well established. Many personal health perceptions still do not comprehensively understand the role of pharmacists in

clinical pharmacy services. This problem must be addressed together. Healthcare facilities appear to have to make policies and regulations related to the involvement of pharmacists in clinical pharmacy services. The regulations of the Minister of Health of the Republic of Indonesia have outlined the roles that pharmacists can play in clinical pharmacy services to patients [3,26,39–41]. This regulation does not appear to have been fully implemented in healthcare facilities. In addition, pharmacists in Indonesia, especially in the province of Bali, are highly recommended to start showing their existence in providing clinical pharmacy services.

Ultimately, good communication between pharmacists and other health workers is the main key to the success of interprofessional collaboration. Pharmacists are also advised to be able to show evidence that the involvement of pharmacists in providing clinical pharmacy services, such as counseling services, can provide improvements in the prognosis of T2DM patients.

**Barriers due to health facility policies**

All pharmacists involved in the study uniformly stated that there was no fee for service, specifically for pharmaceutical counseling services. Fee-for-service was available in general pharmacy work in healthcare facilities. Regulations and policies in healthcare facilities do not yet contain detailed individual performance indicators for pharmacists. The problem that occurred in the field was that pharmaceutical work that focuses on pharmaceutical inventory management was still unable to be overcome due to limited human resources. This limitation hinders the focus of pharmacist's work on priority matters such as ensuring the availability of drugs and medical devices for outpatients [7,14,28].

Healthcare facilities, especially hospitals that have developed a high level of outpatient visits, are recommended to increase the number of pharmacists who work specifically in clinical pharmacy services. Regulations and policies are recommended to be prepared to accommodate pharmacists who practice clinically without having to be given additional tasks in the aspect of pharmaceutical inventory management. Healthcare facility accreditation standards, both national (Indonesia) and international, with the best ratings, will be easier to achieve because these standards have established patient-based pharmacy services as an important component in the assessment [3–5].

**Barriers due to health facility infrastructure**

Health facility infrastructure is indeed one of the important components that support the success of counseling services for ambulatory T2DM patients. Pharmacists should also have access to the patient information system. In this situation, access to patient information will make it easier for pharmacists to screen and study the patient's T2DM disease history so that when giving counseling services, they can focus on problems that are considered important to solve. Supporting infrastructure such as drug information resources, brochures, pamphlets, teaching aids, drug education videos, and other counseling support instruments can actually be provided by educational institutions that collaborate with health facilities through their pharmacy students who do internships at health facilities. This barrier can basically be overcome if there is motivation to do it [14,24,35].

**Barriers due to government policies and regulations**

Researchers understand the dynamics of government regulations and policies related to National Health Insurance. Dynamic policy changes basically protected a fair health budget for all Indonesian people. Researchers recommend that the government fully shift the health service system to digital and integrate it with health facility levels. Such a situation would alleviate the workload of healthcare professionals and pharmacists regarding administrative services for patients. The plan to digitize the health system in Indonesia and simplify the administration of patients using the Indonesian National Health Insurance (BPJS Kesehatan) has begun to be conveyed by the government and has begun to be implemented gradually [26,32].

**Pharmacist's expectations to overcome existing barriers**

Pharmacists' expectations regarding barriers to providing counseling services to ambulatory T2DM patients showed that there were variables related to each other in the six mapped barrier categories. The findings in this study indicate that pharmacists were basically willing to provide counseling services to diabetes patients but chose not to act on existing barriers. Communication and efforts to overcome barriers that were considered lacking caused pharmacists to fall into services that were based on pharmaceutical supply management only. Senior pharmacists are also advised to provide role models for pharmacists providing clinical pharmacy services so that young pharmacists can emulate and follow in the footsteps of their seniors [28,37,38].

**Study limitation**

The limitation of this study was the exploration of barriers based only on the pharmacist's perspective. After the interview process was conducted in the study, it was found that there were barriers originating from patients and also between other professions. Another limitation was that the pharmacists involved in the study were enrolled in health facilities in Bali Province, Indonesia, and were predominantly hospital pharmacists. Thus, the results of our research may not be generalized to other pharmacist populations because of different characteristics, regulations, and policies from the government and the health facilities themselves.

**Recommendations**

Pharmacists ought to be incorporated into multidisciplinary care teams comprising physicians, nurses, nutritionists, and social workers. This collaborative approach can guarantee that all facets of the patient's care, encompassing medication management and lifestyle modifications, are addressed comprehensively. Pharmacists can partner with patients and other healthcare professionals to jointly determine prescription plans and lifestyle modifications. This method fosters patient involvement and enhances the efficacy of counseling.

Pharmacists can contribute to raising public awareness about the role of pharmacists in diabetes management through educational campaigns. By informing patients about the valuable services pharmacists provide, they may be more likely to seek out counseling services. Pharmacists should work on establishing rapport with their patients, ensuring that they feel comfortable discussing medication adherence, side effects, and other concerns. Trust is essential to an effective counseling relationship.

Policymakers can initiate advocacy for policy and fee-for-service improvements. The implementation of a fee-for-service approach for counseling services can offer financial assistance to pharmacists. This problem would motivate pharmacists to participate in counseling more proactively, aware that they will receive remuneration for their time and competence. Establishing partnerships with healthcare institutions to formalize contracts or agreements for pharmacists to get compensation for counseling services might mitigate financial obstacles.

To address physical infrastructure constraints, pharmacists could use telehealth services, providing counseling sessions through video calls or telephone consultations. This thing may enhance accessibility, particularly for patients residing in rural regions or experiencing mobility difficulties. Pharmacists may suggest or create applications that assist patients in tracking their prescriptions, monitoring blood glucose levels, and receiving appointment reminders. This technology can improve the efficacy of counseling and bolster patient compliance with treatment regimens.

Further exploratory studies are needed regarding the truth of the barriers felt by pharmacists from the perspective of patients and other professionals such as doctors, nurses, nutritionists, and other health workers involved in the management of T2DM patients. Further information from healthcare facility officials is also considered important to explore regarding the findings of this study.

## CONCLUSION

Pharmacist barriers in providing counseling services to ambulatory T2DM patients in Bali, Indonesia, were as follows: pharmacist personal perceived barriers, barriers from patients, interprofessional perceived barriers, barriers due to health facility policies, barriers due to health facility infrastructure, and barriers due to government policies and regulations. Pharmacist involvement in clinical pharmacy services, such as counseling services, has been reported in several studies to accelerate the achievement of T2DM patient therapy goals and reduce the risk of harm in drug use. However, its implementation was hampered by gaps due to barriers that should receive rapid follow-up before the existing barriers widen the gap. Pharmacists are basically willing to provide counseling services to diabetes patients. The barriers present make them unable to provide optimal pharmaceutical services to T2DM patients. They expect to be able to get attention in terms of well-being, sustainable knowledge training, and a support system that stimulates their existence in providing patient-oriented services.

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## AUTHOR CONTRIBUTIONS

All authors made substantial contributions to the conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work. All the authors are eligible to be an author as per the International Committee of Medical Journal Editors (ICMJE) requirements/guidelines.

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## CONFLICTS OF INTEREST

The authors report no financial or any other conflicts of interest in this work.

## ETHICAL APPROVALS

Ethical approvals is given in 'Materials and Methods' section.

## DATA AVAILABILITY

All data generated and analyzed are included in this research article.

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