



Original article

Consensus methodology to investigate the crucial referral criteria to pharmacist-led counseling clinics in Makkah City

Sarah M. Khayyat

Department of Clinical Pharmacy, College of Pharmacy, Umm Al-Qura University, Makkah, Saudi Arabia

ARTICLE INFO

Keywords:

Referral criteria
Post-discharge care
Counseling clinic
Pharmaceutical care

ABSTRACT

Aim: Identifying and prioritizing criteria for referring patients to a counseling clinic managed by hospital pharmacists in the tertiary care setting in Saudi Arabia (SA).

Method: A two-phase consensus Delphi methodological approach was adopted in this study. Data was collected from physicians and pharmacists from different specialties working in different hospitals in Makkah City. In Phase 1, semi-structured interviews were conducted with physicians and pharmacists to discuss and develop the initial list of potential referral criteria for post-discharge counseling. Phase 2 consisted of two rounds of online surveys where participants were asked to independently rank the referral criteria using a 5-point Likert Scale.

Results: In Phase 1, four participants undertook the interviews (two physicians and two pharmacists). Overall, no major comments were given on the suggested criteria. In Phase 2, most suggested referral criteria to the counseling clinic reached participants' consensus agreement of >70 % in both rounds for all three domains. Among all criteria that achieved consensus agreement, two demographic criteria were top-ranked by the participants; the elderly patients (100 %) and those who needed help with their devices (96 %). These were followed by five medication-related criteria, which are medication-related problems, polypharmacy, medication that needs monitoring, high-risk medication, and medication with special formulations. All had a consensus agreement of 96 %.

Conclusion: This study suggests that a counseling clinic led by pharmacists is particularly advisable for the elderly, individuals requiring assistance with their devices, and those encountering medication issues. It is essential to prioritize specific patient demographics when contemplating the extensive establishment and integration of such clinics across various hospitals in SA.

1. Background

The pharmacy practice has developed over the years to include dispensing medication and providing other important clinical services in different care settings (Rantucci, 2006). However, the literature identified different barriers and challenges to providing care in the hospital outpatient setting, highlighting the need for ongoing professional development and support to enable pharmacists to navigate and overcome barriers. For example, hospital pharmacists encounter an increasing workload and demand for services, leading to time constraints in giving comprehensive medication counseling and ensuring optimal patient outcomes (Bowles et al., 2003; Khayyat and Nazar, 2023; Laif et al., 2017; Royal Pharmaceutical Society, 2009). Additionally, understaffing resulting from a shortage of well-trained pharmacists may reduce pharmacists' ability to address individual patient needs effectively (Mekonnen et al., 2018). Similarly, patients encounter

various challenges when seeking care in outpatient pharmacies, such as extended waiting times, inconvenient counseling areas, and limited availability of personalized counseling and education about prescribed medications (Daliri et al., 2019). Addressing these challenges requires a holistic approach, such as medication counseling clinics, to enhance the patient experience in outpatient pharmacy within hospital environments.

The role of pharmacists in improving the transition of care and post-discharge care has become an interest for many researchers and service designers. It has been found that post-discharge counseling reduces medication-related problems such as side effects, drug interactions, and other medication errors (Chowdary and Aanandhi, 2018; Ko et al., 2007). A recent systematic review and meta-analysis identified 49 randomized control trials (RCTs) evaluating the role of pharmacists in improving patient outcomes (Kelly et al., 2021). Pharmacists' interventions included counseling and/or providing other services, i.e.,

E-mail address: smkhayat@uqu.edu.sa.

<https://doi.org/10.1016/j.jsps.2024.101981>

Received 8 October 2023; Accepted 1 February 2024

Available online 7 February 2024

1319-0164/© 2024 The Author(s). Published by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

medication review, drug evaluation, and recommendations to change medication. Most of the identified studies delivered care to patients out-of-hospital ($n = 30$) or in clinics ($n = 17$), while others delivered care at homes ($n = 7$) or in community pharmacies ($n = 6$) (Kelly et al., 2021). The review found that compared to usual care, where patients did not receive any counseling, pharmacist-led medication counseling significantly improved medication adherence and quality of life and reduced 30-day hospital readmissions and emergency department visits. However, studies with better quality are still required to evaluate these outcomes. In another systematic review and meta-analysis, 47 studies (out of 52) demonstrated positive clinical outcomes by providing post-discharge community pharmacy interventions, such as education, health/lifestyle advice, adherence assessment, medication review, monitoring, and adjusting medication (Yuan et al., 2019). The study identified greater reductions in systolic and diastolic blood pressure and hemoglobin A1c with pharmacist interventions (Yuan et al., 2019). These findings suggested the need to analyze the results by considering the intervention location (i.e., if it was delivered for inpatients or outpatients) and healthcare professionals delivering the intervention, as such factors may impact the results.

In Saudi Arabia (SA), the Ministry of Health (MOH) aims to provide comprehensive health care for all people through an integrated network of healthcare services covering all regions. Services in the MOH medical facilities and hospitals are provided for citizens and residents for free (GOV.SA United National Platform, 2023). The MOH provides different health education clinics delivered by physicians or other non-pharmacy staff. These clinics are provided virtually or in primary healthcare centers (Ministry of Health, 2023b). However, to align with Saudi Vision, 2030 in improving the healthcare sector, pharmacist-led counseling clinics have been newly implemented in the MOH hospitals (Vision 2030, 2023). The service is provided by a pharmacist upon receiving a referral request from physicians or pharmacy staff working in the outpatient pharmacy. It is provided in a face-to-face clinic with outpatients and hospital-discharged patients or as a virtual clinic for outpatients (Ministry of Health, 2023a). In Makkah City, six MOH hospitals (out of eight) have started counseling non-hospitalized patients. When these counseling clinics were implemented, the policymakers and services designers at the MOH aimed to provide it to different patients. The service eligibility criteria were for patients with chronic diseases, medication non-adherence, pregnant/breastfeeding women, drug-related problems such as side effects, drug interactions, dispensing/transcription medication errors, high alert medications, and polypharmacy (Ministry of Health, 2023a). However, since the service implementation, it has been provided to patients with type 1 and 2 diabetes only. There is another specialized counseling clinic for patients on anticoagulant therapy. However, no counseling clinics led by pharmacists are offered for other patients (e.g., those with hypertension or heart failure) in any care setting, especially in the tertiary care setting. To expand these clinics in Makkah City and increase patient utilization, the MOH policymakers and service designers need to consider an extensive evaluation of the service and explore all potential referral criteria before its wide implementation. Therefore, this study aims to identify criteria for referring patients to the counseling clinic managed by hospital pharmacists in SA. The objectives include (1) identifying all potential non-hospitalized patients who would benefit from the counseling clinics, (2) evaluating the degree of healthcare censuses on current and new suggested criteria, and (3) prioritizing the referral criteria to facilitate service adaptation and implementation across all hospitals in SA.

2. Method

2.1. Study design

A two-phase consensus Delphi methodological approach (Trevelyan and Robinson, 2015) was adopted in this study to identify appropriate

referral criteria for patients attending counseling clinics in the tertiary care setting. The Delphi technique is a reliable method for developing novel concepts, resolving critical issues, and determining the orientation of future research (Rowe and Wright, 1999). The technique is commonly used to generate a consensus of individual panel member opinions (percentage of agreement) on certain topics and resolve disagreement (Nasa et al., 2021; Trevelyan and Robinson, 2015); in this case, deciding the referral criteria to the counseling clinics. The Delphi approach involves conducting different phases; the first one uses well-structured open-ended questions with some expert panel to develop an initial framework. The second phase involves different rounds and uses a Likert Scale survey (Trevelyan and Robinson, 2015).

In this study, interviews were chosen over a focus group as the aim was to provide a platform for in-depth exploration of each participant's experiences and perspectives in a comfortable one-on-one setting. Additionally, interviews offer flexibility, allowing researchers to adapt questions based on participants' responses, fostering a dynamic and responsive interaction.

2.2. Phase 1

Semi-structured interviews were conducted over one month in June 2023 with physicians and pharmacists of different expertise working in different hospitals in Makkah. The main purpose of the interviews was to check the validity of the developed questionnaire about the appropriateness of the referral criteria and if there were other criteria that should be considered for the next phase of the study.

2.2.1. Data collection

Open-ended questions were used in the topic guide to identify a wide range of possible referral criteria. These questions were adapted from the current MOH referral criteria (internal system) (Ministry of Health, 2023a) and other criteria identified from the literature (Nazar et al., 2016, 2019). The topic guide had three main sections related to different types of referral criteria these are demographic-related criteria, medication-related criteria, and disease-related criteria. Under each category, there were some prompt questions to encourage the exploration and articulation of thoughts more fully, eliciting specific details, clarifying any ambiguous responses, or facilitating participants' engagement.

The one-to-one interviews were conducted over the phone in either English or Arabic, as per the participants' preference. They were audio-recorded to facilitate the transcription and analysis of responses. Data from this phase gave an overview of all potential referral criteria to the counseling clinics and helped the research team to sort, organize, and remove overlapped criteria. The obtained data from this phase also helped design the questionnaire for the subsequent online surveys.

2.2.2. Participant recruitment

A purposive sampling was considered to recruit participants who were involved in designing and/or delivering the counseling service. Participants were recruited via a collaboration with a gatekeeper, a leader of the counseling clinic in Makkah City, who has access to potential participants and who sent them the study invitation emails and messages. This method enhances the efficiency of participant identification, especially since the Delphi approach requires communicating with an expert panel on the topic. In addition, having a gatekeeper streamlines the recruitment process and ensures the selection of individuals who align with the study's criteria.

2.3. Phase 2

This phase consisted of two rounds of online surveys sent to physicians and pharmacists who agreed to participate, worked in Makkah City, showed interest in the topic, and were committed to completing the two rounds of the Delphi consensus activity. In Delphi technique, the

optimal recommended number of rounds to reach a consensus between panel members is three (Trevelyan and Robinson, 2015). However, previous studies found that consensus was successfully achieved and closing criteria (final agreed criteria) were stable after two rounds (Diamond et al., 2014; Jünger et al., 2017). Therefore, in this study, we used two predefined rounds to identify and validate all critical referral criteria and achieve consensus among all participants.

2.3.1. Data collection

The survey for Phase 2 was developed from data obtained from Phase 1 (stakeholder interviews) and a similar study on a referral service provided to discharged patients (Nazar et al., 2019). The survey was reviewed and tested by two clinical pharmacists for the validity of the questions and clarity of the language. A short time frame was chosen between the two rounds to maintain participant engagement and reduce dropout rates (Trevelyan and Robinson, 2015). The first round took place over one week, and the second round over the next week (each round lasted for one week). The survey included three domains of referral criteria to the counseling clinics, these are demographic-related criteria (e.g., patient's age, language difficulties), medication-related criteria (e.g., adherence issues, polypharmacy), and disease-related criteria (e.g., hypertension, heart failure).

2.3.2. Participant recruitment

A convenience sampling technique was considered to recruit participants in this phase. They received invitation messages via social media platforms/accounts (WhatsApp, Facebook, Twitter). This method allowed the researcher to connect with large and diverse potential participants, potentially reaching individuals from various demographics and with different experiences and perspectives.

2.3.3. Round 1

Participant demographics were collected, which included the participant's gender, age, current job position, medical specialty, and years of experience. All potential referral criteria (identified from the literature and phase 1) were listed, and participants were asked to independently rank them using a 5-point Likert scale ('strongly agree', 'agree', 'disagree', 'strongly disagree', and 'do not know'). Such a scale produced stable findings in previous Delphi studies (Akins et al., 2005; Vogel et al., 2019). Including the 'do not know' option as an alternative response for each statement is recommended in the Delphi approach, especially when participants have different backgrounds and knowledge and may not necessarily know how to answer certain statements (Trevelyan and Robinson, 2015; Vogel et al., 2019). In addition, this allowed the research team to pinpoint statements that lacked clarity and needed further scrutiny (Vogel et al., 2019). A free-text response was also available to provide the opportunity to suggest additional referral criteria and elaborate/explain responses. Based on the first round of responses, the research team refined the survey and calculated the percentage for each referral criterion. Then, the survey was sent out again to the same participants.

2.3.4. Round 2

Participants were given the refined survey along with the mean values of the importance of each criterion (from Round 1). This round developed a reasonable consensus among participants by allowing them to revise aspects of their opinions that they had not considered previously (Hong et al., 2015). Details of the data collection forms used in both phases are provided in Supplementary File 1.

2.4. Data analysis

In Phase 1, relevant sentences in the Arabic interviews underwent a forward-backward translation method that was approved by the World Health Organization (WHO) (World Health Organization, n.d.). Transcribed interview data was analyzed using thematic analysis, employing

both inductive and deductive approaches to identify all important themes and sub-themes. The analysis was performed using Nvivo12 Software. Three models of saturation were achieved in this study as follows: (1) data saturation, where codes tended to be redundant of codes already identified, (2) a priori thematic saturation, as all pre-identified criteria were adequately represented in the data, and (3) inductive thematic saturation where no new codes or referral criteria were emerged in the process of analysis (Saunders et al., 2018). To ensure the trustworthiness of the data, triangulation of sources was considered by comparing the responses of people with different experiences and job positions. In addition, interviewees were from different hospitals to achieve site triangulation (Shenton, 2004).

In Phase 2, descriptive statistics was used to describe participants' demographics and responses to each referral criterion in all rounds. To analyze the data and identify study objectives, patients' responses were classified into two main groups (agree and disagree), and the consensus was defined as more than 70 % of participants agreeing/strongly agreeing or disagreeing/strongly disagreeing in the final round. This consensus predefined cut-off has been considered appropriate in many Delphi studies (Diamond et al., 2014; Slade et al., 2014; Vogel et al., 2019). All 'do not know' responses were excluded from the analysis to ensure that the level of consensus of each referral criterion was reported by the percentage of only those who knew the answer (Vogel et al., 2019). Consensus stability was considered achieved if the variation in group responses varied by $\leq 10\%$ (Duffield, 1993; Vogel et al., 2019).

3. Results

3.1. Phase 1

Four participants undertook the interviews and who had previously provided the service (i.e., referred patients to the clinic or provided counseling). The mean average length of the interviews was 17 min (± 5 min), and all interviews followed the same interview guide (Supplementary File 1). Their demographic characteristics are provided in Table 1.

Overall, participants agreed on the adapted referral criteria but suggested some refining and re-organization of the criteria. No major comments were given on the suggested criteria. Only one physician did not agree on the disease-related criteria (e.g., counsel patient with hypertension and heart failure). He believed patients would receive the required information about their diseases from their physicians. However, as suggested by other interviewees, the literature, and the MOH internal system, counseling patients with some medical conditions is necessary. Thus, it was favorable to keep the disease-related criteria for further investigation in Phase 2.

Table 1
Characteristics of the interviewed participants.

Characteristics	Number (%)
Gender	
- Male	4
- Female	20
Age	
- 25-34	1
- 35-44	2
- 45-54	1
Current job position	
- Consultant physicians	2
- Consultant pharmacist in medication counseling	1
- Pharmacist	1
Medical specialty	
- Endocrinology	1
- Family medicine	1
- No specialty	2
Years of experience	
- 6-9 years	2
- ≥ 10 years	2

Table 2
Demographic characteristics of Delphi participants.

Characteristics	Round 1 (n = 30)	Round 2 (n = 24)
Gender		
- Male	6	4
- Female	24	20
Age		
- 25–34	13	9
- 35–44	13	11
- 45–54	2	2
- 55–64	2	2
Current job position		
- Consultant physicians	13	12
- Specialist physicians	4	2
- Consultant clinical pharmacists	3	3
- Consultant pharmacist in medication counseling	2	2
- Pharmacists	8	5
Medical specialty		
- Cardiology	1	1
- Endocrinology	1	1
- Family medicine	8	8
- Infectious disease	1	1
- Nephrology	2	2
- Obstetrics and gynecology	3	3
- Oncology	1	1
- Paediatric	1	0
- Radiology	1	1
- Surgery	2	0
- No speciality	9	6
Years of experience		
- <2 years	3	0
- 2–5 years	4	4
- 6–9 years	8	6
- ≥10 years	15	14

3.2. Phase 2

A total of 30 participants completed the survey in Round 1 and 24 participants in Round 2. Their demographics are provided in [Table 2](#).

Participants' characteristics showed that most were physician consultants (n = 13) and pharmacists (n = 8). Most participants had a family medicine specialty (n = 8) and working experience of ≥10 years (n = 15). The comparison of participants' responses showed that stability of consensus (≤10 % variation) was achieved between both rounds for two of the three domains. [Table 3](#) summarizes grouped criteria by domain and the percentage of variation in group responses, while [Table 4](#) provides details of participants' responses to the suggested referral criteria to the pharmacist-led counseling clinic (in both rounds).

As shown in [Table 4](#), most suggested referral criteria to the counseling clinic reached participants' consensus agreement of >70 % in both rounds for all three domains. In Round 1, consensus was achieved for 90.5 % (n = 19) of the 21 statements. While in Round 2, consensus was achieved for 85.7 % (n = 18) of the 21 statements.

Based on findings from Round 2, the number of criteria that achieved consensus varied between domains. In the demographic-related criteria domain, participants disagreed with referring patients of any age or ≤18 years old (consensus was achieved for only 50 and 67 %, respectively). On the other hand, 100 % consensus was achieved for referring

Table 3
Summary of grouped statements by domain.

Domains	Number of criteria in each domain		Proportion of criteria where consensus was achieved (n)		Variation in group responses*
	Round 1	Round 2	Round 1	Round 2	
Demographic-related criteria	7	7	85.7 % (6)	71.4 % (5)	14.3 %
Medication-related criteria	7	7	100 % (7)	100 % (7)	0 %
Disease-related criteria	7	7	85.7 % (6)	85.7 % (6)	0 %

* Considered to evaluate the consensus stability.

elderly patients and 96 % for those who needed help with their devices. For medication-related criteria, all listed criteria achieved consensus agreement. However, the highest level of agreement was related to counseling patients who have medication-related problems, polypharmacy, medication that needs monitoring, high-risk medication, and using medication with special formulations. In the disease-related criteria domain, consensus agreement was achieved for all criteria, except referring patients with pain to a counseling clinic (67 %). The highest level of agreement among the participants (92 %) was related to referring patients with heart failure, stroke, or other coagulation disorders.

4. Discussion

This study found that among all criteria that achieved consensus agreement, two demographic criteria were top-ranked by the participants: elderly patients and those who needed help with their devices. These were followed by five medication-related criteria, which are medication-related problems, polypharmacy, medication that needs monitoring, high-risk medication, and medication with special formulations.

Elderly patients have been identified, in this study and previous ones, as a high-risk group requiring additional support and care post-hospital discharge ([Kansagara et al., 2011](#); [Raval et al., 2015](#); [Salmasi et al., 2020](#)). Similarly, patients with medication-related problems required additional support and were prioritized by the participants in this study. Previous studies found that their problems have been associated with unnecessary healthcare utilization (e.g., outpatient visits and hospital admissions), interfered with clinical treatment, and increased financial burden on patients or healthcare systems ([Lensesen et al., 2016](#); [Ni et al., 2021](#)). The involvement of a pharmacist in patient care for reducing medication-related problems was the most recommended intervention in previous studies ([Hanlon et al., 2004](#); [Salmasi et al., 2020](#)). For example, a recent study related to post-discharge care identified many medication-related problems resulting in pharmacist interventions ([Salmasi et al., 2020](#)). The most reported problems were the need for additional therapy, followed by having unnecessary drug(s), poor adherence, and adverse drug reactions. The commonly delivered intervention was patient education which included drug/device use education and chronic disease education. The study also found that elderly patients with comorbidities had the highest incidence of medication-related problems requiring pharmacists' interventions. Patients needed counseling and education even when they had no reported medication-related problems ([Salmasi et al., 2020](#)).

Participants of this study recommended the pharmacist-led counseling clinic to patients with chronic diseases, mainly those with cardiovascular diseases. However, the literature provided controversial findings where it was found that pharmacist-led interventions had improved patient outcomes and the use of medication regardless of the medical conditions (e.g., chronic diseases, human immunodeficiency virus (HIV) infection) ([Gilbert and Gerzenshtein, 2016](#); [Mayzel et al., 2022](#)) or the prescription status (i.e., the use of over-the-counter (OTC) drugs and prescription-only medication (POM)) ([Mayzel et al., 2022](#); [Ylä-Rautio et al., 2020](#)). For example, a study exploring drug-related problems and community pharmacy interventions in OTC drugs found

Table 4
Responses to patients' criteria and/or conditions to refer to counseling clinic.

Referral criteria	Round 1 (n = 30)		Round 2 (n = 24)	
	Agree %	Disagree %	Agree %	Disagree %
Demographic-related criteria				
- Elderly patients >60 years	87	13	100	0
- Young patients ≤18 year	83	17	67	33
- Patient of any age	63	37	50	50
- Patients who need help with devices (e.g., glucometer, inhalers)	93	7	96	4
- Patients with language difficulties	77	23	79	17
- Patients with cognitive impairment	80	20	92	8
- Pregnant or breastfeeding	90	10	92	8
Medication-related criteria				
- Adherence issue	87	13	88	13
- Medication-related problems (e.g., medication error, drug interactions, side effects)	100	0	96	4
- Polypharmacy	97	0	96	4
- Medication that needs monitoring	93	7	96	4
- High-risk medication (e.g., insulin, opioid, warfarin)	97	3	96	4
- New medication started in hospitals	90	10	92	8
- Special formulations of medication (e.g., patches, syringes)	93	7	96	4
Disease-related criteria				
- Newly diagnosed patients with any disease	73	27	83	17
- Hypertension	90	10	71	25
- Heart failure	90	10	92	4
- Stroke/other coagulation disorders	93	7	92	4
- Other cardiovascular diseases	97	3	83	13
- Respiratory disease	63	3	88	8
- Pain	90	10	67	33

N.B: Consensus was defined as more than 70 % of participants' general agreement or disagreement in round 2.

Bolded numbers represent referral criteria with the highest % of consensus agreement.

that pharmacists reported 339 medication-related problems over one week. Commonly reported problems were patients being uncertain about the indication of their medication, overuse of medication, and drug-drug interaction. To resolve these problems, community pharmacists made 641 interventions. Their main provided interventions were patient counseling, switching drugs, and referring patients to a physician (Ylä-Rautio et al., 2020). The authors believed pharmacist counseling should be available for outpatients to promote safer self-medication practices (Ylä-Rautio et al., 2020). The variation in findings between the literature and the current study regarding the type of medical condition that pharmacists can manage in counseling clinics could be attributed to having different contexts, cultures, and levels of appreciation of the pharmacist's role in improving patient health. In SA, clinical pharmacy is developed to a lesser extent in MOH hospitals than in other non-MOH tertiary hospitals. In addition, community pharmacists still play a role mainly in medication dispensing (Al-Jedai et al., 2016). Therefore, pharmacy practice in SA still faces challenges that hinder the wide implementation of different clinical pharmacy services.

Previous studies identified other factors contributing to negative patient outcomes which required further attention by pharmacists (Raval et al., 2015; Wolff et al., 2002). For example, Raval et al. ascertained that elderly patients with polypharmacy were more likely to have 30-day readmissions than those without polypharmacy (Raval et al., 2015). High readmission rates were also strongly associated with prescribing high-risk medication at discharge, requiring the delivery of targeted interventions (Allaudeen et al., 2011). Different high-risk medication categories were associated with hospital admissions/readmissions, such as steroids, opioids, cardiovascular medications, anticoagulants, insulin, oral hypoglycemic drugs, antibiotics, and analgesics (Allaudeen et al., 2011; Forster et al., 2005; Howard et al., 2007). Targeting patients receiving high-risk medication, as recommended by the participants in this study, would help in developing prevention and improvement strategies (Barnett et al., 2011; Forster et al., 2005; Howard et al., 2007). Forster et al. suggested different strategies to reduce hospital readmissions. One strategy was to involve pharmacists in the pre- and post-discharge care, in which hospital pharmacists could provide medication counseling before patients' discharge (Forster et al., 2005), and then community pharmacists could follow up with the

patients a few days later to discuss any concerns or resolve any problems (Barnett et al., 2011). A previous study using the Delphi approach also found that patients taking high-risk drugs achieved high consensus agreement. All participants indicated the criteria as important for post-discharge care. However, this criterion ranked third after the change in medication during hospitalization and having new medication on discharge (Nazar et al., 2019).

4.1. Implication for practices

Recently, the number of well-trained, specialized clinical pharmacists in SA has increased, especially with the introduction of many specialized residency programs. Such manpower can be highly utilized to improve pharmaceutical care, such as providing counseling clinics. The area of improvement in the hospital setting is more promising as most pharmacists prefer to work in the hospital setting, and more patients prefer the MOH hospitals when needing outpatient services (Al-Jedai et al., 2016; Ministry of Health, 2019). However, even with sufficient staff, hospitals are still limited in other resources, such as the number of private counseling clinics, workload, and time constraints to provide adequate care (Laif et al., 2017). Thus, there is a need for more robust regulations regarding the provision of services. The prioritization of the referral criteria suggested in this study is one way to improve the provision of counseling clinics. It would have several implications for the MOH providers. For example, prioritization would ensure the identification of patients at higher risk who would benefit more from the counseling clinics (Hohmeier et al., 2020). Additionally, by prioritizing referral criteria, pharmacists could optimize their resources and allocate time and expertise to cases with the greatest impact. This strategic approach would enhance the overall efficiency and workflow of the counseling clinics and might be the most cost-effective strategy to reduce post-discharge adverse drug events and related hospital readmission (Forster et al., 2005; Hohmeier et al., 2020).

Even though this study used a reliable method (the Delphi technique) that has been used in previous similar studies for decision-making and consensus-building in various fields, some limitations still exist. Firstly, the findings represent the opinions of physicians and pharmacists who are keenly interested in the topic. Therefore, their opinion cannot be

generalized, and a larger sample size would improve the study's overall reliability. Secondly, expert selection bias may exist in Phase 1 of the study. However, the nature of Delphi's method heavily relies on selecting knowledgeable and diverse experts. Such bias did not exist in Phase 2 as convenience sampling was used, and physicians and pharmacists were recruited from different sites, providing diversity to capture a comprehensive view of the topic. Thirdly, a loss of richness in interaction in Phase 2 may exist. However, the participants were able to express their opinions and new thoughts in the free-text boxes. Finally, this study only focuses on providing the service in MOH hospitals. However, asking the participants about the referral criteria in private hospitals is subjected to many variations, with the financial factor at the top. Other variations include having different structures and workflows.

5. Conclusion

The findings of this study indicate that a pharmacist-led counseling clinic was recommended mainly for the elderly, those who need help with their devices, and those with medication-related problems. Prioritizing these patient groups is necessary when considering the wide provision and implementation of the clinic in different hospitals in SA. However, further studies are still necessary to identify the impact of pharmacist-led counseling clinics on clinical and non-clinical outcomes in the Saudi population. Evaluation of the implementation process is also necessary to identify barriers and facilitators to providing/using the clinics among the Saudi population.

6. Ethics approval and consent to participate

The Ethics Committee at Umm Al-Qura University approved the study (Identification number: HAPO-02-K-012-2023-08-1696). Enrolled participants consented to participate via an electronic link through Google Forms, which also included information about the study and its ethical considerations.

Author contribution

SMK was responsible for the conceptualization, methodology, data curation, investigation, formal analysis, visualization, writing the original draft, and reviewing and editing it.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jsps.2024.101981>.

References

- Akins, R.B., Tolson, H., Cole, B.R., 2005. Stability of response characteristics of a Delphi panel: application of bootstrap data expansion. *BMC Med. Res. Method.* 5 (1), 37. <https://doi.org/10.1186/1471-2288-5-37>.
- Al-Jedai, A., Qaisi, S., Al-Meman, A., 2016. Pharmacy practice and the health care system in Saudi Arabia. *Can. J. Hosp. Pharm.* 69 (3), 231–237. <https://doi.org/10.4212/cjhp.v69i3.1561>.
- Allaudeen, N., Vidyarthi, A., Maselli, J., Auerbach, A., 2011. Redefining readmission risk factors for general medicine patients. *J. Hosp. Med.* 6 (2), 54–60. <https://doi.org/10.1002/jhm.805>.
- Barnett, N., Athwal, D., Rosenbloom, K., 2011. Medicines-related admissions: you can identify patients to stop that happening. *Pharm. J.* 286, 471–472.
- Bowles, K.H., Foust, J.B., Naylor, M.D., 2003. Hospital discharge referral decision making: a multidisciplinary perspective. *Appl. Nurs. Res.* 16 (3), 134–143. [https://doi.org/10.1016/S0897-1897\(03\)00048-X](https://doi.org/10.1016/S0897-1897(03)00048-X).

- Chowdhary, R., Aanandhi, V., 2018. Impact of patient counselling on the knowledge, attitude, practice and quality of life in patients with hypertension with diabetes mellitus-II. *Ind. J. Pharm. Educ. Res.* 52 (2).
- Daliri, S., Bekker, C.L., Buurman, B.M., Reimer, S.O., van den Bemt, B.J.F., Karapinar-Çarkit, F., 2019. Barriers and facilitators with medication use during the transition from hospital to home: a qualitative study among patients. *BMC Health Serv. Res.* 19 (1), 204. <https://doi.org/10.1186/s12913-019-4028-y>.
- Diamond, I.R., Grant, R.C., Feldman, B.M., Pencharz, P.B., Ling, S.C., Moore, A.M., Wales, P.W., 2014. Defining consensus: a systematic review recommends methodologic criteria for reporting of Delphi studies. *J. Clin. Epidemiol.* 67 (4), 401–409. <https://doi.org/10.1016/j.jclinepi.2013.12.002>.
- Duffield, C., 1993. The Delphi technique: a comparison of results obtained using two expert panels. *Int. J. Nurs. Stud.* 30 (3), 227–237. [https://doi.org/10.1016/0020-7489\(93\)90033-Q](https://doi.org/10.1016/0020-7489(93)90033-Q).
- Forster, A.J., Murff, H.J., Peterson, J.F., Gandhi, T.K., Bates, D.W., 2005. Adverse drug events occurring following hospital discharge. *J. Gen. Intern. Med.* 20 (4), 317–323. <https://doi.org/10.1111/j.1525-1497.2005.30390.x>.
- Gilbert, E.M., Gerzenshtein, L., 2016. Integration of outpatient infectious diseases clinic pharmacy services and specialty pharmacy services for patients with HIV infection. *Am. J. Health Syst. Pharm.* 73 (11), 757–763. <https://doi.org/10.2146/ajhp150701>.
- GOV.SA United National Platform, 2023. Healthcare. https://www.my.gov.sa/wps/portal/snp/aboutksa/HealthCareInksa/tut/p/z1/04_Sj9PCyKssy0xPLMnMz0vMAfj08zivQN9DDycTaz9LZxCHQ0CA91MQyzMgo0NLEz0w8EKvAlstAwdDQz9_Y1NnQwCnX3N_R2DwwvNDEz1o4jRb4AD0BoQ1h-FqsTfz9AMqCTExdnHO9QIaAZUAT4nghXgcUNBmiEQaanlgCyvyKC/#header2.2.
- Hanlon, J.T., Lindblad, C.I., Gray, S.L., 2004. Can clinical pharmacy services have a positive impact on drug-related problems and health outcomes in community-based older adults? *Am. J. Geriatr. Pharmacother.* 2 (1), 3–13. [https://doi.org/10.1016/S1543-5946\(04\)90002-5](https://doi.org/10.1016/S1543-5946(04)90002-5).
- Hohmeier, K.C., Shelton, C., Havrda, D., Gatwood, J., 2020. The need to prioritize "prioritization" in clinical pharmacy service practice and implementation. *Res. Soc. Adm. Pharm.* 16 (12), 1785–1788. <https://doi.org/10.1016/j.sapharm.2020.04.012>.
- Hong, S.G., Trimi, S., Kim, D.W., Hyun, J.H., 2015. A Delphi study of factors hindering web accessibility for persons with disabilities. *J. Comput. Inf. Syst.* 55 (4), 28–34. <https://doi.org/10.1080/08874417.2015.11645784>.
- Howard, R.L., Avery, A.J., Slavenburg, S., Royal, S., Pipe, G., Lucassen, P., Pirmohamed, M., 2007. Which drugs cause preventable admissions to hospital? A systematic review. *Br. J. Clin. Pharmacol.* 63 (2), 136–147. <https://doi.org/10.1111/j.1365-2125.2006.02698.x>.
- Jünger, S., Payne, S.A., Brine, J., Radbruch, L., Brearley, S.G., 2017. Guidance on conducting and REporting DELphi Studies (CREDES) in palliative care: recommendations based on a methodological systematic review. *Palliat. Med.* 31 (8), 684–706. <https://doi.org/10.1177/0269216317690685>.
- Kansagara, D., Englander, H., Salanitro, A., Kagen, D., Theobald, C., Freeman, M., Kripalani, S., 2011. Risk prediction models for hospital readmission. *J. Am. Med. Assoc.* 306 (15), 1688. <https://doi.org/10.1001/jama.2011.1515>.
- Kelly, W.N., Ho, M.-J., Bullers, K., Klocksieben, F., Kumar, A., 2021. Association of pharmacist counseling with adherence, 30-day readmission, and mortality: a systematic review and meta-analysis of randomized trials. *J. Am. Pharm. Assoc.* 61 (3), 340–350.e5. <https://doi.org/10.1016/j.japh.2021.01.028>.
- Khayyat, S.M., Nazar, H., 2023. Qualitative investigation of barriers to providing an electronic hospital to community pharmacy referral service for discharged patients. *PLoS One* 18 (3), e0283836. <https://doi.org/10.1371/journal.pone.0283836>.
- Ko, S.-H., Song, K.-H., Kim, S.-R., Lee, J.-M., Kim, J.-S., Shin, J.-H., Cho, Y.-K., Park, Y.-M., Jeong, J.-H., Yoon, K.-H., Cha, B.-Y., Son, H.-Y., Ahn, Y.-B., 2007. Long-term effects of a structured intensive diabetes education programme (SIDEPE) in patients with Type 2 diabetes mellitus—a 4-year follow-up study. *Diabet. Med.* 24 (1), 55–62. <https://doi.org/10.1111/j.1464-5491.2007.02013.x>.
- Laif, F., Ahmad, R., Naqvi, A., Ahmad, N., 2017. Pharmacist perceived barriers to patient counseling: a study in eastern region of Saudi Arabia. *J. Pharm. Res. Int.* 19 (6), 1–12. <https://doi.org/10.9734/JPRI/2017/37705>.
- Lenssen, R., Heidenreich, A., Schulz, J.B., Trautwein, C., Fitzner, C., Jaehde, U., Eisert, A., 2016. Analysis of drug-related problems in three departments of a German University hospital. *Int. J. Clin. Pharm.* 38 (1), 119–126. <https://doi.org/10.1007/s11096-015-0213-1>.
- Mayzel, B., Muench, S., Lauster, C., 2022. Impact of pharmacist education on inhaler technique and adherence in an outpatient clinic. *Hosp. Pharm.* 57 (3), 402–407. <https://doi.org/10.1177/00185787211046863>.
- Mekonnen, A.B., McLachlan, A.J., Brien, J.E., Mekonnen, D., Abay, Z., 2018. Barriers and facilitators to hospital pharmacists' engagement in medication safety activities: a qualitative study using the theoretical domains framework. *J. Pharm. Policy Pract.* 11 (1), 2. <https://doi.org/10.1186/s40545-018-0129-y>.
- Ministry of Health, 2019. WORLD HEALTH SURVEY SAUDI ARABIA (KSAWHS). <https://www.moh.gov.sa/en/Ministry/Statistics/Population-Health-Indicators/Documents/World-Health-Survey-Saudi-Arabia.pdf>.
- Ministry of Health, 2023a. Patient Medication Counselling Clinics Policy. Internal MOH Policy. Unpublished.
- Ministry of Health, 2023b. Health education clinics. <https://www.moh.gov.sa/Ministry/Projects/Health-Education-Clinics/Pages/default.aspx>.
- Nasa, P., Jain, R., Juneja, D., 2021. Delphi methodology in healthcare research: how to decide its appropriateness. *World J. Methodol.* 11 (4), 116–129. <https://doi.org/10.5662/wjm.v11.i4.116>.
- Nazar, H., Brice, S., Akhter, N., Kasim, A., Gunning, A., Slight, S.P., Watson, N.W., 2016. New transfer of care initiative of electronic referral from hospital to community pharmacy in England: a formative service evaluation. *BMJ Open* 6 (10), e012532. <https://doi.org/10.1136/bmjopen-2016-012532>.

- Nazar, H., Maniopoulos, G., Mantzourani, E., Watson, N., 2019. Consensus methodology to investigate appropriate referral criteria for inpatients to be offered a transfer of care service as they are discharged home. *Integr. Pharm. Res. Pract.* 8, 35–37. <https://doi.org/10.2147/IPRP.S190008>.
- Ni, X.-F., Yang, C.-S., Bai, Y.-M., Hu, Z.-X., Zhang, L.-L., 2021. Drug-related problems of patients in primary health care institutions: a systematic review. *Front. Pharmacol.* 12 <https://doi.org/10.3389/fphar.2021.698907>.
- Rantucci, M.J., 2006. *Pharmacists Talking with Patients: A Guide to Patient Counselling*, 2nd edition. Lippincott Williams & Wilkins.
- Raval, A.D., Zhou, S., Wei, W., Bhattacharjee, S., Miao, R., Sambamoorthi, U., 2015. 30-Day readmission among elderly Medicare beneficiaries with type 2 diabetes. *Popul. Health Manag.* 18 (4), 256–264. <https://doi.org/10.1089/pop.2014.0116>.
- Rowe, G., Wright, G., 1999. The Delphi technique as a forecasting tool: issues and analysis. *Int. J. Forecast.* 15 (4), 353–375. [https://doi.org/10.1016/S0169-2070\(99\)00018-7](https://doi.org/10.1016/S0169-2070(99)00018-7).
- Royal Pharmaceutical Society, 2009. Workload pressure and the pharmacy workforce: supporting professionals and protecting the public. <https://pharmacyresearchuk.org/wp-content/uploads/2012/11/workplace-pressures-FINAL-web.pdf>.
- Salmasi, S., Tsao, N.W., Li, K., Shaske, J.N., Marra, C.A., Lynd, L.D., 2020. Characterization of pharmacist-based medication management services in a community pharmacy. *Res. Soc. Adm. Pharm.* 16 (2), 178–182. <https://doi.org/10.1016/j.sapharm.2019.04.051>.
- Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H., Jinks, C., 2018. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual. Quant.* 52 (4), 1893–1907. <https://doi.org/10.1007/s11135-017-0574-8>.
- Shenton, A.K., 2004. Strategies for ensuring trustworthiness in qualitative research projects. *Educ. Inf.* 22 (2), 63–75. <https://doi.org/10.3233/EFI-2004-22201>.
- Slade, S.C., Dionne, C.E., Underwood, M., Buchbinder, R., 2014. Standardised method for reporting exercise programmes: protocol for a modified Delphi study. *BMJ Open* 4 (12), e006682. <https://doi.org/10.1136/bmjopen-2014-006682>.
- Trevelyan, E.G., Robinson, P.N., 2015. Delphi methodology in health research: how to do it? *Eur. J. Integr. Med.* 7 (4), 423–428. <https://doi.org/10.1016/j.eujim.2015.07.002>.
- Vision 2030, 2023. Health Sector Transformation Program. <https://www.vision2030.gov.sa/en/vision-2030/vrp/health-sector-transformation-program/>.
- Vogel, C., Zwolinsky, S., Griffiths, C., Hobbs, M., Henderson, E., Wilkins, E., 2019. A Delphi study to build consensus on the definition and use of big data in obesity research. *Int. J. Obes. (Lond.)* 43 (12), 2573–2586. <https://doi.org/10.1038/s41366-018-0313-9>.
- Wolff, J.L., Starfield, B., Anderson, G., 2002. Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Arch. Intern. Med.* 162 (20), 2269 <https://doi.org/10.1001/archinte.162.20.2269>.
- World Health Organization. (n.d.). WHODAS 2.0 TRANSLATION PACKAGE. Retrieved May 2, 2023, from <https://terrance.who.int/mediacentre/data/WHODAS/Guidelines/WHODAS%202.0%20translation%20guidelines.pdf>.
- Ylä-Rautio, H., Siissalo, S., Leikola, S., 2020. Drug-related problems and pharmacy interventions in non-prescription medication, with a focus on high-risk over-the-counter medications. *Int. J. Clin. Pharm.* 42 (2), 786–795. <https://doi.org/10.1007/s11096-020-00984-8>.
- Yuan, C., Ding, Y., Zhou, K., Huang, Y., Xi, X., 2019. Clinical outcomes of community pharmacy services: a systematic review and meta-analysis. *Health Soc. Care Commun.* 27 (5), e567–e587. <https://doi.org/10.1111/hsc.12794>.