OPEN ACCESS

Assessment of knowledge, attitude, and practice on self-care with over-the-counter medicines among pregnant women

Kavindya Nirmani [a], Chanidi Danthanarayana [a], P.M. Thilini Nisansala [a], Jeniffer Michael [a], Achala Shyamali [a], Jayani Dunukara [a], Mohammed Dauda Goni [b], Thilini Nisansala [b,*]

[a] Department of Biomedical Science, Faculty of Health Science, KAATSU International University, Battaramulla, Sri Lanka
[b] Faculty of Veterinary Medicine, Universiti Malaysia Kelantan, Pengkalan Chepa 16100, Kota Baru, Kelantan, Malaysia

ARTICLE INFO

ABSTRACT

Background: Self-care during pregnancy is a crucial topic to be discussed due to its effects on both the mother and fetus. In Sri Lanka, specifically regarding self-care with over-the-counter (OTC) medicines, usage among the pregnant population is scarce.
Objective: This study assessed knowledge, attitudes, and practices (KAP) on self-care with OTC medicine usage among pregnant women attending maternity clinics in the Colombo Medical Officer of Health (MOH) areas, Sri Lanka.
Method: A cross-sectional study was conducted among 399 pregnant women enrolled through simple random sampling using a self-administered questionnaire. Data were collected on knowledge, attitudes, practices, and sociodemographic characteristics. SPSS version 27 was used for descriptive statistical analysis.
Results: There were satisfactory levels of KAP on self-care with OTC medicines identified among participants. The Mean $\pm$ SD for knowledge was 4.38 ± 0.873, and for attitude and practice, 27.56 ± 3.752 and 20.35 ± 4.235, respectively. Significant positive linear correlation between knowledge and attitude ($r = 0.375$, $p < 0.001$), attitude and practice ($r = 0.518$, $p < 0.001$), and knowledge and practice ($r = 0.224$, $p < 0.001$) were observed. It refers to participants with higher levels of knowledge being more likely to exhibit certain attitudes and engage in good practice regarding self-care. However, 93% of the participants had a wrong intention that any medicine could be used at any stage of pregnancy, and 26.3% of the participants didn't know that the medications taken during pregnancy could impact the fetus. Surprisingly, 87% had misperceived that antibiotics can be purchased as OTC medicines. Additionally, the majority of the participants (96%) believed that they could use old prescriptions to purchase medicines during pregnancy.
Conclusion: Greater awareness regarding self-care with OTC medication usage is suggested to be provided during pregnancy.

1. Introduction

Self-care is the ability of individuals, families, and communities to promote and maintain health, prevent disease, and cope with illness and disability with or without the support of a health worker.[1] This practice includes the utilization of over-the-counter (OTC) medicines as well as herbal and traditional remedies. Self-care with OTC medications is a common health practice among pregnant women, which involves autonomy of their care and the decision-making processes that accompany it. Among vulnerable populations, pregnancy is a unique state that can

carry critical risks due to the improper utilization of self-care for both mother and fetus.[2] Notably, vulnerable populations are not included in clinical trials, resulting in a shortage of available data on the effects of medicines on pregnancy.[3] There is a risk of using medicines during pregnancy because the fetus relies on the mother to get all nutrients and substances through the placenta. Consequently, the fetus can be affected by medications used by the mother during pregnancy.[4] Some potential effects among pregnant women are the increasing rate of miscarriage, stillbirth, fetal growth perturbations, and pre-term birth, and for long-term uses, increased risk of vaginal adenocarcinoma. Furthermore, the

---

physiological changes during pregnancy affect the pharmacokinetics of drugs, potentially leading to variations in the effectiveness of such medications in pregnant women compared to non-pregnant women.[5] Moreover, acetylsalicylic acid self-intake among pregnant women results in increased perinatal mortality, neonatal hemorrhage, low birth weight, prolonged gestation/labor, and possible birth defects. Improper Paracetamol intake might have adverse effects on neurological development during fetal development. Inappropriate antibiotic usage, including practices like self-care, can result in the emergence of bacterial resistance, increased morbidity, elevated healthcare costs, and the onset of side effects.[6] In recent years, treating minor ailments without seeking professional medical advice has become increasingly prevalent among pregnant women.[7] Pregnant women utilize prescription and OTC medicines for pregnancy-related and pregnancy-unrelated conditions such as nausea, vomiting, hypertension, gastric reflux, back discomfort, asthma, and migraine.[8] Findings from a study conducted in Iran indicate that pregnant women with a low socioeconomic status engage in self-care for several reasons. One is the influence of recommendations from relatives who have previously used the same medication. Additionally, some lack confidence in physicians' accurate diagnosis of their conditions. Their reliance on self-care is attributed to a lack of knowledge about the disease, a lack of time for doctor visits, satisfaction with self-care outcomes, and a lack of awareness of potential side effects.[9] In many Latin American countries where OTC medicine sales are prohibited but lack effective enforcement, self-care is a common practice. Therefore, community pharmacies that dispense medicines such as antibiotics without a prescription from healthcare professionals are significant stimulators for promoting self-care.[10]

Severe risks of drug interactions, misdiagnosis, polypharmacy, incorrect choice of drug, usage of excess dosage, and severe adverse effects can be carried out by self-care.[11] Pregnant women's knowledge, attitude, and practice (KAP) considerably impact the understanding of uptake of self-care. The knowledge gap, poor attitudes, and poor practices during pregnancy can have detrimental effects on fetal development. The assessment of KAP towards self-care among the pregnant population has received considerable focus from researchers from different countries worldwide. Health outcomes can differ based on individual characteristics, community-wide socioeconomic conditions, and political context.[12] Despite developments in healthcare, Sri Lanka still encounters obstacles in providing comprehensive healthcare services to its populace due to the economic crisis. Since peoples' healthcare is essential for a country to go forward, it is important to focus on including the health sector.[13] Consequently, data on self-care with OTC medicine usage is scarce in Sri Lanka. Since there is no study undertaken in Sri Lanka to assess KAP on self-care with OTC medicines, the objective of this study was to evaluate the KAP concerning self-care with OTC medicines among pregnant women in the MOH areas in Colombo. Furthermore, the study aimed to determine the relationship between socio-demographic characteristics and KAP on self-care.

2. Material and methods

2.1. Study design

A descriptive cross-sectional study was conducted in Colombo municipal council MOH area between April to May 2023. The study population of consisted of pregnant women who attended the maternity clinics in the Colombo MOH areas.[14] The selected area consisted of six main districts and the pregnant women attending maternity clinics located in selected areas who were willing to participate in the study were enrolled. The decision to take part in the study was entirely voluntary and it is crucial to affirm that the decision was completely in the hands of pregnant women themselves. Pregnant women who did not provide consent to participate afflicted with specific health conditions such as mental disabilities were excluded from the study by screening exclusion criteria. Participants who did provide consent were included in the study.

2.2. Sample size

The sample size was obtained using a margin of error of 5% and a confidence interval (CI) of 95%. The sample size estimated for the study was 384 to make conclusions that were statistically reliable. Nonetheless, 399 participants were enrolled; this improved the study's reliability as it decreased the unforeseen issues during data collection and analysis. The sample size was calculated by using below equation.[15,16]

$$n = \frac{Z_{1-\frac{\alpha}{2}}^2 p(1-p)}{d^2}$$

$$n = \frac{1.96^2 \ 0.5(1-0.5)}{0.05^2}$$

$$n = 384$$

2.3. Sampling method

Participants were enrolled through simple random sampling. An updated detailed list of the pregnant women that were on appointment were obtained before the start of the clinic day, and those who did not met the study eligibility criteria were screened out. Pregnant women who attended maternity clinics were selected as participants in the study using a simple random sampling through a random sequence generator from the sampling frame. An appreciation gift was given to respondents for participating in the study. Participants involved in the study were guided about the study at the onset of the enrollment. A written consent was obtained from participants and self-administered questionnaires were distributed among the participants at their maternity clinics.

2.4. Measurement tool

The questionnaire for this study was developed following an extensive literature search of published articles related to the usage of OTC medicines among pregnant women to suit the Sri Lankan population. The items in the questionnaire were written in English (Appendix 1) and then translated into Sinhala and Tamil languages. The questionnaire was comprised of the sociodemographic sections followed by the KAP sections on the usage of OTC medicine among pregnant women. The questionnaire was piloted among 20 pregnant women and pre-tested. Findings of the reliability analysis showed Cronbach's coefficient alpha for knowledge, attitude, and practice was 0.777, 0.709, and 0.729, respectively. It was administered to participants as paper copies at each clinic and collected by a single study investigator.

The knowledge section consisted of Yes/No type questions and a series of Likert-scale questions for assessing attitudes and practices, using a 1–5-point scale (1-Strongly disagree, 5-Strongly disagree). Scores from each category were taken and stratified based on "Bloom's

Table 1
Cutoff point for data analysis.

	Knowledge	Attitude	Practice
Allocated marks for each question	1 mark – Correct response 0 mark – Incorrect response	1 mark - Strongly disagree 2 marks – Disagree 3 marks – Uncertain 4 marks – Agree 5 marks – Strongly agree	
Maximum total score	5	35	25
Interpretation	>60% - "Good" <60% - "Poor"	>80% - "Good" 79% - 60% - "Moderate" <60% - "Poor"	

cutoff point" as "Good," "Poor," and "Moderate" (Table 1).[17,18]

2.5. Ethical consideration

Ethical approval was obtained from the Ethics Review Committee (ERC) of KAATSU International University (KIU) (ref no: KIU/ERC/22/092), and permission was obtained from the Public Health Department – MOH Division, Colombo Municipal Council to recruit participants. Informed consent was obtained from every participant in the study. The collected data were kept confidential.

2.6. Data analysis

Statistical analyses were conducted using the Statistical Package for Social Sciences (SPSS) version 27.0. During the data analysis, the knowledge questions were renamed K1-K5, attitude questions A1-A7, and practice questions P1-P5. The categorical variables were presented using frequency and percentages and descriptive statistics was done to present the socio-demographic characteristics with KAP scores. The association between socio-demographic variables and KAP were taken using the appropriate Chi-square test of independence. To assess the correlation among KAP, a Pearson correlation coefficient was used.

3. Results

3.1. Socio-demographic data

Three hundred ninety-nine ($n = 399$) pregnant women participated in the study, of whom 253 (63.4%) were aged between 20 and 30 and the majority of participants were Tamil 153 (38.3%). One hundred and fifty-three (38.3%) had completed secondary education and only 106 (26.6%) participants were employed. Furthermore, 192 (48.1%) were in their third trimester of pregnancy. The summary of the socio-demographic characteristics is shown in Table 2.

3.2. Assessment of medications taken during pregnancy

Table 3 denotes the medications taken by the participants during the study period. The majority of participants were taking vitamins, iron, and other supplements as they were prescribed those medicines at maternity clinics (Table 3). Despite that, Iron folate, Vitamin C, and Calcium lactate are given as standard therapy during pregnancy in Sri Lanka.

3.3. Assessment of the health status of the participants during pregnancy

The participants were instructed to provide information on any disease conditions they had. Among the reported diseases, diabetes mellitus, hypertension, and heart conditions were the highest reported at 3.7%, 2.7%, and 1.7%, respectively.

3.4. Knowledge towards self-care

Out of the 399 participants, the majority of the participants of 383 (96%) were with "Good" knowledge of self-care with OTC medicines, and only 16 (4%) were with "Poor" knowledge. The Mean ± SD of the total knowledge score of the participants was 4.38 ± 0.873. Most of the participants (93.5%) were aware of the currently taking medicines, and 90.5% of them were aware of the usage of the medicine that they were currently taking. However, 93% of participants misunderstood that they could use any medicine at any stage of the pregnancy. Further, 87% had misperceived that the antibiotic could be purchased as an OTC medicine, as shown in Table 4.

3.5. Attitude towards self-care

The majority of the participants, 212 (53.3%), had a "Good" attitude, while 172 (43.2%) had a "Moderate" attitude, and 14 (3.5%) had a "Poor" attitude. The Mean ± SD of the attitude score of participants was 27.56 ± 3.752. Out of the 399 participants, 50.5% strongly agreed that they could purchase medicines without visiting a doctor when they knew the disease. The majority of participants, 27.1%, 27.1%, and 37.8%, agreed and strongly agreed that OTC medicines should have been avoided during pregnancy, as shown in Table 5. A significant proportion (51.6%) agreed that they possessed sufficient knowledge about the side effects of the drugs they used during pregnancy. About 4% of participants correctly answered that using old prescriptions to purchase medicines during pregnancy is unsuitable. A considerable proportion of participants (40.1%) agreed there was no need to visit a doctor as some doctors did not prescribe any drugs. Further, 48.4% strongly believed that they should have inquired about the complications of prescribed medicines during pregnancy from doctors. About 34.8% of participants believed that self-care always gives good results.

3.6. Practice towards self-care

In Table 5, the responses of participants regarding self-care practices are provided. The Mean ± SD of the practice score of participants was 20.35 ± 4.235. Among the pregnant women, 275 (69.4%) had a "Good" practice, and 94 (23.7%) had a "Moderate" practice, while 27 (6.8%)

Table 2
Demographic characteristics of study participants ($n = 399$).

Variables	Frequency (n)	Percentage (%)
Age (Years)		
<20	23	5.8
20–30	253	63.4
30–40	99	24.8
>40	7	1.8
No response	17	4.3
Ethnicity		
Sinhalese	122	30.6
Tamil	153	38.3
Muslim	116	29.1
Other	3	0.8
No response	5	1.3
Educational Level		
Primary	39	9.8
Secondary	153	38.3
Tertiary	142	35.6
Graduate	56	14
No response	9	2.3
Employment		
Yes	106	26.6
No	285	71.4
No response	8	2
Gestational Stage		
First trimester	45	11.3
Second trimester	152	38.1
Third trimester	192	48.1
No response	10	2.5
Pre-birth Status		
No response/No baby	217	54.4
1 baby	121	30.3
2 babies	46	11.5
3 babies	12	3
4 babies	3	0.8

Table 3
Medicines used during pregnancy.

Medicine	Frequency	Percentage (%)
Analgesics (Eg- Paracetamol)	108	26.5
Antibiotics (Eg- Amoxicillin)	31	7.6
Vitamins	293	71.8
Iron and other supplements	297	72.8

Table 4
Knowledge towards self-care in the study population.

Questions	Responses (n = 399)	
	Yes	No
K1. Are you aware of how to use the medicine you're currently taking?	373 (93.5%)	26 (6.5%)
K2. Do you know the usage of the medicine that you are currently taking?	361 (90.5%)	38 (9.5%)
K3. Any medicine can be used at any stage of pregnancy.	371 (93%)	28 (7%)
K4. Some medicines that take during pregnancy can have an impact on fetal development.	294 (73.7%)	105 (26.3%)
K5. Antibiotics (E.g.-Amoxicillin) can purchase as over the counter medicine?	347 (87%)	52 (13%)

had a "Poor" practice towards self-care. Out of the total participants, 41.9% recognized that taking OTC medicines frequently without a prescription from a doctor is unsuitable. Further, 53.4% strongly recognized using medications other family members used before the same disease condition is not suitable. Among participants, 40.1% did not practice self-care because visiting a doctor is expensive, and 39.3% did not use medicines without a prescription in an emergency. Furthermore, 42.9% of participants did not practice self-care as they had no time to visit the doctor for treatments.

3.7. Association of Socio-demographic characteristics and KAP scores

The association between socio-demographic characteristics and KAP scores is represented in Table 6. Among demographic variables, educational level and gestational stage were significantly associated with knowledge scores ($p < 0.05$). Age, educational level, and employment status were significantly associated with attitude scores, and ethnicity, educational level, and gestational stage were associated with practice scores.

3.8. Correlation between KAP

As shown in Table 7, there was a significant positive linear correlation between knowledge and attitude ($r = 0.375$, $p < 0.001$). It shows that when knowledge increases, attitudes tend to increase. The coefficient was 0.224 for the correlation between knowledge and practice scores ($r = 0.224$, $p < 0.001$). When the knowledge score improves practice, the score tends to increase as well. It was a positive linear correlation between knowledge and practice. A stronger positive linear correlation between attitude and practice scores ($r = 0.518$, $p < 0.001$) was found in the study. The participants who have a more positive attitude towards self-care are more likely to engage in better practices on self-care.

4. Discussion

This study evaluated the knowledge, attitude, and practice of self-care with OTC medicines among pregnant women who visited antenatal clinics in MOH areas in Colombo. Further, this study represents the first to evaluate the KAP regarding self-care with OTC medicines among Sri Lankan pregnant women. Several studies have been conducted to determine the KAP of pregnant women's self-care in many countries.[3,19] However, few studies have been published among other populations regarding self-care in Sri Lanka.[20,21] The current study demonstrated a satisfactory level of KAP of self-care among pregnant women.

The current study revealed 96% of participants had good knowledge, 53.3% had good attitude and 69.4% had good practice regarding self-care with OTC medicines. The mean score for knowledge determined a good level of knowledge. For instance, in a study involving pregnant women in the United Arab Emirates, 57.9% of the participants identified their knowledge as medium while 16.4% of pregnant women showed

Table 5
Attitude and practice towards self-care in the study population.

Attitude Questions	Responses (n = 399)				
	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
A1. When I know my disease, I can purchase medicines myself without visiting a doctor.	201 (50.5%)	125 (31.4%)	41 (10.3%)	16 (4%)	15 (3.8%)
A2. Taking OTC medicines should be stopped during pregnancy.	151 (37.8%)	108 (27.1%)	34 (8.5%)	58 (14.5%)	48 (12%)
A3. I have enough knowledge about the side effects over the pregnancy of the drugs that I use.	101 (25.3%)	206 (51.6%)	43 (10.8%)	33 (8.3%)	16 (4%)
A4. I can use old prescriptions to purchase medicines during the pregnancy	163 (40.9%)	151 (37.8%)	55 (13.8%)	14 (3.5%)	16 (4%)
A5. No need to visit doctor because some don't prescribe any drugs	145 (36.3%)	160 (40.1%)	44 (11%)	26 (6.5%)	24 (6%)
A6. Pregnant women should ask about complications of medications from doctors that are prescribing during pregnancy	193 (48.4%)	169 (42.4%)	01 (0.3%)	20 (5%)	16 (4%)
A7. Self-care always gives me good results.	103 (25.8%)	139 (34.8%)	78 (19.5%)	40 (10%)	39 (9.8%)
Practice Questions					
P1. Taking OTC drugs frequently without a prescription from a doctor is suitable.	11 (2.8%)	16 (4.0%)	38 (9.5%)	154 (38.6%)	167 (41.9%)
P2. Using medications that other family members used before for the same disease condition is suitable.	4 (1%)	11 (2.8%)	29 (7.3%)	139 (34.8%)	213 (53.4%)
P3. I prefer self-care because visiting a doctor is always costly.	5 (1.3%)	27 (6.8%)	41 (10.3%)	155 (38.8%)	160 (40.1%)
P4. Using medicines without a prescription in an emergency condition are suitable.	15 (3.8%)	31 (7.8%)	45 (11.3%)	157 (39.3%)	142 (35.6%)
P5. I prefer self-care because I do not have time to visit the doctor to get treatments.	11 (2.8%)	12 (3%)	44 (11%)	151 (37.8%)	171 (42.9%)

Table 6
Comparison of socio-demographics characteristics and KAP scores in the study population.

Variables	N = 399		
	Knowledge score	Attitude score	Practice score
	p value		
Age	0.326	0.016*	0.135
Ethnicity	0.359	0.232	0.036*
Education level	0.033*	0.000*	0.000*
Employment	0.227	0.020*	0.077
Monthly income	0.408	0.175	0.089
Gestational stage	0.011*	0.084	0.000*
Pre-birth experiences	0.323	0.439	0.300

* $p < 0.05$ Chi-Square Test.

Table 7
Correlation between knowledge, attitude and practice score.

Variable	Pearson Correlation Coefficient (r)	*p*-value
Knowledge-Attitude	0.375	p < 0.001
Knowledge-Practice	0.224	p < 0.001
Attitude-Practice	0.518	p < 0.001

advanced levels.[7] However, a study in Nigeria revealed that participants had a poor level of knowledge about medication use and restriction during pregnancy.[22] In the present study, most of the participants believed that they could use the medications that they were currently taking. Although the majority believed that they could use any medicine at any stage of the pregnancy, and their beliefs included the misconception that antibiotics can be purchased as an OTC medicine. Contrary to the findings in the present study, a study in Hyderabad indicated that the majority of pregnant women had limited knowledge (77.4%) about the medicines they were using, and few (20.3%) were aware about indications.[2] Based on the data gathered from questions on knowledge section, 26.3% were unaware that medicine could impact fetal development if they use medicines during pregnancy, posing potential risks to fetus. Similarly, in a study in Southern Italy, pregnant women (81.1%) knew the possibility of harm such as fetal growth retardation, intra-uterine death, and malformation to the unborn due to medications use during pregnancy.[19] Knowledge scores were significantly associated with educational level and the gestational stage.

The mean score for attitude suggests on average level of attitude, pregnant women in the study had a favorable view of self-care. These findings contradict with a study developed among pregnant women regarding self-care in Yazd, Iran.[9] Importantly, educated pregnant women had considerably higher attitude scores than uneducated participants, demonstrating that education has a positive impact on attitudes about self-care. Only small portion of participants believed that they should not purchase medicines themselves without visiting a doctor when they were aware of their disease. Based on data gathered from the questionnaire, 37.8% of participants believed that they should stop taking OTC medicines during pregnancy.

Among the participants, 76.9% believed that they had enough knowledge about the side effects of using medicines during pregnancy. These results are in line with the findings from the study in Italy,[19] where over half of the participants (52.8%) expressed concern about the risk to the unborn baby and concerns about adverse reactions (39%). These findings suggest that a significant proportion of participants in these studies were aware of the potential risks and had concerns about self-care during pregnancy. Surprisingly, only a small portion of pregnant women believed that using old prescriptions to purchase medicines during the pregnancy period is not suitable, with 6% of participants believing they should visit a doctor even though no prescription was given. A good percentage (48.4%) of participants strongly agree that they should ask about complications of medicines that doctors

prescribed. However, only 9.8% of participants believed self-care was an undesirable habit. These findings are similar to a study conducted in El-Marj city where respondents believed that medicines do more harm than good for health.[23] Even though, 38.3% of total participants had completed secondary education, only tertiary-educated participants (42%) demonstrated the highest attitude scores. The attitude scores were significantly associated with age, education level and employment status.

The mean score for practices indicated over 2/3 of participants demonstrating good practice. A study in the United Arab Emirates showed similar results, finding that the pregnant women in that study were hesitant to use OTC medicines during pregnancy.[7] Further, a study in Jordan reported that pregnant women did not engage in self-care practices, with only around 1/3 (33%) engaging in self-care.[24] However, this result contradicts the study conducted in Pakistan, which concluded that many women have practiced self-care with OTC during pregnancy.[2] Based on the data, 41.9% of participants disagreed with the statement that taking OTC medicines frequently without a prescription is appropriate. According to the present study, more than half of the participants disagreed with using medicines that other family members had used before for the same disease condition. A considerable proportion of participants (40.1%) believed that not visiting a doctor was inappropriate due to its associated cost. However, 66.5% of pregnant women in Tanzania hesitated to take medications without visiting their doctors, and 31.5% were aware of certain medicines that are contraindicated during pregnancy.[25] Further, 42.9% believed self-care is unsuitable since they have time constraints to visit a doctor. In a similar study, the most common reason for OTC medicines intake was the cost of attending proper healthcare and time-saving.[2] However, a significant number of respondents strongly disagreed that utilizing over-the-counter medications in an emergency situation is appropriate. The relevant study in Riyadh, Saudi Arabia, has shown that most respondents believe if they are sick during pregnancy, they would go directly to the pharmacists and obtain medicines without a doctor's prescription.[26] The present study findings indicated that practice levels were higher among tertiary-educated participants, even though the majority of the participants completed secondary education. The practice scores were significantly associated with ethnicity, education level, and gestational stage, similar to the study among pregnant women in Ethiopia. Moreover, a study in Brazil highlights higher prevalence of self-care in the first trimester, critical period for the development of congenital malformations.[27] The present study also reported no significant difference between other socio-demographic characteristics, which are age, employment, and pre-birth status, which is consistent with a similar study conducted by Saudi Arabia.[26]

A positive correlation was observed between knowledge, attitude, and practice among pregnant women, emphasizing the relevance of knowledge in developing attitudes towards self-care. However, a study conducted in Indonesia reported that those with a high level of knowledge regarding OTC medication were more prone to self-medicate than those with a low level of knowledge.[3]

4.1. Limitations

The study had some limitations. Participants were disturbed due to the routine procedure of the clinic while filling out the questionnaire, which led to the discontinuation of their concentration. Another limitation, the data were collected from 7 MOH clinics out of 14 clinics from Colombo. Therefore, the findings may not be representing the entire pregnant population and cannot be applied to the entire Colombo district. Since this study is a cross-sectional observational study design, it should include conclusions of causality. However, causality is unable to be determined since this evaluation tool was only used at one point in time. If the study tool's content validation process is carried out, it is more reliable.

4.2. Future recommendations

The study can be improved by comparing urban and rural areas in the Colombo district, KAP among pregnant women, to give better outcomes. The present study showed that the participants had some misperceptions regarding self-care. An awareness Program on self-care with OTC medicine is suggested to be conducted to further improve KAP outcomes among pregnant women in Sri Lanka. Further studies are suggested by conducting a survey before and after an intervention awareness program.

5. Conclusion

In conclusion, crucial insights into the KAP of self-care with OTC medicines among pregnant women attending maternity clinics in the Colombo MOH areas in Sri Lanka were identified. These findings hold the potential to inform and guide health authorities in their efforts to enhance and promote safer and more informed practices of self-care among this specific demographic.

CRediT authorship contribution statement

Kavindya Nirmani: Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Chanidi Danthanarayana:** Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **P.M. Thilini Nisansala:** Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Jeniffer Michael:** Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Achala Shyamali:** Writing – original draft, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Jayani Dunukara:** Writing – review & editing, Validation, Supervision, Software, Resources, Project administration, Methodology, Funding acquisition, Conceptualization. **Mohammed Dauda Goni:** Writing – review & editing, Validation, Software, Resources, Formal analysis. **Thilini Nisansala:** Writing – review & editing, Supervision, Software, Resources, Project administration, Methodology, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.rcsop.2024.100413.

References

1. "Self-care interventions for health." Accessed: Dec. 25, 2023 [Online]. Available https://www.who.int/news-room/fact-sheets/detail/self-care-health-interventions.

2. Bohio R, Brohi ZP, Bohio F. *Subjects and Methods Utilization of Over The Counter Medication Among Pregnant Women; A Cross-Sectional Study Conducted at Isra University Hospital, Hyderabad.* 2024.

3. R. N. Atmadani, O. Nkoka, S. L. Yunita, and Y. H. Chen, "Self-medication and knowledge among pregnant women attending primary healthcare services in Malang, Indonesia: a cross-sectional study," BMC Pregnancy Childbirth, vol. 20, no. 1, Jan. 2020, doi: https://doi.org/10.1186/s12884-020-2736-2.

4. Chautrakarn S, Khumros W, Phutrakool P. Self-medication with over-the-counter medicines among the working age population in metropolitan areas of Thailand. *Front Pharmacol.* 2021;12. https://doi.org/10.3389/fphar.2021.726643. Aug.

5. Stock SJE, Norman JE. *"Medicines in pregnancy," F1000Research.* 8. 2019. https://doi.org/10.12688/f1000research.17535.1. F1000 Research Ltd.

6. Torres NF, Chibi B, Middleton LE, Solomon VP, Mashamba-Thompson TP. Evidence of factors influencing self-medication with antibiotics in low and middle-income countries: a systematic scoping review. *Public Health.* 2019;168:92–101. Elsevier B. V. Mar. 01 https://doi.org/10.1016/j.puhe.2018.11.018.

7. Abduelkarem AR, Mustafa H. Use of over-the-counter medication among pregnant women in Sharjah, United Arab Emirates. *J Pregnancy.* 2017;2017. https://doi.org/10.1155/2017/4503793.

8. van Gelder MMHJ, et al. Assessment of medication use during pregnancy by web-based questionnaires, pharmacy records and serum screening. *Reprod Toxicol.* 2019; 84:93–97. Mar https://doi.org/10.1016/j.reprotox.2019.01.002.

9. Baghianimoghadam MH, Mojahed S, Baghianimoghadam M, Yousefi N, Zolghadr R. Attitude and practice of pregnant women regarding self-medication in Yazd, Iran. *Arch Iran Med.* 2013;16(10):580–583. Oct.

10. Lescure D, Paget J, Schellevis F, van Dijk L. Determinants of self-medication with antibiotics in European and Anglo-Saxon countries: A systematic review of the literature. *Front Public Health.* 2018;6. https://doi.org/10.3389/fpubh.2018.00370. DEC. Frontiers Media S.A., Dec. 17.

11. Marwa KJ, Njalika A, Ruganuza D, Katabalo D, Kamugisha E. Self-medication among pregnant women attending antenatal clinic at Makongoro health Centre in Mwanza, Tanzania: a challenge to health systems. *BMC Pregnancy Childbirth.* 2018;18(1). https://doi.org/10.1186/s12884-017-1642-8. Jan.

12. De Alwis D, Noy I. The cost of being under the weather: droughts, floods, and health-care costs in Sri Lanka. *Asian Dev Rev.* 2019;36(2):185–214. https://doi.org/10.1162/adev_a_00136.

13. Matthias AT, Govindapala DS, Jayasinghe S. *Multisectoral Approaches to Accelerate Economic Transformation in the Face of Crisis in Sri Lanka*Vol. 1. Colombo: Young Scientists Forum (YSF), National Science and Technology Commission, Sri Lanka; 2023.

14. Colombo Municipal Council. *Accessed*; 2023. Dec. 25. [Online]. Available: https://www.colombo.mc.gov.lk/health-curative.php.

15. Naing L, Bin Nordin R, Abdul Rahman H, Naing YT. Sample size calculation for prevalence studies using Scalex and ScalaR calculators. *BMC Med Res Methodol.* 2022;22(1):209. Jul https://doi.org/10.1186/s12874-022-01694-7.

16. Charan J, Biswas T. How to calculate sample size for different study designs in medical research? *Indian J Psychol Med.* 2013;35(2):121–126. Apr https://doi.org/10.4103/0253-7176.116232.

17. Goni MD, et al. Assessment of knowledge, attitude and practice towards prevention of respiratory tract infections among hajj and umrah pilgrims from Malaysia in 2018. *Int J Environ Res Public Health.* 2019;16(22). https://doi.org/10.3390/ijerph16224569. Nov.

18. Arbiol J, Orencio PM, Romena N, Nomura H, Takahashi Y, Yabe M. Knowledge, attitude and practices towards leptospirosis among lakeshore communities of Calamba and Los Baños, Laguna, Philippines. *Agriculture (Switzerland).* Jun. 2016;6 (2). https://doi.org/10.3390/agriculture6020018.

19. Navaro M, Vezzosi L, Santagati G, Angelillo IF. Knowledge, attitudes, and practice regarding medication use in pregnant women in southern Italy. *PloS One.* 2018;13 (6). https://doi.org/10.1371/journal.pone.0198618. Jun.

20. de Silva BP, et al. Self-medication practices and misuse of medicine among mothers of young children attending a teaching hospital in Sri Lanka. *Sri Lanka J Child Health.* 2017;46(2):122–127. https://doi.org/10.4038/sljch.v46i2.8267.

21. Subashini N, Udayanga L. Demographic, socio-economic and other associated risk factors for self-medication behaviour among university students of Sri Lanka: a cross sectional study. *BMC Public Health.* 2020;20(1). https://doi.org/10.1186/s12889-020-08622-8. May.

22. Obi OC, Anosike C. A cross-sectional study on the knowledge, attitude, and practice of pregnant women regarding medication use and restriction during pregnancy. *Explora Res in Clinic and Soc Pharm.* 2023;11. https://doi.org/10.1016/j.rcsop.2023.100308. Sep.

23. Mashathi RSM. Knowledge, attitudes, and uses of medications during pregnancy among pregnant women at El-Marj City. *Glob Libyan J.* 2021;52. Jul.

24. Alsous MM, Al-Azzam SI, Nusair MB, Alnahar SA, Obeidat NA. Self-medication among pregnant women attending outpatients' clinics in northern Jordan-a cross-sectional study. *Pharmacol Res Perspect.* Apr. 2021;9(2). https://doi.org/10.1002/prp2.735.

25. Kamuhabwa A, Jalal R. Drug use in pregnancy; knowledge of drug dispensers and pregnant women in Dar Es Salaam, Tanzania. *Indian J Pharm.* 2011;43(3):345–349. May.

26. H. Raheel, S. Alsakran, A. Alghamdi, M. Ajarem, S. Alsulami, and A. Mahmood, "Antibiotics and over the counter medication use and its correlates among Arab pregnant women visiting a tertiary care hospital in Riyadh, Saudi Arabia," Pak J Med Sci, vol. 33, no. 2, pp. 452–456, Mar. 2017, doi: 10.12669/pjms.332.12376.

27. Lutz BH, et al. Medication use among pregnant women from the 2015 pelotas (Brazil) birth cohort study. *Int J Environ Res Public Health.* Feb. 2020;17(3). https://doi.org/10.3390/ijerph17030989.