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Community pharmacists' services for women during pregnancy and breastfeeding in Kuwait: A cross-sectional study

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Title: Community pharmacists' services for women during pregnancy and breastfeeding in Kuwait: A cross-sectional study

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ABSTRACT

Objectives: This study was designed to identify the services provided by community pharmacists in Kuwait and their views regarding self-care in pregnancy and lactation. In addition, it determined the pharmacists' recommendations for treatment of pregnancy and breastfeeding related ailments.

Design: Cross-sectional survey**.**

Setting: Community pharmacies in Kuwait.

Participants: 207 pharmacies were randomly selected from the Ministry of Health database. One registered pharmacist was approached from each pharmacy. 192 (92.8%) pharmacists agreed to participate and completed a self-administered questionnaire.

Outcomes: Services most regularly offered by pharmacists to pregnant and lactating women, pharmacists' recommendations (services) for common and specific ailments during pregnancy and breastfeeding, and pharmacists' views about self-care in pregnancy and breastfeeding.

Results: The top services provided to pregnant and lactating women were recommending vitamins and food supplements (89.8%) and contraception advice (83.4), respectively. More than half of participants indicated that they would recommend medications for headache, constipation, cough, runny nose, sore throat, nausea/vomiting, indigestion, sore or cracked nipple and insufficient milk. Diarrhea, hemorrhoids, insomnia, varicose vein, swelling of the feet and legs, vaginal itching, back pain, fever, mastitis and engorgement were frequently referred to the physician. Recommendations on medication use were occasionally inappropriate in terms of unneeded drug therapy, off-label use, and safety. More than half of pharmacists agreed that they have sufficient knowledge (61.5%; 50.5%) and confidence (58.3%; 53.1%) about offering advice and solving medication and health problems of pregnant and lactating women, respectively. Most of the respondents (88.5%) agreed that a continuing education program on this topic would be of value and priority for their practice.

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Conclusion The present findings show that respondents had different approaches towards responding to pregnancy and lactation related ailments; and also highlight the need for multifaceted interventions to enhance pharmacists' role in improving maternal health.

Keywords: Community pharmacists, pregnancy, breastfeeding, self-care, self-medication, Kuwait

Strengths and limitations of this study

- The strength of this survey included the high response rate, which could indicate the importance of this topic to community pharmacists and the length of time that they were willing to spend on completing the questionnaire.
- Further strength was the proper sample size and sampling method to produce a representative data regarding the study population; therefore, the present findings can be generalized at the community pharmacists level in Kuwait.
- In addition, this study fills in a gap in the limited existing literature in the developing countries and provides useful pieces of information for community pharmacists' services for pregnant and lactating women in the Middle Eastern region.
- Limitations of this study include that it is a theoretical survey that did not truly assess real-life situations; therefore, the extent of being definitely sure that respondents perform what they declare when responding to the questionnaire is not possible and open to recall bias or error.
- Further limitation was the cross-sectional design of the study that represented one point in time; hence, did not reflect any alterations in participants' opinions over time regarding responding to aliments during pregnancy and lactation.

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INTRODUCTION

Self-care is defined as " *the action individuals take for themselves and their families to stay healthy and take care of minor and long term conditions, based on their knowledge and the information available, and working in collaboration with health and social care professionals where necessary*".[1] Self-medication is a part of self-care behaviors, which is mainly considered in developed countries for minor illnesses by using over-the-counter (OTC) medications, while in developing countries is for both minor and major illnesses as a wider spectrum of medications is available from community pharmacies without a prescription.[2]

The prevalence of self-medication throughout pregnancy was found to be in the range between 25.1% and 68.3%.[3-7] The most commonly used OTC medications were analgesics, cough and common cold remedies, allergy products, laxatives, antacids, vitamins, antibiotics and herbal products.[4 6 8] The rates of self-medication among breastfeeding women ranged between 17% and 52.4%.[9 10] The most used OTC medicines were analgesics, antispasmodics, laxatives, and nasal decongestants.[9] The effect of medication use during pregnancy and lactation is a major worry for both women and healthcare practitioners.[11] Hence, there is a need for professional guidance for selection of appropriate and safe OTC medicines for each ailment. In 2011, the International Pharmaceutical Federation (FIP) Council approved a document on the valuable pharmacists' roles to improve maternal, newborn, and child health. These roles have been structured in accordance with the FIP/WHO (World Health Organization) Guidelines on Good Pharmacy Practice.[12]

Previous studies have evaluated the role of community pharmacists in providing advice or counselling regarding pregnancy and lactation related ailments. A study from Israel showed that only 9% of community pharmacists reported asking the women to elucidate whether or not they are pregnant or lactating.[13] In Rhode Island, the USA 42% of community pharmacists indicated that

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they asked women about breastfeeding before providing services.[14] A study in Nebraska, the USA reported a variation in community pharmacists' responses to whether they would recommend medications for seven common OTC-treatable conditions in pregnancy and breastfeeding. Also, some of the respondents recommended unsafe medications. [15] The results of a study conducted in France revealed that medications were often recommended by community pharmacists for pain, fever, nose and oropharynx disorders, venous insufficiency, dyspepsia and constipation. Overall, pharmacists sometimes provided inappropriate advice including medications that were potentially harmful in pregnancy.[16] A study that was performed in three countries: the Netherlands, Canada, and Iceland showed that most of the pharmacists were unable to provide evidence-based recommendation and 90% of them recommended referral to the physician.[17] In Thailand, a study reported that about 75% of community pharmacists treated headache, runny nose and sore throat with medicines. Over half of the respondents indicated that they were confident and have adequate knowledge about providing advice and solving medication and health problems for women during pregnancy and breastfeeding.[18] A study conducted in Serbia and Norway reported that several respondents' recommendations on medications use were inappropriate.[19]

Additional studies regarding community pharmacists' services for pregnant and lactating women still necessary to be performed, particularly in developing countries where most of medications can be obtained from the pharmacy without prescription. To our knowledge, there are no published data that evaluate the role of community pharmacists in advising and recommending medications for pregnant and lactating women in the Eastern Mediterranean region, including Kuwait. Such study is highly warranted since community pharmacists should have a crucial role in sustaining positive behaviors in self-care by providing the proper evidence-based information and supporting the public to maintain a healthy lifestyle. Hence, this study was designed to identify the services provided by community pharmacists regarding self-care in pregnancy and lactation, determine the pharmacists'

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recommendations (services) for treatment of pregnancy and lactation related ailments, and identify their views about self-care during pregnancy and lactation.

METHODS

The study design was descriptive and cross-sectional. It was performed in Kuwait, a Middle-Eastern country with an area of 17,820 km^2 and an approximate population of 3,065,850 individuals (2011 estimate).[20] It was conducted during the period from March to December 2015. The study population were employed community pharmacists in Kuwait. Ethical approval was received from the "Ministry of Health Ethical Committee, Kuwait".

PS power and sample size calculator V.3.05 was used to determine the sample size.[21] One hundred and eight six pharmacists would be needed to determine a 20% difference in proportion between two groups (e.g., male vs. female) with an 80% power and a 5% significance level. Presuming a response rate of 90%, a sample size of 207 community pharmacies were randomly selected from the six governorates using stratified and systematic random sampling.[22] Due to the lack of lists with the names and addresses of community pharmacists in Kuwait, lists of community pharmacies at the various governorates were acquired from the Ministry of Health. The lists included a total of 348 pharmacies distributed among the six governorates of Kuwait. Only one full-licensed pharmacist was approached from pharmacies hiring more than one pharmacist. The aim of the survey was concisely explained to the pharmacist on duty (face-to face). Pharmacists were free to refuse to take part in the study. Those who agreed to participate in the survey were handed the questionnaires and then were gathered from them anonymously after being completed within one to two weeks. The study participants offered written consent to take part in the survey.

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The study survey was adapted from validated questionnaires that were previously used in Thailand and France.[16 18] A research group at Kuwait University established the content validity of the adapted survey. Its face validity was assessed with 5 community pharmacists for clarity of questions. Then the survey was pretested on 10 community pharmacists, and refinements were made as needed so that the survey was simple to comprehend and answer.

The pre-tested survey contained four sections. Demographic and other characteristics of respondents were included in the first section (Table 1). Section two contained eleven questions to provide information about the services provided by the community pharmacists regarding self-care in pregnancy and lactation. These questions were about the availability of information leaflet or brochure to promote health for pregnant and breastfeeding women, experience with pregnant and breastfeeding women, number of pregnant and breastfeeding women who visited the pharmacy per week, the three services most commonly provided for pregnant and breastfeeding women, the two symptoms and/or questions that both pregnant and breastfeeding women most frequently consulted the pharmacists in the past, and how do they know that women are pregnant or breastfeeding. Seven of the above questions were close-ended and their options were presented in the results section. The third section included 16 common symptoms in pregnancy and 12 common symptoms in breastfeeding for which pregnant and breastfeeding women often seek advice from pharmacists. They were asked to indicate the recommendations (services) that they will provide for each symptom if being consulted by a pregnant or breastfeeding women. They were needed to select from three options for each ailment as they would be in real life situations: refer to a doctor, dispense medicine, and provide only advice without medicine dispensation. If they decided to dispense medications, they were asked to indicate the names of the medications. The results for this section were presented in three parts: eight common minor symptoms in both pregnant and breastfeeding women, eight specific pregnancy symptoms and four specific breastfeeding symptoms

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(Figures 1, 2 and 3, respectively). The final section included twelve statements to identify the pharmacists' views about self-care in pregnancy and breastfeeding (Table 2). The responses were measured using a 5-point Likert scale (strongly disagree, disagree, neither agree nor disagree (neutral), agree, and strongly agree). In addition to three questions to determine the pharmacists need for continuing education about self-care in pregnancy and breastfeeding, the convenient method of delivering the continuing education for them, and the most common source of information used by them to prepare themselves for responding to symptoms during pregnancy and lactation.

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS, version 23, SPSS, Chicago, IL, U.S.A.). Pharmacists' responses were presented as percentages (95% confidence intervals; CI) and medians (interquartile ranges; IQR). To simplify the results' presentation in the text, those who answered "strongly agree" or "agree" were classified as "agreed", and those who answered "strongly disagree" or "disagree" as having disagreed. The internal consistency for the sections to determine the pharmacists' views about self-care in pregnancy and breastfeeding was assessed using Cronbach's α test. The test results were as follows: four statements of support self-care, 0.84; two statements about the safety of OTC medicines, 0.91, four statements about knowledge and confidence about pregnancy and breastfeeding, 0.79, and two statements about undergraduate training in self-care for both pregnant and breastfeeding women, 0.97.

The univariate logistic regression was used first to evaluate the association of respondents' characteristics with the dependent variables. All variables with $p<0.25$ in the univariate analysis were included in the multivariate logistic regression analysis to determine the factors that are independently associated with each of the dependent variables. Only the results of multivariate

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logistic analysis are reported showing odds ratio (OR) and 95% CI. Statistical significance was accepted at $p<0.05$.

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RESULTS

One hundred and ninety-two (92.8%) pharmacists agreed to participate in the study. Their median (IQR) age and experience as practitioners were 35 (11) years and 11 (7) years, respectively. Table (1) shows the respondents' characteristics.

Above two-fifths (n=85; 44.3%; 95% CI: 37.2- 51.6) of participants have information leaflets or brochures to promote health for pregnancy and lactation, and most of these were from pharmaceutical companies (66%). Most of the respondents had experience with pregnant (n =186; 96.9%; 95% CI: 93.0-98.7) and breastfeeding (n=181; 94.3%; 95% CI: 89.7-97.0) women. The median (IQR) numbers of pregnant women and breastfeeding women who visited the community pharmacy per week were 10 (7) and 6 (3), respectively.

Community pharmacists who reported to have experience with pregnant and breastfeeding women were asked to indicate the most frequently provided services. The top three services provided for pregnant women were recommending vitamins and food supplements (n=167; 89.8%; 95% CI: 84.3-93.6), referral to a doctor (n=126; 67.7%; 95% CI: 60.5-74.3), and providing advice about suitable behavior such as lifestyle and exercise (n=115; 61.8%; 95% CI: 54.4-68.8). Other offered services, but to a lesser extent, were diagnosis of symptoms and dispensing of medicines (n=100; 53.8%; 95% CI: 46.3-61.0) and herbal products (n=80; 43.0%; 95% CI: 35.9-50.5). The three services most frequently provided to breastfeeding women were contraception advice (n=151; 83.4%; 95% CI: 77.0-88.4), recommending vitamins and food supplements (n=101; 55.8%; 95% CI: 48.3-63.1), and weight control advice (n=92; 50.8%; 95% CI: 43.3-58.3). Other offered services, but to a lesser extent, were diagnosis of symptoms and dispensing of herbal products (n=88; 48.6%; 95% CI: 41.2-56.1) and medicines (n=69; 38.1%; 95% CI: 31.1- 45.7), and referral to a doctor (n=58; 32.0%; 95% CI: 25.4-39.4). About three-fifths (n=106; 58.6%; 95% CI: 51.0-

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65.8) of respondents stated that they knew women are pregnant or breastfeeding by asking them, while 41.4% (n=75; 95% CI: 34.3-49.0) reported that women inform them before asking about the services.

Moreover, respondents indicated the symptoms and/or questions that most frequently been consulted about the past. They were most frequently consulted by pregnant women regarding gastrointestinal symptoms (nausea/vomiting, constipation, and stomach cramp), respiratory symptoms (common cold and cough), safety of medicine use in pregnancy, and back pain. Breastfeeding women most frequently consulted them about a medicine to increase breast milk, contraceptive pills, safety of medicine use in breastfeeding, and respiratory symptoms (common cold and cough).

Figure (1) presents the distribution of pharmacists' responses to the most commonly treated symptoms during pregnancy and breastfeeding. Most of the pharmacists recommended medicines or referral to a doctor rather than providing advice only without medicine dispensation for treatment of these symptoms. More than half of participants recommended medications for treatment of headache, constipation, cough, sore throat, and runny nose. In relation to diarrhea and hemorrhoids, about three-fifths and half of respondents recommended referral to a doctor rather than dispensing medicines or providing only advice, respectively. There were significant associations between the recommendation to dispense medicines for treatment of diarrhea or constipation in breastfeeding women and the respondents' experience as practitioners ($p<0.05$). It was found to be more common among those with experience of > 10 years compared to those with experience of < 10 years (for diarrhea: p=0.02; OR = 2.0; 95% CI: 1.1-3.5) and (for constipation: p=0.02; OR = 2.2; 95% CI: 1.1-4.2).

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Figure (2) presents the distribution of pharmacists' responses to the specific symptoms in pregnancy. Over half of respondents recommended referral of pregnant women to the doctor for swelling of the feet and legs, varicose vein, insomnia, vaginal itching, back pain, and fever and aches. More than two-thirds of participants recommended dispensing of medications for treatment of nausea, vomiting, and indigestion. There was a significant association between the recommendation to dispense medicines for nausea/vomiting and the pharmacists' experience as practitioners ($p<0.05$). It was found to be more common among those with experience of > 10 years compared to those with experience of < 10 years ($p=0.03$; OR = 2.6; 95% CI: 1.1-6.5). The recommendation to dispense medicines for treatment of vaginal itching was significantly more common among females compared to males ($p=0.01$; OR = 2.3; 95% CI: 1.2-4.4).

Figure (3) presents the distribution of pharmacists' responses to the specific symptoms in breastfeeding. Pharmacists mainly recommended dispensing of medications for sore or cracked nipple and to increase the breast milk, and referral to the doctor for mastitis. There were significant associations between the recommendation to dispense medicine to relieve engorgement or increase the breast milk and gender. It was found to be more prevalent among females compared to males (for engorgement: $p=0.01$; OR = 2.2; 95% CI: 1.1-4.1) and (for insufficient milk: $p=0.03$; OR = 2.5; 95% CI: 1.1-5.9).

The medications that respondents recommended for each of the symptoms during pregnancy and breastfeeding are presented in the supplementary file. Most medicines that were recommended are not detrimental to the mother, fetus and infant. However, the respondents' recommendations on medicine use were sometimes inappropriate. Respondents sometimes recommended ibuprofen for headache, antibiotics for sore throat and productive cough, herbal products for cough, loratadine for runny nose and productive cough, stimulant laxatives for constipation, loperamide for diarrhea, St

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John's wort and melatonin for insomnia, topical products with no evidence to heal a nipple, paracetamol, moisturizing cream and domperidone for engorgement, and herbal products that contain fenugreek for insufficient milk.

Table (2) shows the respondents' views regarding self-care of pregnant and breastfeeding women. In the first dimension about self-care support, above half of respondents agreed that pharmacists are qualified to provide advice and an OTC therapy to treat symptoms in pregnant (58.9%) and breastfeeding (65.1%) women. However, less than half of participants agreed that pharmacists should recommend an OTC therapy to treat symptoms in pregnant (39.1%) and breastfeeding (46.9%) women. In the second dimension about safety, more than two-fifths of participants disagreed about the safety of OTC medicines for pregnant (51.6%) and breastfeeding (43.8%) women. In the third dimension about knowledge and confidence, more than half of pharmacists agreed that they are confident about providing advice and counselling to pregnant (58.3%) and breastfeeding (53.1%) women; and that they have adequate knowledge to solve medication and health problems of pregnant (61.5%) and breastfeeding (50.5%) women. In the last dimension about undergraduate training, four-in ten responders agreed that pharmacy schools provided appropriate training to provide advice and an OTC therapy for pregnant (44.3%) and breastfeeding (42.2%) women. The agreement that OTC medicines are safe was significantly higher among females compared to males (p=0.04; OR = 2.1; 95% CI: 1.0-4.3).

Most of the respondents (n=170; 88.5%; 95% CI: 83.0-92.5) agreed that a continuing education program regarding this topic would be of value and priority for their practice. Attending lectures/workshops/seminars (n=80; 47.1%) was the most convenient method of delivering continuing education for them, followed by receiving regular newsletters (n=61; 35.9%), and receiving distant learning packages (n=34; 20%). There was no significant association between the respondents' need for continuing education and the independent variables (p > 0.05). The most

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commonly indicated sources of information used by respondents to prepare themselves for responding to symptoms in pregnancy and breastfeeding was the websites (n=133; 69.2%), followed by books (n=99; 51.5 %), and journal articles (n=19; 9.9%).

DISCUSSION

The present results showed that community pharmacists in Kuwait are frequently consulted by pregnant and breastfeeding women. Most of the pharmacists recommended medicines or referral to a doctor rather than providing advice only for the treatment of pregnancy and breastfeeding related ailments. Recommendations on medication use were occasionally inappropriate in terms of unneeded drug therapy, off-label use, and safety. Some community pharmacists still lack confidence and knowledge to provide advice and resolve health and medication problems of pregnant and lactating women. To our knowledge, this is the first study to be performed in Kuwait, and likely in the Middle Eastern area, and it contributes to the limited amount of existing literature in the developing countries about the services provided by community pharmacists for women during pregnancy and lactation. The present results present a baseline quantitative data of these services that will aid in the assessment of the current pharmacy practices towards self-care during pregnancy and lactation, and offer additional insight in designing future multifaceted interventions to improve the community pharmacists' role to deliver the proper advice and resolve the healthcare matters of pregnant and lactating women in Kuwait.

The present findings show that the number of pregnant and lactating women who visited the pharmacy per week was 10 and 6, respectively. These results are higher than that reported in the USA and Thailand, where pharmacists provided advice for 2.2 to 2.8 pregnant and lactating women per week. [15 18] The current results reveal that the services most regularly offered to pregnant and lactating women were recommending vitamin or food supplements, referral to a doctor, contraception advice, and weight control advice. These results are close to that indicated in the Thai

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study, with the exception that symptom diagnosis and medicine dispensing was a commonly provided service in Thailand.[18] The study population indicated that pregnant and lactating women most frequently consulted them regarding gastrointestinal symptoms, respiratory symptoms, and safety of medicine use. It was reported that most people considered these gastrointestinal and respiratory symptoms as minor ailments that can be treated by using OTC medicines that they tend to purchase from a community pharmacy.[18 29] The finding that respondents were also frequently consulted about the safety of medicines use in pregnancy and lactation is in accordance with a previous report, which has shown that women require information regarding medication use during pregnancy and indicated pharmacists amongst the three mainly utilized sources of information.[30] These findings indicate that women with pregnancy and lactation related ailments were more tending to visit a pharmacist than a physician. This could be partly explained by the easy access to the community pharmacies, it is evident that community pharmacies are recognized as the utmost reachable healthcare settings due to the high volume of the public that utilize their services.[23] Furthermore, it may be due to the observation of the pharmacists by the pregnant and breastfeeding women as the self-care consultant who provide them with enough time to discuss their health problems and prefer to get advice from a pharmacist rather than from a physician when they have non-serious condition.[24-28] These findings indicate the relevance of maternal-fetal medication as a crucial area for pharmacy practice, which needs the pharmacists to have adequate knowledge and a responsible framework in paying particular attention when these women request advice to improve maternal health. This is confirmed by the finding that 88.5% of respondents agreed that a continuing education regarding self-care for pregnant and breastfeeding women would be of value and priority for their practice.

Respondents were also asked about the services that they would recommend for pregnancy and lactation related ailments. More than half of pharmacists indicated that they would recommend medications for headache, constipation, cough, runny nose, sore throat, as well as, nausea/vomiting,

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indigestion, sore or cracked nipple and insufficient milk. Diarrhea, hemorrhoids, insomnia, varicose vein, swelling of the feet and legs, as well as, vaginal itching/simple discharge, back pain, fever and aches, mastitis and engorgement were frequently referred to the physician. In comparison to previous reports, a study conducted in France revealed that medications were often recommended by pharmacists for pain, fever, nose and oropharynx disorders, venous insufficiency, dyspepsia and constipation. They recommended referral to the doctor for nausea/vomiting and back pain.[16] In Thailand, about 75% of pharmacists treated headache, runny nose and sore throat with medicines. Providing only advice without the dispensation of medicine was mainly recommended for constipation, backache, indigestion, varicose vein, insomnia and engorgement. They mainly referred women with vaginal itching and simple discharge, and swelling of the feet and legs to the doctor.[18] A recent study reported that 52% of pharmacists in Serbia recommended medication use for treatment of back pain, heavy legs, nausea, common cold and constipation during pregnancy, while 62% of respondents in Norway recommended non-pharmacological advice as well as referral to a doctor.[19] These findings illustrate the large differences in community pharmacists practices between countries regarding the services recommended for treatment of pregnancy and lactation related ailments. This could be partly explained by the differences in regulatory environments, types of undergraduate programs, and the availability of products at the local pharmacies. The finding that less than one-tenth of the participants recommended only advice for most of the symptoms underscores the need for pharmacists to have sufficient knowledge and information about self-care practices which are crucial to alleviate some ailments without medications. The pharmacist must have adequate information to reach a conclusion about the risk: benefit ratio of treatment for the women to be able to counsel them effectively.

In the present study, recommendations on medication use were occasionally inappropriate in terms of unneeded drug therapy, off-label use, and safety. Previous studies showed that community

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pharmacists were incapable to offer adequate evidence-based information about use of medicines during pregnancy.[15 17] These results demonstrate that respondents have different knowledge levels in the subject of maternal-fetal medicine. This is confirmed by the findings that about two-fifths of respondents did not agree that they have confidence and aknowledge about giving advice and resolving medication and health problems of pregnant and lactating women. In addition, over half of participants reported that pharmacy schools did not provide appropriate training regrading advice and OTC therapy for pregnant and lactating women. These results underscore the need for continuing professional development and the revision of the undergraduate pharmacy curriculum to fill the knowledge gaps of pharmacy students and practitioners in maternal-fetal medicine and to support pharmacists to deliver the proper care for pregnant and lactating women.

The current findings reveal that pharmacists with experience of more than 10 years recommended to dispense medicines for diarrhea, constipation, and nausea/vomiting more than those with less experience. This might be due to that their knowledge base in the area of pregnancy and breastfeeding related ailments relies on experience gained in practice. Also, it was found that female respondents recommended to dispense medications for vaginal itching/simple discharge, engorgement, and insufficient milk more than males. This could be explained by the fact that female pharmacists have more exposure to pregnancy-related issues, either personal or work experience for pregnant or lactating women tend to discuss their concerns more comfortable with female than male pharmacists. Another possible reason demonstrated by this study was their agreement that OTC medicines are safe, which was significantly higher than males. Further qualitative research is needed for describing and understanding these predictors.

Conclusions

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The present results reveal that community pharmacists in Kuwait are frequently consulted by pregnant and breastfeeding women and that the pharmacists had different approaches towards responding to pregnancy and lactation related ailments. Also highlight the need for multifaceted interventions, including continuing professional development and the revision of the undergraduate pharmacy curriculum to fill the knowledge gaps of pharmacy students and practitioners in maternal-fetal medicine and to enhance pharmacists' role in improving maternal health.

Acknowledgements

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Authors' contributions AB contributed in data collection, analysis and interpretation, and wrote the manuscript. AA designed and supervised the study, performed the data analysis and reviewed the manuscript critically for important intellectual content. Both authors read and approved the final manuscript.

Data sharing statement The raw data of the present study are available from the corresponding author on reasonable request.

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Table 1 Characteristics of respondents (n=192)		
	Frequency	**Percentage (%)**
Gender		
Male	127	66.1
Female	65	33.9
Age (years)		
20-39	132	68.8
≥ 40	60	31.2
Basic qualification in pharmacy		
B. Pharm	177	92.2
M. Pharm	9	4.7
Pharm D	6	3.1
Postgraduate qualification(s) in pharmacy		
Diploma	15	7.8
Master degree	12	6.2
PhD	3	1.6
Experience as practitioners (Years)		
≤ 10	92	47.9
> 10	100	52.1
Location of pharmacy (Governorates)		
Hawalli	57	29.7
Al-Farwaniyah	43	22.4
Al-Ahmadi/Mubarak Alkabeer	43	22.4
Capital	25	13.0
Al-Jahra	24	12.5

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Figure 1 Pharmacists' responses to eight common symptoms in pregnancy and breastfeeding (n=192)

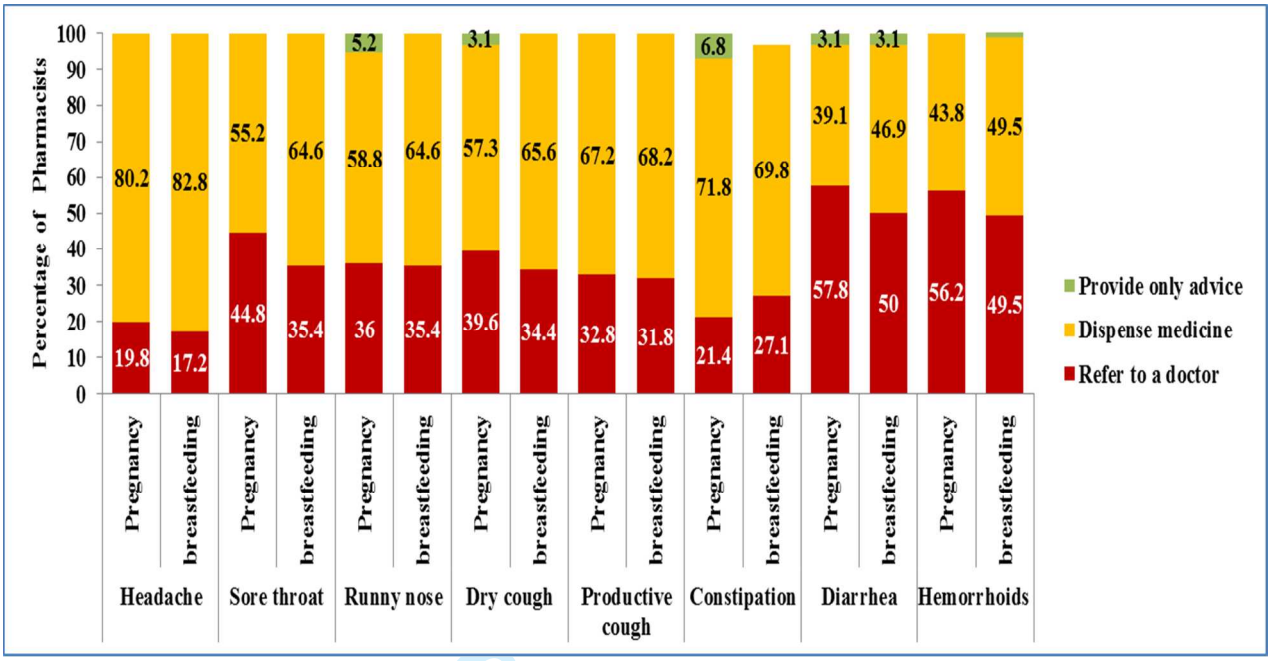

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Figure 2 Pharmacists' responses to specific symptoms in pregnancy (n=192)

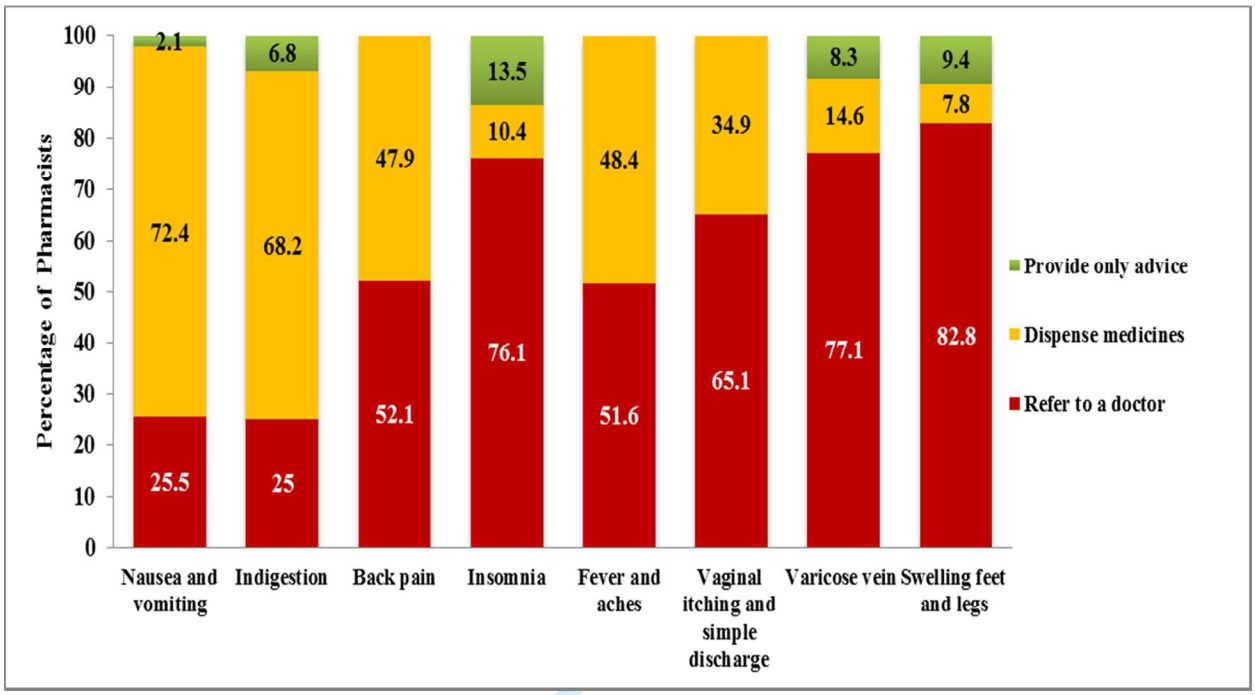

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Figure 3 Pharmacists' responses to specific symptoms in breastfeeding (n=192)

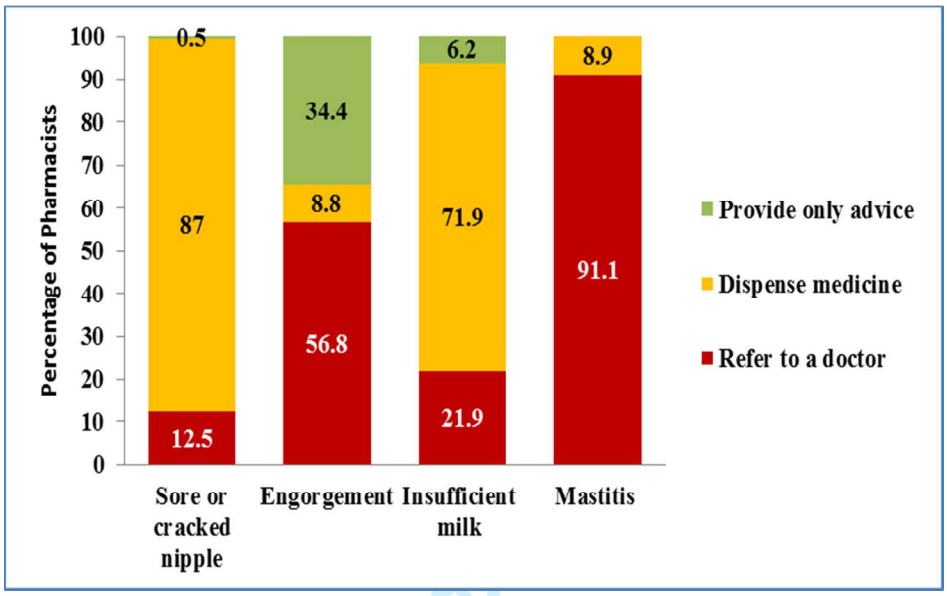

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Table 2 Respondents views about self-care of pregnant and breastfeeding women (n=192)

	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n(%)	Strongly agree n (%)	Median^ (IQR)
Support self-care						
Community pharmacists are qualified to provide advice and an over- the-counter (OTC) therapy to treat common and minor symptoms in pregnant women	6 (3.1)	29 (15.1)	44 (22.9)	84 (43.8)	29 (15.1)	4.0 (1.0)
Community pharmacists are qualified to provide advice and an OTC therapy to treat common and minor symptoms in breastfeeding women	4 (2.1)	25 (13.0)	38 (19.8)	90 (46.9)	35 (18.2)	4.0 (1.0)
Community pharmacists should recommend OTC therapy and counseling to treat common and minor symptoms in pregnant women	14 (7.3)	49 (25.5)	54 (28.1)	55 (28.7)	20 (10.4)	3.0 (2.0)
Community pharmacists should recommend OTC therapy and counseling to treat common and minor symptoms in breastfeeding women	13 (6.8)	40 (20.8)	49 (25.5)	72 (37.5)	18 (9.4)	3.0 (2.0)
Overall Scale						**4.0 (1.0)**
Safety of OTC medicine						
OTC medicines are safe for pregnancy	29 (15.1)	70 (36.5)	52 (27.1)	34 (17.7)	7 (3.6)	2.0 (1.0)
OTC medicines are safe for breastfeeding	19 (9.9)	65 (33.9)	56 (29.1)	44 (22.9)	8 (4.2)	3.0 (2.0)
Overall Scale						**3.0 (1.0)**
Knowledge and confidence about pregnancy and breastfeeding						
I am confident about giving advice and counselling to pregnant women	8 (4.2)	27 (14.1)	45 (23.4)	97 (50.5)	15 (7.8)	4.0 (1.0)
I have sufficient knowledge to solve medication and health problems of pregnant women	7 (3.6)	19 (9.9)	48 (25.0)	95 (49.5)	23 (12.0)	3.0 (2.0)
I am confident about giving advice and counselling to breastfeeding women	11 (5.8)	25 (13.0)	54 (28.1)	83 (43.2)	19 (9.9)	4.0 (1.0)
I have sufficient knowledge to solve medication and health problems of breastfeeding women	14 (7.2)	36 (18.8)	45 (23.4)	75 (39.1)	22 (11.5)	4.0 (1.0)
Overall Scale						**4..0 (1.0)**
Undergraduate Training						
Pharmacy school provided appropriate training regarding advice and OTC therapy for pregnant women	15 (7.8)	40 (20.8)	52 (27.1)	70 (36.5)	15 (7.8)	3.0 (2.0)
Pharmacy school provided appropriate training regarding advice and OTC therapy for breastfeeding women	16 (8.4)	40 (20.8)	55 (28.6)	65 (33.9)	16 (8.3)	3.0 (2.0)
Overall Scale						3.0 (2.0)

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Names of medications recommended by pharmacists for eight common symptoms in pregnancy and breastfeeding

Common symptoms	Frequency (%) of pharmacists recommended medicines for pregnant women	Frequency (%) of pharmacists recommended medicines for breastfeeding women
Headache	*n=154	*n=169
Paracetamol tablet	151 (98.1%)	145 (85.8)
Ibuprofen tablet	3 (1.9%)	24 (14.2)
Sore throat**	*n= 106	*n=124
Lozenges	90 (84.9)	89 (71.8)
Paracetamol tablet	16 (15.1)	29 (23.4)
Vitamin C tablet	14 (13.2)	16 (12.9)
Amoxicillin capsule	4 (3.8)	6 (4.8)
Azithromycin tablet	2 (1.9)	2 (1.6)
Runny nose**	*n=113	*n=124
Normal saline spray	69 (61.1)	33 (26.6)
Loratadine tablet	17 (15.0)	30 (24.2)
Paracetamol and Pseudoephedrine	19 (16.8)	22 (17.7)
tablet	21 (18.6)	25 (20.2)
Vitamin C tablet	7 (16.2)	17 (13.7)
Cetrizine tablet	2 (1.8)	3 (1.6)
Corticosteroid nasal spray		
Dry cough	*n=110	*n=126
Prospan® syrup	86 (78.2)	75 (59.5)
Codilar® syrup	12 (10.9)	20 (15.9)
Cloperastine syrup	8 (7.3)	22 (17.5)
Butamirate syrup	4 (3.6)	9 (7.1)
Productive cough**	*n=129	*n=131
Prospan® syrup	113 (87.6)	85 (64.9)
Mucolytic syrup	15 (11.6)	9 (6.9)
Amoxicillin capsule	2 (1.6)	2 (1.5)
Loratadine tablet	3 (2.3)	24 (18.3)
Butamirate syrup	-	10 (7.6)
Cloperastine syrup	-	8 (6.1)
Constipation	*n=138	*n=134
Sterculia granules	63 (45.7)	43 (32.1)
Lactulose syrup	60 (43.5)	63 (47.0)
Glycerine suppository	6 (4.3)	11 (8.2)
Sennalax® tablet®	9 (6.5)	17 (12.7)
Diarrhea**	n=75	n=90
Kaolin + Pectin syrup	23 (30.7)	18 (20.0)
Nifuroxazide tablet	18 (24.0)	32 (35.6)
Loperamide tablet	16 (21.3)	26 (28.9)
Oral rehydration salts	25 (33.3)	21 (23.3)
Activated charcoal tablet	3 (4.0)	-
Hyoscine tablet	-	3 (3.3)
Hemorrhoids	n=84	n=95
Neo-healar® cream	35 (41.6)	25 (26.3)
Pilex® ointment®	24 (28.6)	17 (17.9)
Procto-Glyvenol® cream	15 (17.9)	24 (25.3)
Procto-Glyvenol® suppository	10 (11.9)	15 (15.8)
Daflon® tablet	-	2 (2.1)
Proctosedyl® suppository	-	12 (12.6)

*Number of pharmacists recommended dispensation of a medicine; ** May total > 100% because of recommended combination of medicines; Prospan® (herbal medicinal product containing ivy leaf extract); Codilar® (Chlorpheniramine + Dextromethorphan + Phenylephrine); Sennalax® (Sennosides + docusate); Neo-healar® (four medicinal plants: Lupinus Albus, Vateria Indica, Mentha Piperita, Aloe Vera); Pilex® (a mixture of herbs [Mimosa pudica, thistles, Vitex negundo, Calendula flowers, camphor], Zinc, and Borax); Procto-Glyvenol® (tribenosid + lidocaine); Daflon® (diosmin + hesperidin); Proctosedyl® (hydrocortisone + cinchocaine).

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Names of medications recommended by respondents for specific symptoms in pregnancy	
Specific pregnancy symptoms	**Frequency (%) of pharmacists recommended medicines**
Nausea and vomiting	*n=139
Navidoxine® tablet	110 (79.1)
Ondasetron tablet	27 (19.4)
Domperidone tablet	1 (0.7)
Multivitamin capsule	1 (0.7)
Indigestion (heartburn)	*n=131
Gaviscon® suspension	89 (67.9)
Ranitidine tablet	20 (15.3)
Zymogen® tablet	22 (16.8)
Back pain**	*n=92
Paracetamol tablet	42 (45.7)
Diclofenac gel	27 (29.3)
Reparil® gel	7 (7.6)
Relaxnova® cream	21 (22.8)
Insomnia	*n=20
St John's wort®	5 (25.0)
Dream water®	10 (50.0)
Melatonin tablet	5 (25.0)
Fever and aches	*n=93
Paracetamol tablet	93 (100)
Vaginal itching and simple discharge	*n=67
Clotrimazole ovule	20 (29.9)
Clotrimazole cream	15 (22.4)
Clotrimazole wash	9 (13.4)
Miconazole cream	11 (16.4)
Miconazole ovule	12 (17.9)
Varicose veins	*n=28
Venoruton® gel	21 (75.0)
Reparil® gel	7 (25.0)
Swelling feet and legs	*n=15
Reparil® gel	11 (73.3)
Varixinal® gel	4 (26.7)

*Number of pharmacists recommended dispensation of a medicine; ** May total > 100% because of recommended combination of medicines; Zymogen® (Lipase + Proteas +Pepsin + Hemicellulase +Ox bile extract +Dimethylpolysiloxane +Vitamin B1); Reparil® (Aescinum +Diethylamini salicylas); Relaxnova® (Idrocilamide) ; St John's Wort® (Hypericum perforatum); Dream water® (Melatonin + 5-HTP + GABA); Venorutin® (Rutoside); Varixinal® (Ruscus Aculeatus Extract, Aesculus Hippocastanum Extract, Centella Asiatica Extract, Vaccinium Myrtillus Extract).

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Names of medications recommended by respondents for specific symptoms in breastfeeding	
Common breastfeeding symptoms	**Frequency (%) of pharmacists recommended medicines**
Sore or cracked nipple	*n=167
Panthenol cream	53 (31.7)
Lanolin cream	45 (26.9)
Avalon Organics® moisturizer	35 (21.0)
Mustela® Nipple Cream	18 (10.8)
Mebo® ointment	12 (7.2)
Cocoa butter cream	4 (2.4)
Engorgement	*n=17
Moisturizing cream	6 (35.3)
Cabergolin tablet	5 (29.4)
Paracetamol tablet	4 (23.5)
Fucidin cream	2 (11.8)
Insufficient milk	*n=138
Fitolat® tablet	118 (85.5)
Domperidone tablet	10 (7.2)
Multivitamins Capsule	10 (7.2)
Mastitis	*n=17
Local antibiotic cream	3 (17.6)
Panthenol cream	6 (35.3)
Amoxicillin capsule	3 (17.6)
Paracetamol tablet	2 (11.8)
Diclofenac tablet	2 (11.8)
Fitolat® tablet	1 (5.9)

*Number of pharmacists recommended dispensation of a medicine; Avalon® (Lavender + prebiotics); Mebo® (Sesame oil + Beeswax + other edible herbs); Mustela® (Avocado peptides + Bisabolol + Shea butter + Lupeol + Vitamin B5); Fitolat® (herbal extracts from plants, such as Fennel, Fenugreek, Hops and Verbena)

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STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract **Pages 1 and 2 (paragraph 2) of the manuscript.**
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found **Pages 2 and 3 (paragraph 1) of the manuscript)**
Introduction		
Background/rationale	2	Explain the scientific background. P**ages 4 and 5 (paragraph 1) of the manuscript.** and rationale for the investigation being reported. P**age 5 (paragraph 2) of the manuscript.**
Objectives	3	State specific objectives, including any prespecified hypotheses. P**age 5 (paragraph 2) and page 6 (paragraph 1) of the manuscript.**
Methods		
Study design	4	Present key elements of study design early in the paper. **Page 6 (paragraph 2) of the manuscript.**
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection. **Page 6 (paragraph 2) of the manuscript.**
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants. P**age 6 (paragraph 3) of the manuscript.**
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable. P**ages 7 and 8 (paragraph 1) of the manuscript.**
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group. P**ages 7 and 8 (paragraph 1) of the manuscript.**
Bias	9	Describe any efforts to address potential sources of bias. P**age 3 of the manuscript.**
Study size	10	Explain how the study size was arrived at. **Page 6 (paragraph 2) of the manuscript.**
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why. **Page 8 (paragraphs 2 and 3) of the manuscript.**
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding
		(*b*) Describe any methods used to examine subgroups and interactions
		(*c*) Explain how missing data were addressed
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was

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addressed

Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy. **Page 8 (paragraphs 2 and 3) of the manuscript.**

(*e*) Describe any sensitivity analyses

Continued on next page

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Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed. **Page 9 (paragraph 1) of the manuscript and Table 1 (page 21).**
		(b) Give reasons for non-participation at each stage
		(c) Consider use of a flow diagram
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders. **Page 9 (paragraph 1) of the manuscript and Table 1 (page 21)**
		(b) Indicate number of participants with missing data for each variable of interest **There were no missing data for variables of interest since the questionnaires were checked for being completed at the stage of their collection in hand from the study participants.**
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures **Pages 9 to 12 of the manuscript + Table 1 (page 21), Figures 1, 2 and 3 (pages 22-24) and table 2 (page 25) + Supplementary file**
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included
		(*b*) Report category boundaries when continuous variables were categorized **Pages 9 to 12 of the manuscript**
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses **Page 8 (paragraph 2) of the manuscript**
Discussion		
Key results	18	Summarise key results with reference to study objectives **Page 13 (paragraph 1) of the manuscript**
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias. **Page 3 of the manuscript**
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence **Pages 13 to 16 (paragraph 2) of the manuscript**
Generalisability	21	Discuss the generalisability (external validity) of the study results **Page 3 of the manuscript**
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based **Page 1 of the manuscript**

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely

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Community pharmacists' services for women during pregnancy and breastfeeding in Kuwait: A cross-sectional study

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ABSTRACT

Objectives: This study was designed to identify the services provided by community pharmacists in Kuwait and their views regarding self-care in pregnancy and lactation. In addition, it determined the pharmacists' recommendations for treatment of pregnancy and breastfeeding related ailments.

Design: Cross-sectional questionnaire-based survey**.**

Setting: Community pharmacies in Kuwait.

Participants: 207 pharmacies were randomly selected from the Ministry of Health database. One registered pharmacist was approached from each pharmacy. One hundred and ninety-two (92.8%) pharmacists agreed to participate and completed a self-administered questionnaire.

Outcomes: The proportions of pharmacists offering particular advice for health conditions in pregnancy and lactation, pharmacists' recommendations for common and specific ailments during pregnancy and breastfeeding, and pharmacists' views about self-care in pregnancy and breastfeeding.

Results: The top services provided to pregnant and lactating women were recommending vitamins and food supplements (89.8%) and contraception advice (83.4%), respectively. More than half of participants indicated that they would recommend medications for headache, constipation, cough, runny nose, sore throat, nausea/vomiting, indigestion, sore or cracked nipple and insufficient milk. Diarrhea, hemorrhoids, insomnia, varicose vein, swelling of the feet and legs, vaginal itching, back pain, fever, mastitis and engorgement were frequently referred to the physician. Recommendations on medication use were occasionally inappropriate in terms of unneeded drug therapy, off-label use, and safety. In relation to offering advice and solving medication and health problems of pregnant and lactating women, more than half of pharmacists indicated that they have sufficient knowledge (61.5%; 50.5%) and confidence (58.3%; 53.1%), respectively. Most of the respondents (88.5%) agreed that a continuing education program on this topic would be of value for their practice.

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Conclusion The present findings show that respondents had different recommendations for treatment of pregnancy and lactation related ailments; and also highlight the need for interventions, including continuing professional development and revision of the undergraduate pharmacy curriculum.

Keywords: Community pharmacists, pregnancy, breastfeeding, lactation, feto-maternal self-care, self-medication, Kuwait

Strengths and limitations of this study

- The strength of this survey included the high response rate, which could indicate the importance of this topic to community pharmacists and the length of time that they were willing to spend on completing the questionnaire.
- Further strength was the adequate sample size and sampling method to produce a representative data regarding the study population; therefore, the present findings can be generalized at the community pharmacists level in Kuwait.
- In addition, this study fills in a gap in the limited existing literature in the developing countries and provides useful pieces of information for community pharmacists' services for pregnant and lactating women in the Middle Eastern region.
- Limitations of this study include that the survey did not truly assess real-life situations; therefore, the extent of being definitely sure that respondents perform what they declare is not possible and open to recall bias or error.
- Further limitation is the social desirability bias that the respondents might have offered favorable answers to conform to the more socially accepted view.

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INTRODUCTION

Self-care is defined as " *the action individuals take for themselves and their families to stay healthy and take care of minor and long term conditions, based on their knowledge and the information available, and working in collaboration with health and social care professionals where necessary*".[1] Self-medication is a part of self-care behaviors, which is mainly considered in developed countries for minor illnesses by using over-the-counter (OTC) medications, while in developing countries is for both minor and major illnesses as a wider spectrum of medications is available from community pharmacies without a prescription.[2]

The prevalence of self-medication throughout pregnancy was found to be in the range between 25% and 68%.[3-7] The most commonly used OTC medications were analgesics, cough and common cold remedies, allergy products, laxatives, antacids, vitamins, antibiotics and herbal products.[4 6 8] The rates of self-medication among breastfeeding women ranged between 17% and 52%.[9 10] The most used OTC medicines were analgesics, antispasmodics, laxatives, and nasal decongestants.[9] The effect of medication use during pregnancy and lactation is a major worry for both women and healthcare practitioners.[11] Hence, there is a need for professional guidance for selection of appropriate and safe OTC medicines for each ailment.

In 2011, the International Pharmaceutical Federation (FIP) Council approved a document on the valuable pharmacists' roles to improve maternal, newborn, and child health. These roles have been structured in accordance with the FIP/WHO (World Health Organization) Guidelines on Good Pharmacy Practice.[12]

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Previous studies have evaluated the role of community pharmacists in providing advice or counselling regarding pregnancy and lactation related ailments. in the USA, France, the Netherlands, Canada, Iceland, Serbia, Norway, Thailand, Uganda and Qatar. [13-18] The main findings of these studies included a variation in community pharmacists' responses for treatment of common ailments during pregnancy and breastfeeding, the recommendations of unsafe medications during pregnancy and lactation, and the different levels of pharmacists' knowledge in the area of maternal-fetal medicine.

Additional studies regarding community pharmacists' services for pregnant and lactating women still need to be performed, particularly in developing countries where most of medications can be obtained from the pharmacy without prescription. To our knowledge, only one study has explored the pharmacists' knowledge and perceptions of maternal-fetal medicine in the Eastern Mediterranean region in Qatar.[18] Hence, this study was designed to identify the services provided by community pharmacists regarding self-care in pregnancy and lactation, determine the pharmacists' recommendations (services) for treatment of pregnancy and lactation related ailments, and identify their views about self-care during pregnancy and lactation. Secondary objectives were to determine factors associated with pharmacists' (a) recommendations for treatment of pregnancy and lactation related ailments, (b) views about self-care of pregnant and breastfeeding women, and (c) need for continuing education.

METHODS

The study design was a cross-sectional questionnaire-based survey. It was performed in Kuwait, a Middle-Eastern country with an area of 17,820 km^2 and an approximate population of 3,065,850 individuals (2011 estimate).[19] It was conducted during the period from March to December 2015.

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The study population comprised of employed community pharmacists in Kuwait. Ethical approval (No. 1593) was received from the "Ministry of Health Ethical Committee, Kuwait" on 02/12/2014

PS power and sample size calculator V.3.05 was used to determine the sample size.[20] One hundred and eight six pharmacists would be needed to determine a 20% difference in proportion between two groups (e.g., male vs. female) with an 80% power and a 5% significance level. Presuming a response rate of 90%, a sample size of 207 community pharmacies were randomly selected from the six governorates using stratified and systematic random sampling.[21] Due to the lack of lists with the names and addresses of community pharmacists in Kuwait, lists of community pharmacies at the various governorates were acquired from the Ministry of Health. The lists included a total of 348 pharmacies distributed across the six governorates of Kuwait. Only one full-licensed pharmacist was approached from pharmacies hiring more than one pharmacist. The aim of the survey was concisely explained to the pharmacist on duty (face-to face). Pharmacists were free to refuse to take part in the study. Those who agreed to participate in the survey were handed the questionnaires and then were gathered from them anonymously after being completed within one to two weeks. They signed a consent form to participate in the study.

The study survey was adapted from validated questionnaires that were previously used in Thailand and France.[14 16] A research group at Kuwait University established the content validity of the adapted survey. Its face validity was assessed with 5 community pharmacists for clarity of questions. Then the survey was pretested on 10 community pharmacists, and refinements were made as needed so that the survey was simple to comprehend and answer.

The pre-tested survey contained four sections (Appendix-1). Demographic and other characteristics of respondents were included in the first section . Section two contained eleven questions to provide information about the services provided by the community pharmacists regarding self-care in

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pregnancy and lactation. These questions were about the availability of information leaflet or brochure to promote health for pregnant and breastfeeding women, experience in providing services for pregnant and breastfeeding women**,** number of pregnant and breastfeeding women who visited the pharmacy per week, the three services most commonly provided for pregnant and breastfeeding women, the two symptoms and/or questions that both pregnant and breastfeeding women most frequently consulted the pharmacists in the past, and how do they know that women are pregnant or breastfeeding. Seven of the above questions were close-ended. . The third section included 16 common symptoms in pregnancy and 12 common symptoms in breastfeeding for which pregnant and breastfeeding women often seek advice from pharmacists. They were asked to indicate the recommendations (services) that they will provide for each symptom if being consulted by a pregnant or breastfeeding women. They were needed to select from three options for each ailment as they would be in real life situations: refer to a doctor, dispense medicine, and provide only advice without dispensing medicine. If they decided to dispense medications, they were asked to indicate the names of the medications. . The final section included twelve statements to identify the pharmacists' views about self-care in pregnancy and breastfeeding. The responses were measured using a 5-point Likert scale (strongly disagree, disagree, neither agree nor disagree (neutral), agree, and strongly agree). In addition to three questions to determine the pharmacists need for continuing education about self-care in pregnancy and breastfeeding, the convenient method of delivering the continuing education for them, and the most common source of information used by them to prepare themselves for responding to symptoms during pregnancy and lactation were asked

Data analysis was conducted using the Statistical Package for Social Sciences (IBM SPSS Statistics for Windows, version 23, Armonk, NY: IBM Corp) . Pharmacists' responses were presented as percentages (95% confidence intervals; CI) and medians (interquartile ranges; IQR). To simplify the results' presentation in the text, those who answered "strongly agree" or "agree" were classified as

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"agreed", and those who answered "strongly disagree" or "disagree" as having disagreed. The internal consistency for the sections to determine the pharmacists' views about self-care in pregnancy and breastfeeding was assessed using Cronbach's α test.

The univariate logistic regression was used first to evaluate the association of respondents' characteristics with the dependent variables. All variables with $p<0.25$ in the univariate analysis were included in the multivariate logistic regression analysis to determine the factors that are independently associated with each of the dependent variables. Only the results of multivariate logistic analysis are reported showing odds ratio (OR) and 95% CI. Statistical significance was accepted at $p<0.05$.

RESULTS

One hundred and ninety-two (92.8%) pharmacists agreed to participate in the study. Their median (IQR) age and experience as practitioners were 35 (11) years and 11 (7) years, respectively. Table (1) shows the respondents' characteristics.

Above two-fifths (n=85; 44.3%; 95% CI: 37.2- 51.6) of participants have information leaflets or brochures to promote health for pregnancy and lactation, and most of these were from pharmaceutical companies (66%). Most of the respondents had experience in providing services for pregnant (n =186; 96.9%; 95% CI: 93.0-98.7) and breastfeeding (n=181; 94.3%; 95% CI: 89.7-97.0) women. The median (IQR) numbers of pregnant women and breastfeeding women who visited the community pharmacy per week were 10 (7) and 6 (3), respectively.

Community pharmacists who reported to have experience in providing services for pregnant and breastfeeding women were asked to indicate the most frequently provided services. The top three

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services provided for pregnant women were recommending vitamins and food supplements (n=167; 89.8%; 95% CI: 84.3-93.6), referral to a doctor (n=126; 67.7%; 95% CI: 60.5-74.3), and providing advice about suitable behavior such as lifestyle and exercise (n=115; 61.8%; 95% CI: 54.4-68.8). Other offered services, but to a lesser extent, were diagnosis of symptoms and dispensing of medicines (n=100; 53.8%; 95% CI: 46.3-61.0) and herbal products (n=80; 43.0%; 95% CI: 35.9-50.5). The three services most frequently provided for breastfeeding women were contraception advice (n=151; 83.4%; 95% CI: 77.0-88.4), recommending vitamins and food supplements (n=101; 55.8%; 95% CI: 48.3-63.1), and weight control advice (n=92; 50.8%; 95% CI: 43.3-58.3). The other offered services, but to a lesser extent, were diagnosis of symptoms and dispensing of herbal products (n=88; 48.6%; 95% CI: 41.2-56.1) and medicines (n=69; 38.1%; 95% CI: 31.1- 45.7), and referral to a doctor (n=58; 32.0%; 95% CI: 25.4-39.4). About three-fifths (n=106; 58.6%; 95% CI: 51.0-65.8) of respondents stated that they knew women are pregnant or breastfeeding by asking them, while 41.4% (n=75; 95% CI: 34.3-49.0) reported that women inform them before asking about the services.

Moreover, respondents indicated that they were most often consulted by pregnant women regarding gastrointestinal symptoms (nausea/vomiting, constipation, and stomach cramp), respiratory symptoms (common cold and cough), safety of medication use , and back pain. Breastfeeding women most frequently consulted them about a medicine to increase breast milk, contraceptive pills, safety of medication use , and respiratory symptoms (common cold and cough).

Figure (1) presents the distribution of pharmacists' responses to the most commonly treated symptoms during pregnancy and breastfeeding. Most of the pharmacists recommended medicines or referral to a doctor rather than providing advice only without dispensing medicine for treatment of these symptoms. More than half of participants recommended medications for treatment of

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headache, constipation, cough, sore throat, and runny nose. In relation to diarrhea and hemorrhoids, about three-fifths and half of respondents recommended referral to a doctor rather than dispensing medicines or providing only advice, respectively. There were significant associations between the recommendation to dispense medicines for treatment of diarrhea or constipation in breastfeeding women and the respondents' experience as practitioners ($p<0.05$). It was found to be more common among those with experience of > 10 years compared to those with experience of < 10 years (for diarrhea: p=0.02; OR = 2.0; 95% CI: 1.1-3.5) and (for constipation: p=0.02; OR = 2.2; 95% CI: 1.1-4.2).

Figure (2) presents the distribution of pharmacists' responses to the specific symptoms in pregnancy. Over half of respondents recommended referral of pregnant women to the doctor for swelling of the feet and legs, varicose vein, insomnia, vaginal itching, back pain, and fever and aches. More than two-thirds of participants recommended dispensing of medications for treatment of nausea, vomiting, and indigestion. There was a significant association between the recommendation to dispense medicines for nausea/vomiting and the pharmacists' experience as practitioners ($p<0.05$). It was found to be more common among those with experience of > 10 years compared to those with experience of < 10 years (p=0.03; OR = 2.6; 95% CI: 1.1-6.5). The recommendation to dispense medicines for treatment of vaginal itching was significantly more common among females compared to males (p=0.01; OR = 2.3; 95% CI: 1.2-4.4).

Figure (3) presents the distribution of pharmacists' responses to the specific symptoms in breastfeeding women. Pharmacists mainly recommended dispensing of medications for sore or cracked nipple and to increase the breast milk, and referral to the doctor for mastitis. There were significant associations between the recommendation to dispense medicine to relieve engorgement or increase the breast milk and gender. It was found to be more prevalent among females compared

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to males (for engorgement: p=0.01; OR = 2.2; 95% CI: 1.1-4.1) and (for insufficient milk: p=0.03; OR = 2.5; 95% CI: 1.1-5.9).

The medications that respondents recommended for each of the symptoms during pregnancy and breastfeeding are presented in the supplementary file (Appendix 2). Most medicines that were recommended are not detrimental to the mother, fetus and infant. However, the respondents' recommendations on medicine use were sometimes inappropriate in terms of unneeded drug therapy, off-label use, and safety. Respondents sometimes recommended ibuprofen for headache, antibiotics for sore throat and productive cough, herbal products for cough, loratadine for runny nose and productive cough, stimulant laxatives for constipation, loperamide for diarrhea, St John's wort and melatonin for insomnia, topical products with no evidence to heal a nipple, paracetamol, moisturizing cream and domperidone for engorgement, and herbal products that contain fenugreek for insufficient milk.

The Cronbach's α test results for the sections to determine the pharmacists' views about self-care in pregnancy and breastfeeding were as follows: four statements of support self-care, 0.84; two statements about the safety of OTC medicines, 0.91, four statements about knowledge and confidence about pregnancy and breastfeeding, 0.79, and two statements about undergraduate training in self-care for both pregnant and breastfeeding women, 0.97. Table (2) shows the respondents' views regarding self-care of pregnant and breastfeeding women. In the first dimension about self-care support, above half of respondents agreed that pharmacists are qualified to provide advice and an OTC therapy to treat symptoms in pregnant (58.9%) and breastfeeding (65.1%) women. However, less than half of participants agreed that pharmacists should recommend an OTC therapy to treat symptoms in pregnant (39.1%) and breastfeeding (46.9%) women. In the second dimension, s, more than two-fifths of participants disagreed about the safety of OTC medicines for

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pregnant (51.6%) and breastfeeding (43.8%) women. In the third dimension about knowledge and confidence, more than half of pharmacists agreed that they are confident about providing advice and counselling to pregnant (58.3%) and breastfeeding (53.1%) women; and that they have adequate knowledge to solve medication and health problems of pregnant (61.5%) and breastfeeding (50.5%) women. In the last dimension about undergraduate training, four-in ten responders agreed that pharmacy schools provided appropriate training to provide advice and an OTC therapy for pregnant (44.3%) and breastfeeding (42.2%) women. The agreement that OTC medicines are safe was significantly higher among females compared to males (p=0.04; OR = 2.1; 95% CI: 1.1-4.3).

Most of the respondents (n=170; 88.5%; 95% CI: 83.0-92.5) agreed that a continuing education program regarding this topic would be of value and priority for their practice. Attending lectures/workshops/seminars (n=80; 47.1%) was the most convenient method of delivering continuing education for them, followed by receiving regular newsletters (n=61; 35.9%), and receiving distant learning packages (n=34; 20%). There was no significant association between the respondents' need for continuing education and the independent variables (age: p=0.44; gender: p=0.47; experience: p=0.49). The most commonly indicated sources of information used by respondents to prepare themselves for responding to symptoms in pregnancy and breastfeeding was the websites (n=133; 69.2%), followed by books (n=99; 51.5 %), and journal articles (n=19; 9.9%).

DISCUSSION

The present results showed that community pharmacists in Kuwait are frequently consulted by pregnant and breastfeeding women. Most of the pharmacists recommended medicines or referral to a doctor rather than providing advice only for the treatment of pregnancy and breastfeeding related ailments. Recommendations on medication use were occasionally inappropriate in terms of unneeded drug therapy, off-label use, and safety. Some community pharmacists still lack confidence and knowledge to provide advice and resolve health and medication problems of pregnant and

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lactating women. To our knowledge, this is the first study to be performed in Kuwait, and the second in the Middle Eastern area, and it contributes to the limited amount of existing literature in the developing countries about the services provided by community pharmacists for women during pregnancy and lactation. The present results present a baseline quantitative data of these services that will aid in the assessment of the current pharmacy practices towards self-care during pregnancy and lactation, and offer additional insight in designing future multifaceted interventions to improve the community pharmacists' role to deliver the proper advice and resolve the healthcare matters of pregnant and lactating women in Kuwait.

The current results reveal that the services most regularly offered to pregnant and lactating women were recommending vitamin or food supplements, referral to a doctor, contraception advice, and weight control advice. These results are close to those indicated in the Thai study, with the exception that symptom diagnosis and medicine dispensing was a commonly provided service in Thailand.[16] The study participants indicated that pregnant and lactating women most frequently consulted them regarding gastrointestinal symptoms, respiratory symptoms, and safety of medicine use. It was reported that most people considered these gastrointestinal and respiratory symptoms as minor ailments that can be treated by using OTC medicines that they tend to purchase from a community pharmacy.[16 22] The finding that respondents were also frequently consulted about the safety of medicines use in pregnancy and lactation is in accordance with a previous report, which has shown that women require information regarding medication use during pregnancy and indicated pharmacists amongst the three mainly utilized sources of information.[23] These findings indicate that women with pregnancy and lactation related ailments were more tending to visit a pharmacist than a physician. This could be partly explained by the easy access to the community pharmacies, it is evident that community pharmacies are recognized as the utmost reachable healthcare settings due to the high volume of the public that utilize their services.[24] Furthermore, it

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may be due to the observation of the pharmacists by the pregnant and breastfeeding women as the self-care consultant who provide them with enough time to discuss their health problems and prefer to get advice from a pharmacist rather than from a physician when they have non-serious condition.[25-29] These findings indicate the relevance of maternal-fetal medication as a crucial area for pharmacy practice, which needs the pharmacists to have adequate knowledge and a responsible framework in paying particular attention when these women request advice to improve maternal health.

Respondents were also asked about the services that they would recommend for pregnancy and lactation related ailments. More than half of pharmacists indicated that they would recommend medications for headache, constipation, cough, runny nose, sore throat, as well as, nausea/vomiting, indigestion, sore or cracked nipple and insufficient milk. In comparison to previous reports, a study conducted in France revealed that medications were often recommended by pharmacists for pain, fever, nose and oropharynx disorders, venous insufficiency, dyspepsia and constipation. [14] In Thailand, about 75% of pharmacists treated headache, runny nose and sore throat with medicines. . A recent study reported that 52% of pharmacists in Serbia recommended medication use for treatment of back pain, heavy legs, nausea, common cold and constipation during pregnancy, while 62% of respondents in Norway recommended non-pharmacological advice as well as referral to a doctor.[17] These findings illustrate the large differences in community pharmacists practices between countries regarding the services recommended for treatment of pregnancy and lactation related ailments. This could be partly explained by the differences in regulatory environments, types of undergraduate programs, and the availability of products at the local pharmacies. The finding that less than one-tenth of the participants recommended only advice for most of the symptoms underscores the need for pharmacists to have sufficient knowledge and information about self-care practices which are crucial to alleviate some ailments without medications. The pharmacist must

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have adequate information to reach a conclusion about the risk: benefit ratio of treatment for the women to be able to counsel them effectively.

In the present study, recommendations on medication use were occasionally inappropriate in terms of unneeded drug therapy, off-label use, and safety. Previous studies showed that community pharmacists were incapable to offer adequate evidence-based information about use of medicines during pregnancy.[13 15] These results demonstrate that respondents have different knowledge levels in the subject of maternal-fetal medicine. and underscore the need for continuing professional development and the revision of the undergraduate pharmacy curriculum to fill the knowledge gaps of pharmacy students and practitioners in maternal-fetal medicine and to support pharmacists to deliver the proper care for pregnant and lactating women.

The current findings reveal that pharmacists with experience of more than 10 years recommended to dispense medicines for diarrhea, constipation, and nausea/vomiting more than those with less experience. This might be due to that their knowledge base in the area of pregnancy and breastfeeding related ailments relies on experience gained in practice. Also, it was found that female respondents recommended to dispense medications for vaginal itching/simple discharge, engorgement, and insufficient milk more than males. This could be explained by the fact that female pharmacists have more exposure to pregnancy-related issues, either personal or work experience for pregnant or lactating women tend to discuss their concerns more comfortable with female than male pharmacists. Another possible reason demonstrated by this study was their agreement that OTC medicines are safe, which was significantly higher than males. Further qualitative research is needed for describing and understanding these predictors.

Conclusions

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The present results reveal that community pharmacists in Kuwait are frequently consulted by pregnant and breastfeeding women and that the pharmacists had different approaches towards responding to pregnancy and lactation related ailments. Also highlight the need for multifaceted interventions, including continuing professional development and the revision of the undergraduate pharmacy curriculum to fill the knowledge gaps of pharmacy students and practitioners in maternal-fetal medicine and to enhance pharmacists' role in improving maternal health.

Acknowledgements

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Authors' contributions AB contributed in data collection, analysis and interpretation, and wrote the manuscript. AA designed and supervised the study, performed the data analysis and reviewed the manuscript critically for important intellectual content. Both authors read and approved the final manuscript.

Data sharing statement The raw data of the present study are available from the corresponding author on reasonable request.

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Table 1 Characteristics of respondents (n=192)

	Frequency	Percentage (%)
Gender		
Male	127	66.1
Female	65	33.9
Age (years)		
20-29	28	14.6
30-39	104	54.2
≥ 40	60	31.2
Basic qualification in pharmacy		
B. Pharm	177	92.2
M. Pharm	9	4.7
*Pharm D	6	3.1
Postgraduate qualification(s) in pharmacy		
Diploma	15	7.8
Master degree	12	6.2
PhD	3	1.6
Experience as practitioners (Years)		
≤ 10	92	47.9
> 10	100	52.1
Location of pharmacy (Governorates)		
Hawalli	57	29.7
Al-Farwaniyah	43	22.4
Al-Ahmadi/Mubarak Alkabeer	43	22.4
Capital	25	13.0
Al-Jahra	24	12.5

*Doctor of Pharmacy degree

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Table 2 Respondents views about self-care of pregnant and breastfeeding women (n=192)

	Strongly disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n(%)	Strongly agree n (%)	Median^ (IQR)
Support self-care						
Community pharmacists are qualified to provide advice and an over- the-counter (OTC) therapy to treat common and minor symptoms in pregnant women	6 (3.1)	29 (15.1)	44 (22.9)	84 (43.8)	29 (15.1)	4.0 (1.0)
Community pharmacists are qualified to provide advice and an OTC therapy to treat common and minor symptoms in breastfeeding women	4 (2.1)	25 (13.0)	38 (19.8)	90 (46.9)	35 (18.2)	4.0 (1.0)
Community pharmacists should recommend OTC therapy and counseling to treat common and minor symptoms in pregnant women	14 (7.3)	49 (25.5)	54 (28.1)	55 (28.7)	20 (10.4)	3.0 (2.0)
Community pharmacists should recommend OTC therapy and counseling to treat common and minor symptoms in breastfeeding women	13 (6.8)	40 (20.8)	49 (25.5)	72 (37.5)	18 (9.4)	3.0 (2.0)
Overall Scale						**4.0 (1.0)**
Safety of OTC medicine						
OTC medicines are safe for pregnancy	29 (15.1)	70 (36.5)	52 (27.1)	34 (17.7)	7 (3.6)	2.0 (1.0)
OTC medicines are safe for breastfeeding	19 (9.9)	65 (33.9)	56 (29.1)	44 (22.9)	8 (4.2)	3.0 (2.0)
Overall Scale						**3.0 (1.0)**
Knowledge and confidence about pregnancy and breastfeeding						
I am confident about giving advice and counselling to pregnant women	8 (4.2)	27 (14.1)	45 (23.4)	97 (50.5)	15 (7.8)	4.0 (1.0)
I have sufficient knowledge to solve medication and health problems of pregnant women	7 (3.6)	19 (9.9)	48 (25.0)	95 (49.5)	23 (12.0)	3.0 (2.0)
I am confident about giving advice and counselling to breastfeeding women	11 (5.8)	25 (13.0)	54 (28.1)	83 (43.2)	19 (9.9)	4.0 (1.0)
I have sufficient knowledge to solve medication and health problems of breastfeeding women	14 (7.2)	36 (18.8)	45 (23.4)	75 (39.1)	22 (11.5)	4.0 (1.0)
Overall Scale						**4..0 (1.0)**
Undergraduate Training						
Pharmacy school provided appropriate training regarding advice and OTC therapy for pregnant women	15 (7.8)	40 (20.8)	52 (27.1)	70 (36.5)	15 (7.8)	3.0 (2.0)
Pharmacy school provided appropriate training regarding advice and OTC therapy for breastfeeding women	16 (8.4)	40 (20.8)	55 (28.6)	65 (33.9)	16 (8.3)	3.0 (2.0)
Overall Scale						3.0 (2.0)

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Figure Legends

Figure 1 Pharmacists' responses to eight common symptoms in pregnancy and breastfeeding (n=192)

Figure 2 Pharmacists' responses to specific symptoms in pregnancy (n=192)

Figure 3 Pharmacists' responses to specific symptoms in breastfeeding (n=192)

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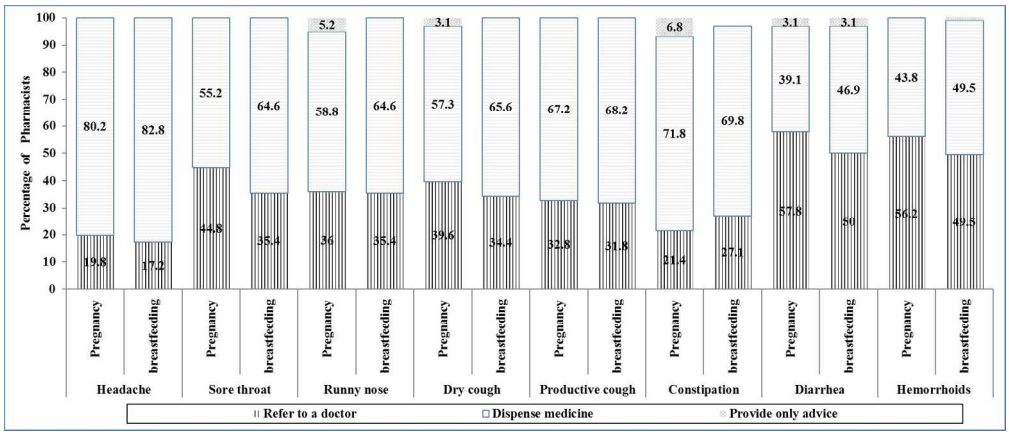

Figure 1 Pharmacists' responses to eight common symptoms in pregnancy and breastfeeding (n=192)

164x70mm (300 x 300 DPI)

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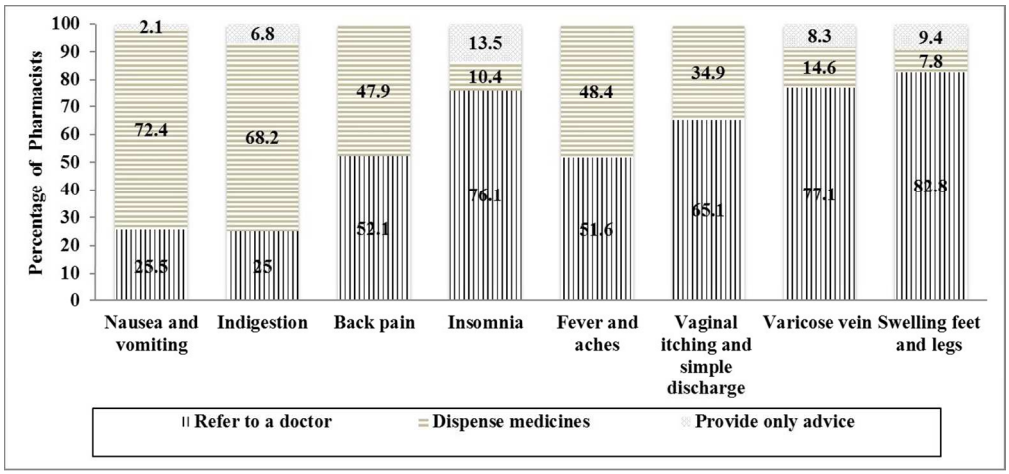

Figure 2 Pharmacists' responses to specific symptoms in pregnancy (n=192)

111x51mm (300 x 300 DPI)

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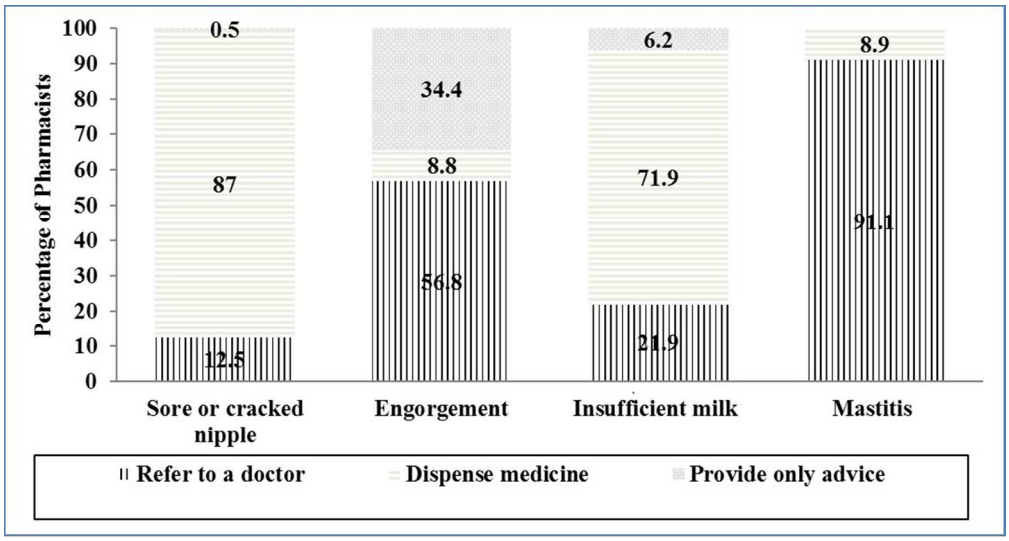

Figure 3 Pharmacists' responses to specific symptoms in breastfeeding (n=192)

90x48mm (300 x 300 DPI)

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Part 1. Demographic and other Characteristics

PLEASE FILL IN OR TICK (√) THE APPROPRIATE ANSWER

1.1 Gender: [1] Male [2] Female

1.2. Age in years: . . . . . ……

1.3. Basic qualification in pharmacy: [1] BSC (Pharm) or B Pharm [2] M Pharm [3] Pharm D

1.4. Do you have any postgraduate qualification(s) in pharmacy? [1] Yes [2] No

1.5. If yes to question (1.4), please tick below all that apply:

[1] Diploma [2] Master [3] Ph.D [4] Others (Please state) .....

1.6. Number of years you have practiced as pharmacist since initial licensure .....

1.7. Location of pharmacy: [1] Hawalli [2] Al-Farwaniyah [3] Al-Ahmadi/ Mubarak Al-kabeer [4] Al-Asima (Capital) [5] Al-Jahra

PART 2: Services provided regarding self-care in pregnancy and lactation

2.1 Do you have information leaflet or brochure to promote health for pregnant and breastfeeding women? [1] Yes [2] No

2.2 If yes to question (2.1), please tick the appropriate options

[1] Make it by myself [2] Drug company [3] Organization (please state)……

[4] Others (please state)……

2.3 Do you have experience in providing services for pregnant women? [1] Yes [2] No
(If no experience, please go to question 2.7)

2.4. If yes to question (2.3), how many pregnant women do receive your services in this pharmacy per week? .....

2.5. If yes to question (2.3), please rank the three services that you give most frequently for pregnant women. (i.e., first, second, third)

……. Advice about a suitable behavior such as lifestyle, exercise
……. Recommend vitamin and food supplements
……. Dispensing herbal medicine
……. Dispensing medicine
……. Refer to a doctor
……. Others (Please state)……..…….

2.6. If yes to question (2.3), please indicate two symptoms and/or questions that pregnant women most frequently consulted you about in your pharmacy in the past.

1.……

2.……

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2.7. Do you have experience in providing services for breastfeeding women? [1] Yes [2] No
(If no experience, please go to PART 3)

2.8. If yes to question (2.7), how many breastfeeding women do receive your services in this pharmacy per week? ……

2.9. If yes to question (2.7), how do you mostly know that women who receive your services are pregnant or breastfeeding? *(Please tick one option)*

[1] Asking by Pharmacist [2] Women tell before get the services

[3] Others (Please state) ……

2.10. If yes to question (2.7), please rank the three services that you give most frequently for breastfeeding mothers. (i.e., first, second, third)

…….Advice about a suitable behavior such as lifestyle, exercise
…….Advice about contraception such as contraceptive pill
…….Advice about weight control or lose weight
…….Dispensing herbal medicine
…….Recommend vitamin and food supplement
…….Dispensing medicine
…….Refer to doctor
…….Others (Please state)……

2.11. If yes to question (2.7), please indicate two symptoms and/or questions that breastfeeding women most frequently consulted you about in your pharmacy in the past.

……..……

……

PART 3: Recommendations when counseling women on self-care in pregnancy and lactation.

3.1. If pregnant women consult you about their symptoms as listed below. Please tick one recommendation (service) that would be your response for each symptom. If you choose to dispense medicines or vitamin or herbal medicines, please write the name in the table.

Symptom	Refer to doctor	Provide only advice without dispensing a medicine	Dispense medicines or vitamin or herbal medicines Please write the name
1. Nausea and vomiting			
2. Indigestion (heartburn)			
3. Headache			
4. Back pain			
5. Insomnia (difficulty in sleeping)			

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6. Sore throat			
8. Dry cough			
9. Productive cough			
10. Fever and aches			
11. Constipation			
12. Diarrhea			
13. Hemorrhoids			
14. Vaginal itching and simple discharge			
15. Varicose vein			
16. Swelling feet and legs			

3.2 If breastfeeding women consult you about their symptoms as listed below. Please tick one recommendation (service) that would be your response for each symptom. If you choose to dispense medicines or vitamin or herbal medicines, please write the name in the table.

Symptom	Refer to doctor	Provide only advice without dispensing a medicine	Dispense medicines or vitamin or herbal medicines Please write the name
1. Sore or cracked nipple (small ulcerations (cuts) develop on the nipple)			
2. Engorgement (painful overfilling of the breasts with milk)			
3. Insufficient milk			
4. Mastitis (inflammation of a breast)			
5. Diarrhea			

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6. Constipation			
7. Hemorrhoids			
8. Headache			
9. Sore throat			
10. Runny nose			
11. Dry cough			
12. Productive cough			

PART 4: Views about self-care in pregnancy and lactation

Please tick one option that best describes your own view

	1. Strongly disagree	2. Disagree	3. Neither disagree or agree	4. Agree	5. Strongly agree
4.1 Community pharmacists are qualified to provide advice and an over- the-counter (OTC) therapy to treat common and minor symptoms in pregnant women					
4.2 Community pharmacists are qualified to provide advice and an OTC therapy to treat common and minor symptoms in breastfeeding women					
4.3 Community pharmacists should recommend OTC therapy and counseling to treat common and minor symptoms in pregnant women					
4.4 Community pharmacists should recommend OTC therapy and counseling to treat common and minor symptoms in breastfeeding women					
4.5 OTC medicines are safe for pregnancy.					
4.6 OTC medicines are safe for breastfeeding.					
4.7 I am confident about giving advice and counselling to pregnant women					
4.8 I have sufficient knowledge to solve medication and health problems of pregnant women					
4.9 I am confident about giving advice and counselling to breastfeeding women					

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4.10 I have sufficient knowledge to solve medication and health problems of breastfeeding women					
4.11 Pharmacy school provided appropriate training regarding advice and OTC therapy for pregnant women.					
4.12 Pharmacy school provided appropriate training regarding advice and OTC therapy for breastfeeding women.					

4.14 Do a continuing education program regarding this topic would be of value/priority for your practice?

[1] Strongly disagree [2] disagree [3] Neutral [4] Agree [5] strongly agree

4.15 If you agree or strongly agree to participate in continuing education program, what would be the most convenient method of delivering continuing education to you? (*Please tick one option*)

[1] Attending lectures and workshops/seminars [2] Receiving regular news letters

[3] Receiving distant learning packages [4] Others (Please state) …… ……

4.16 What is /are the most common source(s) of information do you use for responding to symptoms during pregnancy and breastfeeding and /or searching about medicines use in pregnancy and breastfeeding? (*You may tick more than one option*)

[1] Books [2] Journal articles [3] Handout [4] Website [5] Others (please state)…….

Thank you for your time and cooperation in completing this questionnaire.

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Names of medications recommended by pharmacists for eight common symptoms in pregnancy and breastfeeding

Common symptoms	Frequency (%) of pharmacists recommended medicines for pregnant women	Frequency (%) of pharmacists recommended medicines for breastfeeding women
Headache	*n=154	*n=169
Paracetamol tablet	151 (98.1%)	145 (85.8)
Ibuprofen tablet	3 (1.9%)	24 (14.2)
Sore throat**	*n= 106	*n=124
Lozenges	90 (84.9)	89 (71.8)
Paracetamol tablet	16 (15.1)	29 (23.4)
Vitamin C tablet	14 (13.2)	16 (12.9)
Amoxicillin capsule	4 (3.8)	6 (4.8)
Azithromycin tablet	2 (1.9)	2 (1.6)
Runny nose**	*n=113	*n=124
Normal saline spray	69 (61.1)	33 (26.6)
Loratadine tablet	17 (15.0)	30 (24.2)
Paracetamol and Pseudoephedrine	19 (16.8)	22 (17.7)
tablet	21 (18.6)	25 (20.2)
Vitamin C tablet	7 (16.2)	17 (13.7)
Cetrizine tablet	2 (1.8)	3 (1.6)
Corticosteroid nasal spray		
Dry cough	*n=110	*n=126
Prospan® syrup	86 (78.2)	75 (59.5)
Codilar® syrup	12 (10.9)	20 (15.9)
Cloperastine syrup	8 (7.3)	22 (17.5)
Butamirate syrup	4 (3.6)	9 (7.1)
Productive cough**	*n=129	*n=131
Prospan® syrup	113 (87.6)	85 (64.9)
Mucolytic syrup	15 (11.6)	9 (6.9)
Amoxicillin capsule	2 (1.6)	2 (1.5)
Loratadine tablet	3 (2.3)	24 (18.3)
Butamirate syrup	-	10 (7.6)
Cloperastine syrup	-	8 (6.1)
Constipation	*n=138	*n=134
Sterculia granules	63 (45.7)	43 (32.1)
Lactulose syrup	60 (43.5)	63 (47.0)
Glycerine suppository	6 (4.3)	11 (8.2)
Sennalax® tablet®	9 (6.5)	17 (12.7)
Diarrhea**	n=75	n=90
Kaolin + Pectin syrup	23 (30.7)	18 (20.0)
Nifuroxazide tablet	18 (24.0)	32 (35.6)
Loperamide tablet	16 (21.3)	26 (28.9)
Oral rehydration salts	25 (33.3)	21 (23.3)
Activated charcoal tablet	3 (4.0)	-
Hyoscine tablet	-	3 (3.3)
Hemorrhoids	n=84	n=95
Neo-healar® cream	35 (41.6)	25 (26.3)
Pilex® ointment®	24 (28.6)	17 (17.9)
Procto-Glyvenol® cream	15 (17.9)	24 (25.3)
Procto-Glyvenol® suppository	10 (11.9)	15 (15.8)
Daflon® tablet	-	2 (2.1)
Proctosedyl® suppository	-	12 (12.6)

*Number of pharmacists recommended dispensation of a medicine; ** May total > 100% because of recommended combination of medicines; Prospan® (herbal medicinal product containing ivy leaf extract); Codilar® (Chlorpheniramine + Dextromethorphan + Phenylephrine); Sennalax® (Sennosides + docusate); Neo-healar® (four medicinal plants: Lupinus Albus, Vateria Indica, Mentha Piperita, Aloe Vera); Pilex® (a mixture of herbs [Mimosa pudica, thistles, Vitex negundo, Calendula flowers, camphor], Zinc, and Borax); Procto-Glyvenol® (tribenosid + lidocaine); Daflon® (diosmin + hesperidin); Proctosedyl® (hydrocortisone + cinchocaine).

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Names of medications recommended by respondents for specific symptoms in pregnancy	
Specific pregnancy symptoms	**Frequency (%) of pharmacists recommended medicines**
Nausea and vomiting	*n=139
Navidoxine® tablet	110 (79.1)
Ondasetron tablet	27 (19.4)
Domperidone tablet	1 (0.7)
Multivitamin capsule	1 (0.7)
Indigestion (heartburn)	*n=131
Gaviscon® suspension	89 (67.9)
Ranitidine tablet	20 (15.3)
Zymogen® tablet	22 (16.8)
Back pain**	*n=92
Paracetamol tablet	42 (45.7)
Diclofenac gel	27 (29.3)
Reparil® gel	7 (7.6)
Relaxnova® cream	21 (22.8)
Insomnia	*n=20
St John's wort®	5 (25.0)
Dream water®	10 (50.0)
Melatonin tablet	5 (25.0)
Fever and aches	*n=93
Paracetamol tablet	93 (100)
Vaginal itching and simple discharge	*n=67
Clotrimazole ovule	20 (29.9)
Clotrimazole cream	15 (22.4)
Clotrimazole wash	9 (13.4)
Miconazole cream	11 (16.4)
Miconazole ovule	12 (17.9)
Varicose veins	*n=28
Venoruton® gel	21 (75.0)
Reparil® gel	7 (25.0)
Swelling feet and legs	*n=15
Reparil® gel	11 (73.3)
Varixinal® gel	4 (26.7)

*Number of pharmacists recommended dispensation of a medicine; ** May total > 100% because of recommended combination of medicines; Zymogen® (Lipase + Proteas +Pepsin + Hemicellulase +Ox bile extract +Dimethylpolysiloxane +Vitamin B1); Reparil® (Aescinum +Diethylamini salicylas); Relaxnova® (Idrocilamide) ; St John's Wort® (Hypericum perforatum); Dream water® (Melatonin + 5-HTP + GABA); Venorutin® (Rutoside); Varixinal® (Ruscus Aculeatus Extract, Aesculus Hippocastanum Extract, Centella Asiatica Extract, Vaccinium Myrtillus Extract).

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Names of medications recommended by respondents for specific symptoms in breastfeeding	
Common breastfeeding symptoms	**Frequency (%) of pharmacists recommended medicines**
Sore or cracked nipple	*n=167
Panthenol cream	53 (31.7)
Lanolin cream	45 (26.9)
Avalon Organics® moisturizer	35 (21.0)
Mustela® Nipple Cream	18 (10.8)
Mebo® ointment	12 (7.2)
Cocoa butter cream	4 (2.4)
Engorgement	*n=17
Moisturizing cream	6 (35.3)
Cabergolin tablet	5 (29.4)
Paracetamol tablet	4 (23.5)
Fucidin cream	2 (11.8)
Insufficient milk	*n=138
Fitolat® tablet	118 (85.5)
Domperidone tablet	10 (7.2)
Multivitamins Capsule	10 (7.2)
Mastitis	*n=17
Local antibiotic cream	3 (17.6)
Panthenol cream	6 (35.3)
Amoxicillin capsule	3 (17.6)
Paracetamol tablet	2 (11.8)
Diclofenac tablet	2 (11.8)
Fitolat® tablet	1 (5.9)

*Number of pharmacists recommended dispensation of a medicine; Avalon® (Lavender + prebiotics); Mebo® (Sesame oil + Beeswax + other edible herbs); Mustela® (Avocado peptides + Bisabolol + Shea butter + Lupeol + Vitamin B5); Fitolat® (herbal extracts from plants, such as Fennel, Fenugreek, Hops and Verbena)

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