



COMMUNITY PHARMACISTS' EXPERTISE AND APPROACH TO THE SAFETY AND EFFICACY OF MEDICATIONS (HERBS AND ALLOPATHIC) THROUGHOUT THE PREGNANCY PERIOD

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Abstract

The purpose of this study was to examine Pakistani community pharmacists' expertise and approach regarding the safety and effectiveness of both allopathic and herbal medicines during pregnancy. During the three months of 1st November 2023 to 30th January 2024, an online questionnaire was used to conduct a cross-sectional study in multi-setting of Pakistan. SPSS version 26 was used to analyze the data. The relationship between approach scores and other continuous factors, such as age and years of experience, was examined using the Mann-Whitney U Test. There were total 185 participants. Among them, 69.1% females and 30.9% were males. In overall, 82.15 populations were having post-graduation and only 17.9% have only graduation. Data were collected from both community pharmacists and obstetrician & gynecologists. Moreover, 74.6% were having professional experience of >5 years. Most of the respondents reported inquire about the pregnancy status always (60.6%), sometimes (31.9%), and 1.1% never inquire for status. When faced with uncertainty about drug safety, 74.6% indicated that they would refer to authentic sources, and 54.1% would advise pregnant women to consult their physicians when requesting a potentially contraindicated drug. Nearly half (51.2%) of the participants contacted the prescribing physician to explore safer options. As per study approach, 74.50% allopathic medication and 44.60% herbs are

safe to use throughout pregnancy while 17.30% allopathic medication and 22.40% herbs are unsafe to use throughout pregnancy. A higher knowledge score was significantly associated with receiving a post-graduation degree ($p= 0.002$). In conclusion, the study's findings demonstrated that community pharmacists adhere to safe practices and possess expertise in utilizing drugs safely while pregnant. Higher knowledge scores were linked to post-graduation. Consequently, the survey participants felt strongly that there was a need for seminars, sessions, and educational programs focused on herbal medicines.

Keywords: Pregnancy, community pharmacists, herbs, allopathic medications, safety, efficacy

INTRODUCTION

Prescription of medication during pregnancy involves taking the benefit to the mother and the risk to the fetus into careful account. Improving patient safety and lowering drug mistakes are the two main topics of conversation [1]. Pregnancy-related drug use requires extra caution because the health and life of the unborn child are also at risk, in addition to the mother. Pregnant women who take therapeutic medications run the risk of their growing kid developing seriously adversely in terms of structure and function [2]. The majority of medicines are not advised to be used during pregnancy since it is tough to assess the effects on the fetus before selling new treatments for apparent ethical concerns [3]. Herbal medicines are frequently employed in the world's healthcare system to treat and prevent illnesses. In some nations, herbal remedies may typically include natural organic or inorganic active substances not derived from plants [4]. Alongside the rising consumer demand, the usage of herbal medicines continues to rise worldwide [5]. Herbal remedies are available in bulk as unrefined extracts or as pharmaceutical dosage forms, such as tablets, capsules, tinctures, teas, and decoctions. The perception that herbal medicines are intrinsically safe, patients' disenchantment with the effectiveness and/or safety of allopathic conventional drugs, and their satisfaction with the therapeutic outcome have all had an impact on the use of herbal medicines in the management of both minor and major illnesses [6–8]. Some more intricate explanations for the inclination toward herbal remedies include philosophical perspectives on life and health [6], cultural and personal beliefs, and patient comparisons of the experiences of complementary medicine practitioners and conventional healthcare providers [11]. In many affluent as well as emerging nations, the use of herbal therapy has increased [12, 13]. It is estimated that between 65 and 80% of people on the planet receive their primary medical care from herbal remedies [14, 15]. Patients who are currently susceptible to problems from regularly given prescriptions, such as fetuses, infants and older children, the elderly, and pregnant and breastfeeding mothers, are likely to be at risk from the side effects of herbal medicines [16–23]. Particularly in developing countries, the production, importation, and sale of herbal medicines are not subject to the same stringent safety and efficacy regulations as standard Western/allopathic pharmaceuticals [24]. Drug use during pregnancy carries several risks, including the possibility of problems for the mother and unfavourable results for the fetus. Potential fetal injury is difficult to assess because of ethical issues. The majority of drug-related pregnancy data comes from observational research and experimental animal studies, however the validity of these approaches is constrained [25]. Medical regulatory agencies have created risk classification systems. Still, there are many variables to consider when assessing the safety of drugs, including dosage, mode of administration, length of treatment, and gestational age. Pregnant women frequently take medicine to treat pregnancy-induced problems, manage previous medical disorders, and relieve discomfort [26]. Antibiotics, iron supplements, antifungal drugs, analgesics, antiemetics, and antacids are among the most often prescribed medications during pregnancy. According to a significant survey, more than 80% of expectant mothers in the Americas, Australia, and Europe took at least one over-the-counter (OTC) drug [27]. In the region, over 40% of pregnant women took medications or herbal remedies, according to a Saudi Arabian study [28]. Pregnant women's use of complementary and alternative medicines (CAMs) was examined in another study. Most subjects (87.7%) took biologically based, non-herbal medications, such as

vitamins and supplements [29]. Furthermore, it was discovered that a significant proportion of pregnant women—between 77.1% and 88.4%—used herbs [30, 31]. Dispensing precise and safe medications is no longer the exclusive function of pharmacists in the contemporary medical setting; they now also collaborate and specialize in coordinating pharmaceutical care [32]. Pharmacy practices now offer a more comprehensive range of services, such as patient education, medication therapy management, pharmaceutical counselling, and coordination with other medical specialities. Above all, pharmacists are now in charge of transferring and improving patient care in several contexts. Since the pharmacist is one of the most approachable medical professionals, building connections with patients and carrying out their duties depend on information exchange [33]. Community pharmacists (CPs) appear to impact patients' decisions, even though their primary responsibility in Pakistan is still medicine administration with little patient interaction. Two investigations showed that CPs have a significant impact on patients' decisions to self-medicate [34]. This is particularly important for antibiotics, freely available in Pakistan [35] without a prescription. On the other hand, pharmacists in Pakistan possessed a mediocre understanding of various pharmacological subjects, such as medication interactions, bioequivalence and pharmacokinetics, antibiotic resistance, and adverse effects and contraindications [30–36]. This information gap suggests that there may be improper practices when it comes to using drugs while pregnant. Community pharmacists' knowledge about the use of pharmaceuticals (allopathic and herbal) during pregnancy has not been studied before, even though this information is crucial for developing educational and regulatory interventions that will enhance pharmacy practices. The purpose of this study was to examine Pakistani community pharmacists' expertise and approach regarding the safety and effectiveness of both allopathic and herbal medicines during pregnancy.

RESEARCH METHODOLOGY

During the three months of 1st November 2023 to 30th January 2024, an online questionnaire was used to conduct a cross-sectional study at the following locations: Frontier Medical and Dental College Abbottabad, Pakistan; Ayub Medical College, Abbottabad, Pakistan; Gajju Khan Medical College, Swabi; and Fauji Foundation Hospital, Karachi. The study's sample size was decided upon using the number of community pharmacists and gynecologists in Pakistan to obtain a representative sample. Utilizing snowball sampling, participants were found via social media. To efficiently address Pakistan's large community of pharmacists and obstetricians and gynecologists, this technique was modified for use online. As nodes of professional networks, the approach started with identifying important contacts in the pharmacy community. The practical limitations of reaching a dispersed professional community and the need to leverage professional networks to provide a broad reach led to the selection of this approach. To represent the makeup of Pakistan's community pharmacy workforce, online questionnaires with a Google Form were sent to pharmacists working in various settings throughout the country who spoke English and who were either fully registered (FRP), provisionally registered (PRP), obstetricians and gynecologists, or pharmacy assistants with a diploma in pharmacy. The medicine list was created individually by each expert, cross-checked, and updated during the cross-review process to cover the area's most widely used prescription drugs, dietary supplements, and herbal remedies. The choice of drugs made it possible to create a thorough list of all the many kinds and uses of drugs, including pain relievers, bronchodilators, antibiotics, and oral contraceptives. Social media platforms, including Facebook, WhatsApp, Instagram, and Telegram, were used to find the participants. Using the Raosoft calculator, a sample size was determined to be the necessary 185, representing the number of community pharmacists and obstetricians and gynecologists in Malaysia. Additionally, a formal invitation was made via social media to groups of obstetricians and gynecologists in Pakistan and community pharmacies. Before completing the questionnaires, individuals had to formally consent to participate in the study by signing a form. Participants received weekly reminders to finish the survey, which improved the response rate and sample representativeness. In addition, participants were requested to forward colleagues the online form to fill out. SPSS version 26 was

used to analyze the data. The frequencies and percentages are given. The relationship between approach scores and other continuous factors, such as age and years of experience, was examined using the Mann-Whitney U Test. The considered p-value of less than 0.05 indicated statistical significance.

RESULTS AND DISCUSSION

Table 1 demonstrated the demographic characteristics of study population. There were total 185 participants. Among them, 69.1% females and 30.9% were males. In overall, 82.15 populations were having post-graduation and only 17.9% have only graduation. Data were collected from both community pharmacists and obstetrician & gynecologists. There were 55.7% participants were obstetrician & gynecologists following 44.3% participants were community pharmacists. 40% were government officers, 37.3% were running their private setup (owner), and 22.7% were working in partnership with others. Moreover, 74.6% were having professional experience of >5 years and only 7.0% were having <1 years of professional experience. In Table 2, descriptive analysis of community pharmacists' expertise to the safety and efficacy of medications (herbs and allopathic) throughout the pregnancy period were discussed. Most of the respondents reported inquire about the pregnancy status always (60.6%), sometimes (31.9%), and 1.1% never inquire for status. When faced with uncertainty about drug safety, 74.6% indicated that they would refer to authentic sources, and 54.1% would advise pregnant women to consult their physicians when requesting a potentially contraindicated drug. Nearly half (51.2%) of the participants contacted the prescribing physician to explore safer options. More details have given below in Table 2. Figure 1 demonstrated that approach of study participants regarding drugs (allopathic and herbs) use throughout pregnancy. As per study approach, 74.50% allopathic medication and 44.60% herbs are safe to use throughout pregnancy while 17.30% allopathic medication and 22.40% herbs are unsafe to use throughout pregnancy. More details have given below in Figure 1. In Table 3, association between variables has been described. The median score of the participants was 19.1 [17.1-23.1]. A higher knowledge score was significantly associated with receiving a post-graduation degree (p= 0.002).

Table 1: Demographic Characteristics of study population (N = 185)

Variables	Frequency	%age
Gender		
Female	128	69.1
Male	57	30.9
Educational Status		
Graduation	33	17.9
Post-graduation	152	82.1
Participants		
Community Pharmacists	82	44.3
Obstetrician & Gynecologists	103	55.7
Employment Status		
Partnership	42	22.7
Owner	69	37.3
Govt. officer	74	40.0
Professional Experience (Years)		
<1	13	7.0
2-5	34	18.4
>5	138	74.6

Table 2: Descriptive Analysis of Community Pharmacists' Expertise to the Safety and Efficacy of Medications (Herbs and Allopathic) Throughout the Pregnancy Period, N = 185 (%)

Variables	Frequency (%)
Do you check concerning your pregnancy's condition?	

Always	112 (60.6)
Sometimes	59 (31.9)
Only if expected	12 (6.5)
Never	2 (1.1)
If you are unsure about a drug's safety for expectant mothers, do you consult specific reputable sources?	
No	13 (7.0)
Sometimes	34 (18.4)
Yes	138 (74.6)
If a woman who is expecting desires to purchase additional medication, though you are aware that such drugs shouldn't be taken while pregnant. Which recommendations would you provide her?	
Prescribe alternative and safe medication	82 (44.3)
Prescribe to not take medication	03 (1.6)
Advise to revisit the doctor	100 (54.1)
You are knowledgeable enough to address pregnant women's medication and medical concerns.	
Disagree	25 (13.5)
Agree	160 (86.5)
Large-scale non-prescribed herbs usage does not have any hazardous effects or adverse reactions.	
True	13 (7.1)
False	172 (92.9)
Large-scale allopathic medications usage does not have any hazardous effects or adverse reactions.	
True	08 (4.4)
False	177 (95.6)
Total	185 (100)

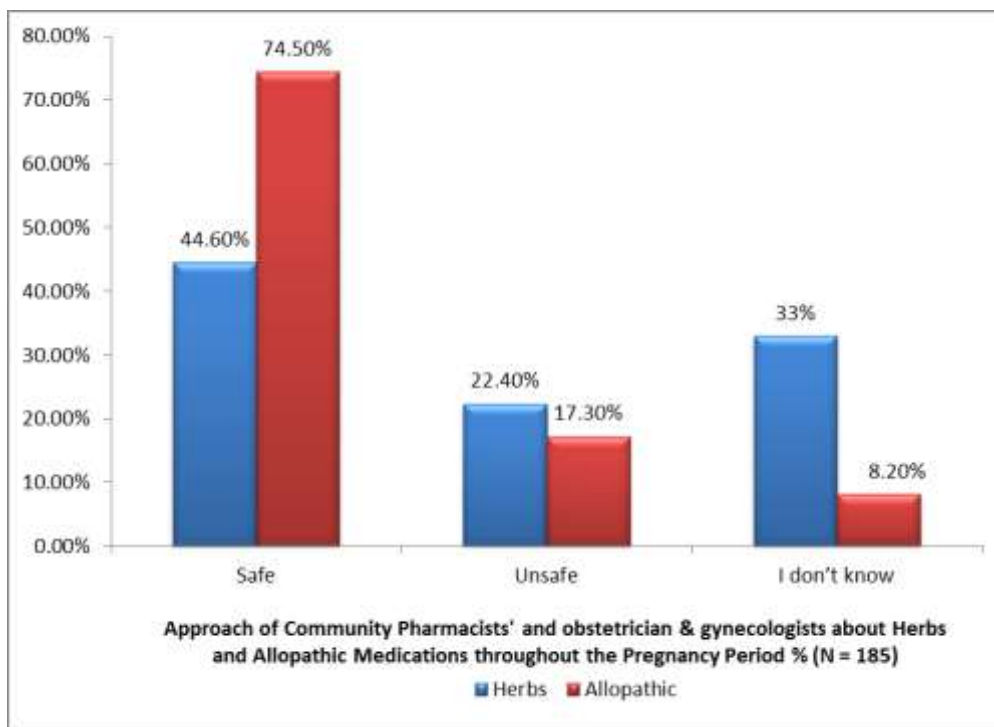


Figure 1: Approach of study participants regarding drugs (Allopathic and Herbs) use throughout pregnancy

Table 3: Association between Demographic characteristics and Community Pharmacists' Expertise and Approach to the Safety and Efficacy of Medications (Herbs and Allopathic) Throughout the Pregnancy Period

Variables	Median [Q1-Q3]	P-value
Gender		
Female	18.0 [16.0-22.0]	0.671
Male	19.1 [17.1-23.1]	
Educational Status		

Graduation	19.0 [15.60-22.01]	0.002
Post-graduation	21.1 [18.24-23.74]	
Participants		
Community Pharmacists	19.40 [17.01-22.01]	0.324
Obstetrician & Gynecologists	22.20 [17.19-20.84]	
Employment Status		
Partnership	21.00 [18.25–23.75]	0.041
Owner	18.00 [16.04-22.02]	
Govt. officer	11.40 [16.03-18.72]	
Professional Experience (Years)		
<1	17.00 [14.02-21.01]	0.001
2-5	12.04 [14.20-18.00]	
>5	21.1 [18.24-23.74]	

Pharmacists in Pakistan have shown inadequate understanding of a variety of pharmacological topics, particularly in important conditions like pregnancy, considering having an impact on patients' drug decisions [25–28]. The purpose of the research was to find out how CPs operating in Pakistan understood the safety and effectiveness of allopathic medicines, including botanicals, during pregnancy. The study's conclusions showed that, despite certain shortcomings, CPs generally exhibit safe behaviors, sufficient knowledge, and a suitable approach. The majority of CPs do not participate in continuous professional development to update and maintain their technique despite the significant burden associated with prescribing medications to expectant patients. Although CPs follow safe procedures when giving medicines to expectant patients, some replies point to unfair and insufficient procedures. For example, slightly more than half of CPs were questioned about their pregnancy status, and a similar proportion were directed to physicians to discuss safer options. This conclusion may be explained by the stigma that surrounds open discussion of sexual and reproductive issues in public, which discourages such conversations [37]. Discussing a woman's reproductive status can be viewed as a breach of her privacy and a source of embarrassment, particularly in conservative societies. Such concerns might be deemed sensitive even in less conservative settings. For example, in one study, nearly half of the CPs thought that "asking about pregnancy status" was sensitive [38]. Furthermore, since the majority of medicines do not increase the risk of pregnancy, routine inquiries regarding pregnancy status may not be essential [12]. Pregnancy-related medication safety is emphasized more in education and practice than other areas because of the fetus's susceptibility and the unique pharmacokinetics associated with pregnancy, which call for caution [39]. Additionally, pharmacists regularly deal with pregnancy-related issues in the course of their work, which broadens their understanding in this area. This result is in line with an unpublished study among Pakistani community practitioners (CPs) that found a lack of understanding on the pharmacology of herbs, particularly their safety during pregnancy [35]. This could be as a result of pharmacy education placing less focus on the safety of herbs. Nonetheless, as pregnant women frequently take herbs, it is critical to increase CPs' understanding of herb pharmacology [20, 21]. While most research conducted globally have found that pharmacists do not know enough about the safety of drugs during pregnancy, significant methodological discrepancies make it difficult to compare these studies. Using a variety of assessment instruments that take into account the difficulty and applicability of the questions presented, the majority of these research reported knowledge scores [40]. It is advised to create a consistent, reliable, and validated questionnaire to assess knowledge of drug safety during pregnancy in order to solve this methodological challenge. This strategy would improve the internal validity of related research and enable accurate comparisons between various studies. Possessing a post-graduation was substantially correlated with a higher knowledge score. This highlights how crucial lifelong learning is to preserving pharmaceutical knowledge and enhancing patient care. It is important to recognize the limitations of this study. First off, even though an attempt was made to get a representative sample of Pakistani community pharmacists, the precision of the results may have been affected by the sample size that was determined. Secondly, self-reported data collection

methods may introduce biases even though strict validation procedures were used for the survey questions. In addition, self-selection bias might have resulted from the recruitment strategy that used snowball sampling and social media. The cross-sectional approach makes it difficult to evaluate temporal changes because it confines the investigation to a single moment in time. Moreover, it's possible that the study's conclusions cannot be fully applied to areas with distinct medical procedures and infrastructures.

CONCLUSION

The study's findings showed that pharmacy professionals generally had a favorable opinion of herbal medicines despite their low expertise scores. Moreover, research has shown that many pharmacy workers use herbal remedies. Pregnancy-related pharmaceutical selections are affected by obstetricians, gynecologists, and community pharmacists. In conclusion, the study's findings demonstrated that community pharmacists adhere to safe practices and possess expertise in utilizing drugs safely while pregnant. These findings, however, indicated a need for more knowledge in many areas, chief among them being plant pharmacology. Furthermore, most CPs did not make a significant contribution, even though it was necessary to update their practices and level of expertise. Higher knowledge scores were linked to post-graduation. Consequently, the survey participants felt strongly that there was a need for seminars, sessions, and educational programs focused on herbal medicines. Implementing educational courses and initiatives can enhance knowledge and practice about the safety of drugs and herbs during pregnancy and other pharmacological themes. Furthermore, developing reliable and valid evaluation instruments to gauge knowledge and practice would support future research's internal validity and make comparing studies conducted in various contexts easier.

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