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Effectiveness of Structured Teaching Program on Staff Nurses' Knowledge of Obstetric Drugs in Maternity Wards

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Abstract: A midwife is described as a skilled and accountable member of the healthcare team who works in collaboration with women to deliver pivotal care, intervention, and support during pregnancy, labor, and the postpartum period. This care includes the management of healthy pregnancies and identification of potential complications while safeguarding both maternal and neonatal outcomes. Midwives will increasingly be required to have knowledge and apply medications in labor settings, to manipulate labor (uterotropics), augment contractions (uterotonics), or to intervene with preterm labor (tocolytics). An understanding of uterine physiology is important for comprehending how these drugs will function, and what developing practice will be required in the intervention of the medications. Midwives need to have a working understanding of drugs such as oxytocics, ergots, prostaglandins, and the various tocolytic options, providing the most efficacious option for maternal and fetal well-being during labor and delivery. Midwifery errors may be a result of erroneous usage due to distractions, rushing, errors in labeling of medications, miscommunication or fatigue; midwifery requires diligent practice requiring careful attention to ensure that error is prevented.

Keywords: Uterotonics, Eclampsia, Oxytocic, Tocolytics, Congenital

1. Introduction:

A midwife is a qualified professional who is responsible for the care of mother and baby through pregnancy, birth, and the postpartum period. They establish a close relationship with pregnant individuals through personalized care, health education, and support during their reproductive journey. Midwives practice within a range of competencies that include regular health checks, counseling, and assessments, developing birth plans, and providing reassurance in labor and birth. Midwives are also in charge of ongoing monitoring of the health of the mother and fetus, overseeing the process of labor, and managing any complications or emergencies if they arise **[1-7]**.

Midwives are competent to assist with pain management during labor, encourage natural birth, and only intervene when it is warranted for clinical reasons. They facilitate the administration of medications to establish, augment, or inhibit labor progress with medications such as uterotropics, uterotonics, and tocolytics **[8]**. Understanding uterine physiology and pharmacology assists them in making safe care decisions for the mother and their baby. Midwives effectively weigh risks and benefits of medications such as oxytocics

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and ergots, prostaglandins, and other tocolytics to safely advocate for these decisions in all processes **[9]**. Midwives also have a role in reducing medication errors, which mostly happen as a result of distraction, haste, dispensing mistakes, mislabeling, fatigue, and communication failure **[10]**. Adverse drug reactions and misuse are major contributory factors to death in developed and developing countries **[11]**.

The vast majority of women use medications in pregnancy, and greater than 50 percent of women are prescribed antiemetics, antacids, antihistamines, analgesics, antibiotics, diuretics, hypnotics and tranquilizers for recreational use. Even with widespread use, the evidence-based guidelines for prescribing in pregnancy are not strong, and research often excludes these populations. While the FDA continues to classify drugs for pregnancy, the different categories (class A, B, C, D, and X) will have expected congenital anomalies related to pharmaceutical exposures that only represent a minor fraction compared to congenital problems from other exposures. Examples of medications to treat chronic hypertension, gestational hypertension, or preeclampsia will include methyldopa, some beta-blockers, calcium channel blockers, and hydralazine, but often, clinical trials are not powered to adequately compare outcomes **[2]**.

The administration of analgesia during labor often entails the use of analgesic medications such as pethidine (meperidine/Demerol), which benefits from widespread utilization and allowance by midwives in numerous countries. Oxytocin is another essential medication used to both induce labor, moderate the rate of contractions and prevent postpartum haemorrhage. Patients must also be closely monitored following the administration of oxytocin, since excessive doses can cause serious adverse events, including but not limited to uterine rupture, fatal fetal distress, or water intoxication. In addition to standard medications, oxytocin rises naturally around labor and lactation due to physiologic bonding and breast milk production. These properties contribute to oxytocin being listed among the top essential medicines in the World Health Organization (WHO) guidelines. Additionally, oxytocin is also categorized among medications that involve a higher level of safeguard to mitigate emerging risks associated with potential adverse events **[12]**.

Diuretics may also be provided by midwives on occasion- typically in cases of pregnancy-induced hypertension and pathological edema, pulmonary distress conditions related to eclampsia, or in cases of acute severe anemia with heart failure. Midwives will engage in management of preterm labor pharmacologically to facilitate neonatal outcomes, especially to allow for the administration of glucocorticoids even if it is only a short delay. Stopping preterm labor follows a similar process of maintaining therapeutic levels of beta mimetics, inhibitors of prostaglandin, magnesium sulphate, calcium channel blockers, receptor antagonists, or nitric oxide donors and antibiotics. In terms of anticonvulsants, the good management of pregnancy should include the usage of the fewest effective doses, and with informed deliberation, since the risk of not managing seizures is often greater than the risks of most antiepileptics **[2]**. Ultimately, the role of the midwife encompasses vigilant preparation, risk minimization, and all-around support of women and their families during pregnancy, birth, and after. It is important for the midwife to shape practice to ensure the best available evidence and to meet women and families' individual needs **[12]**.

Rosing and Archbald **[13]** conducted a research project in New York City that examined community knowledge, acceptance, and use of misoprostol for self-managed abortion. In this

study, 610 women participated; 37% had heard of misoprostol for abortion, and 5% (29 out of 610) reported personal use. The latter percentage was notably higher than the reported use in a Brazilian population of women, 2.2% (133/6102) at prenatal care. Previous abortion experience, being foreign-born, and knowing someone who took misoprostol were associated outcomes of being misoprostol users. Most participants (73%) were enrolled in Medicaid, and only about half knew New York Medicaid covers abortion. They concluded that there was a lack of knowledge of family planning and the need to eliminate barriers to accessing services. The authors recommended additional research to better understand knowledge and unsupervised use of misoprostol in other US communities.

Onasoga et al. **[14]** conducted a study with eight midwives at a government hospital in Bayelsa State, Nigeria. Most participants (85%) were knowledgeable regarding the prevention and management of postpartum hemorrhage and employed strategies such as early cord clamping, emptying the bladder, placing women in a Trendelenburg position, uterine massage after placental delivery, and using uterotonics like oxytocin. Although 73.8% had heard about anti-shock garments, only 52.5% had used them during PPH management. There was no statistically significant link between midwives' qualifications or rank and their knowledge level. Refresher training was recommended to ensure health professionals maintain up-to-date skills for PPH prevention and management.

2. Objectives of the Study

- To examine whether there is a relationship between nurses' knowledge scores after the intervention and selected demographic factors such as age, experience, or education.
- To determine staff nurses' baseline knowledge of specific obstetric medications before instruction.
- To assess how effective a structured teaching session is in improving nurses' knowledge about the use of obstetric medications.
- To measure any changes in staff nurses' understanding of these drugs following an educational intervention.

3. Methodology

- **Approach:** Quantitative research methods were utilized.
- **Research Design:** The study followed a pre-experimental model with a single group undergoing both pre- and post-tests.
- **Setting:** The research was carried out in a selected maternity hospital in Jaipur.
- **Target Population:** The focus was on nurses working in the maternity unit of the hospital.
- **Sample Size:** Sixty staff nurses participated.
- **Sampling Technique:** Purposive sampling was used to select participants.
- **Data Collection Tools:** A two-part structured questionnaire was administered.
  - Part A collected demographic data.
  - Part B evaluated nurses' knowledge regarding self-care and use of selected obstetric drugs through a set of 40 multiple-choice items, grouped in three sections:
    - Section A: Knowledge of specific obstetric medications (13 items).
    - Section B: Usage patterns and administration (16 items).
    - Section C: Risks and side effects (11 items).

- Each correct answer was scored as one point, with a maximum possible total score of 40.

4. Results and Discussions

Table 1: Distribution of respondents according to Socio-demographic variables. **N = 60**

S. No.	Variable		Frequency	Percentage
1.	AGE	20-25 Yr.	16	26.66
		25-30 Yr.	16	26.66
		30-35 Yr.	14	23.33
		>35 Yr.	14	23.33
2.	GENDER	Female	41	68.33
		Male	19	31.66
3.	MARITAL STATUS	Married	39	65
		Un-married	21	35
4.	EDUCATION	G.N.M.	29	48.33
		P.BSc.N.	11	18.33
		B.Sc.N.	14	23.33
		Other	6	10
5.	EXPERIENCE	<1 Yr.	0	0
		1-2 Yr.	15	25
		2-3 Yr.	22	36.66
		>3 Yr.	23	38.33
6.	HOSPITAL TYPE	General	11	18.33
		Specialist	33	55
		Super-specialist	16	26.66

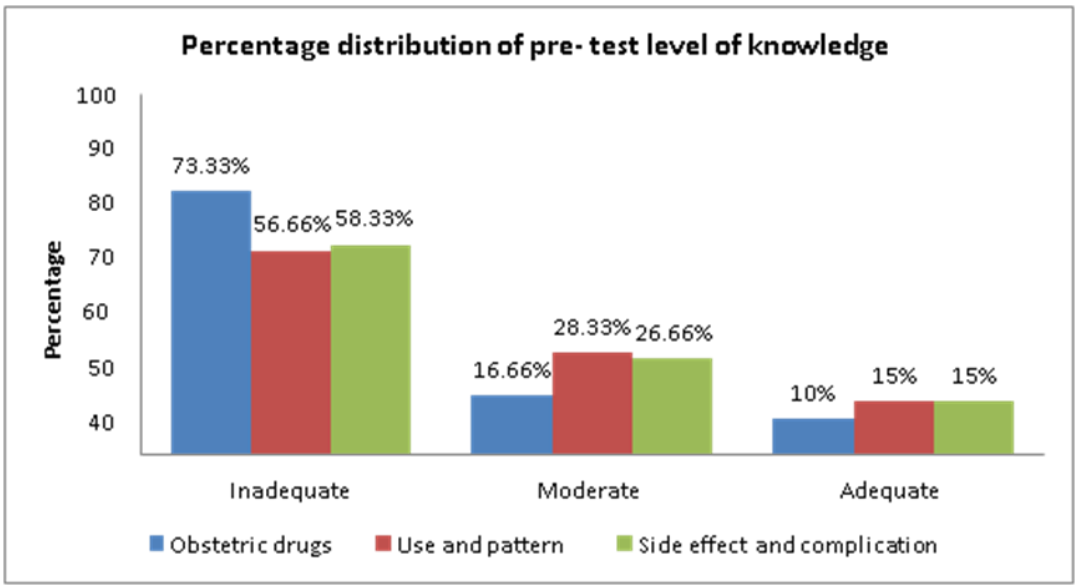
Table 1 shows distribution of demographic variables of Staff Nurse regarding selected obstetric drugs.

1. **Age:** The table depicts, the Staff nurses belongs to age 26.66% of the Staff nurses were in the age group of 20 -25 years of age, 26.66% were in 25-30 years of age, 23.33% were in the age group of 30-35yearrs and 23.33% were above 35 years.
2. **Gender:** Out of 60 staff nurses 41(68.33%) of the staff nurses were Female, 19(31.66%) were Male.
3. **Marital status:** Majority of staff nurses 39 (65%) were married and 21(35%) were unmarried.
4. **Education Qualification:** Out of 60 staff Nurses 29(48.33%) of the staff Nurses were GNM in education, 14(23.33%) were B.Sc. Nursing, 11(18.33%) were Post Basic B.Sc. and 6(10%) had additional qualification.
5. **Working experience:** All out of 60 staff Nurses 15(25%) had 1 to 2 year working experience, 22(36.66%) had 2 to 3 years working experience and 23(38.33%) had more than 3year working experience there were no respondent below 1 year experience.
6. **Working Area:** Out of 60 staff Nurses 11(18.33%) were in general hospital, 33 (55%) were in specialist hospital, 16 (26.66%) super-specialist hospitals were working in maternity ward in maternity hospital Jaipur.

Table 2: Frequency and percentage distribution of pre-test level of knowledge in different aspects of selected obstetric drugs. **N= 60**

Aspect of selected obstetric drugs	Max Score	Inadequate		Moderate		Adequate	
		F	%	F	%	F	%
Obstetric drugs	13	44	73.33	10	16.66	6	10
Use and pattern	16	34	56.66	17	28.33	9	15
Side effect and complication	11	35	58.33	16	26.66	9	15

Table 2 and Graph 1 depicts frequency and percentage distribution of pre- test level of knowledge in different aspects of selected obstetric drugs, gives the information out of the total maximum score i.e., 60, It is clear from the data that, 73.33% (44) had inadequate knowledge, 16.66% (10) has moderate knowledge and remaining 10% (6) has adequate knowledge regarding knowledge of obstetric drugs. Just below 56.66% (34) have inadequate knowledge, 28.33% (17) have moderate knowledge, and 15% (9) have adequate knowledge regarding the use and pattern of obstetric drugs. It was also observed that 58.33% (35) had inadequate knowledge, 26.66% (16) had moderate knowledge, and 15% (9) had adequate knowledge regarding the side effects and complications of obstetric drugs. Hence, assumption 1 is accepted, i.e., staff nurses possess some knowledge regarding selected obstetric drugs.

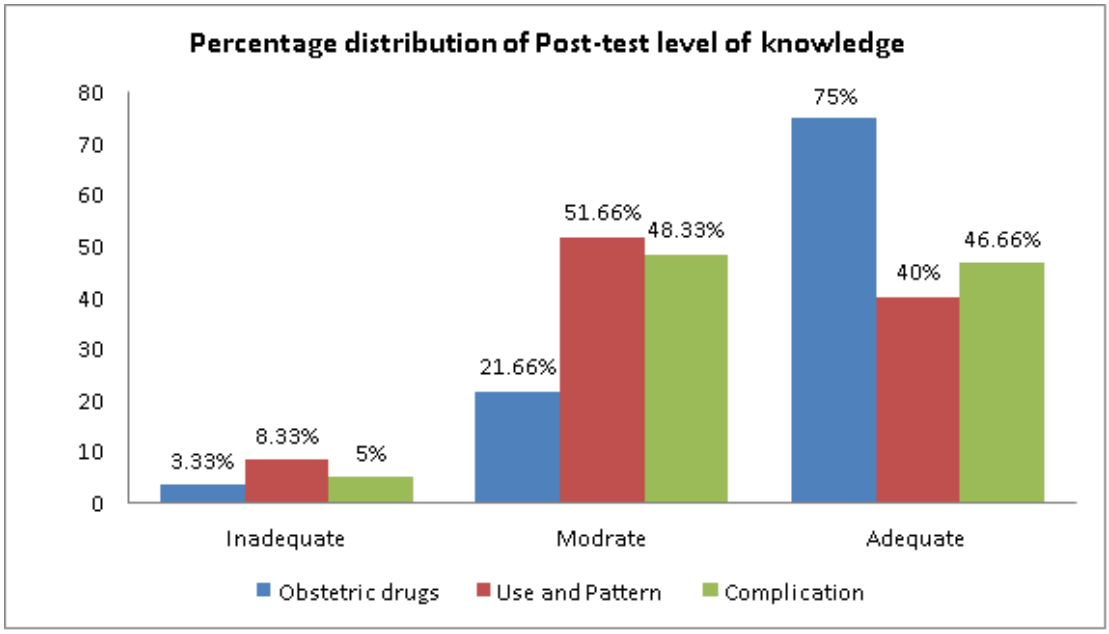


Graph 1: Percentage distribution of pre-test level of knowledge in different aspects of selected obstetric drugs.

Table 3: Frequency and percentage distribution of post-test level of knowledge in different aspects of selected obstetric drugs. **N = 60**

Aspect of selected obstetric drugs	Max Score	Inadequate		Moderate		Adequate	
		F	%	F	%	F	%
Obstetric drugs	13	2	3.33	13	21.66	45	75
Use and pattern	16	5	8.33	31	51.66	24	40
Side effect and complication	11	3	5	29	48.33	28	46.66

Table 3 and Graph 2 depict the percentage and frequency distribution of post-test level of knowledge in different aspects of selected obstetric drugs among Staff Nurses. Gives the information out of the total maximum score, i.e., 60. It is clear from the data that 3.33% (2) have an inadequate knowledge level, 21.66% (13) have a moderate knowledge level, and the remaining 75% (45) have an adequate knowledge level regarding knowledge of obstetric drugs. 8.33% (5) have an inadequate knowledge level, 51.66% (31) have a moderate knowledge level, and 40% (24) have an adequate knowledge level regarding the use and pattern of selected obstetric drugs. 5% (3) have an inadequate knowledge level, 48.33% (29) moderate knowledge level, and 46.66% (28) has adequate knowledge level regarding side effect and complication of selected obstetric drugs. Hence, assumption 2 was accepted, i.e., the Staff Nurse will be free to answer the question.



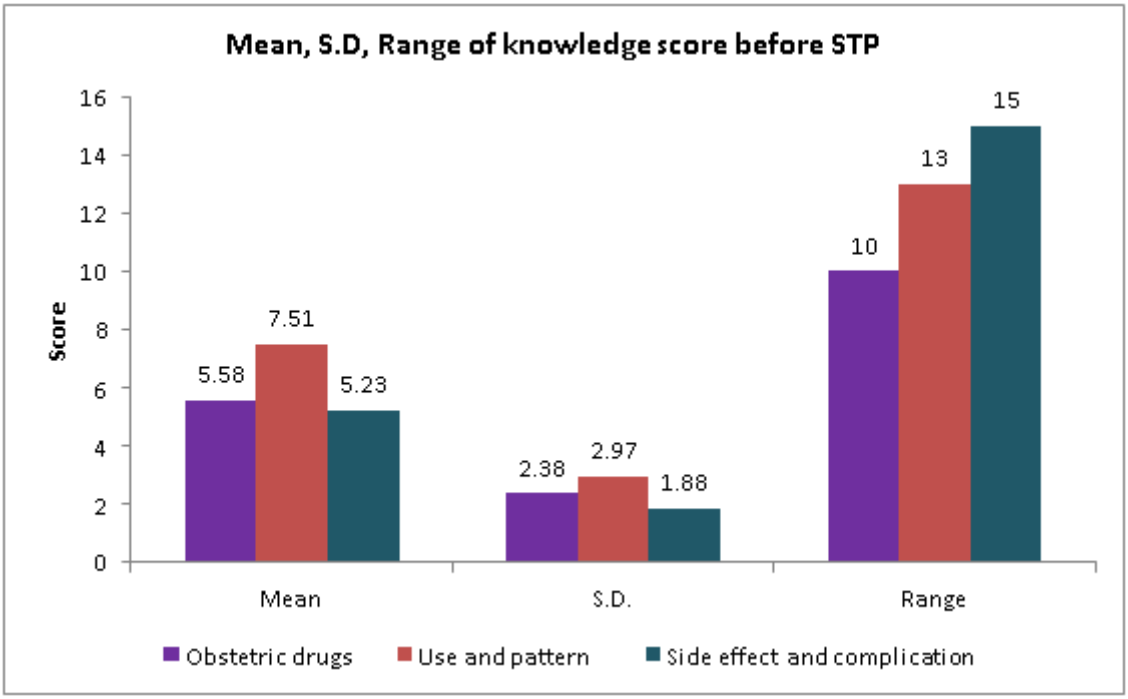
Graph 2: Percentage distribution of post-test level of knowledge in different aspects of selected obstetric drugs

Table 4: Mean, S.D., range, mean score percentage of knowledge score before STP. **N=60**

S. No.	Aspect of Knowledge	Max score	Mean	SD	Range	Mean %
1	Obstetric drugs	13	5.58	2.38	10	42.92
2	Use and pattern	16	7.51	2.97	13	46.93
3	Side effect and complication	11	5.23	1.88	15	47.54
4	Overall	40	18.33	6.63	25	45.82

Table 4 and Graph 3 present descriptive statistics for the pre-intervention knowledge scores of staff nurses regarding selected obstetric drugs. Among the 60 participants, the pre-test results indicate average knowledge levels in specific content areas. For knowledge related to selected obstetric medications, the mean score was 45.82%. In the domain of general knowledge of obstetric drugs, the mean percentage was reported as 42.92%. Assessment of practical use and administration patterns of these drugs yielded a mean score of 46.93%,

while the area concerning associated risks and adverse effects recorded a mean percentage of 47.54%. Overall, the combined pre-test mean score stood at 45.82%, with a standard deviation of 6.63, demonstrating the variability in knowledge among the staff nurses prior to the structured teaching program.

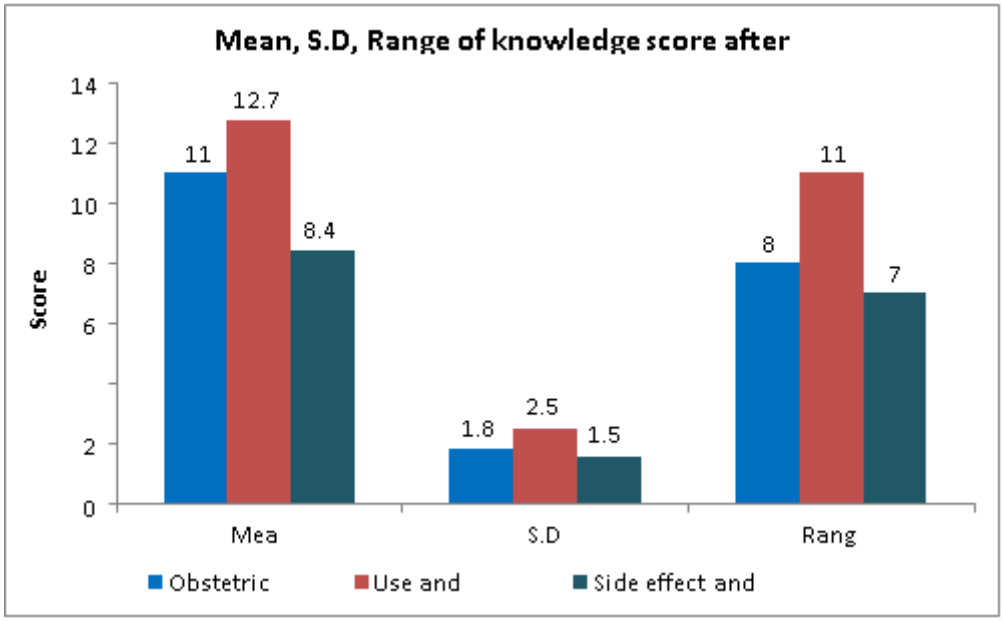


Graph 3: Mean, S.D., Range, of knowledge score before STP

Table 5: Mean, S.D., range, mean score percentage of knowledge score after STP. **N=60**

S. No.	Aspect of knowledge	Maximum possible score	Mean	Standard deviation	Range	Mean %
1.	Obstetric drugs	13	11.0	1.83	8	84.61
2.	Use and pattern	16	12.73	2.51	11	79.56
3.	Side effect and complication	11	8.41	1.57	7	76.45
4.	Over all	40	32.15	4.99	20	80.37

Table 5 and Graph 4 provide a summary of the descriptive statistics for post-intervention knowledge scores among staff nurses regarding selected obstetric drugs. Following the structured teaching program, nurses achieved an average knowledge score of 84.61% for general awareness of specified obstetric medications. The mean score for understanding the use and administration patterns of these drugs was 79.56%. Additionally, knowledge concerning side effects and potential complications yielded a mean score of 76.45%. Overall, the post-test results revealed an average knowledge score of 80.37% with a standard deviation of 4.99, reflecting the improvement in nurses' understanding after the educational intervention.



Graph 4: Mean, S.D., Range, of knowledge sore after STP

Table 6: Significance difference between pre-test and post-test knowledge scores. **N-60**

S. No.	Aspect of knowledge	Max Score	Mean	SD	SD Error	Mean difference	df	"t" value	Tabulated value
1	Pre-test	40	18.33	6.63	0.86	14.16	59	28.28	2.00
2	Post-test	40	32.15	4.99	0.64				

Table 6 depicts that significance difference between pre-test and post-test knowledge scores Mean & S.D of Pre-test and Post-test knowledge of Staff nurse regarding selected Obstetric drugs**.**, i.e., in Pre-test mean ±SD 18.33 ±6.63 and in Post-test 32.15 ±4.99 and their mean difference is 14.16 and the t-ratio was statistically significant as the obtained value 28.28 is higher than the tabulated value 2.00 required for t-ratio to be significant at .05 level of significance.

5. Conclusion:

The statistical outcomes clearly demonstrate that the Structured Teaching Programme significantly improved the staff nurses' knowledge across all assessed areas related to selected obstetric drugs, as shown by the notably higher percentages in post- test scores compared to pre-test results. Furthermore, analysis revealed no statistically significant correlation between post- test knowledge scores and factors such as gender, marital status, or hospital type.

Recommendations

Based on the outcomes of this research, the following future directions are suggested:

- This type of investigation could be carried out with a larger participant pool to enhance the generalizability of the results.
- A comparative analysis could be arranged to examine similarities and differences in knowledge between health workers in rural versus urban environments.
- Replicating the study in the format of an awareness initiative may help further community

engagement and education.

- Alternative educational approaches or methods could be evaluated for their relative effectiveness in improving obstetric drug knowledge.
- Additionally, conducting the study with the inclusion of a control group would provide robust evidence concerning the intervention's true impact.

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