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EFFECT OF EDUCATIONAL TRAINING SESSION ON OBSTETRIC DANGER SIGNS IDENTIFICATION KNOWLEDGE AMONG PREGNANT WOMEN IN RURAL PART OF DISTRICT NOWSHERA

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Abstract

Pregnancy and childbirth are critical phases in a woman's life that can be accompanied by multiple complications such as headache, epigastric pain, blurred vision, severe abdominal pain, convulsions, preterm labor, high-grade fever, and rupture of membranes. If these obstetric danger signs go unrecognized and untreated, they can lead to increased maternal morbidity and mortality. Awareness and understanding of these signs are crucial for timely management and seeking of appropriate care.

Aim: *This study aimed to assess the effect of an educational training session on the knowledge of pregnant women regarding the identification of obstetric danger signs in the rural part of District Nowshera, Khyber Pakhtunkhwa, Pakistan.*

Methods: *A quasi-experimental study was conducted at the Rural Health Center, Kheshgi Payan, District Nowshera. A total of 71 pregnant women (gestation >8 weeks) were recruited using a convenience sampling technique. Educational interventions were administered over a period of three weeks, and post-intervention data were collected after one week. A structured questionnaire was used to evaluate knowledge before and after the intervention.*

Results: *There was a statistically significant improvement in participants' knowledge following the educational sessions. The mean knowledge score increased from 9.23 (pre-intervention) to 13.90 (post-intervention), with a p-value of 0.000, indicating a strong positive effect of the intervention.*

Conclusion: *Educational training significantly enhanced the pregnant women's knowledge of obstetric danger signs. Incorporating such educational sessions into routine antenatal care is recommended to reduce maternal risks and improve health outcomes*

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INTRODUCTION

Pregnancy can be described as the stage extending from the moment of fertilization to the birth of the child; pregnancy is a delicate time for the woman and the fetal child, pregnant women's should therefore be accorded the right to proper health care and prenatal health care.[1] Pregnancy is associated with a variety of complications which may lead to morbidity and mortality.[2] Pregnancy related mortality is defined as a death of a woman while she is pregnant or within 42 days of termination of pregnancy from any cause associated with pregnancy or its treatment.[3]

Complications arising from pregnancy and childbirth stand as prominent contributors to maternal mortality on a global scale. [4] United Nations (UN) estimates that around 303,000 women died while giving birth in 2015 and of these, 99% happened in low-resource settings.[5] Sub-Saharan Africa and South Asia are most affected with 66% cent and 23% of total maternal deaths in the world respectively.[6] World Health Organization (WHO) estimates, approximately 295,000 women die every year during or after pregnancy due to pregnancy related complications. [7] Most of these cases (66%) were reported in Sub-Saharan Africa due to variety of issues such as delayed care, difficulty in approaching to the health care facilities and unavailability of appropriate care.[8]

Maternal Mortality is the main problem of concern worldwide, but developing countries like Pakistan is still struggling to address this issue.[9] In a number of Low and Middle Income Countries (LMICs), maternal mortality continues to remain high, of which, a good number of women lose their lives to complications related to delays in seeking appropriate obstetric care. [10,11] Including the list of developing countries, the MMR in Pakistan reported very high (186 per 100000 live births), which make a significant rise of 32% form 2017 where the MMR was 140 per 100000. [12]

Apart from maternal mortality, millions of women suffer severe morbidity during pregnancy or childbirth, as life-threatening causes; including severe postpartum hemorrhage, infection, and eclampsia remain a genuine threat for women's health. Relevant approaches are essential to ensure pregnant women have the right knowledge on obstetric danger signs with an aim of reducing high rates of maternal mortality and morbidity. [13,14]

There are also knowledge questions pertaining to one's ability to recognize obstetric danger signs as part of prenatal care. Obstetric danger signs refer to signal alert and adverse outcomes during pregnancy, labour/birth or within the first 48 hours of birth that could culminate into severe maternal morbidity/mortality if not well addressed.[15] Some obstetric danger signs include severe abdominal pains, vomiting/bloody vaginal discharge, difficult and prolonged labour and fever during pregnancy.[16] It is important to recognize such danger signs in order to help pregnant women access adequate and proper intervention during their pregnancy.[17]

Nurses serve as educators and care givers for pregnant women especially among the poor settings. Nurses are often selected by their communities, given short term training, who offers simple health care services in the communities. With reference to the obstetric danger signs, the nurses may be empowered to provide education on the warning signs that may require the attention of a skilled birth attendant as well as teach the expectant mothers signal appreciation of what they are taught.[18,19]

The study aimed to evaluate the effectiveness of interventions regarding knowledge of pregnant women towards identification of danger signs during pregnancy. Maternal mortality and morbidity rates remain a significant concern, particularly in low-resource settings such as rural areas, where access to healthcare resources is often limited. As primary healthcare providers, nurses play a pivotal role in maternal care, and understanding the effectiveness of educational interventions is crucial for refining and optimizing their role in promoting maternal health.

Methodology:

A quasi-experimental study design was employed to assess the effect of an educational training session on the knowledge of obstetric danger signs among pregnant women. The study was conducted over a period of six months at the Rural Health Center (RHC) in Kheshgi Payan, District Nowshera, Khyber Pakhtunkhwa. Ethical approval for the study was obtained from the Ethical Review Board of Khyber Medical University, Peshawar.

The sample size was determined using the G*Power sample size calculator, with a confidence interval of

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95%, a margin of error of 5%, and an effect size of 0.3. [20] Based on these parameters, a total of 71 participants were required. A convenience sampling technique was used to recruit pregnant women who met the inclusion criteria. Participants were eligible if they had a gestational age of at least 8 weeks, were primigravida, and aged between 18 and 45 years.

Data Collection Procedure

Data were collected using a pre-validated and reliable knowledge questionnaire. The tool categorized knowledge levels into three categories: Poor Knowledge (score < 50%), Average Knowledge (score 50%–75%), and Good Knowledge (score > 75%). The internal consistency of the tool was verified with a Cronbach's Alpha of 0.8.

Educational interventions were delivered through a combination of lecture-based presentations and small group discussions, lasting approximately 2–3 hours. All educational sessions were conducted in the hospital's committee room. The training covered key obstetric danger signs including severe vaginal bleeding, prolonged labor, convulsions, severe headache, visual disturbances, decreased fetal movement, high blood pressure, difficulty in breathing, swelling of the face and hands, fever, and signs of infection.

Data Analysis Procedure

Data were entered and analyzed using SPSS version 26. Descriptive statistics such as means, standard deviations, and frequencies were calculated. Pre- and post-intervention knowledge scores were compared to determine the effectiveness of the educational intervention. Statistical tests were used to assess the significance of the observed differences, with a p-value of less than 0.05 considered statistically significant.

Results and Analysis

Socio-Demographic profile of the participants

The majority of participants were over 35 years old (43.7%) and had gestational ages less than 20 weeks (40.8%). Most belonged to families earning over 30,000 PKR monthly (60.6%) and lived in nuclear families (60.6%). A significant portion were housewives (56.3%), and 25.4% were illiterate, with only 19.7% having college-level education or above. Most participants (95.8%) were Muslim (Table 1).

Table 1: Socio-Demographic profile of the participants, n=71

		f	%
Age of the Participants			
	Less than 25 Years	15	21.1
	25 to 35 Years	25	35.2
	More than 35 Years	31	43.7
	Total	71	100.0
Gestation age of the Participants			
	Less than 20 Weeks	29	40.8
	20 to 30 Weeks	19	26.8
	More than 30 Weeks	23	32.4
	Total	71	100.0
Monthly Income of the Family			
	Less than 15000	7	9.9
	15000 to 30000	21	29.6
	More than 30000	43	60.6
	Total	71	100.0
Number of Pregnancy			
	1	11	15.5

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	2	11	15.5
	3	14	19.7
	4	15	21.1
	5	11	15.5
	6	9	12.7
	Total	71	100.0
Number of Children			
	0	10	14.1
	1	12	16.9
	2	14	19.7
	3	13	18.3
	4	10	14.1
	5	12	16.9
	Total	71	100.0
Religion of the Participants			
	Muslim	68	95.8
	Christian	3	4.2
	Total	71	100.0
Occupation of the participants			
	House Wife	40	56.3
	Employee	31	43.7
	Total	71	100.0
Education status of the participants			
	Illiterate	18	25.4
	Primary	21	29.6
	Secondary	18	25.4
	College and above	14	19.7
	Total	71	100.0
Family Type of the participants			
	Nuclear Family	43	60.6
	Joint Family	28	39.4
	Total	71	100.0

Pre-Interventional Knowledge:

The participants overall pre-interventional knowledge regarding obstacle danger signs was assessed. More than half (54%) of the participants were reported average knowledge, 38% of the participants were reported poor while only 8% of the participants were reported good knowledge (Figure 1).

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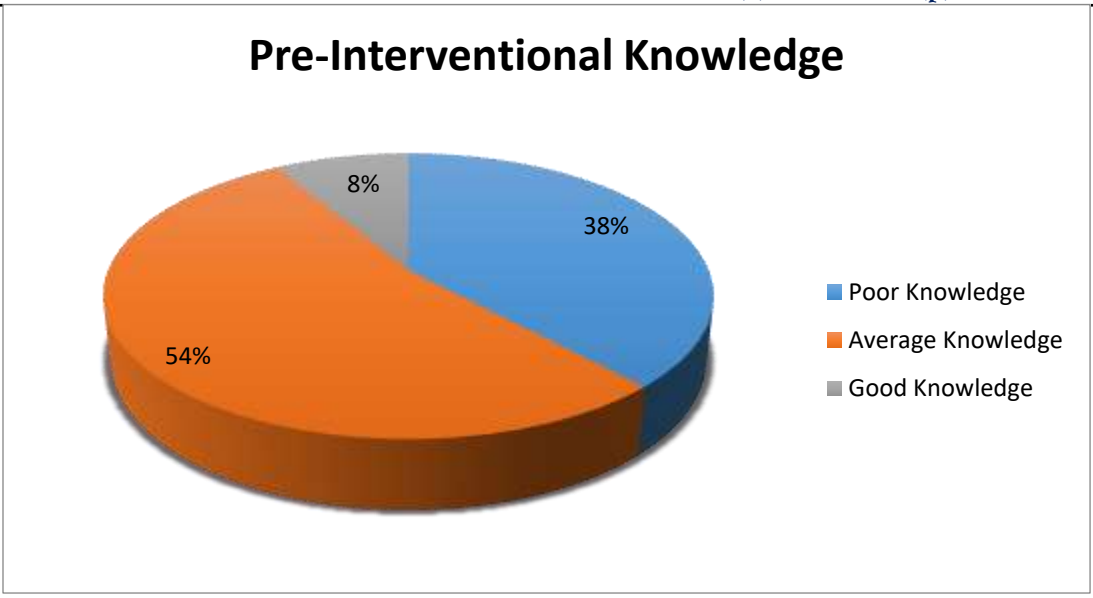

Figure 1: Pie-Chart depicting overall pre-interventional knowledge

Overall Post-Interventional Knowledge:
Overall post-interventional knowledge was assessed after interventions. The majority 83% of the participants were reported good knowledge while 17% of the participants were reported average knowledge. There was significant enhancement in the knowledge after interventions (Figure 2).

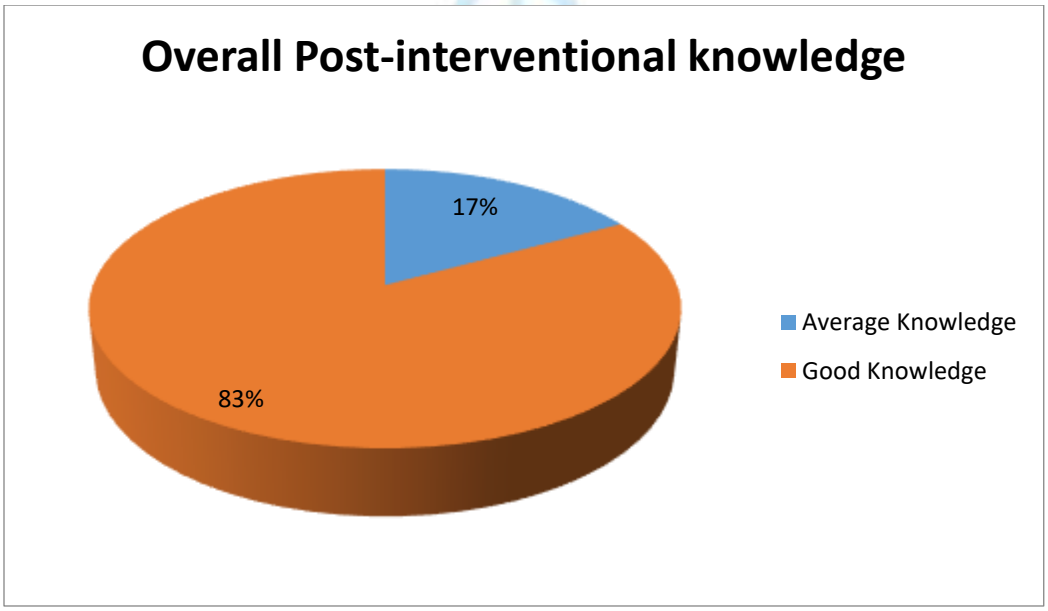

Figure 2: Pie-Chart depicting overall post interventional knowledge

Effectiveness of interventions:
The pre interventional mean score of participant's knowledge regarding obstacle danger signs was 9.23 which enhanced to 13.90 after interventions. There was significant (P=0.000) improvements in the knowledge of the mothers regarding obstacle danger signs after educational interventions (Table 2).

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Table 2: Effectiveness of educational interventions, pre and post mean score regarding obstacle danger signs

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Interventional Score	9.23	71	2.263	.269
	Post-Interventional Score	13.90	71	1.569	.186

Paired Samples Test

		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	Pre-Interventional Score - Post-Interventional Score	-4.67	2.529	.300	-5.275	-4.078	-15.58	70	.000

Discussion:

The study investigated the knowledge of mothers regarding obstetric danger signs. The results revealed that more than half (54%) of the mothers had average knowledge, 38% demonstrated poor knowledge, and only 8% had good knowledge. These findings highlight significant gaps in awareness that could adversely impact maternal and neonatal health outcomes.

The current work was done in line with other studies done in the low and middle income countries (LMICS). Research study documented that only 52% of women in Ethiopia has average knowledge of obstetric danger signs, a proportion who demonstrated poor knowledge. [21] Likewise, another study discovered that over forty percent of these women had limited knowledge in the three main obstetric complication warning signs. [22]

In the current study for most of the mothers in this study, they had average levels of knowledge in obstetric danger signs including severe bleeding, convulsions, and prolonged labor. This has a certain degree of awareness but the depth of knowledge is inadequate to act on emergency decisions on short notice. Similarly, research studies have indicated that despite knowing a few danger signs, the knowledge is often partial hence restricting available appropriate health seeking behaviors. [23,24]

This level of knowledge may be correlated to their times of availing themselves in the antenatal (ANC) services where bits of health education are offered. In their study of the medical practices in Ghana, research study found that variability in the quality of counseling during ANC sessions defines how much information the mothers remember. [25]

In the current study 38% of the mothers had poor knowledge was rather worrying. Supporting the findings of the current study, the findings of the study reported that 59.5% of the mothers had poor knowledge regarding danger signs during pregnancy. [26] In contrast a study carried out in Ethiopia reported that 77.5% of the mothers had knowledge regarding obstacle danger signs. [27]

A lack of knowledge of obstetric danger signs may also delay timely identification of complications, seeking care, or reaching health care facilities potentially fatal consequences of maternal mortality. [28] The similar conclusions were made study which stated that poor knowledge was statistically significantly connected with socioeconomic obstacles, cultural perceptions, and restricted availability of healthcare service. [29]

In the current study, only 8% of the participants were reported good knowledge regarding obstetric danger signs. In contrast another study reported totally different findings and the findings of the study revealed good knowledge among the mothers regarding danger obstetric signs. [30] Similarly, another study reproofed different finding than the current study and the study reported they the respondents were relatively more knowledgeable about danger signs during pregnancy and delivery than the postpartum period. Many of them took the view that

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some form of antenatal care is able to help in minimizing complications. [31] Another study showed that in the Cameron population only 73.3% of people had sufficient level of knowledge. This group usually comprises more educated women, better health facility access and multiple antenatal care clinic attendances where they are counseled. [32] Large proportions of mothers demonstrate poor knowledge in a number of areas these results suggest that health education interventions are either weak or poorly delivered in relation to the majority of the population. Literature stressed that the health education during ANC visits has to be structured and the knowledge improvements have to be reinforced through community activities. [33,34]

The current study revealed a significant improvement in the knowledge of mothers regarding obstetric danger signs after educational interventions. The pre-interventional mean knowledge score of 9.23 increased to 13.90 post-intervention, with a highly significant p-value (P = 0.000). This demonstrates the effectiveness of educational programs in enhancing maternal awareness of critical obstetric danger signs. The noted improvement in the aspect of knowledge conforms to several researched studies that highlights structured health education for mothers. Study showed that through implementation of educational interventions within the framed objectives the obstetric danger signs were enhanced by up to 63%. [35] In the same regard, another study also showed that interventions through the ANC visits considerably increased identification of other danger signs including severe hemorrhage, eclampsia, prolonged labor and high fever. [36] In this study, the enhancement of knowledge level after the intervention is consistent with a study in which the educational programs ensure the enhanced of knowledge among the mothers. [37] These outcomes support the necessity of the educational programs for enhancing retention and usage of the obtained knowledge in the sphere of health. In the similar context an interventional study in Ethiopia also provided aligned results and reported that ANC guidelines help the mothers to enhance the knowledge regarding obstacle danger signs. The study also showed that counseling women on obstetric danger signs during their ANC session, depended with the level of availability of ANC guidelines (range 61-70%), and the level of provider training on danger signs (ranged 62-68%). [38] Maternal knowledge thus has a direct relation to maternal and neonatal mortality rates cutting across the millennial development goal of reducing maternal mortality and improving maternal, newborn and child health. Failure to perceive danger signs, make a choice to consult, and obtain needed care are leading causes of adverse events. [39-41] The relatively large increase in knowledge demonstrated in this study suggests a possibility of the first delay: recognition of danger signs being lowered.

Conclusion

The current study therefore demonstrates the extent to which educational interventions can contribute in enhancing maternal knowledge about obstetric danger signs. The research showed that the pre-interventional mean knowledge score was 9.23. The mean post-intervention knowledge score was observed to be 13.90 and the change observed was statistically significant (P = 0.000). All participants except three showed below average or poor knowledge of appropriate information that significantly increased after structured training.

This study confirms the need to incorporate educational interventions within regular ANC services in particular LMIC contexts. They also supported community organization activities and the creation of culturally comprehensible and easily available information for patients. Finally, all these interventions can go a long way in helping try and meet global maternal health goals as per trying to eliminate preventable maternal and neonatal mortalities. The results can be therefore used as a good basis for policy-makers and other health managers to ensure that increasing the education level of mothers ought to be central for enhancing MCH outcomes.

Recommendations

1. **Integrate Structured Health Education into ANC Visits**
   Antenatal care (ANC) services should incorporate structured health education sessions focusing on obstetric danger signs to ensure every pregnant woman is equipped with lifesaving knowledge.

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2. **Use Culturally Appropriate IEC Materials**
   Develop and disseminate simple, culturally sensitive educational materials (e.g., pictorial leaflets, posters, and audio aids in local language) to reinforce key messages on danger signs during pregnancy.

3. **Enhance the Capacity of Frontline Health Workers**
   Provide regular training and refreshers for nurses, midwives, and LHWs to effectively deliver educational interventions and address maternal health queries confidently.

4. **Community Mobilization and Male Involvement**
   Conduct outreach programs and involve community elders and husbands to raise awareness and support for recognizing and responding to obstetric complications early.

5. **Policy Support for Routine Maternal Health Education**
   Advocate for provincial health policies to mandate routine maternal education as part of ANC services, especially in rural health facilities, to reduce maternal morbidity and mortality.

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