

EFFECTS OF NURSE LED GROUP BASED EDUCATION ON KNOWLEDGE AND UTILIZATION OF ANTENATAL CARE SERVICES AMONG PREGNANT WOMEN

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Abstract

Maternal health encompasses the well-being of women during their reproductive years, spanning from pre-pregnancy to pregnancy and the postpartum period while caring for their young children. Aim of the study is to determine the effects of nurse led group based education on knowledge of Antenatal care services among pregnant women. A quasi-experimental study with a pre-post design was conducted to evaluate the impact of a nurse-led group-based educational intervention on antenatal care knowledge and service utilization among pregnant women in Dhaka Nizam Pura, Tehsil Ferozwala, District Sheikhupura. The study included 58 women aged 20-45, selected through purposive sampling. Data were collected via self-reported questionnaires in Urdu, focusing on demographic information and antenatal care knowledge. The nine-month study involved pre-assessment, a five-month intervention, and a post-assessment. SPSS Version 24 was used to analyze the data, comparing pre- and post-intervention results to assess effectiveness. The study result showed that majority of participants were aged 25-34 years (62.1%), with a large proportion being housewives (44.8%) and from poor households (56.9%). The majority (70.7%) were primiparous, and 79.3% had low-risk pregnancies. Normality tests indicated non-normal data distribution. Knowledge scores significantly improved post-intervention, rising from 8.31 ± 2.76 to 16.40 ± 4.20 ($p < 0.001$). After the intervention, 58.8% achieved good knowledge compared to 54.2% pre-intervention. Age was significantly associated with knowledge improvement ($p = 0.045$), while pregnancy risk status also showed a significant impact ($p = 0.006$), with low-risk participants achieving better outcomes. The study concluded that nurse led education intervention significantly improve knowledge of pregnant women.

1. Introduction

Maternal health encompasses the well-being of women during their reproductive years, spanning from pre-pregnancy to pregnancy and the postpartum period while caring for their young children. Maternal health care aims to reduce rates of morbidity and death among women by offering comprehensive healthcare services to them before to, during, and after pregnancy, as well as throughout the time between pregnancies [1].

Pregnancy-related health issues can have detrimental effects on the mother, her unborn child, her family, and her community [2]. Maternal health and healthcare play crucial roles in determining the survival of newborns and the overall health outcomes of children. Consequently, enhancing the health of mother and child is a significant objective in global public health [3].

Antenatal care (ANC) is a critical healthcare service that plays a significant role in reducing maternal and neonatal mortality. According to the World Health Organization (WHO), for pregnant women without perinatal complications, sufficient ANC involves a minimum of four healthcare visits during pregnancy. However, the recent 2016 WHO ANC model supersedes the four-visit approach and now recommends a higher standard of care, with at least eight healthcare provider contacts scheduled at specific intervals during pregnancy (up to

12 weeks, at 20 and 26 weeks of gestation, and at 30, 34, 36, 38, and 40 weeks) [4].

Antenatal care is ongoing medical attention that starts prior to conception and ends with the baby's delivery and the postpartum phase. The primary goal of prenatal care is to deliver a single, healthy baby at term, which is 38 to 42 weeks' gestation and weighs at least 2.5 kg. No complications for the mother at the time of delivery [5].

Antenatal care (ANC) holds significant importance in monitoring the progress of a pregnancy and detecting any potential complications that may arise during both pregnancy and childbirth. The initial ANC visit at a healthcare facility is particularly crucial as it allows health providers to assess any risks to both the mother and the unborn child. It is essential for healthcare providers to possess the necessary skills to effectively attend to pregnant women during ANC visits and to educate them about the significance of seeking ANC early on. ANC services encompass comprehensive health supervision for pregnant women, and enhance the mother and child health [6].

It's crucial that a woman visits a medical facility as soon as she thinks she could be pregnant or notices her first missing period in order to get further assistance and confirmation of her pregnancy [7]. Early detection and treatment of issues are

facilitated by a visit to the medical facility. Consequently, it's important to start ANC care at the appropriate moment [8]. Pakistan is among the South Asian nations with the highest rate of maternal mortality. Despite having signed Agenda 2030, the nation is still far behind in accomplishing the Sustainable Development Goals (SDGs). In the nation's rural areas, the maternal mortality rates are significantly higher. Maternal mortality and morbidity rates in Pakistan are high due to a number of important contributing factors, including socioeconomic factors, poverty, malnutrition, lack of access to health care, and high rates of violence against women in rural regions [9]. Therefore the aim of study is to determine the effects of nurse led group based education on knowledge and utilizationof Antenatal care services among pregnant women.

2. Material and Methods

A quasi-experimental study with a single pre-post group design was conducted to assess the effect of a nurse-led group-based educational intervention on antenatal care knowledge and service utilization among pregnant women in the Dhaka Nizam Pura community of Tehsil Ferozwala, District Sheikhpura, Union Council 30. The study targeted pregnant women aged 20-45 who attended antenatal care services, utilizing a purposive sampling technique to recruit 58 participants based on specific inclusion criteria. The data collection process involved administering self-reported questionnaires in Urdu, assessing demographic information, knowledge of antenatal care. The study was carried out over nine months, divided into pre-assessment, implementation, and post-assessment phases. During the pre-assessment phase, written informed consent was obtained, and knowledge and utilization were measured using validated tools. The educational intervention spanned five months, using diverse teaching methods, and was followed by a one-month post-assessment to evaluate changes in knowledge and service utilization. Data were analyzed using SPSS Version 24, with descriptive statistics and comparative analyses applied to assess the intervention's effectiveness.

Demographic Characteristics of participants

Table 4.1: Demographic characteristic of participants

Variable	Categories	Frequency	Percentage
Age	<25 Year	14	24.1%
	25-34 year	36	62.1%
	35-45 years	8	13.8%
Education Level	Primary or below	18	31.0%
	Secondary	26	44.8%
	High	7	12.1%
	Above High	7	12.1%
Occupation	Housewife	26	44.8%
	Government Job	13	22.4%
	Private Job	19	32.8%
Household Wealth Index	Poor	33	56.9%
	Middle	19	32.8%
	Rich	6	10.3%
Parity	Primiparous	41	70.7%
	Multiparous	17	29.3%
Pregnancy	Low Risk	46	79.3%
	High Risk	12	20.7%

Table 4.1 provides an overview of the demographic characteristics of nurses. In terms of age, the majority (62.1%) are in the 25-34 year range, followed by 24.1% under 25 years and 13.8% aged 35-45 years. Regarding education level, a significant portion has completed secondary education (44.8%), while 31.0% have primary education or below, and only 12.1% have completed high school or higher. When examining occupation, most participants are housewives (44.8%), with others employed in private jobs (32.8%) or government positions (22.4%). The household wealth index indicates that over half (56.9%) are classified as poor, while 32.8% fall into the middle category and only 10.3% are considered rich. In terms of parity, a substantial majority are Primiparous (70.7%), indicating they are having their first child, compared to 29.3% who are multiparous, having had more than one child. Finally, the data shows that most participants are classified as low risk during their pregnancy (79.3%), while a smaller percentage (20.7%) are considered high risk.

4.2. Comparison of Knowledge and Practice Score of participants pre and post intervention

variables	Pre-Education	Post-Education	p-value
Knowledge Score	8.31±2.76	16.40±4.20	<0.001*
Practice Score	9.29±10.05	27.43±4.02	<0.001*

Wilcoxon Signed Ranks Test

Table 4.2 compares the knowledge and practice scores of participants before and after the educational intervention. The mean knowledge score increased significantly from 8.31±2.76 before the intervention to 16.40±4.20 after the intervention, with a p-value of <0.001, indicating a statistically significant improvement. Similarly, the practice score showed a substantial increase from 9.29±10.05 pre-education to 27.43±4.02 post-education, also with a p-value of <0.001, further highlighting the significant impact of the educational intervention on participants' practice performance.

4.3. Comparison of Pre and Post Knowledge

Post Knowledge	Pre-knowledge		Total	P-Value
	Poor Knowledge	Average Knowledge		
Poor Knowledge	0 (0.00%)	3 (12.50%)	3 (5.20%)	0.061
Average Knowledge	14 (41.20%)	8 (33.30%)	22 (37.90%)	
Good Knowledge	20 (58.80%)	13 (54.20%)	33 (56.90%)	
Total	34 (58.62%)	24 (41.38%)	58 (100.00%)	

Likelihood Ratio 5.580

Table 3 presents comparison of pre- and post-knowledge participants' knowledge following the intervention. Prior to the intervention, 54.2% of participants had good knowledge, 33.3%

had average knowledge, and 12.5% had poor knowledge. After the intervention, no participants remained in the poor knowledge category, with 58.8% demonstrating good knowledge and 41.2% having average knowledge. This shift indicates that the educational intervention effectively enhanced the knowledge levels of participants, as the majority moved from lower categories to improved knowledge post-intervention. The Pre and Post knowledge has no association with each other (p-value 0.061).

4.4. Comparison of Pre and Post Practice findings

Post Practice	Pre-Practice		Total	P-Value
	Incompetent	Competent		
Incompetent	13 (26.50%)	3 (33.30%)	16 (27.60%)	0.696
Competent	36 (73.50%)	6 (66.70%)	42 (72.40%)	
Total	49 (84.48%)	9 (15.52%)	58 (100.00%)	

Fisher's Exact Test

Table 4.4 compares the pre- and post-practice competency levels of participants. Before the intervention, 33.3% of participants were competent, while 66.7% were incompetent. After the intervention, a substantial improvement was observed, with 73.5% of participants becoming competent and 26.5% remaining incompetent. Despite this improvement, Fisher's Exact Test yielded a p-value of 0.696, indicating that the observed difference in competency levels between the pre- and post-practice periods is not statistically significant. Thus, while there is an apparent positive shift in practice outcomes, the change is not significant at a statistical level.

3. Discussion

The current study aimed to assess the effects of nurse-led group-based education on the knowledge and utilization of antenatal care services among pregnant women. The findings offer valuable insights into the impact of structured educational interventions on improving maternal health outcomes. This chapter discusses the key results in relation to existing literature, explores potential reasons behind the observed changes in knowledge and antenatal care utilization, and addresses the implications of the findings for clinical practice. Furthermore, the limitations of the study and recommendations for future research are considered.

The majority of participants (62.1%) were aged 25-34 years. This distribution aligns with findings from the Tromsø Study, where majority of participants were aged between 30-40 year of age [10]. However, this study's focus on a relatively young demographic may suggest targeted recruitment strategies are effective in engaging younger populations. Other studies, such as those by a study, show similar age distributions in maternal health research, particularly in low- and middle-income countries, where childbearing is common in younger age groups [11]. In contrast, studies conducted in higher-income settings, often observe a more evenly distributed age range, potentially due to the delayed age of first-time motherhood in those regions [12].

In terms of education, the majority (44.8%) had completed secondary education. This contrasts with findings from studies [13], which indicate that higher educational attainment correlates with increased participation in health-related studies. The low representation of individuals with higher education levels (only 12.1% above high school) could indicate barriers to participation for those who might prioritize work or family commitments over survey involvement. However, similar trends have been observed in populations from rural or underserved communities, where secondary education is the highest level many attain due to socioeconomic constraints [14]. The education disparity is also reflected in research, who highlighted that individual with lower education levels often have less access to health education, which may impact both their health literacy and participation in health studies [15].

The occupational breakdown shows a significant number of housewives (44.8%), reflecting traditional gender roles prevalent in many societies. This is consistent with broader trends observed in demographic studies where women often engage more in household roles than formal employment [16]. Similar findings were observed in studies from South Asia and Sub-Saharan Africa, where women's participation in the formal labor force is low due to cultural norms [17]. However, studies conducted in urbanized or high-income countries, show a much lower proportion of housewives, with women more likely to be employed in professional roles, reflecting evolving gender roles and economic empowerment [18].

A striking finding is the high percentage of participants classified as poor (56.9%). This aligns with broader public health literature that emphasizes the link between lower socioeconomic status (SES) and poorer health outcomes [19]. Other studies highlight similar patterns where lower SES groups experience disproportionate health challenges, reinforcing the need for targeted interventions. In contrast, studies in more affluent populations, such as those conducted, demonstrate that higher SES is associated with better health literacy, access to care, and more favorable health outcomes [20,21]. This underscores the importance of addressing social determinants of health in lower-income populations to reduce health inequities. The study found that 70.7% of participants were primiparous (first-time mothers), which is significant as primiparity has been associated with different health risks compared to multiparity [1]. This is consistent with findings from other studies, such as by Fraser et al. (2021), which demonstrate higher health risks for primiparous women, particularly regarding labor complications and postpartum health. In contrast, multiparous women tend to have fewer complications due to prior pregnancy experience. However, some research suggests that younger, first-time mothers, particularly in well-supported healthcare systems, may experience better health outcomes due to enhanced prenatal care services [5].

A majority (79.3%) of participants were classified as low-risk pregnancies. This finding may reflect a trend toward healthier pregnancies among younger mothers, which is supported by recent research indicating improved maternal health outcomes in younger populations due to better access to healthcare services (Barker et al., 2020). Studies by Kuo et al. (2021) similarly show that women classified as low-risk during pregnancy have better perinatal outcomes, especially when supported by consistent antenatal care. However, research in

higher-risk populations, such as by Weir et al. (2022), reveals that a higher prevalence of complications in older and high-risk pregnancies underscores the need for specialized interventions in different demographic groups.

The comparison of knowledge scores of participants before and after an educational intervention reveals a substantial improvement in knowledge, with the mean score increasing from 8.31 ± 2.76 to 16.40 ± 4.20 ($p < 0.001$). This significant change indicates that the educational intervention was effective in enhancing participants' understanding of the subject matter. These results align closely with a study that have examined the impact of educational interventions on pregnant women's knowledge regarding antenatal care (ANC). The study highlighted that various forms of nutrition education significantly improved both knowledge and dietary practices among pregnant women [7]. This suggests that structured educational programs can effectively enhance understanding in multiple domains related to pregnancy, including nutrition and ANC. Similarly, a study evaluated the use of multimedia educational interventions, including video content, to inform pregnant women about various aspects of prenatal care. The results indicated a marked improvement in knowledge levels post-intervention, reinforcing the notion that diverse educational methods can effectively engage and inform pregnant women [20].

The current research indicates a significant increase in practice scores among participants following the educational intervention. The mean practice score rose dramatically from 9.29 ± 10.05 pre-education to 27.43 ± 4.02 post-education, with a p-value of < 0.001 , highlighting the substantial impact of the intervention on participants' practice performance. These results are consistent with a study who found that implementing structured breastfeeding education significantly improved mothers' self-efficacy and practical skills related to breastfeeding, which is a critical aspect of maternal care. The intervention led to increased confidence and knowledge, ultimately enhancing breastfeeding practices, similar to how the current study improved ANC practices through education [4]. This is also aligns with another study examined the effects of multimedia educational interventions on pregnant women's knowledge and practices concerning prenatal care. Participants showed marked improvements in their practice scores post-intervention, indicating that targeted educational strategies can effectively promote better health behaviors among pregnant women [17].

4. Conclusion

The results of study concluded that that the majority of the participants are aged 25-34 years, have secondary-level education, and are primarily housewives, with a significant portion belonging to the poor wealth index. Most participants are primiparous and have low-risk pregnancies. The knowledge and practices were improved after post-intervention.

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