

Impact of health counseling on women's awareness concerning threatened warning signs of pregnancy

Basma Said Mahmoud Elgamasy¹, Heba TALLah Elashmawy Mohamed Shaban², Asmaa Abdallah Ahmed³ & Rehab Sabri Fawzi Mohammed⁴

¹. Lecture of Maternal and Newborn Health Nursing, Cairo University, Egypt.

². Lecturer of Maternal and Newborn Health Nursing Cairo University, Egypt.

³. Lecturer of Maternal and Newborn Health Nursing Cairo University, Egypt.

⁴. Lecturer of Obstetrics and Gynecologic Nursing Suez Canal University, Egypt.

Abstract

Background: Despite the fact that pregnancy is a normal physiological event that ends with positive pregnancy outcomes for both mother and newborn, it may be associated with unexpected complications that end in morbidities or mortalities. Therefore, health counseling has a crucial role in the early detection of these warning signs and their management. **Aim:** to evaluate the impact of health counseling on women's awareness concerning threatened warning signs of pregnancy. **Design** A quasi-experimental design was utilized at the Obstetrics and Gynecology Hospital affiliated with Suez Canal University Hospitals on 150 pregnant women who were recruited using a purposive sample. **Data collection tools,** two tools were used for data collection: 1) a structured interview questionnaire, and 2) women's awareness about threatened warning signs of pregnancy used as pre-posttest questionnaire. **Results:** Total awareness scores regarding threatened warning signs of pregnancy showed highly statistically significant differences between pretest and posttests (1st and 2nd ($p < 0.05$). Moreover, there was a weak positive correlation between women's awareness scores regarding threatened warning signs of pregnancy and educational level ($p = 0.047$). **Conclusion:** The current study results summarize that health counseling has a positive impact on pregnant women's awareness concerning threatened warning signs of pregnancy. **Recommendations:** The current study recommended providing each pregnant mother with a basic Arabic pamphlet about warning signs throughout pregnancy during the prenatal visit.

Keywords: Counseling, Pregnancy & Warning signs

Introduction

Antenatal care (ANC) is essential for pregnant women as it helps identify and manage potential pregnancy-related complications while providing education, counseling, and emotional support. Access to accurate information from healthcare professionals is a key component of prenatal care, particularly for first-time mothers who may struggle to recognize potential risks or complications (Ademam & Edamo, 2020).

Pregnancy is a natural physiological process occurring during a woman's reproductive years. However, all pregnancies carry some risk, and unexpected complications can pose serious threats to both the mother and fetus. Recognizing early warning signs is crucial for timely intervention. These signs include vaginal bleeding, prolonged severe vomiting, persistent headaches with blurred vision, generalized swelling, sudden decrease or absence of fetal movements, unexpected fluid leakage from the vagina, seizures, and high fever. Several factors influence women's knowledge of

these warning signs, including age, family size, frequency of ANC visits, education level, household income, occupation, residence, pregnancy trimester, media exposure, and parity (Mesele, et al., 2023).

Screening and health counseling play a vital role in ensuring a healthy pregnancy. ANC provides an opportunity to educate women about potential complications, promote proper health-seeking behaviors, and address topics such as minor pregnancy discomforts, adequate nutrition, warning signs, birth planning, family planning, and breastfeeding (Uwiringiyimana et al., 2022 & Shahin, et al., 2018).

As pregnancy approaches full term, fetal membranes naturally weaken due to biochemical and mechanical factors that facilitate labor. Typically, the fetal membranes rupture spontaneously during labor, known as spontaneous rupture of membranes (SROM). However, in some cases, rupture occurs before the onset of labor, termed premature rupture of membranes (PROM)-defined as the spontaneous leakage of amniotic fluid after 37 weeks of gestation

and at least one hour before labor begins (Mishra & Joshi, 2017). When this occurs before 37 weeks, it is classified as preterm premature rupture of membranes (PPROM), a high-risk condition that endangers both the mother and fetus (Perrini, 2015). Another significant warning sign is decreased or absent fetal movement (DFM), commonly referred to as "Kick Counts," which should be monitored after 24 weeks of gestation. Normal fetal movements indicate fetal well-being, and a count of fewer than ten kicks in 12 hours may signal a problem requiring immediate medical evaluation. Research has linked DFM to complications such as intrauterine growth restriction, preterm birth, and stillbirth, highlighting the need to enhance maternal awareness about fetal movement monitoring (Jindal et al., 2017; Ali, et al., 2020).

A sudden gush of fluid from the vagina may also indicate PROM, fetal malpresentation, multiple pregnancies, excessive amniotic fluid, cervical incompetence, or abdominal trauma and high-grade fever during pregnancy. Seizures or convulsions may occur due to epilepsy or eclampsia, a severe hypertensive disorder of pregnancy characterized by high blood pressure, swelling, protein in the urine, and seizures. Around 0.5% of pregnancies are affected by epilepsy, while eclampsia remains a life-threatening obstetric emergency. Another serious condition is hyperemesis gravidarum, which involves persistent, severe vomiting throughout pregnancy and requires medical intervention (Al-Matarneh, et al., 2023).

Nurses play a critical role in educating pregnant women about these warning signs and potential pregnancy-related complications. Recognizing early risk factors is crucial for reducing maternal mortality by addressing delays in seeking medical care and ensuring timely referrals to obstetric services. Additionally, male partners play a significant role in decision-making regarding maternal health. Many women still struggle to differentiate between normal pregnancy changes and serious warning signs, often delaying necessary medical attention (Zaki, et al., 2021). Therefore, this study aims to enhance women's awareness of pregnancy warning signs through structured health counseling (Brasington et al., 2016).

Significance of the study

Maternal mortality remains a global concern, primarily due to complications related to pregnancy and childbirth. According to the World Health Organization (WHO), approximately 295,000 maternal deaths occurred in 2017, with delays in seeking, accessing, and receiving appropriate medical care contributing to 66% of these deaths in Sub-

Saharan Africa. Moreover, critical factor in these delays is the lack of awareness of obstetric danger signs, which increases the risk of maternal morbidity and mortality, particularly in low- and middle-income countries (WHO, 2019 & Sk, et al., 2019).

In addition, the most obstetric danger signs during pregnancy include severe vaginal bleeding, persistent headaches, premature labor, rupture of membranes before labor, epigastric pain, severe abdominal pain, convulsions, blurred vision, and fever. Many Studies conducted regarding this issue, one of them in Sub-Saharan Africa indicate that many pregnant women and their communities remained inadequately informed about these warning signs (Geleto, et al., & Loxton, 2019 and Mwilike, et al., 2018 & Wassihun et al., 2020).

Currently, numerous studies conducted in Egypt one research in Mansoura by Zaki, et al., (2021), found that 57.9% of pregnant women had poor knowledge of obstetric danger signs, highlighting the urgent need for educational interventions. Another study at Minia Maternity and Children University Hospital revealed that over half of pregnant women had insufficient knowledge of pregnancy-related risks (Abdelhalim, et al., 2023).

Given the critical role of nurses in antenatal care, this study assesses the impact of health counselling on improving women's awareness of pregnancy warning signs. Enhancing knowledge through structured counselling can lead to early detection, prevent complications for both mother and child, and ultimately influence hospital policies by reinforcing regular health education as a standard practice in antenatal care.

Methods:

Aim of the study

The current study aimed to evaluate the impact of health counseling on women's awareness concerning threatened signs of pregnancy.

Objectives:

1. Assess the level of women's awareness concerning threatened warning signs during pregnancy.
2. Evaluate the impact of health counseling on women's awareness concerning threatened warning signs of pregnancy.

Operational Definitions:

Threatened warning signs in the current study mean vaginal bleeding, reduced fetal movements, sudden escape of fluid from the vagina; convulsion and high-grade fever, continuous lower abdominal pain, and recurrent frontal headache associated with blurring of vision.

Research Design

Quasi-experimental design one group pre-posttest was adopted in the current study

Research Hypothesis

H₁: Women's awareness of threatened warning signs of pregnancy significantly improves after counseling, as evidenced by higher posttest scores compared to pretest scores.

Setting:

The study was conducted at an antenatal clinic affiliated with Suez Canal University Hospitals that has been setting up at 18-12-1993; it provides services for all cases that come from urban and rural areas in Ismailia city. Antenatal clinic at Suez Canal university hospital consists of one room, which includes one bed, examination table and ultrasound device and computer. Nursing care is provided by baccalaureate and diploma nurses.

Sample:

For the study, 150 pregnant women were chosen as a purposeful sample. The inclusion criteria were as follows: a primigravida who could read and write in the second trimester, free of any obstetrical or medical conditions. Pregnant women who had attended prior training of a similar nature or who were taking antipsychotic medication due to psychological issues, pregnant women attending private health care facilities and those did not have a mobile phone to contact them later were excluded.

Sample size:

Solvin's formula was applied for determining the sample size as follows

$$n = N/1 + N(e)^2$$

n = sample size

N = total population

e= Margin of errors (0.05)

Confidence level =95%

Tools of Data Collection:

Two tools were used for data collection. They were designed and filled by the researcher after extensive review of recent literature.

Tool (1): Structured interview schedule: This tool was developed by the researcher, and it included two parts: the first part (a) personal data such as age, educational level, occupation, residence and phone number; and the second part (b) obstetrics history: it included data such as the expected date of delivery (EDD) and gestational age (GA).

Tool (2): Women's awareness about threatened warning signs: this tool was developed by the researcher after an extensive review of recent and relevant literature and guided by (Zaki, et al., 2021 & El-Nagar, et al., 2017). It was used as a pre-post-test questionnaire to assess women awareness of threatened warning signs. It included the following items: vaginal bleeding; persistent severe vomiting; severe recurrent frontal headache associated with blurring of vision; swelling of the face, feet, and hands; sudden decrease or absence of fetal

movement; sudden escape of fluid from the vagina; fits; and high-grade fever.

Scoring system: For awareness, scores were determined according to the literature. Points were assigned based on how each question is judged on a score of (1) for an incorrect answer and a score of (2) for a correct answer, so the total awareness scores were (14–28), which were categorized as follows: scores of less than or equal to 50% were considered unsatisfactory, while scores of more than 50% were considered satisfactory.

Tool validity

The developed tools were submitted to a panel of three experts in the field of obstetrics and gynecology to test their content and validity. Modifications were carried out according to the expert's judgment on the clarity of sentences and the appropriateness of contents.

Pilot Study

A pilot study was conducted on 10 women (10 % of total sample) to evaluate the applicability and the obtained results of the pilot study was used as a guide for the necessary modification needed in the data collecting tools.

Ethical consideration:

The ethical approval was obtained from the Research and Ethics Committee at the Faculty of Nursing, Suez Canal University. Moreover, official permission to conduct the proposed study was obtained from the hospital administrators in the selected setting for data collection. At the initial interview, each potential participant was informed about the purpose, the procedure, and the benefits of the study, and the cover letter explaining the research study was read to them. Each participant woman was assured that participation in this study is voluntary, and they had the right to withdraw from the study at any time without affecting the health care services that they received.

Procedure:

The actual fieldwork was carried out for four months from the beginning of June until the beginning of October 2024; was conducted in four main phases.

The preparatory phase:

The researchers reviewed past and currently available literature relevant to the study topic to acquire in-depth knowledge of theoretical of the different aspects of the program. Then the study tools were designed after an extensive review of the literature. An official letter of approval was obtained from the obtained from the ethics committee at the Faculty of Nursing at Suez Canal University. This letter includes permission to conduct the study and explained the aim and nature of the study. During this phase, women who fit the inclusion criteria and were accepted to be included in this study were recruited for the study.

Interviewing phase:

The researcher introduced herself to the pregnant women and explained the purpose and nature of the study to obtain informed written consent as well as to gain their cooperation. History taking get from pregnant women to take complete personal information, and her phone number was essential to contacting her later through follow-up and obstetric history using (tool 1) Knowledge assessment: The researcher obtained assessment of women's current knowledge awareness about threatened warning signs during pregnancy by using (tool 2).

Implementation Phase

During this phase, counseling sessions conducted to improve women's awareness of threatened warning signs of pregnancy. The sessions were delivered in simple Arabic, utilizing interactive teaching methods and pre-prepared educational materials developed based on an extensive literature review and findings from published studies. Sessions took place in the waiting area of antenatal clinics, with small groups of 8–10 women. Participants received handouts summarizing key content and activities, and feedback was provided at the end of each session to reinforce learning. This phase consisted of two sessions:

First Session: Familiarization and Preparation

The researcher introduced the concept of threatened and warning signs of pregnancy through a structured teaching class and group discussion, using a predesigned brochure as a guide. This session lasted 30–40 minutes and was conducted in simple Arabic. Each participant received a free copy of the brochure, which outlined common warning signs to serve as a home reference.

Second Session: Posttest and Reinforcement

One week after the first session, a first posttest was conducted to assess women's awareness of threatened warning signs and their knowledge of proper management strategies using tool 2. The researcher contacted the participants, inquired about their health and pregnancy status, and then assessed their recall of warning signs. If a woman had forgotten any information, the researcher provided simplified reinforcement and emphasized appropriate management strategies for each warning sign.

Evaluation Phase

One week after the second session, follow-up assessments (second posttest) was conducted through phone calls to assess women's awareness of threatened warning signs and their knowledge of proper management strategies using tool 2, this lasts 20-30 minutes. During these calls, participants also given the opportunity to ask additional health-related questions beyond the study scope for reassurance about their condition.

Statistical Analysis:

The collected data scored, tabulated, and analyzed by a personal computer using the statistical package for social sciences (SPSS) program version 28. Descriptive as well as inferential statistics were utilized to analyze data pertinent to the study. The level of significance was set at $p < 0.05$.

Results**Table (1): Distribution of the pregnant women according to their demographic data (n=150)**

Items	No.	%
Age		
Below 20yrs	17	11.3
20-	65	43.3
25-	45	30
30 -35	23	15.3
Total	150	100.0
Mean \pm SD= 24.25 \pm 4.140		
Residence		
Urban	93	62
Rural	57	38
level of Education		
Read& write	63	42
Primary/ preparatory education	48	32
Secondary education	28	18.6
University Education	11	7.3
Occupation		
House wife	140	93.3
Working	10	6.7

Table (2): Distribution of the pregnant women according to their awareness about antenatal care

Women's awareness about importance of antenatal visit	(n=150)	%
Reassurance with Ultrasound	25	16.6
Fetal movements Reassurance	25	16.7
Early detection of problem	30	20
Reassure health of both mother and her fetus	80	53.3
Important if I have problem	10	6.7
Conditions of self-monitoring		
Fetal movement count	80	53.3
Measuring Blood Pressure	70	46.7

Table (3): Distribution of the pregnant women according to their awareness regarding other warning signs of pregnancy

Other warning signs of pregnancy	Pre-test		1 st Post-test		2 nd Post-test	
	N=150	%	N=150	%	N=135	%
Sudden leakage of amniotic fluid as warning sign						
correct answer	135	90.0	147	98	130	96.3
Response in case of sudden gush of amniotic fluid						
• Ignorance	8	5.3	00	00	00	00
• Consulting doctor	142	94.7	150	100	135	100
High grade fever as warning sign						
Correct answer	100	66.7	140	93.3	135	100
Response in case of fever						
Consulting doctor	15	10	120	80	123	91.1
Self-management cold compresses/ OTC	135	90	30	20	12	8.9
Continuous vomiting as warning sign						
Frequency of vomiting per day	60	40	150	100.0	135	100
Correct answer	10	6.7	140	96.7	130	96.3
Severe lower abdominal pain as warning sign						
Correct answer	24	26.7	150	100	135	100

Table (4): Comparison between mean awareness score regarding general threatened warning signs of pregnancy pre-test and 1st&2ndpost-tests

Comparison	Differences		Paired t- test	sig
	Mean	SD±	T	P
Pretest & 1 st post test	12.24	0.210	73.00	<0.05
Pretest & 2 nd post test	11.10	1.34	70.85	<0.05

Table (5): Distribution of the pregnant women according to their awareness regarding fetal movement counts(n=150)

Awareness regarding fetal movements	Pre-test		1 st Post-test	
	N	%	N	%
Fetal movements as warning sign				
• Incorrect answer	100	66.6	0	0
• Correct answer	50	33.3	150	100
Number of fetal kicks per day as mentioned				
• Incorrect answer	135	90.0	20	13.3
• Correct answer	10	10.0	130	86.7
Technique of count fetal movements				
• Incorrect answer	128	85.3	15	10
• Correct answer	22	14.7	135	90
Technique of reassuring fetal movements				
• Correct answer	0	0	145	96.7
• Incorrect answer	150	100.0	5	3.3

Awareness regarding fetal movements	Pre-test		1 st Post-test	
	N	%	N	%
Response in case of not reassured fetal movements				
Fetal stimulation				
• Incorrect answer	136	90.7	10	6.7
• Correct answer	14	9.3	140	93.3
Go to physician immediately				
• Incorrect answer	60	44.7	0	0
• Correct answer	90	55.3	150	100
Mean \pmSD	1.26 \pm 1.03		5.47 \pm 0.67	

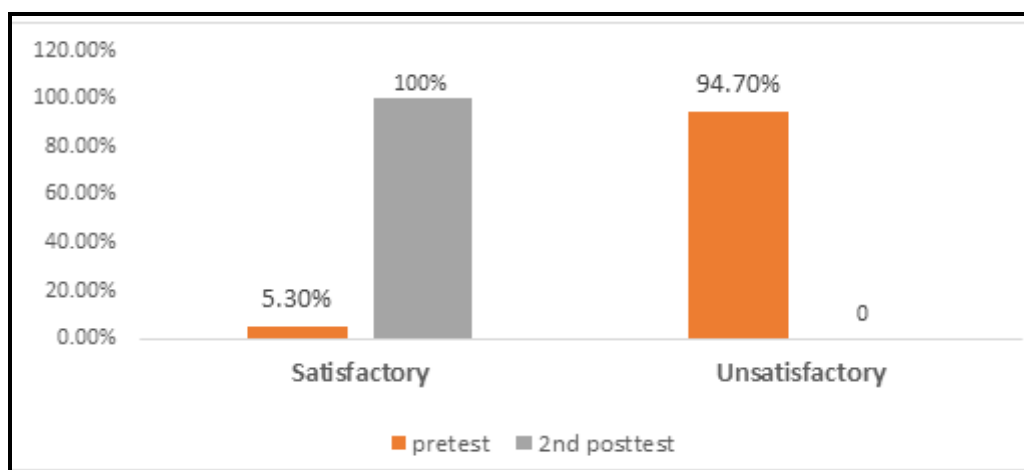


Figure (1): Percentage of pregnant women regarding level of awareness about fetal movement counts during pregnancy

Table (6): Comparison of pregnant women's level of total awareness regarding threatened warning signs during pregnancy pre-test & 1st post-test and pre-test & 2nd post-test

Level of awareness	Satisfactory		Unsatisfactory		Mean X	Two related sample tests	
	Freq.	%	Freq.	%		Z	P
Pre-test	10	6.7	140	93.3	73.78	12.124	<0.05
1st post-test	140	93.3	10	6.7			
Pre-test	10	6.7	140	93.3	71.46	11.269	<0.05
2nd post-test	125	83.3	25	16.7			

Table (1): Shows that the age of the pregnant women was 18–35 years, with a mean age of 24.25 \pm 4.14 years. 43.3% were in the age group 20<25 years, while 15.3% were in the age group 30<35 years. As well as 62% of pregnant women from urban areas. Regarding level of education, 42% can read and write, 32% have a basic (primary or preparatory) level of education, and only 7.3% have university education. In relation to occupation, 93.3% of pregnant women were housewives, and 6.7% of them were working.

Table (2): As regards assessing the pregnant women's awareness related to the importance of an antenatal visit, the results reported that 53.3% of pregnant women reported that it was important to reassure the health of both the mother and her fetus, and 20% of them reported that it was important for

the early detection of any health problems. 6.7% reported its importance only when there is a problem occurred. Regarding pregnant women's self-monitored conditions, the results reported that 53.3% of pregnant women were keen to follow daily fetal movements, and 46.7% of them followed their blood pressure on a regular basis.

Table (3): Shows that 90% of pregnant women's knowledge about sudden leakage of amniotic fluid was a warning sign during the pretest, compared to 98% and 96.3% during the first and 2nd posttests, respectively. Regarding pregnant women's response in case of sudden leakage of amniotic fluid, the findings of the pretest revealed that 94.7% of pregnant women would consult a doctor if they faced it, and only 5.3% of them answered ignorance, while

100% of pregnant women answered consulting a doctor during the first and second post-tests.

Concerning pregnant women's awareness of high-grade fever as a warning sign of pregnancy, the results of the pretest revealed that 66.7% of pregnant women had the correct answer, while 93.3% during the 1st post-test and 100% during the 2nd post-test answered correct (table,3). In relation to pregnant women's awareness about continuous vomiting as a warning sign of pregnancy, the findings of the pretest showed that 40% had the correct answer, while all of them had the correct answer during the first post-test and second post-test

Table (4): Shows that there is a highly statistically significant difference between the mean awareness score related to threatened warning signs during pregnancy in the pre-test and the first and second post-tests ($p < 0.05$).

In relation to pregnant women's awareness related to fetal movement counts during pregnancy, the results of the pre-test revealed that most pregnant women had incorrect answers to almost all questions, while almost all had correct answers in the second post-test. The mean score awareness regarding fetal movement counts during pregnancy is 1.26 ± 1.03 out of 6 compared to 5.47 ± 0.67 in the 2nd post-test (**Table 5**).

Regarding level of awareness about fetal movements count during pregnancy, 94.7% of pregnant women have an unsatisfactory level of knowledge in the pre-test, compared to 100.0% of them having a satisfactory level of knowledge during the second post-test (**Figure 1**).

Table (6): Reveals a highly statistically significant difference between the level of total awareness regarding threatened warning signs during pregnancy in the pre-test and the 1st post-test ($p < 0.05$); furthermore, there is a highly statistically significant difference between the level of awareness in the pretest and the 2nd post-test ($p < 0.05$).

Discussion

Enhancing maternal knowledge through structured counselling can lead to early detection, prevent complications for both mother and child. In the current study, the researcher attempted to investigate the impact of health counseling on women's awareness concerning threatened warning signs of pregnancy. The present study findings answered a research question in relation to the level of women's awareness regarding threatened warning signs of pregnancy, as they revealed that almost all pregnant women had an unsatisfactory level of awareness before health counseling was carried out. The reason for this finding might be due to the low emphasis on threatened warning signs and other complications

during antenatal visits and follow-up among health services providers.

The study findings were in line with a cross-sectional study conducted by **Ghimire, et al., (2022)** in Nepal to estimate pregnant women's awareness of obstetric warning signs among 194 pregnant women and showed that 96% of them had poor knowledge and recommended that health management teams and service providers should prioritize education, communication, and education about obstetric danger signs, which in turn will increase awareness and prevent unfavorable outcomes for both the mother and the newborn. In the same vein, **Mwilike et al., (2018)** found that, based on a cross-sectional survey done, the majority of participants had limited knowledge about pregnancy warning signs, even if they could mention four or more of the indicators that were determined in the study.

On the contrary, **Manandhar, & Tamang, (2022)** reported that Only 17% of respondents had inadequate understanding of obstetric danger indicators, compared to 56% who had good knowledge and 27% who had moderate knowledge. In addition, two studies were carried out in Ethiopia to evaluate pregnant women's awareness of risks during pregnancy. According to the first study, 259 out of 410 women (63.2%, 95% CI 58.3–67.8) knew a lot about the warning symptoms of pregnancy (**Mesele, et al., 2023**). This prevalence is consistent with a second survey that indicated that 58.0% of Chiro Town residents knew a good deal about the risks associated with pregnancy and the implementation of pertinent health intervention programs and sociocultural variables may be the cause of this discrepancy (**Getachew, et al., 2022**).

The current study examined the impact of health counseling on pregnant women's awareness regarding fetal movement counts. It found that most primigravida women were unaware of normal fetal movement counts and how to count fetal kicks as reported during the pretest. However, after receiving health counseling, their awareness score increased during the first, and second posttests compared to the pretest value ($p < 0.05$). This is made possible by pregnant women's willingness to study and their curiosity about pregnancy-related topics, which enable them to maintain a safe and unexpectedly trouble-free pregnancy. In a similar vein, a study that was conducted in Indonesia and supported by the current study found that women's knowledge of fetal movement counting significantly changed after the program, going from 52.94% to 86.10%, with the highest score in the technique being 93.67% (**Samuri & Endriyani, 2021**).

Furthermore, in agreement with the current investigation, **Ezzat et al. (2023)** found that

implementing a fetal kick counting education program improved women's self-reported habits and awareness. A comparable study was carried out in Ethiopia using a cluster randomized control trial to assess how mothers' awareness of obstetric danger signs was affected by a community-based HEI that was tailored to the local environment and run by women's organizations. The most often reported ODS in both study arms throughout pregnancy and delivery was significant vaginal bleeding, which was followed by decreased or nonexistent fetal activity. lower fetal activity count and raise the mother's memory of significant vaginal bleeding could be brought on by regular information about this problem (Yoseph, et al., 2024).

Similar to the current study, Ahmed (2016) conducted a study at Banha University Hospital in Egypt on the "Effect of counseling intervention on women's knowledge, practices and lifestyle of fetal wellbeing among primigravida" with 139 primigravida women. The study found that the majority of the women had insufficient knowledge about fetal movements, that their level of knowledge increased after the intervention was applied compared to before, and that the majority of the women were satisfied after the intervention ($P \leq 0.001$). Additionally, the study suggested that regular educational classes for pregnant women be added as a routine part of nursing care.

Regarding unexpected leakage of amniotic fluid as a potentially threatened warning sign of pregnancy, counseling has an impact on pregnant women's awareness. According to the results of the current study, most participants knew that a sudden gush of amniotic fluid was a warning sign during a pretest, and most of them responded by seeing a doctor if it occurred. This may be connected to the understanding that the fetus needs the amniotic fluid surrounding it to swim and move around, and that pregnant women who experience an early rupture of their membrane or exhibit other signs of preterm birth run the risk of giving birth before term.

The results of this study were consistent with previous research, which found that over one-third of the study sample reported that a sudden gush of amniotic fluid from the vagina was a warning sign of danger during pregnancy. The researchers recommended that prenatal classes be developed to educate all pregnant women about these alarming signs and when to seek medical attention. Additionally, women, families, and communities should get accurate and pertinent information about the warning signals of prenatal problems from the mass media (Al-Matarneh, et al., 2023).

Conversely, another study was disagreed with this study results that conducted by Solomon et al.,

(2015) about "knowledge about danger signs of pregnancy and associated factors among pregnant women" in Ethiopia on three hundred fifty five pregnant women as pretest questionnaire revealed that very small percent of the study sample mentioned that sudden gush of amniotic fluid was danger signals during pregnancy and recommended that establishment health services based on designing an appropriate strategies involving delivery of targeted information and health education during follow up of antenatal care.

The findings of present study were in line with a study mentioned before as researcher concluded that more than one third of study sample reported that sudden gush of amniotic fluid from the vagina as danger signals during pregnancy and suggested developing antenatal classes for all pregnant women about danger signals and when to seek medical care. Also, mass media should disseminate correct and related information about danger signs of antenatal complications to women, families and communities (El-Nagar, et al., 2017).

The results of the current study revealed no significant relationship ($p = 0.21$) between the awareness score of threatened warning signs of pregnancy and place of residence. This could be the result of a little difference in the number of pregnant women living in urban or rural areas. Additionally, there was a statistically negligible link ($p = 0.047$) between the educational level and the awareness score regarding threatened warning indications of pregnancy. It might possibly be because the only criteria used to choose the sample was reading and writing, and there isn't much variation in the small study sample in relation to education.

Findings of this study were matched with another study which conducted in Tanzania by August et al., (2016) about " Effectiveness of the home based lifesaving skills training by community health workers on knowledge of danger signs, birth preparedness, complication readiness and facility delivery" among women and showed that there was significant improvement in level of knowledge of danger signs during pregnancy in post intervention than pre intervention ($p < .0001$).

As regards the effect of conducted health teaching sessions on pregnant women's awareness about high grade fever as danger signals during pregnancy, the current study revealed that more than half of pregnant women were aware during pretest but after health teaching all of them had correct answer and this might due to that high grade fever had negative impact on body as whole and expected that it will have effect on health of pregnant women. The current study findings was matching with another study mentioned before conducted in Malaysia

reported that more than two third of the sample had correct answer regarding high grade fever as danger signal during pregnancy (Teng, et al., 2015).

Conclusion

According to the study's findings, during the pretest alone, all the pregnant women's awareness about potentially warning signs of pregnancy was unsatisfactory, and health counseling enabled them to increase their understanding. The acquired information assisted the expectant mothers in identifying issues early on and averting more troubles. Hence, managing and making wise time judgments will advance maternal health and wellbeing.

Recommendation

- Encourage practical nurses to act as health counselors.
- Provide each pregnant mother with a basic Arabic pamphlet about warning signs throughout pregnancy during the prenatal visit.
- Inform pregnant mothers of potential pregnancy-related issues by health care professionals.
- Use mobile health application or SMS based system that send reminders as education massage about warning signs

References

- Abdelhalim, N., Osman, H., El Gelany, S., & Abdelhafez, A. A. (2023): Knowledge and Attitude of Pregnant Women Regarding Danger Clinical Features of Pregnancy. Minia Scientific Nursing Journal, 13(1), 2-8.
- Adema, B., & Edamo, W. (2020): KAP on Obstetrics Danger Signs of Pregnancy Among ANC Attending Pregnant Mother in Gununno Health Center, Gununo Town, Wolaita Zone, Southern Ethiopia April: 2019. Journal of Family Medicine and Health Care, 6(3), 91-96. DOI: 10.11648/j.jfmhc.20200603.17.
- Ahmed, A. (2016): Effect of counseling intervention on women's knowledge, practices and lifestyle of fetal well-being among primigravidae. International Journal of Nursing Science, 6(4): 87-93,
- Al-Matarneh, B., Al-khawaldeh, O., & Alsaraireh, A. (2023): Knowledge, attitudes and practices regarding obstetric danger signs among Jordanian pregnant women attending antenatal clinic in Jordan. Central European Journal of Nursing and Midwifery, 14(2), 860.
- Ali, Z., Mohamed, H. & Mostafa, M. (2020): Increasing Awareness of Primigravidas About Fetal Movements During Pregnancy. Assiut Scientific Nursing Journal, 8(22), 153-165.
- Ali, R., Mohamed, A., Arief, A., Abdel-Salam, D., & Khalaf, F. (2020): Effectiveness of Health Education Program on the Level of Knowledge and Attitude of Pregnant Women Regarding Obstetric Danger Signs in Upper Egypt. Journal of High Institute of Public Health, 50(3), 118-125.
- August, F., Pembea, B., Mpembeni, R., Axemo, P., & Darj, E. (2016): Effectiveness of the home based lifesaving skills training by community health workers on knowledge of danger signs, birth preparedness, complication readiness and facility delivery, among women in Rural Tanzania. BMC Pregnancy and Childbirth Journal, 16(129), 1-12.
- El-Nagar, A., Ahmed, M., & Belal, G. (2017): Knowledge and practices of pregnant women regarding danger signs of obstetric complications. Journal of Nursing and Health Science, 6(1), 30-41.
- Ezzat Abdel Gawad Badar, H., Abdel Salam Ramadan, S., Abdallah El Sayed Affi, H., & Rabea Abd Elmordy, Z. (2023): Effect of Teaching Program about Fetal Movement Counting on Primigravida's Prenatal Attachment. Journal of Nursing Science Benha University, 4(2), 894-911.
- Jindal, A., Rimpay, Kaur, k., Kaur, H., & Rahul. (2017): Knowledge regarding danger signs of pregnancy among antenatal mothers. Asian Journal of Nursing Education and Research, 7 (2), 225-227.
- Geleto, A., Chojenta, C., Musa, A., & Loxton, D. (2019): WOMEN's Knowledge of Obstetric Danger signs in Ethiopia (WOMEN's KODE): a systematic review and meta-analysis. Systematic reviews, 8, 1-14.
- Getachew, D., Getachew, T., Debella, A., Eyeberu, A., Atnafe, G., & Assefa, N. (2022): Magnitude and determinants of knowledge towards pregnancy danger signs among pregnant women attending antenatal care at Chiro town health institutions, Ethiopia. SAGE Open Medicine, 10, 20503121221075125
- Ghimire, B., Pathak, P., & Ghimire, P. (2022): Knowledge regarding obstetric danger signs among pregnant women. Nepal Medical College Journal, 24(2), 134-141.
- Manandhar, N., & Tamang, M. (2022): Knowledge regarding obstetric danger signs among mother attending antenatal clinic at Scheer Memorial Adventist Hospital, Banepa, Kavre. Nepal Medical College Journal, 24(2), 91-96. doi: <https://doi.org/10.3126/nmcj.v24i2.46016>.
- Mesele, T., Syuom, A., & Molla, E. (2023): Awareness of danger signs in pregnancy and their associated factors among pregnant women in Hosanna Town, Hadiya Zone, southern

- Ethiopia. *Frontiers in Reproductive Health*, 5, 1097727. [10.3389/FRPH.2023.1097727](https://doi.org/10.3389/FRPH.2023.1097727).
- **Mishra, S., & Joshi, M. (2017):** Premature rupture of membrane- risk factors: a clinical study. *International Journal of Contemporary Medical Research*, 4 (1), 77-83 .
 - **Mwilike, B., Nalwadda, G., Kagawa, M., Malima, K., Mselle, L., & Horiuchi, S. (2018):** Knowledge of danger signs during pregnancy and subsequent healthcare seeking actions among women in Urban Tanzania: a cross-sectional study. *BMC pregnancy and childbirth*, 18, 1-8.
 - **Patel, S., & Pennell, P. (2016):** Management of epilepsy during pregnancy: an update Therapeutic . *Advances in Neurological Disorders Journal*, 9(2) 118–129.
 - **Uwiringiyimana, E., Manirambona, E., Byiringiro, S., Nsanzimana, A., Uhawenayo, N., Ufitinema, P., & Ntsumbumuyange, D. (2022).** Pregnant women's awareness of obstetrical danger signs: A cross-sectional survey in Kigali, Rwanda. *PLOS Global Public Health*, 2(11), e0001084.
 - **Samutri, E., & Endriyani, L. (2021):** Education of fetal movement counting: an effort to increase knowledge and compliance of pregnant women to do self-assessment of fetal wellbeing.
 - **Shahin, E., Mohamed R., & Hosni, N. (2018):** Effect of Health Teaching Sessions on Women's Knowledge Regarding Selected Danger Signals During Pregnancy. *The Medical Journal of Cairo University*, 86(December), 4095-4106.
 - **Sk, M., Paswan, B., Anand, A., & Mondal, N. (2019):** Praying until death: revisiting three delays model to contextualize the socio-cultural factors associated with maternal deaths in a region with high prevalence of eclampsia in India. *BMC pregnancy and childbirth*, 19, 1-11.
 - **Solomon, A., Amanta, N., Chirkose, A. & Badi, M. (2015):** Knowledge about danger signs of pregnancy and associated factors among pregnant women in Debra Birhan Town, Central Ethiopia. *Science Journal of Public Health*, 3(2): 269- 273
 - **Teng, S., Zuo, T., Jummaat, F., & Keng, S. (2015):** Knowledge of pregnancy danger signs and associated factors among Malaysian mothers. *British Journal of Midwifery*, 23(11).
 - **Wassihun, B., Negese, B., Bedada, H., Bekele, S., Bante, A., Yeheyis, T., & Hussen, E. (2020):** Knowledge of obstetric danger signs and associated factors: a study among mothers in Shashamane town, Oromia region, Ethiopia. *Reproductive Health*, 17, 1-8.
 - **World Health Organization. (2019):** Trends in maternal mortality 2000 to 2017: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division: executive summary (No. WHO/RHR/19.23). World Health Organization.
 - **Yoseph, A., Teklesilasie, W., Guillen-Grima, F., & Astatkie, A. (2024):** Effect of community health education on mothers' knowledge of obstetric danger signs and birth preparedness and complication readiness practices in southern Ethiopia: A cluster randomized controlled trial. *PloS one*, 19(11), e0312267.
 - **Zaki, A., & Fouad, S., & khedr, N. (2021):** Assessment of awareness and practices of pregnant women toward danger signs of pregnancy. *Mansoura Nursing Journal*, 8(1), 13-32. Print ISSN: 2735 – 4121 Online ISSN : 2735 – 413X

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