

## Effect of an Educational Program on Pregnant Women's Knowledge about Obstetric Danger Signs

Nabila Salem Mohamed1.

Lecturer of Obstetric and Gynecological Nursing. Faculty of Nursing, Zagazig University, Zagazig, Egypt  
Corresponding Author: Nabila Salem

---

### Abstract:

**Background:** In developing countries complications related to pregnancy labor and puerperium are among the greatest causes of maternal mortality and morbidity of women in reproductive age. Therefore this study intended to assess the effect of an educational program on pregnant women's knowledge about obstetric danger signs. Design: Quasi experimental design was used

**Subject:** 120 women were enrolled in the study during their antenatal care visits at outpatient clinic in Zagazig University Hospitals. Design: Quasi experimental design was used **Results:** 63% of women in the studied group reported that they didn't receive any instructions about obstetric danger signs, bleeding, decrease fetal movement, fluid leakage, cord prolapse, cessation of labor pain. Fever and offensive lochia were the most common danger signs reported by women. Statistically significant positive correlations were found in relation to distance between home and antenatal care (ANC) unit, number of para, complications with previous pregnancy and place of last delivery total mean of knowledge score. Statistically significant differences were detected between total knowledge score about obstetric danger signs at different times from health education program of studied group.

**Conclusion and recommendation** women in the ANC unit have low score of knowledge about obstetric danger signs and nurses in ANC units should educate pregnant women about danger signs and in facilitating uptake of delivery services by using different strategies for this aim.

**Key words:** Obstetric Danger Signs, Antenatal Care Attendant women.

---

Date of Submission: 01-01-2019

Date of acceptance: 15-01-2019

---

### I. Introduction

Both physiological and psychological changes of pregnancy is a normal process. On the other hand, normal pregnancy may be accompanied by some problems and complications which are potentially serious to the mother and or the her fetus.(1)

In 2015 the World Health Organization report estimated that 33 deaths per 100,000 live births were reported between 1996 and 2015 every day and about 830 women worldwide died from complications related to pregnancy and or labor. Postpartum hemorrhage, hypertension and infection, as well as indirect causes that may interact with pregnancy were among the leading causes of death among women.(2,3)

In developing countries, complications related to pregnancy are among the greatest cause of maternal morbidity in reproductive age. Pregnant women may have sudden, unpredictable complications that may lead to their death or to that of their fetus. The high maternal mortality rate in developing countries may be due to several reasons, including delayed seeking medical care and lack of knowledge about obstetric danger signs(4).

Most maternal mortality causes are preventable as healthcare solutions to prevent or manage the complications are well known by well-functioning health system that provides accessible and high-quality care from household to hospital level. Accompanied by raising awareness of pregnant women on the danger signs would improve early detection of problems and reduces the delay in deciding to seek obstetric care. Recognition of obstetric danger signs and seeking health care by women and their families in all probabilities can significantly prevent maternal morbidity and mortality (4,5)

These life-threatening complications can be prevented, and thus most of these deaths are avoidable if women with the complications are able to identify and seek appropriate emergency obstetric care which makes a difference between life and death which could be prevented if women are made aware about and able to identify obstetric danger signs (6)

Obstetric danger signs are signs of serious complications and they are grouped under three phases: pregnancy, childbirth and postpartum. The commonest danger signs during pregnancy include vaginal bleeding, swollen hands and face, and blurred vision. Key danger signs during labor and childbirth include severe vaginal

bleeding, prolonged labor, convulsions, and retained placenta. Danger signs during the postpartum period include severe bleeding following childbirth, loss of consciousness after childbirth, and fever(7.8)

Understanding of obstetric danger signs during pregnancy, childbirth and post-partum is an indispensable component of birth preparation and complication readiness. Pregnant women receive a broad range of promotive, preventive and curative health care services for the mother and her fetus through antenatal care also creates an opportunity to advise the women and their families about birth preparedness, potential obstetric complications and promotes the benefit of skilled attendance at birth and to encourage women to seek care for subroutine complaint which could be of danger signs that have fatal outcomes(7).

#### **Significance of the study:**

According to Egypt Demography and Health Survey, slightly more than one-quarter of Egyptian pregnant women do not receive antenatal care. However, among those who receive antenatal care, only one-third of them received advices about signs of obstetric complications, and where and when to seek medical assistance. (5) Lack of knowledge of the significance for symptoms of obstetric complications is one of the reasons of failure to identify and seek appropriate emergency care. Health education is a neglected part in the Egyptian society and antenatal care is restricted on problem management only. Therefore, assessment of women's knowledge of obstetric danger signs and associated factors contributes for the planners and implementers to improve maternal health

#### **Aims of the study**

To assess the effect of an educational program on pregnant women's knowledge about obstetric danger signs

#### **Research objectives:**

- 1.To assess the level of awareness of obstetric danger signs among ANC clinic attendant pregnant women.
- 2.To design, implement, and evaluate the effectiveness of an educational program about obstetrics danger signs on knowledge of pregnant women.

**Research hypothesis:** After implementation of the educational program, the women's knowledge related to obstetric danger signs will be improved.

## **II. Subjects and Methods**

**Research design:-** A quasi-experimental design with pre and post and follow up intervention was utilized to fulfill the aim of this study

**Setting :** The study was conducted at antenatal care unit in Zagazig University Hospital Sharkia Governorate

**Subjects:-** A convenient sample of 120 pregnant women with inclusion criteria during their first or second trimester who attending the previously mentioned setting for antenatal care during six months of the study were enrolled in the study.

**Tools of data collection :** A structured interview questionnaire was developed by the researcher after reviewing of the relevant literature to collect the necessary data. It comprised the following parts:

Part I: Sociodemographic data such as: age, level of education, occupation, number of family members etc

Part II: Obstetric characteristics such as gravidity, parity, antenatal follow up and presence of any complications etc.

Part III: It was developed by the researcher based on literature review. This included questions regarding women's knowledge about obstetric danger signs during pregnancy labor and postpartum. A completely correct answer was scored 2 an incomplete correct answer was scored 1 and an incorrect answer or don't know was scored zero. For each area of knowledge, the scores of items were summed up and divided by the number of items the total score of knowledge was 50 points. Evaluation of women's knowledge scored 75% or more was considered a good level of knowledge while 50-<75% was considered fair, and less than 50% considered poor.

**Fieldwork:** The execution of the study was through four phases namely assessment planning implementation and evaluation. This lasted for 6 months from the first of October 2017 to the end of March 2018.

**Assessment phase:** It involved the pre-intervention data collection for baseline assessment. Upon obtaining necessary official permissions to carry out the study, the researcher with women who fulfilled the criteria for inclusion explained to them the aim and procedures and invited them to participate in the study. The researcher then read and explained each item of the study tool to the woman and recorded her responses to

each item. The time consumed for completing the interview and filling in the form ranged from 15 to 30 minutes.

**Planning phase:** Based on the results obtained from assessment phase the researcher designed the intervention program contents according to the related literature. The program consisted of four main components supported by pictures. The first component was for giving an introduction about physiological changes of pregnancy the second component focused on danger signs of pregnancy the third component dealt with danger signs of labor, and the fourth component included danger signs of the perineum.

**Implementation phase:** The intervention was implemented in the form of educational sessions. the duration of each session ranged from 20-30 minutes. It was difficult to gather all women at the same time so the program was implemented in small groups in the antenatal unit, each group consisted of two or three women according to their attendance. All participants received the same content using same training methods and same booklet. The training methods included demonstration-re-demonstration, discussions, role-play and reinforcement. The sessions were aided by using pictures and posters. Evaluation phase: The evaluation of the effect of the intervention program was done immediately after its implementation and after two months for follow up through applying the same tool used in the pretest.

**Pilot study:** A pilot study was done to test the feasibility of the study and to estimate the time needed for filling in the tools. The pilot sample involved about ten percent of women fulfilling the set criteria. Those who were included in the pilot sample were excluded from the main study sample.

**Administrative and ethical considerations:** An official permission was obtained using proper channels of communication. This was done through a letter addressed by the Dean of the Faculty of Nursing Zagazig university to the university director, explaining the aim and procedures of the study and asking for cooperation. The women were informed about the study purpose and procedures and invited to participate. A consent was obtained from each participant who agreed to participate in the study they were also assured about confidentiality of data collected that will be used only for and the rights to withdraw at any time without giving any reason and with no consequences.

**Statistical analysis:** Data entry and statistical analysis were done using the statistical package for social science (SPSS) version 20.0 statistical software package. Cronbach's alpha coefficient was calculated to assess the reliability of the developed tools through their internal consistency. qualitative categorical variables were compared using chi-square test. Spearman rank correlation was used for assessment of the inter-relationships among quantitative variables and ranked ones. In order to identify the independent predictors of women's knowledge scores, multiple linear regression analysis was used. Statistical significance was considered at p-value <0.05.

### III. Results

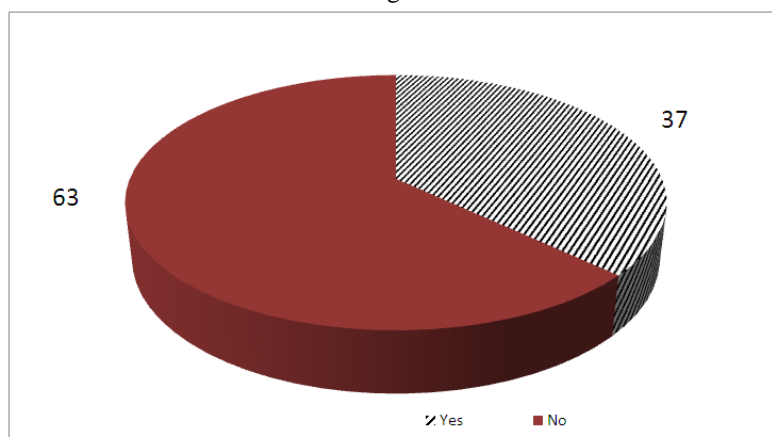
**Table(1):** Distribution of The Studied Group According to Their Sociodemographic Characteristics

Demographic characteristics	No (%)
Age(year) Mean ±SD(Range)	24.6±4.8 (18-36)
<20 year	15(12.5)
20-30year	86(71.7)
>30 year	19(15.8)
Marital status	
Married	111(92.5)
Divorced	9(7.5)
Residence	
Rural	72(60)
Urban	48(40)
Family number	
≤3	49(40.8)
4-5	67(55.8)
6-7	4(3.3)
Education	
Basic and secondary education	78(65)
University	27(22.5)
Post graduate	15(12.5)
Occupation	
Housewife	96(80)
Worker	24(20)
Income	
Sufficient and more	34(28.3)
Sufficient	63(52.5)
Insufficient	23(19.2)

This table shows that % of females

Table (1) shows that 71.7% of the studied women their age ranged between 20-30 years with a mean age of 24.6±4.8 years and 92.5 % of them were married. Additionally, 60% of them living in rural areas. Concerning the educational level 65% of them had basic and secondary education with 52.5% had sufficient income. Regarding occupation 80% of women were housewives.

**Figure (1)** Distribution of The Studied Group According to Their Previous Instruction about Obstetrics Danger Signs



Figure(1) illustrates that, 63% of women in the studied group reported that they didn't receive any instructions about obstetric danger signs.

**Table(2):** Frequency Distribution of Studied Women According to Their Source of Information About Obstetrics Danger Signs

Source of information	Frequency	Percent
Physician	4	3.6
TV& radio	45	40.5
Internet	5	4.5
Family	25	22.5
More than one answer	32	28.9
Total	111	100.0

\*More than one answer

Regarding source of information about obstetric danger signs Radio and TV(40.5%) and family (22.5%) were the commonest sources of information reported by women.

**Table(3):** Frequency Distribution of Obstetric and Medical History of the Studied Group

Variables	No(%)
Gravida	
2	44(36.7)
3	55(45.8)
4	17(14.2)
5	4(3.3)
Gestational age	
≤3 months	55(45.8)
4-6 months	65(54.2)
Antenatal visit	
<4	73(60.8)
≥4	47(39.2)
Distance between home and ANC unit	
≤One hour	63(52.5)
>One hour	57(47.5)
Complication with previous pregnancy	
Yes	93(77.5)
No	27(22.5)
Place of last labor	
No	30(25)
Home	20(16.7)
Hospital	65(54.1)
Others	5(4.2)
Medical history	
Yes	20(16.7)

No	100(83.3)
Disease (n=20)	
Diabetes	5(25)
Hypertension	10(50)
Cardiac	5(25)

Regarding distribution of obstetric history the studied women, table 3 portrays that 45.8% of women had their third pregnancy, 60.8% of them visited ANC care unit less than 4 times although 52.5% had the distance between home and ANC unit one hour or less than one hour and 54.2% were in second trimester. Regarding complication with previous pregnancy 77.5% reported occurrence of complication with previous pregnancy. While 16.7% of the studied group reported presence of medical history as 25% for diabetes, 50% for hypertension and 25% for cardiac disease.

**Figure (2): Frequency Distribution of Danger Signs of Pregnancy as Reported by The studied women**

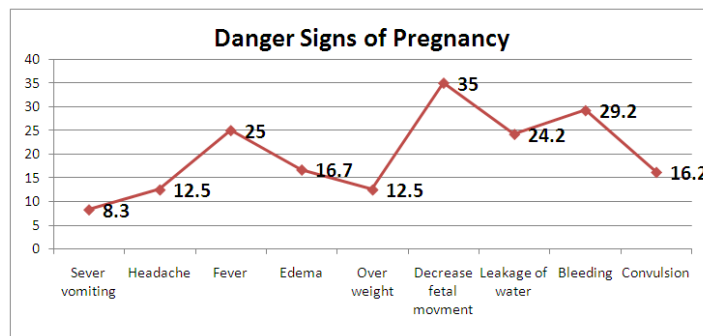
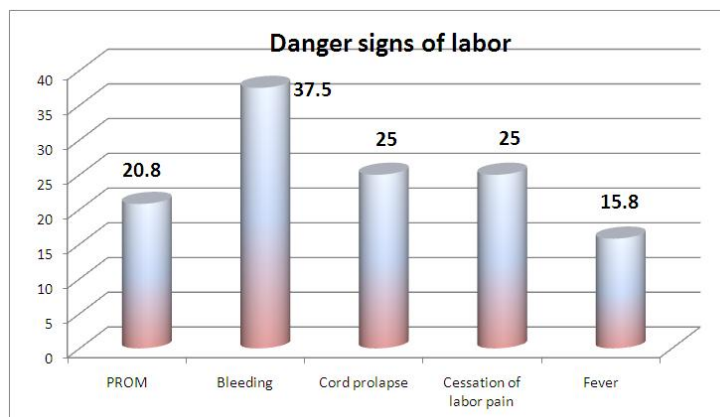
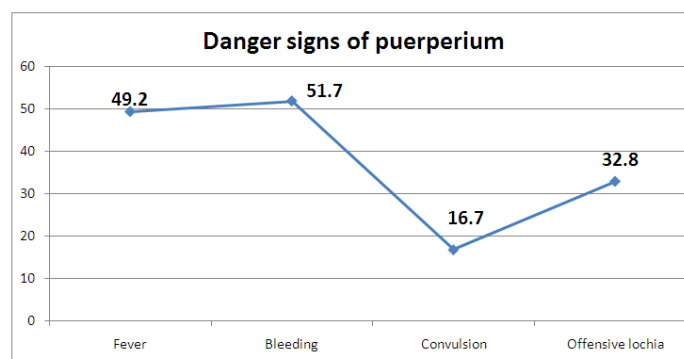


Figure (1) illustrates that decrease fetal movement 35% followed by bleeding 29.2% and fluid leakage from vagina 24.2% were the most commonly reported danger signs of pregnancy by ANC attendant women.



**Figure (3): Frequency Distribution of Danger Signs of Labor as Reported by The Studied Women**

As regards danger signs of labor figure (2) illustrates that bleeding, cord prolapse, cessation of labor pain, PROM and fever were the most commonly reported danger signs (37.5%, 25%, 25% 20.8% & 15.8% respectively).



**Figure (4) Frequency Distribution of reported danger signs of puerperium Among the studied Group**

Figure (4) shows that bleeding (51.7%), fever (49.2%), offensive lochia (32.8%) and convulsion (16.7%) were the most common danger signs reported by studied women.

**Table(4): Frequency Distribution of Women's Reaction Regarding Occurrence of Obstetrics Danger Signs**

Items	Frequency	Percent
Visit physician	62	51.7
Ask for advice from family	48	40.0
Research at internet	10	8.3
Total	120	100.0

Regarding women's reaction toward occurrence of obstetric danger signs 51.7% of women visit physician and 40% ask for advice from family.

**Table (5): Comparison of Total Knowledge Score Regarding Obstetrics Danger Signs at Different Time from Health Education Program**

Knowledge about danger signs	Time of assessment			Freidman test	P
	Before health education	Immediately after health education	After 2 months of health education		
	No(%)	No(%)	No(%)		
Pregnancy					
Poor	35(29.2)	0.0	0.0	192	0.0001 (S)
Fair	75(62.5)	8(6.7)	18(15)		
Good	10(8.3)	112(93.3)	102(85)		
Labor					
Poor	65(54.1)	5(4.2)	0.0	174.5	0.0001 (S)
Fair	50(41.7)	15(12.5)	24(20)		
Good	5(4.2)	100(83.3)	96(80)		
Puerperium					
Poor	60(50)	0.0	5(4.2)	179.2	0.0001 (S)
Fair	45(37.5)	9(7.5)	14(11.6)		
Good	15(12.5)	111(92.5)	101(84.2)		

This table shows statistically significant differences between total knowledge score about obstetric danger signs at different times from health educational program of the studied group.

**Table(6): Relation Between Total Mean of Knowledge Score (pre intervention) in Relation to Demographic Characters of Studied Women.**

Demographic characters		Mean $\pm$ SD (total knowledge)	(p)
<b>Age</b>	<20 year	15	7.3 $\pm$ 4.7
	20-30 year	86	6 $\pm$ 6.1
	>30 year	19	9.2 $\pm$ 5.5
<b>Marital status</b>	Married	111	7.2 $\pm$ 5.9
	Unmarried	9	0.44 $\pm$ 0.53
<b>Residence</b>	Rural	72	5.6 $\pm$ 3.2
	Urban	48	8.1 $\pm$ 8.1
<b>Family number</b>	$\leq$ 3	49	4.7 $\pm$ 2.6
	4-5	67	8.2 $\pm$ 7.4
	6-7	4	6 $\pm$ 0
<b>Education</b>	Basic and secondary education	78	6.7 $\pm$ 6.2
	University	27	8.1 $\pm$ 6
	Post graduate	15	4 $\pm$ 3
<b>Occupation</b>	House wives	96	6.1 $\pm$ 6
	Worker	24	8.9 $\pm$ 4.9
<b>Income</b>	Sufficient and more	34	5.3 $\pm$ 2.2
	Sufficient	63	8.5 $\pm$ 7.5
	Insufficient	23	4.1 $\pm$ 2.8

\*Mann-whitney test      \*\*Kruskall Wallis test      **bold**= significant

Concerning relationsbetween total mean of knowledge score (pre intervention ) in relation to demographic characteristics of studied women. Table( 6) indicates that statistically significant positive relations were found with women's age, marital status and occupation.

**Table(7): Relation Between Total Knowledge Score (pre intervention ) of Obstetrics Danger Signs with Obstetric History of Studied Women**

Variables	No	Mean ±SD	(p)
<b>Antenatal visit</b>			
<4	73	6.9±6.7	*0.72
≥4	47	6.3±4.5	
<b>Distance between home and ANC unit</b>	63	8.2±7.4	<b>*0.003</b>
≤one hour	57	4.5±2.6	
<b>Did anyone talk with you about obstetric danger signs</b>	25	12.2±7.9	<b>*0.0001</b>
Yes	95	4.9±4.2	
No			
<b>Have knowledge about obstetric danger signs</b>	88	7±3.6	<b>*0.0001</b>
Yes	32	4.9±9.7	
No			
<b>Number of para</b>	25	7.2±3.6	<b>**0.0001</b>
0	34	10±8.9	
1	48	3.9±2.6	
2	13	7.1±1.1	
3			
<b>Complication with previous pregnancy</b>	93	6.8±5.7	<b>*0.002</b>
Yes	27	5.9±6.9	
No			
<b>Place of last labor</b>	30	7±3.3	<b>**0.0001</b>
No	20	11.5±9.2	
Home	65	4.6±4.9	
Hospital	5	7±0	
Others			
<b>Gestational age</b>	55	6.4±5.3	*0.5
≤3 months	65	6.5±6.5	
4-6 months			

\*Mann-whitney test      \*\*Kruskall Wallis test      **bold**= significant

Concerning relationsbetween total mean of knowledge score (pre intervention ) in relation ofobstetric history of studied women, table 7 indicates that statistically significant positive relations were found withdistance between home and ANC unit, number of para, complication with previous pregnancy and place of last delivery and total mean of knowledge score about obstetric danger signs.

#### IV. Discussion

Danger signs that most frequently occurring during pregnancy embracesevere vaginal bleeding, hands/face edema and blurry vision. Also,danger signs during labor include hemorrhage, prolonged labor, convulsions, and retained placenta. As well postpartum danger signs include severe postpartum bleeding, fever, offensive lochia [11].Antenatal care provides an opportunity to counsel women about possible serious obstetric danger signs and to support delivery by skilled attendants,to underscore serious obstetrics complication [12]

The present study results show thatsightly more than one third of the studied group reported that they receivedinstructions about obstetric danger signs during their antenatal visits. This finding may due to that health counselling is a missed part in ANC in our country and many women visit ANC unit seeking solution for health problem only. Regarding other sources of information about obstetrics danger signs radio&TV and family were the commonest sources of information reported by women. In congruent with the study findings **Pembe et al. (2010)**in Tanzaniaand **Rashad,W. and Essa R(2010)** in Egypt reported that counselling on pregnancy danger signs generally performed poorlyin informing the clients on pregnancy danger signs. They reported more than one quarter of women were unaware of obstetric danger signs.

As well in agreement with the previous findings **Girum and Shegaze(2017)**in resent studyreported thatduring the ANC consultations, about one inthree women was not informed on any of pregnancy danger signs. However **Acharya and Poudel(2016)** found that 96% of their respondents had knowledge aboutpossible danger signs but only 40.2% of themobtained the information from health personnel.

As regards danger signs of pregnancy reported by women these were decrease fetal movement represented more than one third followed by bleeding less than third and fluid leakage from vagina accounting for slightly less than quarter were the most commonly reported danger signs of pregnancy by ANC attendant

women. Negligence in information from skilled ANC personnel was the main reason for not having good awareness about danger signs of pregnancy.

In some extent of agreement, with the previous findings those of **Gebrehiwot and Haile N., (2014)** in Ethiopia who reported that out of the total participants of their study 336 (79.6%) had information about danger signs of pregnancy from which 208 (61.9%) mothers had information about vaginal bleeding followed by sudden gush of fluid before labor which was mentioned by 141 (41.9%) of respondents. Severe unusual abdominal pain was the least known danger sign 64 (19%).

Concerning the present pregnancy profile nearly half of the study subjects had their third pregnancy and were in second trimester. Although distance between home and ANC unit was one hour or less than one hour for more than half of them visits to ANC unit were less than 4 times. Regarding complications with previous pregnancy more than three quarters reported occurrence of complication with previous pregnancy. In a similar study **Sangal et al., (2012)** was in disagreement with the previous finding and they reported that only 27.2% of multigravida experienced complications in their previous pregnancy.

However in a recent study conducted in Iraq by **Abas & Fakhredeen (2017)** their finding was in accordance with those of current study as they reported that slightly more than half of the pregnant women (53.0%) were pregnant two to three times.

Concerning total knowledge score the present study results revealed that statistically significant differences were detected between total knowledge score about obstetrics danger signs at different time from health educational program implementation to the studied group.

Similar result was reported by **Henry et al. (2013)** whose study entailed awareness of critical danger signs of pregnancy and delivery, preparations for delivery and utilization of skilled birth attendants in Nigeria reported that less than one-third knew three or more danger signs of pregnancy or labor and delivery.

Regarding relations between total mean of knowledge score pre intervention in relation to demographic characteristics of studied women, the present study results revealed that statistically significant positive relations were found between women's age, marital status and occupation. In a similar study **Mengesha (2014)** reported that awareness of women on danger signs during pregnancy is significantly influenced by educational level and occupation of women.

Concerning relations between total mean of knowledge score pre intervention of absolute danger signs in relation to obstetric history of studied women, results of present study indicates that statistically significant positive relations were found between distance between home and ANC unit, number of para, complication with previous pregnancy. This could be explained by the fact that, a woman who has previous child birth experience, and reside near health facilities recognizes more from her exposure and she is also more likely to seek health care and receive health education.

In recently study conducted in Ethiopia by **Girum and Shegaze (2017)** they found that compared to nulliparous, multiparous women were about 1.5 times more likely to be knowledgeable about obstetric complications. However **Henry (2013)** reported that antenatal care visits did not increase knowledge of critical danger signs. Antenatal care visits were not correlated with knowledge of any or critical danger signs. Residence in an urban area increased the odds of obstetrics danger signs. As well as parity clarified that women learn more about non-critical danger signs with every pregnancy and delivery.

## V. Conclusion and Recommendation

The study hypothesis is justified as the educational program was effective in increasing women's total knowledge score about obstetric danger signs. Before implantation of educational program women in ANC unit have low score of knowledge about obstetrics danger signs. So it is recommended that nurses at the ANC units should educate pregnant women about danger signs and facilitate uptake of delivery services by using different strategies for this aim. Future research is needed to identify creative and innovative ways to strengthen these strategies for educating pregnant women about danger signs and in facilitating uptake of delivery services.

## Reference

- [1]. Abas A., & Fakhredeen A., (2017): Knowledge about danger signs and symptoms of pregnant women attending antenatal care centers in Baghdad City. *IOSR Journal of Nursing and Health Science*. Volume 6, Issue 4 Ver. II, PP 37-40
- [2]. Acharya TK. & Poudel M., (2016): Knowledge regarding obstetric danger signs among antenatal mothers attending a tertiary level hospital. *International Journal of Nursing Research and Practice* Vol. 3 No. 2
- [3]. El-Zanaty, F., & Way A. (2008): *Egypt Health Demography Health Survey 2008*. Cairo, Egypt, Ministry of Health. Available at: <http://www.measuredhs.com>
- [4]. Gebrehiwot, H., Bahta S., & Haile N., (2014): Awareness of danger signs of pregnancy and its associated factors among pregnant women who visit ANC in Mekelle Public Hospitals. *American Journal of Advanced Drug Delivery*. pp 164-173
- [5]. Girum T., & Shegaze M. (2017): Knowledge about obstetric danger signs and associated factors among antenatal care attendants. *International Journal of Public Health Science (IJPHS)* Vol.6(1, March 2017), pp. 21:27
- [6]. Global Health Council report: Available at: <http://www.globalhealth.org/reports/report.php3> last accessed on August 5, 2010



- [7]. Henry V., Sally E., Giorgio Cometto., & Godwin Y., (2013): Awareness of critical danger signs of pregnancy and delivery, preparations for delivery, and utilization of skilled birth attendants in Nigeria. *Journal of Health Care for the Poor and Underserved*, 24 pp 152–170
- [8]. JHPIEGO. (2004): Maternal and neonatal health program. birth preparedness and complication readiness: a matrix of shared responsibilities. JHPIEGO: Maryland.
- [9]. Thaddeus S., & Maine D. (2004): Too far to walk: maternal mortality in context. *SocSciMed* ;38:1091–11
- [10]. Mengesha, E., (2014): The level of awareness on danger signs of pregnancy and associated factors among ANC attendant pregnant women in Debarq Town, North West Ethiopia, 2012. *Translational medicine and biotechnology*, volume 2, issue 5.
- [11]. Pembe AB., Carlstedt A., Urassa AD., Lindmark G Nyström L. & Darj E., (2010): Quality of antenatal care in rural Tanzania: counselling on pregnancy danger signs. *BMC Pregnancy and Childbirth* 2010, 10:3 <http://www.biomedcentral.com/1471-2393/10/35>
- [12]. Rashad, W. & Eissa R. (2010): Women's awareness of danger signs of obstetrics complications. *Journal of American Science*, vol/issue: 6(10).
- [13]. Sangal R., Srivastva R., Singh A., Srivastva DK., & Humkhan M., (2012): Knowledge and practice regarding obstetric danger signs in women attending antenatal care clinic at BRD Medical collage Gorakhpur. *Indian J. Prev. Soc. Med.*, 43.(1).
- [14]. USAID. Working toward the goal of reducing maternal and child mortality: USAID (2008): Programming and response to appropriations.
- [15]. World Health Organization (2015): Trends in maternal mortality: 1990 to 2015 Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Geneva 27, Switzerland e-mail: [bookorders@who.int](mailto:bookorders@who.int).
- [16]. World Data Atlas, World and regional statistics, national data, maps, rankings. Maternal mortality in 1990-2015 WHO, UNICEF, UNFPA, World Bank Group, and United Nations Population Division Maternal Mortality Estimation Inter-Agency Group.
- [17]. World Health Organization (WHO) (2015): United Nations Children's Fund (UNICEF), and United Nations Population Fund (UNFPA). Maternal mortality in 2000: Estimates developed by WHO, UNICEF and UNFPA. WHO, Geneva.
- [18]. World Health Organization (2006): Standards for Maternal and Neonatal Care: Birth and emergency preparedness in antenatal care: Department of making pregnancy safer (MPS), Geneva, World Health Organization.
- [19]. World Health Organization (2010): Pregnancy let's make it safer, world health day safe motherhood, Geneva, Switzerland WHO 980.