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RESEARCH ARTICLE

"KNOWLEDGE AND ATTITUDE ON NEONATAL DANGER SIGNS AMONG THE ANTENATAL WOMEN RESIDINGIN THE URBAN AREAS OF GANGTOK, SIKKIM"

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Abstract

Background: A child's survival during the first month of life is highly dependent on several factors since it's a very fragile and delicate period. According to WHO 47% of all under 5 deaths occurred in the newborn period and majority of the deaths occurred in the developing country. The mother has a direct impact on her child's health, thus she has to be alert to any early warning indications that could be concerning.

Aim: The aim of the study was to assess the knowledge and attitude possessed on neonatal danger signs by the antenatal women.

Materials and Methods: A descriptive cross-sectional study was conducted among 237 antenatal women (Primigravida and multigravida) residing in the urban areas of Gangtok, Sikkim. The samples were collected using Purposive sampling technique. A structured knowledge questionnaire and 5-point Likert scale was administered to collect the data.

Results: The results showed that about 5% of the antenatal women had good knowledge, 77% had average knowledge and 18% had poor knowledge, whereas majority, 97% of the women possessed favourable attitude and only 3% had unfavourable attitude. There was a statistically significant correlation (r = 0.317 at 0.001 level of significance) between knowledge and attitudeon neonatal danger signs.

Conclusion: The study concluded that there is a need to improve knowledge on neonatal danger signs among the antenatal women. This can be achieved by providing education either during ANC visits, PNC follow-ups or at community level. Therefore, interventional strategiesthat stresses on strengthening maternal education should be extended.

Introduction:-

"Infant mortality and life expectancy are reasonable indicators of general well-being in asociety."

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The first month of life is an extremely important and fragile time in a child's existence.In addition to being a time for development and connection, it is also a time to exercise prudence. The period of first 28 days of the newborn's existence is referred to as neonatal phase. [1]

The transition from intrauterine to extra uterine life is a significant hurdle or a struggle for thebaby after birth. WHO in 2020 reported that 2.4 million new-borns died in the first 28 days of life, accounting for over half (47%) of all fatalities among children under the age of five.

The non-specific signs of severe illness are neonatal danger signs which can be a manifestation of almost any newborn disease which non-clinical staff, including the mother, may readily identify. [2]

Neonatal danger signs are clinical indicators suggesting a high risk of neonatal morbidity and mortality. Most neonatal fatalities take place in underdeveloped nations, whereby the majority of the deaths taking place in home. Even though there has been progress where the mortality rate dropped from 38.8 deaths per 1,000 live births in 2013 to 26.619 deaths in 2023, but still thereremains a gap in number of fatalities across various nations [3]

One of the health-related Sustainable Development Goals (SDG) that must be accomplished by 2030 is lowering newborn mortality. Therefore, enhancing neonatal health and lowering mortality rate plays a pivotal role in achieving the SDG. WHO estimates that half of all deaths occurred in only five developing nations namely Ethiopia, India, Nigeria, Pakistan andDemocratic Republic of Congo. [4]

According to World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF), neonatal danger signs, which warns that the new-borns are at high risk of sickness and death. In 2013 the World Health Organization issued strong recommendations for the assessment of particular danger signs during each postnatal visit. If any of these signs are present, the newborn should be immediately referred for further evaluation. [5]

The new-born deaths were caused by number of causes that includes, limited awareness and understanding among the primary care providers especially the mothers, difficulty in reachinga conclusive diagnosis and lack of specificity in the clinical presentations of numerous neonatalmorbidities. [6]

The mother has an increased responsibility to recognize the danger signs because of the brief hospital stay after childbirth and the restricted time for a thorough examination of the new-born. According to some studies, most new-born deaths in the developing countries occur as aresult of mothers' failure to recognize these danger signs and not seeking medical care at the earliest. [7]

Neonates are often hospitalized with variety of symptoms that indicate illness. These symptoms may be present during the time of hospital stay or may develop after the baby is discharged from the hospital. Here, the aim of initial management of a neonate showing thesesymptoms is stabilization and preventing deterioration of the health. Neonates are more proneto show subtle signs of illness and difficulty of feeding that are sometimes the only signs present, but the illness may advance quickly [8]

It is estimated that 75% of neonatal deaths could be avoided with simple low-cost identificationand management tools and this is only possible if the mothers' gain knowledge regarding the above neonatal signs of danger (NSD) that enable them to make a quick and prompt decision of seeking health assistance. The World Health Organization (WHO) developed Integrated Management of New-born Illness initiative, which focused on the assessment of NSD and application of prompt timely treatment. [9]

The health condition of a child directly contacts with the mother, she must be very aware of theearly signs which could also possibly be a warning sign. Mother or the caregivers are the first people who can notice the early warning characteristics of illness and major changes or deviation from normal. The main aim is early recognition of the occurrence of these danger signs that would aid in predicting the need for seeking treatment of the new-born. [10]

Early detection of neonatal danger signs of illness is a very important step towards maximizingthe neonate's chances of survival. It should be noted that most of the neonates in the developing countries are either delivered at home or are discharged from the health facility too early. Intervention modalities that focus on increasing the level of prenatal education, access to antenatal and postnatal care and advocating the use of television as means for health education were pinpointed in some relevant studies. [11]

The objectives of this study were:

1. To estimate the knowledge and attitude on neonatal danger signs among the antenatal women.
2. To determine the correlation between knowledge and attitude onneonatal danger signs.
3. To determine the association between the knowledge on neonatal danger signs with demographic and obstetrics variables.
4. To determine the association between the attitude on neonatal danger signs with demographic and obstetrics variables.

Materials and Method:-

This study used purposive sampling and is a descriptive cross-sectional study. 237 samples were chosen for the study based on inclusion and exclusion criteria in the urban areas of Gangtok, Sikkim. Pregnant women who are willing to engage, who are between the ages of 19 and 45, who are primi and multigravida, and who are able to communicate in English, Hindi, or Nepali were the requirements for inclusion.

The data collection tool in the study included: Tool I: Section A: Demographic profile of the antenatal women and Section B: Obstetrics profile of the antenatal women

Demographic profile included components like age, religion, marital status, educational status of the women and husband, occupation of women and husband, total family income and type of family.

Obstetrics profile included components like age at first pregnancy, parity, history of abortion, history of still birth, number of living children, frequency of antenatal visits, plan for place of delivery, antenatal visit accompanied by spouse and birth preparedness status.

Tool II: WHO-recommended 11 components were included in the structured knowledge questionnaire on neonatal danger signs: inability to feed or cessation of feeding, convulsions or fitting since birth, rapid breathing, chest indrawing, high or low body temperature, yellow soles, movement only when stimulated or no movement at all, and indications of local infection, such as umbilicus redness or pus draining, skin boils, or eyes draining pus.

Tool III: The 5-point Likert scale on neonatal danger signs included items such as the newborn's warning signs, seeking medical attention, the time it took to visit a facility, the reasons not to seek medical attention, exposure to sunlight, breastfeeding frequency, and the need for prenatal education.

The study was conducted at the urban areas of Gangtok, Sikkim. Administrative approval from the concerned authorities and respective councillors of the area was taken. The purpose of the study was explained to all the participants after which an informed consent was taken. Patient information sheet was given to the participants where the objectives, procedure involved and their right to withdraw any moment from the study was explained. The tools were then administered and data were collected using interview technique

The data was analysed using descriptive and inferential statistics in SPSS 2024. Chi square orFischer's exact test was computed to find out the association between knowledge and attitudewith demographic and obstetrics variables. Karl Pearson's Correlation Coefficient was used tomeasure the correlation between knowledge and attitude.

Results:-

Based on the results related to demographic profile of antenatal women, majority 51% of the participants belonged to the age group of 28-37 years with 54% belonging to Hindu and all theantenatal women were married. Majority 28% of the women had secondary and above graduation qualification and 29% of their husband had senior secondary level qualifications. Majority 56% of them were homemaker while 35% of their husbands works at other firms. Approximately 35% of the participants total income of family was above 30,001 and majority51% of them belonged to a joint family

Based on the results related to obstetrics profile of antenatal women, majority 60% of the participants were in the age group of 19-27 years when they had their first pregnancy. 57% ofthe women were primigravida and 43% of them were multigravida Majority 91% of them hadno history of abortion and only 0.8% of them had a history of stillbirth. Majority 65% of the participants had a frequency of antenatal visit more than four and 94% of the women were accompanied by their spouses during their visits. Majority 93% of the participants claimed that it was a planned pregnancy and 64% of them had preferred government setting for their placeof delivery.

Based on the results related to knowledge and attitude on neonatal danger signs; the results revealed that out of 237 participants, only 5% had good knowledge, 77% had average knowledge and 18% of them had poor knowledge on neonatal danger signs. The findings also revealed that majority of the participants 97% possessed favorable attitude and only 3% of them had unfavorable attitude on neonatal danger signs.

Based on the results related to correlation between knowledge and attitude, there was a moderate positive correlation between the knowledge and attitude since the obtained value of 'r' and 'p' was (r = 0.317) (p = 0.001).

The findings showed a statistically significant correlation between knowledge and demographic factors, including age in years, the husband's and wife's educational attainment, the prenatal women's occupation, the husband's occupation, and the family's overall income. While there was no significant correlation with other obstetric variables, there was a statistically significant correlation between knowledge and the age of the woman having her first pregnancy.

Based on the results, there was a statistically significant association found between attitude and the educational status of both antenatal women and husband. The results also revealed that there was no any significant association between attitude and obstetrics variables.

Table 1:- Frequency and percentage distribution of demographic variables **N= 237**

Sl. No	Socio-demographic Variables	Frequency (f)	Percentage (%)
1.	e in yearsa. 19-27		
	b. 28-37	96	41
	c. 38-45	**121**	**51**
		20	8
	Religion		
2.	Hindu		
	Christian	**127**	**54**
	Buddhist	53	23
	Others	51	21
		6	2
	Marital status		
3.	Married	**237**	**100**
	Unmarried	0	0
	Divorced/ Separated	0	0
	Widowed	0	0
	Educational status of antenatalwomen		
4.	No formal education	13	5
	Primary education	32	14
	Secondary	67	28
	Senior secondary	58	24
	Graduation and above	**68**	**29**
	Educational status of husband		
	No formal education	17	7
5.	Primary education	32	14
	Secondary	61	26
	Senior secondary	**69**	**29**
	Graduation and above	58	24

6.	Occupation of antenatal women		
	Homemaker	**134**	**56**
	Private employee	39	17
	Government employee	52	22
	Others	12	5
7.	Occupation of husband		
	Unemployed	16	7
	Private employee	72	30
	Government employee	65	28
	Others	**84**	**35**
8.	al income of familya. ≤10,000	24	10
	b. 10,001- 20,000	65	27
	c. 20,001-30,000	66	28
	d. Above 30,001	**82**	**35**
9.	Type of family		
	Nuclear	97	41
	Joint	**120**	**51**
	Extended	20	8

Table 2:- Frequency and percentage distribution of Obstetrics variables **N= 237**

Sl. No	Obstetrics Variables	Frequency (f)	Percentage (%)
1.	e at first pregnancya. 19-27		
	b. 28-37	**141**	**60**
	c. 38-45	92	38
		4	2
2.	Number of pregnancies		
	Primi	**134**	**57**
	Multi	103	43
3.	History of abortion		
	Yes	22	9
	No	**215**	**91**
4.	History of still birth		
	Yes	2	1
	No	**235**	**99**
5.	No. of living children		
	None	**136**	**57**
	1	83	35
	2	17	7
	3 and above	1	1
	Frequency of antenatal visit		
	Less than 4 visits	84	36

6.	More than 4 visits	**153**	**64**
7.	Plan for place of delivery a. Government hospital	**151**	**64**
	Private hospital	86	36
	Home setting	0	0
	Others	0	0
8.	Antenatal visit accompanied byspouse		
	Yes	**224**	**95**
	No	13	5
	Birth preparedness status		
9.	Planned	**220**	**93**
	Unplanned	17	7

Table 3:- Frequency and percentage distribution of level of knowledge on neonatal danger signs among the antenatal women **N= 237**

Knowledge	**Frequency (f)**	**percentage (%)**	**Score Range**	**Median**	**Mode**	**Mean**	**SD**
Poor	43	18	0-14				
Average	**182**	**77**					
Good	12	5	14	8	8	8.10	2.78

Table 4:- Area wise distribution of knowledge on neonatal danger signs among antenatalwomen. **N= 237**

Area of knowledge	**Total items**	**Total Maximum Score**	**Total score obtained**	**Mean**	**Mean %**
Previous knowledge and meaning on neonatal dangersigns	2	2	176	0.74	37%
Poor sucking or has stopped feeding **Signs of convulsions** **Fast and difficult breathing**	3	3	342	1.44	48%
Hyperthermia **Hypothermia** **Yellow skin andsoles**	1	1	121	0.51	51%

Treatment for jaundice	3	3	312	1.31	44%
	2	2	224	0.94	47%
	1	1	113	0.47	48%
	1	1	126	0.53	**53%**
	1	1	86	0.36	36%

Unconsciousness	2	2	199	0.83	42%
Signs of infection	2	2	211	0.89	45%

Section III:- Description of attitude on neonatal danger signs among the antenatal women **N= 237**

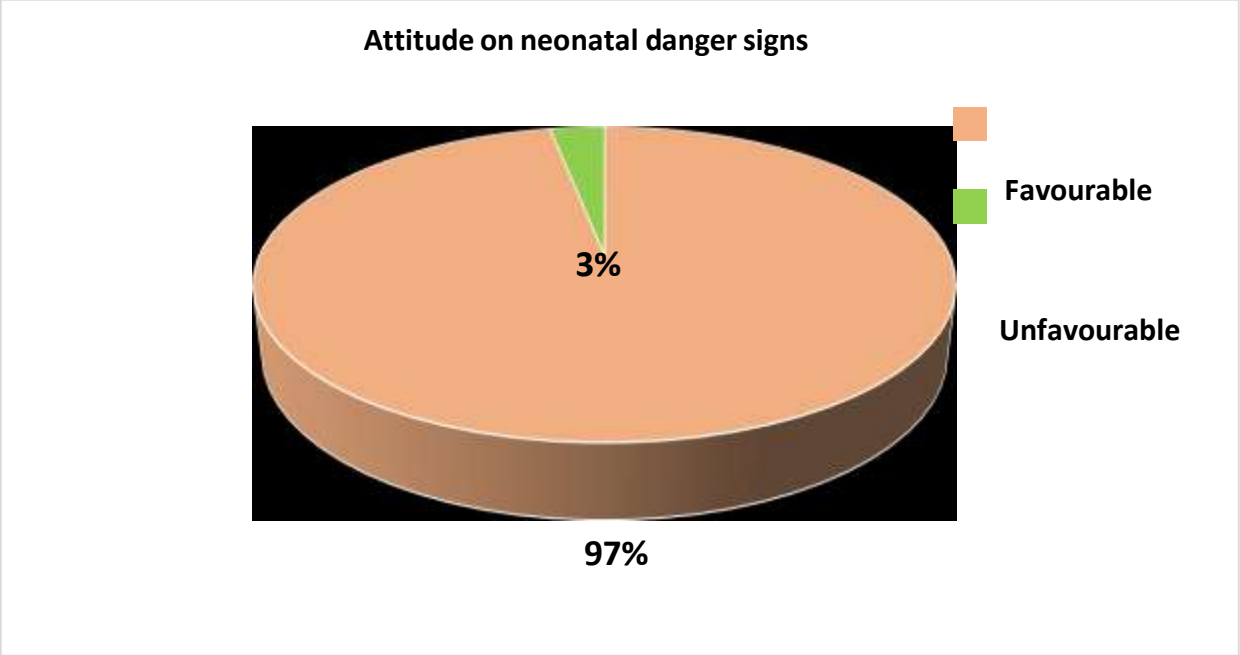

Figure 1:- Frequency percentage distribution of attitude on neonatal danger signs amongthe antenatal women.

Table 5:- Correlation between knowledge and attitude on neonatal danger signs amongthe antenatal women. **N= 237**

Variables	**Mean**	**SD**	**r value**	**p value**
Knowledge	8.10	2.78		
Attitude	73.70	5.59	0.317	0.001*

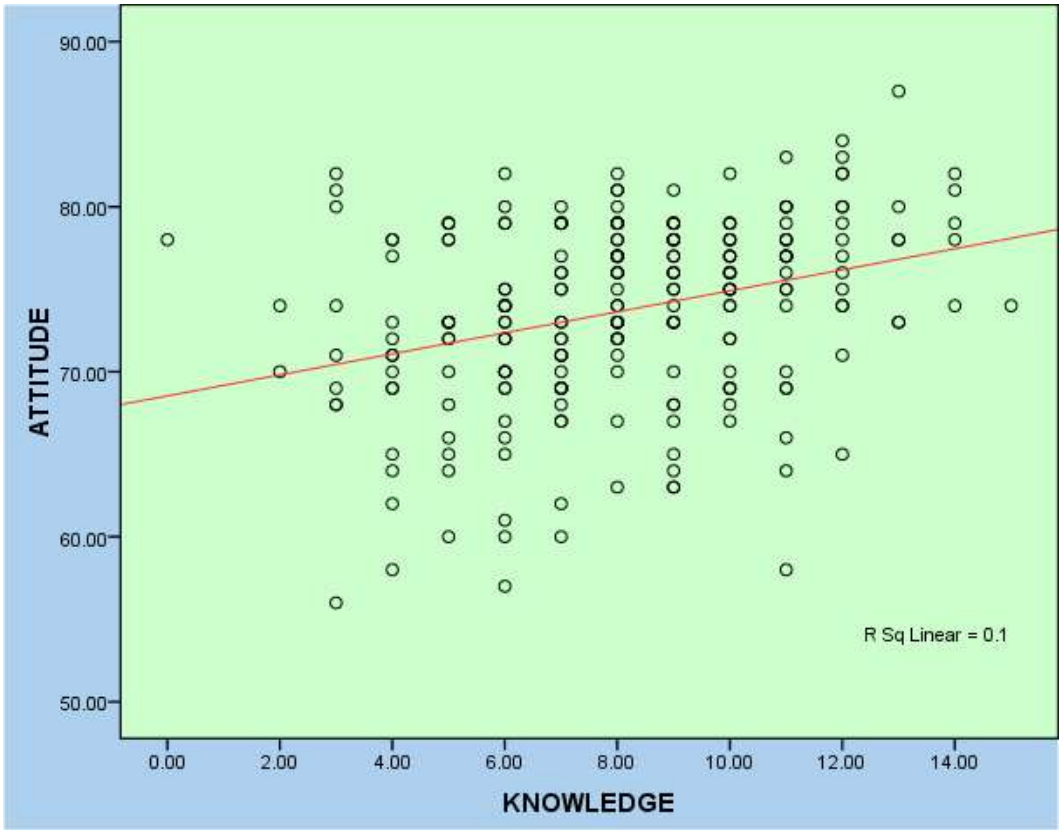

Figure 2:- Correlation between knowledge and attitude on neonatal danger signs amongthe antenatal women.

Table 6:- Association between knowledge on neonatal danger signs with demographicvariables.
N= 237

Sl. no.	Demographic variables	Poor knowledge	Average knowledge	Good knowledge	Fischer's exact/ χ^2 value	df	p value
1.	e in years a. 19-27						
	b. 28-37	**23**	69	4	8.898	4	0.048*
	c. 38-45	20	**93**	**8**			
		0	20	0			
	Religion						
2.	Hindu						
	Christian	**24**	**98**	**5**	5.231	6	0.473^{NS}
	Buddhist	8	41	4			
	Others	8	40	3			
		3	3	0			
	Marital status						
3.	Married	**43**	**182**	**12**	NA	NA	NA
	Unmarried	0	0	0			
	Divorced/Separated	0	0	0			
	Widowed						
		0	0	0			
	Educational						
4.	s						
	tatus						
		8	5	0	65.41	8	0.001*
	ofantenatal women						
		17	15	0			

5.	No formaleducation Primary education Secondary Senior secondary Graduation and above	11 7 0 5	**55** 50 57 12	1 1 **10** 0	35.68	8	0.001*
	Educational status ofhusband No formaleducation Primary education Secondary Senior secondary Graduation and above	**16** 9 11 2	16 50 **55** 49	0 2 3 **7**			
6.	Occupation of antenatalwomen Homemaker Private Government Others	**34** 4 2 3	**98** 34 44 6	2 1 **6** 3	28.93	6	0.001*
7.	Occupation of husband Unemployed Private Government Others	6 9 5 **23**	10 61 55 **56**	0 2 **5** **5**	16.78	6	0.006*
8.	al income of family a. ≤10,000 b. 10,001- 20,001 c. 20,001-30,000 d. Above 30,001	8 **20** 10 5	16 44 55 **67**	0 1 1 **10**	27.41	6	0.001*
9.	Type of family Nuclear Joint Extended	17 **21** 5	75 **93** 14	5 **6** 1	1.076	4	0.911^{NS}

Table 7:- Association between knowledge on neonatal danger signs with Obstetrics variables **N= 237**

Sl. no.	Obstetrics variables	Poor knowledge	Average knowledge	Good knowledge	Fischer' s exact/ $\square^2$value	df	p value

.	Antenatal visit accompanied by spouse Yes No	**40** 3	**172** 10	**12** 0	0.447	2	0.859^{NS}

1.	e at first pregnancyd. 19-27 e. 28-37 f. 38-45	**35** 8 0	**99** 79 4	**7** 5 0	10.85	4	0.021*
2.	Number of pregnancies Primi Multi	20 **23**	**106** 76	**8** 4	2.432	2	0.314^{NS}
3.	History of abortion Yes No	2 **41**	19 **163**	1 **11**	1.225	2	0.574^{NS}
4.	History of still birth Yes No	0 **43**	2 **180**	0 **12**	0.968	2	0.995^{NS}
5.	Number of livingchildren None 1 2 3 and above	**20** **20** 2 1	**108** 59 15 0	**8** 4 0 0	8.496	4	0.211^{NS}
6.	Frequency of antenatalvisit Less than 4 visits More than 4 visits	18 **35**	64 **118**	2 **10**	2.507	2	0.278^{NS}
7.	Plan for place of delivery Government Private hospital Home setting Others	**26** 17 0 0	**118** 64 0 0	**7** 5 0 0	0.567	2	0.789^{NS}

9.	Birth preparedness status Planned				**3 9** 4	**17 0** 12	**1 1** 1	0.892	2	0.543^{NS}
	Sl. no.	**Demographic variables**	**favorableattitude**	**avorable attitude**	**s**					
	1.	in years a. 19-27 b. 28-37 c. 38-45	**4** 3 0	92 **118** 20	0.					
	2.	Religion Hindu Christian Buddhist Others	**5** 0 1 1	**122** 53 50 5	5.					
	3.	Marital status Married Unmarried Divorced/Separated Widowed	**7** 0 0 0	**230** 0 0 0	N					
	4.	Educational status of antenatal women No formaleducation Primary education Secondary	1 1	12 31	8.					
		Unplanned								

Table 8:- Association between attitude on neonatal danger signs with demographic variables. **N= 237**

	Senior secondary Graduation andabove	**5** 0 0	**62** 58 10			
5.	Educational status of husband No formaleducation Primary education Secondary Senior secondary Graduation andabove	2 1 **4** 0	15 31 57 **69**	9.857	4	0.009*
	Occupation of antenatalwomen Homemaker	0	58			

6.	Private					
	Government	**6**	**128**	2.221	3	0.479^{NS}
	Others	1	38			
		0	52			
	Occupation of husband	0	12			
	Unemployed					
7.	Private					
	Government	0	16	5.059	3	0.119^{NS}
	Others	**5**	**67**			
		0	65			
	tal income of familya. ≤10,000	2	82			
	b. 10,001- 20,001					
8.	c. 20,001-30,000					
	d. Above 30,001	1	23	3.586	3	0.259^{NS}
		4	61			
		1	65			
	Type of family	1	**81**			
	Nuclear					
9.	Joint					
	Extended	3	94	0.217	2	0.891^{NS}
		4	**116**			
		0	20			

Table 9:- Association between attitude on neonatal danger signs with Obstetrics variables. **N= 237**

Sl. no.	Obstetrics variables	Unfavorable attitude	Favorable attitude	Fischer's exact/ $\square^2$value	df	p value
1.	e at first pregnancya. 19-27					
	b. 28-37	**4**	**137**	0.734	2	0.992^{NS}
	c. 38-45	3	89			
		0	4			
	Number of pregnancies					
2.	Primi					
	Multi	3	**131**	0.544	1	0.461^{NS}
		4	99			
	History of abortion					
3.	Yes					
	No	0	22	1.386	1	0.239^{NS}
		7	**208**			
	History of still birth					
4.	Yes					
	No	0	2	0.120	1	0.729^{NS}
		7	**228**			
5.	Number of livingchildren					
	None					
	1	3	**133**	3.074	3	0.571^{NS}
	2	**4**	79			
	3 and above	0	17			
		0	1			
	Frequency of antenatalvisit					
6.	Less than 4 visits					
	More than 4 visits	2	82	0.154	2	0.695^{NS}
		5	**148**			

7.	Plan for place of delivery Government Private hospital Home setting Others	 3 **4** 0 0	 **148** 82 0 0	1.294	1	0.255^{NS}
8.	Antenatal visit accompanied by spouse Yes No	**6** 1	**218** 12	0.774	1	0.379^{NS}
9.	Birth preparedness status Planned Unplanned	**6** 1	**214** 16	0.438	1	0.508^{NS}

Discussion in relation to knowledge on neonatal danger signs.

The findings of this study revealed that 76.8% of the participants had average knowledge, 18.1% had poor knowledge and only 5.1% had good knowledge.

These findings are supported by a study conducted at Dhulikhel, Nepal by **Ratneworee Prajapati** and **Sujata Madhikarmi** in 2016 where 55.2% of the participants' possessed moderate knowledge, 9.6% of them had poor knowledge and 35.2% of the respondents had inadequate knowledge on new-born danger signs. [12]

Also, according to a study conducted at Ethiopia by **Mulugeta W, Tarikua Afework** and **PremKumar** in 2019, the findings showed that 82.90% were not knowledgeable and only 17.01% of the respondents were knowledgeable on the identification of new-born danger. [13]

However, the findings are inconsistent with the study conducted at Jalandhar Punjab by **BalbirSingh et al.** in 2021 where 49.6% of the women had good knowledge, 38% had poor knowledge and 12.4% had zero knowledge where they couldn't identify even one neonatal danger sign. The disparity may be due to the differences in the demographic profile or operational definition in their study. [14]

Discussion in relation to attitude on neonatal danger signs.

The findings of the present study shows that 97% of the antenatal women had a favorable attitude and only 3% of them possessed unfavorable attitude on neonatal danger signs. These findings are similar with the study conducted at Dehradun, Uttarakhand by **ReenaThakur, Rajesh Kumar, Laxmi Kumar and Sanchita Pugazhendi** in 2017 which showed majority of the respondents (61%) had moderate attitude and 39% of them had favorable attitude on neonatal danger signs. [15]

Discussion in relation to association between knowledge on neonatal danger signs with demographic and obstetrics variables

In the present study, 51.1% of the participants belonged to the age group of 28-37 years,40.5% between 19-27 and 8.4% between 38-45 years. Similar findings were reported by a study conducted at Ethiopia by **Guta A, Seema A, Amsalu B and Sintayehu Y** in the year 2020, where majority of the participants (62.8%) belonged to the middle age group of 25-34 years, 23.2% between 18-24 years and 14% ≥ 35 years. The present study showed that the antenatal women's age was statistically significant to their knowledge on neonatal danger signs. Antenatal women who were between the age group of 28-37 had higher level of knowledge than the women belonging to other age groups. [16]

Discussion in relation to association between attitude on neonatal danger signs with demographic and obstetrics variables

The findings of the present study show a statistically significant association between attitude possessed on neonatal danger sign and educational status of both the antenatal women and her husband. The findings are supported by a study conducted by **Reena Thakur, et al.** in 2017 where they found statistically significant association between attitude score of the participants and level of education ($p = 0.001$). Hence it can be

interpreted statistically that the mothers who have higher education were also having more positive attitude regarding neonataldanger signs. [15]

Conclusion:-

The present study concluded that, the antenatal women had an average knowledge on neonataldanger signs with a favorable attitude towards it. Even though majority of the antenatal women possessed average knowledge and notably favorable attitude towards it, still there remains a need to educate the antenatal women and strengthen interventional strategies that improve theknowledge of the antenatal women. There was a statistically significant moderate positive correlation between knowledge and attitude on neonatal danger signs which highlights the crucial interplay between knowledge and attitude.

According to the findings, there is a need to foster deeper understanding to enhance early recognition and prompt management of neonatal danger signs, ultimately contributing to improve maternal and child health outcomes. This can be achieved by stressing counselling sessions to address any misconceptions or concerns regarding neonatal health.

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