Napata Scientific Journal, Vol. 4 (1), April. 2025 pp 13-25

Original Article

Pregnant Women Awareness and Attitude Regarding Obstetrics Danger Signs at a Tertiary Hospital in Gezira State, Sudan 2022

Fatima Abdalla[1] Faiza Taha[2] & Aisha Adam [3]

[1*].Fatima Ahmed Abdalla, Alneelain University, lecturer at Igraa College, Khartoum, Sudan.

[2.]Dr. Faiza Ali Nasor Taha Associate Professor Faculty of Nursing Sciences University of Kharyoum, Khartoum, Sudan. **ORCID** : https://orcid.org/0000-0002-0239-4301
Fanasr @uofk.edu & fifi_ali12345@hotmail.com
[3.]Dr. Aisha Mohamed Adam Assistant Professor Obstetric Nursing - Alneelain University
aieshaadam43@gmail.com
[1*] **Corresponding author:**Fatima Ahmed Abdalla, Igraa College, Khartoum, Sudan.

Received: 17/12/2024
Accepted: 28/12/2024

Abstract

Background: Awareness and a positive attitude toward obstetric danger signs are essential first steps in ensuring the appropriate and timely referral to obstetric care. This study aimed to assess awareness and attitudes regarding obstetric danger signs among pregnant mothers attending antenatal care at Wad-Madeni Obstetrics & Gynecology Hospital in Gezira State, Sudan.

Methods: A hospital-based cross-sectional study was conducted from April 30 to July 10, 2022. A total of 419 women were recruited through a systematic simple random sampling method after obtaining their consent. Data were collected using a structured questionnaire. The data were analyzed using the Statistical Package for the Social Sciences (SPSS), applying appropriate descriptive and inferential statistical techniques, with a significance level of $P > 0.05$ for associations.

Results: A total of 206 (49.2%) and 171 (40.8%) mothers were satisfied with their awareness of obstetric danger signs during pregnancy and labor, respectively, while 179 (42.7%) had good

awareness of danger signs during the postnatal period. The overall levels of awareness about obstetric danger signs among women were categorized as follows: good (104, 24.6%), satisfied (168, 40.2%), and poor (147, 35.2%). Additionally, 409 (97.6%) of the total respondents exhibited a positive attitude.

Conclusion: Awareness of obstetric danger signs was significantly associated with education level, frequency of antenatal care (ANC) follow-ups, and parity. The most frequently reported obstetric danger sign during pregnancy, childbirth, and the postpartum period was vaginal bleeding. It is crucial to implement health education programs targeting individuals with low awareness levels to improve overall community knowledge.

Keywords: obstetric, pregnancy, labor, postnatal.

Introduction:

Pregnancy is a natural physiological change, but it is important to acknowledge that it is not always a joyful experience [1]. Obstetric danger signs refer to sudden conditions that result in women's health impairment. These signs can be observed or felt by the pregnant woman herself [2].

Danger signs are warning signs that cannot be reliably predicted, which is why it is crucial to have strategies in place to manage sudden risks. Awareness and a positive attitude toward danger signs, along with emergency preparedness, are essential components of the Safe Motherhood Initiative and are provided through antenatal care (ANC). Obstetric danger signs (ODS) include acute conditions such as bleeding, placental problems, dystocia, infections, and complications of hypertension. They can also include indirect causes like anemia, which increase the risk of disability or death for both the pregnant woman and her child. It is important to note that most obstetric complications are neither predictable nor entirely preventable, but they can be managed and treated through high-risk screening, awareness-raising, and birth planning. Dangerous complications can occur during pregnancy, childbirth, and the postnatal period [3,4].

Pregnancy-related ODS are indicators of potential complications that require immediate medical attention. These signs include severe hemorrhage, preeclampsia, seizures, and difficulty breathing. During delivery, key danger signs include excessive bleeding, prolonged labor, convulsions, and retained placenta. In the postnatal period, warning signs include severe bleeding, high fever, wound infections, and severe depression or suicidal behavior [5].

The World Health Organization (WHO) emphasizes the importance of ensuring a positive pregnancy experience by prioritizing the physical and mental health of both mother and baby, promoting safe delivery, and supporting positive motherhood. Additionally, routine ANC visits are crucial for women to gain information on recognizing danger signs and identifying potential complications, ultimately reducing perinatal mortality [6].

According to WHO, every pregnant woman should receive proper care during pregnancy, delivery, and the postnatal period. Therefore, recognizing early danger signs is essential to prevent delays in seeking appropriate healthcare [7]. Statistics from low- and middle-income regions

remain dishearteningly high, with most maternal deaths in these countries resulting from pregnancy- and childbirth-related complications [8].

To address the issue of delayed care, Sudan, through its Federal Ministry of Health, introduced the Safe Motherhood Health Care Package in 1994 [9]. Gezira State in Sudan is no exception, with reports indicating that 450 women died from obstetric complications between 2012 and 2016 [10].

UN statistics show that for every 100,000 live births, there are 295 maternal deaths and 54.9 infant deaths per 1,000 live births. Delays in seeking emergency obstetric care and giving birth in unhygienic conditions contribute to preterm births, increasing both maternal and infant mortality rates in Sudan and causing long-term developmental problems in children [6].

Evidence suggests that being aware of pregnancy danger signs helps women and their families take necessary precautions to ensure a safe delivery, detect complications early, seek professional obstetric care promptly, and make timely referrals [11].

Furthermore, a study conducted in Delhi on pregnant women's general awareness of ODS revealed a low level of knowledge. Awareness of warning signs during pregnancy, labor, and the postpartum period was found to be 48.3%, 35.6%, and 40.1%, respectively [12].

Additional research on ODS indicates that a significant percentage of pregnant women remain unaware of these danger signs during pregnancy, delivery, and the postpartum period [11]. Findings from another study on ODS comprehension show that only 4.7% of women had good knowledge, while 58.1% had satisfactory knowledge, and 37.2% had poor knowledge [13].

Methods:

Study design: Hospital based descriptive cross-sectional study was carried out in Wad – Madeni Obstetrics &Gynecology Hospital in Gezira State–Sudan.

Study area: Wad – Madeni Obstetrics & Gynecology Hospital. A referral governmental hospital, in Gezira State, is overseen by the Gezira State Ministry of Health, it provides antenatal care to 11052 pregnant women annually and serves residents of the state as well as those in nearby states, including Sinnar, Algadarif, and Blue Nile. Health centers and rural hospitals offer outpatient consultations and

refer serious cases related to obstetrics and gynecology [10].

Study populations: The study included all the pregnant women that were willing to participate and was available at antenatal care clinic during the data collection period**.**

Sampling: A single proportion formula was used:

n = N /1+N (d2)

Where n is the necessary sample size; N = Size of Population; d = Error percentage (0.05).

The sample size obtained = n = 11052/1+11052 ×0.0025 = 419 study participants overall.

With the addition of 10% of the anticipated non-response rate.

Data collection technique and tools: A structured questionnaire was employed to gather information on participants' demographics and their awareness of ODS. The structured questionnaire derived from published studies and literature.(add ref) The questionnaire consists of demographic information, participant obstetric characteristics, and participant awareness of ODS and a rating scale for attitudes regarding ODS.

Data analysis: SPSS was used to analyze the data, and relevant descriptive and inferential statistical methods were used. When utilizing chi square to examine potential relationships between qualitative variables, $P < 0.05$ was deemed statistically significant.

Finding was scored as follows: good for 75% or more; satisfactory for 50-74%; poor knowledge for less than 50%. Negative attitude for less than the mean value and positive attitude for the mean valueor above.

Ethical Considerations: Approval was granted from Alneelain University Research Ethics Review Committee (RERC.), and formal letters were written to the authorities (Gezira State Ministry of Health and Wad Madeni Obstetrics & Gynecology Hospital.), and consent from the women was signed before the data collection. Data confidentiality was maintained.

Result:

Table (1): Distribution of socio-demographic data of the participant n= 419

Variable	Type	Frequency	Percentage
Age	<20	14	3.3
	20-30	239	57.0
	>30	166	39.6
Marital Status	Married	332	79.2
	Divorced	81	19.3
	Widowed	6	1.4
Place of residence	Rural	269	64.2
	Urban	150	35.8
Occupation	Housewife	344	82.1
	Gov't Employee	40	9.5
	Others Specify	35	8.4
Educational status	No regular education	6	1.4
	Primary school	48	11.5
	Secondary school	210	50.1
	College and above	155	37.0

Table one reveals that: the majority of participants, 269 (64.2%) were rural residents, and half of them 310 (50.1%) were Secondary school level of the education.

Table (2) Distribution of the study participant according to their Obstetrics history *(N=419)*.

Variable	Items	Frequency	Percentage
Age at first pregnancy	<18 years	227	54.2
	>18 years	192	45.8
Parity	Primipara	15	3.6
	multipara	234	55.8
	grand multipara	170	40.6
Last pregnancy pattern of antenatal follow up	Regular	262	62.5
	Irregular	157	37.5
Last pregnancy numbers of antenatal visits	one Visit	16	3.8
	two visits	7	1.7
	Three visits	150	35.7
	Four visits and more	89	21.2
Women reasons for not following regular antenatal visits from their views.	Lack of knowledge	65	15.5
	Not received proper services	31	7.4
	Economic reason	87	20.8

Table two reveals that: More than half of the participants, 262 (62.5%) had regular antenatal follow up, and 234 (55.8%) were first pregnancy before 18 years of their age.

Table (3) Distribution of the study participant according to their awareness about danger sign during pregnancy **(*N=419)*.**

Variable	*Yes*		*No*	
	Frequency	*%*	Frequency	*%*
Vaginal bleeding	408	97.4	11	2.6
Severe headache	316	75.4	103	24.6
Dizziness and blurred vision	20	4.8	399	95.2
Convulsion	87	20.8	331	79.0
Swollen hands/ face /feet	250	59.7	169	40.3
High fever	281	67.1	138	32.9
Persistent vomiting	198	47.3	221	52.7
Premature onset of contraction	178	42.5	241	57.5
High Blood Pressure	316	75.4	103	24.6
Severe epigastric pain	20	4.8	399	95.2
reduced fetal movement	295	70.4	124	29.6
Sudden gush of fluid before labor	204	48.7	215	51.3
Average		51.2		48.8

Table Three reveals that among 419 respondents, most of the respondents408 (97.4%) mentioned that vaginal bleeding is a danger sign during pregnancy.

Table (4) Distribution of the study participants according to their awareness about Obstetric danger sign during labor and delivery *(N=419)*.

Variable	*Yes*		*No*	
	Frequency	*%*	Frequency	*%*
vaginal bleeding	340	81.1	79	18.9
loss of consciousness after childbirth (Fits)	17	4.1	402	95.9
Fever	304	72.6	115	27.4
Foul smelling vaginal discharge	244	58.2	175	41.8
Wound infection	385	91.9	34	8.1
Severe calf pain (DVT)	19	4.5	400	95.5
Average		52.1		47.9

Table Four reveals that among 419 respondents, most of the respondents 397 (94.7%) knew that vaginal bleeding is a danger sign during labor and delivery.

Table (5) Distribution of the study participant according to their awareness about Obstetric danger signs in the postpartum period. *(N=419)*.

Variable	*Yes*		*No*	
	Frequency	*%*	Frequency	*%*
vaginal bleeding	397	94.7	22	5.3
Warning Sign of pre – eclampsia	31	7.4	388	92.6
prolonged labor	263	62.8	156	37.2
Loss of conscious ness (eclampsia)	141	33.7	278	66.3
retained placenta	212	50.6	207	49.4
Inverted uterus	109	26.0	310	74.0
Cord prolapses	24	5.7	395	94.3
Fetal distress	23	5.5	396	94.5
Labor Dystocia	228	54.4	191	45.6
Average		37.9		62.1

Table Five reveals that Most of the respondents 385 (91.9%), 340 (81.1%) knew that Wound infection and vaginal bleeding is a danger sign during postpartum.

Table (6) Distribution of study participants according to their score of the awareness about Obstetric danger signs (N=419).

Variables	Good		Satisfied		Poor	
	N	%	N	%	N	%
Women level of the awareness about danger signs during pregnancy	108	25.8	206	49.2	105	25.1
Women level of the awareness about danger signs during labor and childbirth	23	5.5	171	40.8	225	53.7
Women level of the awareness about danger signs during the postpartum period	179	42.7	128	30.5	112	26.7
Average	104	24.6	168	40.2	147	35.2

Table six reveals that: According to the score that set for this study (Good knowledge ≤ 75 % Satisfy knowledge 74-50%, and Poor knowledge >50%) good and satisfied level of the awareness 24.6% and 40.2% respectively and more than one third 35.2% had poor awareness.

Table (7) Distribution of study participants according to their: Perception (Attitude) towards obstetric danger signs *(N=419)*.

Variables	*strongly agree*		*Agree*		*Undecided*		*Disagree*		*strongly disagree*	
	N	***%***	***N***	***%***	***N***	***%***	***N***	***%***	***N***	***%***
1.Do you agree on importance of awareness for mother and family to ward obstetric danger signs	70	16.7	348	83.1	0	0.0	1	0.24	0	0.0
2.Do you agree on obstetric danger sign is preventable?	67	16	351	83.8	0	0.0	1	0.24	0	0.0
3.Do you agree on the idea that mothers who develop obstetric danger signs should not seek help from traditional birth attendants or older women?	127	30.3	275	65.6	0	0.0	8	1.9	9	2.1
4.Do you agree importance for mothers who develop obstetric danger signs should seek medical care on time.	23	5.5	395	94.3	0	0/0	0	0	*1*	.24
Average	97.6%						2.4 %			

Table Seven reveals that: Majority of the participants had positive attitude towards obstetrics danger signs 97.6%.

Table (8) A summary of association between participants awareness of obstetric danger sign and selected demographic variables: **(n = 419**

Variables		awareness of obstetric danger sign				Chi-square%		
		Pregnancy						
		Good	Satisfy	Poor	Total	Value	df	p-value
Parity	Prim-gravida	1	0	14	15	69.604[a]	4	.000
	multipara (2 - 4)	42	120	72	234			
	grand multipara(5 and more	65	86	19	170			
	Total	108	206	105	419			
Frequency of ANC visit	one Visit	17	40	17	74	8.902[a]	6	.179
	two Visit	14	35	20	69			
	Three visit	47	100	44	191			
	one Visit	30	31	24	85			
	Total	108	206	105	419			
Educational status	Able to read and write	2	0	4	6	25.292[a]	6	.000
	Primary school	11	21	16	48			
	Secondary school	70	91	49	210			
	College and above	25	94	36	155			
	Total	108	206	105	419			

Table (8) Pearson chi-square test reveals that there is association between the awareness of obstetric danger signs and parity, p = .000 and educational status p = .000.

Discussion

Information regarding obstetric danger signs (ODS) among participants varied across the trimesters of pregnancy, with a significant proportion demonstrating good or satisfactory understanding. This knowledge was often acquired through antenatal visits, as two-thirds of the participants reported attending regular check-ups during their most recent pregnancy. Obstetric bleeding is recognized as the leading cause of maternal mortality. Many participants were aware that bleeding is a critical danger sign during pregnancy, which could encourage them to seek medical attention should it occur in future pregnancies. Conversely, one-third of the women exhibited inadequate knowledge of ODS, potentially increasing their risk of complications.

This research indicates that 49.2% and 40.8% of participants possessed satisfactory knowledge of ODS during pregnancy and labor, respectively. These findings differ from previous research, which reported that 77.5% and 70.4% of mothers had good knowledge of ODS during pregnancy and labor. A considerable number of women demonstrated a satisfactory understanding of obstetric danger signs, which is a favorable outcome; however, there remains an opportunity to enhance awareness regarding danger signs relevant to both maternal and fetal health. While 42.7% of participants in this study demonstrated good knowledge of danger signs during the postnatal period, previous research reported that 72.2% of women were aware of danger signs during labor and the postnatal period [14]. In this study, an overall mean of 40.2% of participants recognized obstetric danger signs, whereas another study found that 77.3% of mothers recognized these signs [15]. In Thailand, 66.27% of women demonstrated good knowledge of ODS [16].

The findings of this study align with results from a study conducted in India, which found that 48.3% of pregnant mothers had knowledge of danger signs during pregnancy, 35.6% had knowledge of danger signs during labor, and 40.1% had knowledge of danger signs in the postpartum period [12]. These similarities suggest that awareness levels may be comparable across different regions and countries.

The findings of this study are more favorable compared to another study, which reported that only 40.9% of participants had adequate knowledge of ODS during pregnancy [17]. Additionally, another study found that 40.5% of respondents had knowledge of ODS [18], whereas another study indicated that only 16.8% of respondents were aware of these signs [19]. These findings suggest that awareness levels are similar across different environments, although a significant portion of women still lack sufficient knowledge on the subject.

This study indicates that 75% of women were aware of ODS during pregnancy, with 25.8% exhibiting good awareness and 49.2% demonstrating a satisfactory level of knowledge. This awareness level surpasses the 54.7% of participants who demonstrated knowledge of ODS during pregnancy in another study [20]. Additionally, 37.5% of women were found to be knowledgeable about these signs [12]. Other studies have reported that approximately 59% of mothers possessed knowledge of ODS [21], while another study found that 57.2% of pregnant women had a good understanding of pregnancy-related danger signs [22]. Conversely, only 4.9% of respondents exhibited good knowledge of these danger signs [23].

Vaginal bleeding is a prevalent warning sign and a primary contributor to maternal morbidity and mortality. In this study, over 90% of participants identified vaginal bleeding, with its occurrence distributed across various obstetric stages: 97.4% during pregnancy, 94.7% during labor, and 81.1% during the postpartum period. This awareness may help mitigate associated risks if the condition arises. These results align with previous research, which found that 93.5% of women regarded bleeding as an obstetric emergency during pregnancy [15]. Additionally, another study reported that 64.7% of respondents recognized vaginal bleeding as a danger sign in pregnancy [18]. Furthermore, findings from another investigation confirmed that bleeding was the most critical ODS [16].

A study also indicated that bleeding (82.5%) was identified as the most prevalent danger sign during labor [12]. This figure surpasses another study, which revealed that nearly 67.1% of women recognized vaginal bleeding as a danger sign [20].

This study revealed that many women were unaware of convulsions as a significant danger sign, aligning with previous research indicating that 92.9% of women also lacked awareness of convulsions as a dangerous

sign during pregnancy and labor [11]. Furthermore, convulsions were noted as the least recognized obstetric danger sign during pregnancy [15]. However, a notable 77.3% of participants in this study acknowledged convulsions as an obstetric emergency during pregnancy [15].

The findings of this study reveal a significant relationship between women's awareness of ODS, parity, and educational attainment. This observation is consistent with research indicating that mothers with higher education levels possess better awareness of ODS [21]. However, this contradicts another study that found no correlation between a mother's education and her knowledge of ODS [15].

Furthermore, many participants in this study (97.6%) demonstrated a positive attitude toward ODS, corroborating findings from another study where 72.6% of participants expressed a positive attitude [14]. Our results also align with another study that reported a generally positive attitude among participants toward ODS [17]. In contrast, these findings differ from a study that found only 3.8% of women exhibited a positive attitude toward ODS [23].

Conclusion:

The study revealed that one-fourth of the women exhibited an adequate awareness of ODS, while two-fifths demonstrated a satisfactory level of awareness. In contrast, one-third of participants displayed insufficient awareness. Notably, there was a particularly high level of awareness regarding bleeding as a significant danger sign. Additionally, a strong correlation was found between women's awareness of obstetric danger signs and both their parity and educational background. A considerable number of participants expressed a positive attitude toward ODS.

Acknowledgement We wish to express our gratitude to Alneelain University, Department of Nursing for providing the opportunity and our study participants.

Competing interests. No competing of interests.

Funding: Self -funded

References

[1] Marshall, J. E., & Raynor, M. D. (Eds.). Myles' Textbook for Midwives E-Book: Myles' Textbook for Midwives E-Book. Elsevier Health Sciences. (2014).

[2] Terefe, N., Nigussie, A., & Tadele, A. Prevalence of obstetric danger signs during pregnancy and associated factors among mothers in Shashemene

Rural District, South Ethiopia. Journal of Pregnancy, 2020(1), 6153146..https://doi.org/10.1155/2020/6153146

[3] Mekonnen, T., Girmaye, B., & Taye, F. Assessment of knowledge and attitude towards obstetric danger signs during pregnancy among pregnant mothers attending antenatal Care in Mizan Aman Public Health Facilities, Bench Maji Zone, SouthWest Ethiopia. Health, 11(3), 555813.DOI: 10.19080/JGWH.2018.11.555813. Available at PubMed 18/June/2021.

[4] Mwilike, B., Nalwadda, G., Kagawa, M., Malima, K., Mselle, L., & Horiuchi, S. Knowledge of danger signs during pregnancy and subsequent healthcare seeking actions among women in Urban Tanzania: a cross-sectional study. BMC pregnancy and childbirth, (2018). 18, 1-8.doi:10.1186/s12884-017-1628-6. Available at PubMed access 19/June/2021.

[5] Leveno, K. J., Bloom, S. L., Spong, C. Y., Dash e, J. S., Hoffman, B. L., Casey, B. M., & Sheffield, J. S. Williams obstetrics (Vol. 7, pp. 28-1125). F. G. Cunningham (Ed.). (2014). New York: McGraw-Hill Medical.

[6] WHO, World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience World Health Organization. . (2016).https://www.who.int/publications/i/item/9 789241549912 [PubMed] access 19/June/2021.

[7] Tunçalp, Ö., Were, W. M., MacLennan, C., Oladapo, O. T., Gülmezoglu, A. M., Bahl, R., ... & Bustreo, F. Quality of care for pregnant women and newborns—the WHO vision. Bjog, (2015). 122(8), 1045.doi: 10.1111/1471-0528.13451.

[8] World Health Organization. Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. WorldHealthOrganization.(2023). (2023). https://www.who.int/publications/i/item/9789240068759

[9] Olaleye, S. O., Aroyewun, T. F., & Osman, R. A. Sudan's maternal health needs urgent attention amid armed conflict. The Lancet, (2023). 402(10405), 848-849.. doi: 10.1016/S0140-6736(23)01697-5. PMID: 37689405

[10] Ministry of health Gezira state. Directorate of primary health care - reproductive health program maternal – statistic and death report. madani.

[11] Woldeamanuel, G. G., Lemma, G., & Zegeye, B. Knowledge of obstetric danger

signs and its associated factors among pregnant women in Angolela Tera District, Northern Ethiopia. BMC research notes, (2019). 12, 1-6.Dec;12:1-6. DOIhttps://doi.org/10.1186/s13104-019-4639-8

[12] Kumar, A., Yadav, G., Zutshi, V., & Bodat, S. Knowledge about obstetric danger signs among pregnant women attending antenatal clinic in a tertiary care hospital of Delhi: a cross sectional study. International Journal of Reproduction, Contraception, Obstetrics and Gynecology, (2019). 8(9), 3738-3744..
http://www.ijrcog.org/index.php

[13] Tamang ST, Dorji T, Yoezer S, Phuntsho T, Dorji P. Knowledge and understanding of obstetric danger signs among pregnant women attending the antenatal clinic at the National Referral Hospital in Thimphu, Bhutan: a cross-sectional study. BMC Pregnancy Childbirth. 2021;21(1):104. Published 2021 Feb 2. doi:10.1186/s12884-021-03580-4

[14] Teshoma Regasa M, Markos J, Habte A, Upashe SP. Obstetric Danger Signs: Knowledge, Attitude, Health-Seeking Action, and Associated Factors among Postnatal Mothers in Nekemte Town, Oromia Region, Western Ethiopia-A Community-Based Cross-Sectional Study. Obstet Gynecol Int. 2020;2020:6573153. Published 2020 Sep 1. doi:10.1155/2020/6573153

[15] Nkencho ,O., Okeoghene, EA., Vincent, A. Knowledge and Attitude of Pregnant Women towards Obstetric Danger Signs amongst Those Attending Antenatal Clinic in Yenagoa Metropolis, South-South, Nigeria. Int J Womens Health Wellness, (2022). 8(2)1-14. doi.org/10.23937/2474-1353/1510139

[16] Koovimon, P., Kaikaew, K., Mahoree, K., & Bumphenkiatikul, T. Knowledge of obstetric danger signs and associated factors among pregnant women attending antenatal care services at Thai community hospital. F1000Research, (2023). 12.doi: 10.12688/f1000research.131267.2. PMID: 37965586; PMCID: PMC10643879.

[17] Al-Matarneh, B. M., Al-khawaldeh, O. A., & Alsaraireh, A. M. Knowledge, attitudes and practices regarding obstetric danger signs among Jordanian pregnant women attending antenatal clinic in Jordan. Central European Journal of Nursing and Midwifery, (2023). 14(2), 860.doi: 10.15452/CEJNM.2022.13.0021

[18] Wassihun, B., Negese, B., Bedada, H., Bekele, S., Bante, A., Yeheyis, T., & Hussen, E. Knowledge of obstetric danger

signs and associated factors: a study among mothers in Shashamane town, Oromia region, Ethiopia. Reproductive Health, (2020). 17, 1-8.https://doi.org/10.1186/s12978-020-0853-z

[19] Bolanko, A., Namo, H., Minsamo, K., Addisu, N., & Gebre, M. Knowledge of obstetric danger signs and associated factors among pregnant women in Wolaita Sodo town, South Ethiopia: A community-based cross-sectional study. SAGE Open Medicine, (2021). 9, 20503121211001161.doi: 10.1177/20503121211001161. PMID: 33786186; PMCID: PMC7958171.

[20] Haleema, M., Raghuveer, P., Kiran, R., Mohammed, I. M., Mohammed, I. S. A., & Mohammed, M. Assessment of knowledge of obstetric danger signs among pregnant women attending a teaching hospital. Journal of family medicine and primary care, (2019). 8(4), 1422-1426.DOI: 10.4103/jfmpc.jfmpc_149_19.

[21] Jewaro, M., Yenus, H., Ayanaw, Y., Abera, B., & Derso, T. Knowledge of obstetric danger signs and associated factors among mothers in Bahir Dar district, northwest Ethiopia: an institution-based cross-sectional study. Public Health Reviews, (2020). 41, 1-10.doi: 10.1186/s40985-020-00132-7.

[22] Gesese, S. S., Mersha, E. A., & Balcha, W. F. Knowledge of danger signs of pregnancy and health-seeking action among pregnant women: a health facility-based cross-sectional study. Annals of Medicine and Surgery, (2023). 85(5), 1722-1730. doi: 10.1097/MS9.0000000000000610. PMID: 37228959; PMCID: PMC10205383.

[23] Sufiyan, M. B., Adam, N., Umar, A. A., Ibrahim, J. M., Bashir, S. S., & Birukila, G. Knowledge, attitude and perception of pregnancy danger signs among women of childbearing age in samaru community northwestern Nigeria: results from a cross-sectional survey. Arch Med Surg, (2016). 1(2), 24. DOI:10.4103/archms.archms_3_17