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FACTORS ASSOCIATED WITH OBSTRUCTED LABOR AMONG POSTNATAL MOTHERS IN A POSTNATAL WARD AT SORROTI REGIONAL REFERRAL HOSPITAL. A CROSS-SECTIONAL STUDY.

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Abstract.

Background.

At Soroti Regional Referral Hospital, the Health Management Information System report of 2022/2023 showed that, 20% of the mothers who were done caesarean section had obstructed labor and there was slight increase by 1% by 2023. Therefore, this study assessed factors associated with obstructed labour among postnatal mothers in post-natal Ward at Sorroti regional referral hospital.

Methodology.

A descriptive and analytical cross-sectional study design with both quantitative and qualitative methods of data collection was used. Purposive random sampling method was used to get 35 respondents. Data was collected using a self-administered questionnaire and analyzed using Microsoft excel 2016.

Results.

The majority, 15/35 (42.9%) of the respondents were aged 25 years and above, 27/35(77.1%) of the respondents were married, and 4/35 (40%) of the respondents had 1 child. 11/35 (31.4%) of the respondents were dragonized with an abnormal fetal lie, 20/35 (57.1%) of respondents who delivered from home reported fear of embarrassment, 13/35 (37.1%) delayed seeking health care because they went to Traditional Birth Attendants and 16/35 (45.7%) of the respondents had attended antenatal clinic twice. The majority, 18/35 (51.4%), of the respondents went to the hospital after 12 hours of the onset of labor, 11/35 (31.4%) reported having had fetal malposition, and 18/35 (51.4%) reported a distance of more than 16 km from the health facility.

Conclusion

The following factors were associated with obstructed labor among mothers: Fetal malposition and malpresentation, Long distances from the hospital, Maternal age, prolonged labor, and inadequate ANC attendance.

Recommendations.

The obstetricians should promote awareness to the general public about the causes of obstructed labor and other maternal complications to reduce maternal and child deaths and, hence, improve their well-being.

Keywords: *Postnatal Mothers, Obstructed labor, Postnatal ward, Soroti Regional Referral Hospital.*
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Background.

Obstructed labor is the failure of the descent of the fetus in the birth canal for mechanical reasons, despite good uterine contractions. Obstruction often occurs at the pelvic brim but can occur in the pelvic cavity or the outlet of the pelvis. The incidence of obstruction is 1%-3% of all labors, and it is quite high in developing countries because the women are relatively short in stature. There is inadequate antenatal and intranasal care, partly because patients do not make good use of available antenatal clinics. Marriage at an early age, when the development of the pelvis has not attained its full capacity, is also common in these countries; obstructed labor accounts for a high percentage of maternal morbidity and mortality. Globally, obstructed labor has declined slightly, from 9,410,500.87 to 7,564,568.91 from 1990 to 2019, respectively, caused by factors including being of age 15 to 19 years and having iron deficiency anemia, but it is still a considerable cause of maternal death and perinatal death, hence a public health concern. (Yan et al., 2024).

In developing countries, obstructed labor comprises 39% of all obstetric patients (Rizvi & Gandotra, 2017) and was

stated to cause 8% of maternal deaths, which was caused due to delays in referring the cases from peripheral centers. (Usharani et al., 2017). In Sub-Saharan Africa, 8,464 mothers die every year from prolonged obstructed labor due to delayed transfer and antibiotic treatment (Harrison et al., 2016). In Eastern Uganda, it was discovered that 144 children aged two to four years were born to women with obstructed labor at Mbale Regional Referral Hospital (V Mukunya et al., 2024). In eastern Uganda, between 2018/ 2019, 623 women had obstructed labor precipitated by 31% hypocalcemia, 18% hypernatremia, and 13% hypokalemia and high maternal blood lactate levels (Musaba et al., 2021). In Ngora, one of the catchment areas of Soroti Regional Referral Hospital, 17.9% of the Caesarean sections done were due to obstructed labor, and most of them were referred to Soroti Regional Referral Hospital (Waniala et al., 2020).

Obstructed labor seems to be a common problem among mothers. Soroti Regional Referral Hospital, the Health Management Information System report of 2022/2023 showed that 20% of the mothers who were done with cesarean section had obstructed labor, and there was a slight increase by 1% by 2023. This shows that there is a need to address this problem before it claims the lives of mothers. WHO (2015) has put interventions like early attendance of antenatal care to rule out high-risk mothers and the use of partographs in monitoring labor progress.

Despite efforts by Soroti Regional Referral Hospital to follow the above interventions and carry out antenatal awareness campaigns in the neighboring communities. Obstructed labor is still in existence whereby many mothers are referred from health centers in nine districts in the Teso Region by ambulance day and night because of Obstetrical Emergencies where the midwives must escort the mother with delivery kits to save the lives of the mother and the babies. Therefore, this study assessed factors associated with obstructed labor among postnatal mothers in the post-natal Ward at Sorroti Regional Referral Hospital.

Methodology.

Study Design and Rationale

The study adopted a descriptive cross-sectional study design, employing quantitative methods of data collection. It was descriptive as it enabled respondents to accurately describe the characteristics of their feelings and experiences well from their point of view. It was a cross-sectional study because data was collected at a single point at a time; it was cheap, exhaustive, time-saving, and cost-effective. It was quantitative because it involved statistics and numerical data. It was qualitative because it involved open-ended questions and explored details.

Study Setting and Rationale

The study was conducted at Soroti Regional Referral Hospital in Soroti City. The Hospital is located along the Soroti-Lira highway. It is 329 kilometers away from Kampala, the Capital City. The hospital has a bed capacity of 278 beds, It is a referral hospital for the districts of Serere, Ngora, Kumi, Bukedea, Kaberamaido, Kalaki, Katakwi, Kapelebyong, and Amuria. It is a public Hospital funded by the government of Uganda. It is a teaching hospital for Intern Doctors, Intern Nurses, Medical Students from Soroti University, Busitema, Makerere, Mbarara, Kampala International University, and Soroti School of Comprehensive Nursing. Soroti Regional Referral Hospital provides services like Maternity, Antenatal, Family Planning services, Young Child Clinics, Post-natal Clinics, Mental Health Services, Eye, Ear and Throat, Safe Male Circumcisions, Medical and Surgical treatments, and ART Clinics, among others. The Study area was chosen because the Hospital serves a wide catchment area and hence a large population of clients to sample from; it was easily accessible for the researcher, and this minimized the cost of transport during data collection.

Study population

The population of interest was all mothers in the Maternity Ward attending services at Soroti Regional Referral Hospital.

Sample size determination

According to Keish and Leslie 1965, a sample size of 30-200 suffices if 20-80% of the attributes are present. Based on this statement, a sample of 35 respondents was used because it was within the range. The sample was also based on the time allocated for the research and finances available. The sample size was chosen because it was adequate to generate the data needed for the study and was relatively cheaper for the researcher to handle. Data was collected in the shortest time possible, and data collected was free of bias and had an accurate reflection of the situation under study.

Sampling procedure.

Purposive random sampling method was used to select the respondents. A population with characteristics that were of interest to the researcher was sampled. The method was preferred because the respondents were got at the right time and in the right place. The respondents were enrolled one after each other on each day of data collection until a sample size of 35 respondents was reached.

Inclusion criteria

The study included all postnatal mothers who were admitted to the postnatal Ward with a history of obstructed labor and were selected, agreed to consent, of any party, and attended services at Soroti Regional Referral Hospital during the period of data collection.

Definition of Variables.
Variables are characteristics that vary in the study; there are two main types of variables.

Independent variables
These were causal factors to the events under study (obstructed labor), for example, the pregnant mother's demographic data, age of the mother's poor health-seeking behavior contracted, pelvis big baby, malposition and presentation lack of partograph use, distance from the healthy facility late diagnosis and late decision making among others.

Dependent Variables
These were effects or outcome variables in the study, they were obstructed labor and its consequences.

Research Instruments
Semi-structured questionnaire was developed and used for data collection comprising of open and close-ended questions. The tool was per-tested on smaller sample size of a similar background outside the study area. The tool was then refined by the researcher with the help of the supervisor for validity and reliability.

Data Collection Procedure
Data was collected for six working days. The researcher got an introductory letter from the Research Committee School of Comprehensive Nursing and presented it to the Medical Director of Soroti Regional Referral Hospital. Having obtained permission to the study area, the researcher proceeded to the Maternity Ward where I introduced myself and explained to the person in charge the reason for visiting the health unit. The In-Charge introduced me to the pregnant mothers, and then I introduced myself, explained the purpose of the study, got consent, and observed ethical issues. Administered questionnaires with the use of codes, with no personal identifying information recorded on them, to the sampled respondents so that they do not conceal any information. Every respondent was asked for her willingness to participate in the study. I ensured the completeness of the questionnaires. The filled questionnaires were kept in opaque envelopes under strict supervision until all 35 respondents were obtained, and the questionnaires were kept under lock and key.

Data Management
Data was collected daily and checked for completeness, consistency, accuracy, and logical flow of responses. Missing responses were filled out by making re-visits to respondents. The data was sorted, classified, summarized, and tabulated, then computed in terms of frequencies and percentages using tally sheets and calculators, and was further presented in pie charts, bar graphs, tables, and narrative statements. Data folders were given a name only known to the researcher, and a computer password was put to avoid alteration of data.

Data Analysis
The data was analyzed manually by the researcher, who explained the meaning. Tables were employed to analyze both qualitatively and quantitatively. The data was entered into the computer, and analyzed according to the study variables used in the view of the study, and objectives using Statistical Package of Social Sciences version 16(SPSS) For the case of quantitative data, it was expressed in narrative forms with responses from open-ended questions grouped into classes that expressed similar ideas meanwhile, quantitative data was expressed in form of tables and other statistical forms. The responses were coded to provide a basis for interpretation, thus concluding the facts.

Ethical approval.
A written proposal was submitted to the supervisor and the school administration of Soroti School of Comprehensive Nursing for approval. The researcher obtained an introduction letter from the school before proceeding to the study area. Permission was sought at the site for conducting the research.

Informed consent.
Informed consent was obtained from respondents by explaining the purpose, anticipating benefits as well as their voluntary acceptance to participate. The researcher observed privacy, confidentiality, and respect for the rights of respondents. The questionnaire was filled in anonymity, kept under lock and key, and only accessed by the researcher and the password to the data was kept secret and only known to the researcher.

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Results

Table 1: Showing socio-demographic characteristics of respondents (n=35)

Variable	Frequency (f)	Percentage (%)
Age		
10 -15 years	5	14.3
16 – 20 years	10	28.6
21 – 25 years	5	14.3
26 years and above	15	42.9
Total	35	100%
Variable	**Frequency (f)**	**Percentage.(%)**
Religion		
Catholic	18	51.4
Anglican	10	28.6
Islam	7	20
Total	35	100%
Variable	**Frequency (f)**	**Percentage (%)**
Occupation		
Farmer	17	48.5
Civil servant	8	22.9
Self employed	10	28.6
Total	35	100%
Variable	**Frequency (f)**	**Percentage (%)**
Tribe		
Atesot	22	62.9
Kumam	10	28.5
Karamojong	3	8.6
Total	35	100%
Variable	**Frequency (f)**	**Percentage (%)**
Level of education		
Non formal education	15	42.9
Primary	9	25.7
Secondary	6	17.1
Tertiary	5	14.3
Total	35	100%
Variable	**Frequency (f)**	**Percentage (%)**
Marital status		
Single	3	8.6
Married	27	77.1
Cohabiting	1	2.7
Others	4	11.4
Total	35	100%

Table 1 shows that most of the respondents, 15/35 (42.9%), were 25 years and above, while 5/35 (14.3%) were 10 to 15 years old, and 5/35(14.3%) were 21 to 25 years. Respectively. More than half of the 18/35 (51.4%) of the respondents were Catholics, while 7/35 (20%) of the respondents were Muslims. The majority, 17/35 (48.5%) of the respondents were farmers while the minority, 8/35(22.9%) of the respondents were civil servants. Most 22/35(62.9%) of the respondents were Itesots by tribe, while the least 3/35(8.6%) of the respondents were Karamojong. The majority, 15/35 (42.9%) of the respondents had no formal education while 5/35 (14.3%) of the respondents attained a tertiary level of education. Most of the respondents 27/35(77.1%), were married, while the least, 1/35 (2.7%) of the respondents were cohabiting.

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Maternal factors contributing to obstructed labor among mothers

Figure 1: showing the number of children of respondents (n=35)

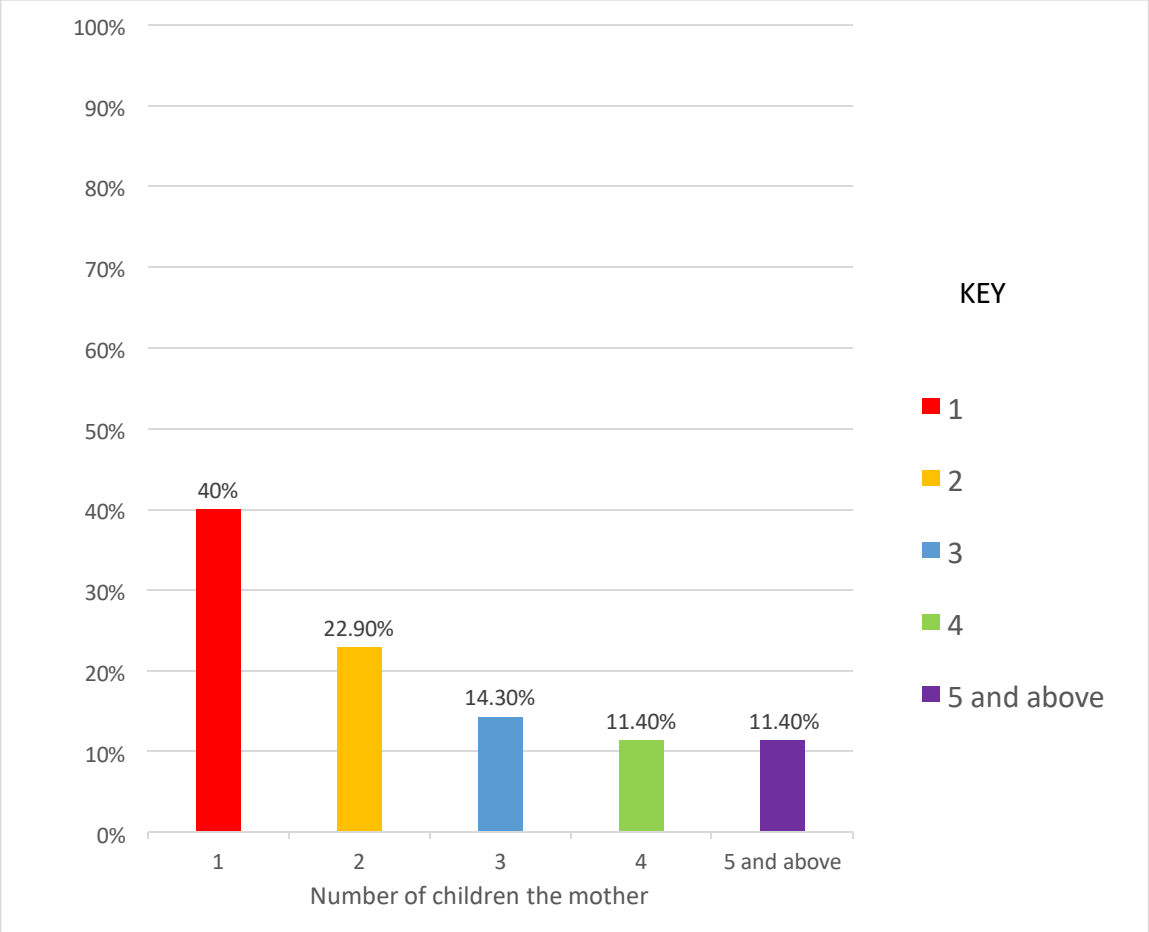

Figure 1 shows that the Majority, 14/35 (40%), of the respondents had 1 child, while 4/35 (11.4%) of the respondents had 4 children and/35(14.2%) had 5 children and above. Respectively

Table 2: Showing where respondents deliver their babies from, what makes mothers deliver from home (n=35)

Variable	Frequency (f)	Percentage (%)
Where respondents deliver their babies from		
At home	10	28.6
In the health center	15	42.9
In the hospital	4	11.4
With traditional birth attendants	6	17.1
Total	35	100%
Variable	**Frequency (f)**	**Percentage (%)**
What makes mothers deliver from home?		
Fear of embarrassment	20	57.1
Long distance to health facilities	15	42.9
Total	35	100%

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Table 2: Most of the respondents, 15/35 (42.9%), delivered their babies from a health facility, 10/35(28.6%) delivered at home, 6/35(11.4%) delivered from Traditional Birth Attendants, and 4/35 (11.4%) of the respondents delivered from the hospital. More than half of 20/35 (57.1%) of the respondents said that they feared embarrassment, while 15/35 (42.9%) of the respondents stated that long distance to the health facilities. This makes mothers prefer delivering at home.

Narrative 1: About what makes mothers fail to deliver normally (n=35)

The findings regarding what makes mothers fail to deliver normally. It proves that the respondents knew what makes mothers fail to deliver normally Majority 14/35 (40%) of the respondents reported that big babies led to the failure of women to deliver normally, and 11/35 (31.4%) of the respondents said that wrong presentation while 10/35 (28.6%) of the respondents reported increased age of the mother led to the failure of mothers to deliver normally.

Table 3: Showing what makes mothers delay seeking care from the hospital (n=35).

Variable	Frequency(f)	Percentages (%)
What makes mothers delay seeking care from hospital		
Going to traditional birth attendants	13	37.1
Fear of operations	9	25.7
Lack of antenatal care attendance	6	17.1
Being the first pregnancy	5	14.3
Having delivered for the first time	2	5.8
Having a history of prolonged labor	0	0
Total	35	100%

Table 3: shows that; Most of the respondents 13/35 (37.1%) mentioned the reason for delay to seek health care was because they go the traditional birth attendants while 2/35(5.8%) stated that they have delivered more than one child.

Findings on times of antenatal care attendance

Figure 2: showing number of times antenatal care was attended (n=35)

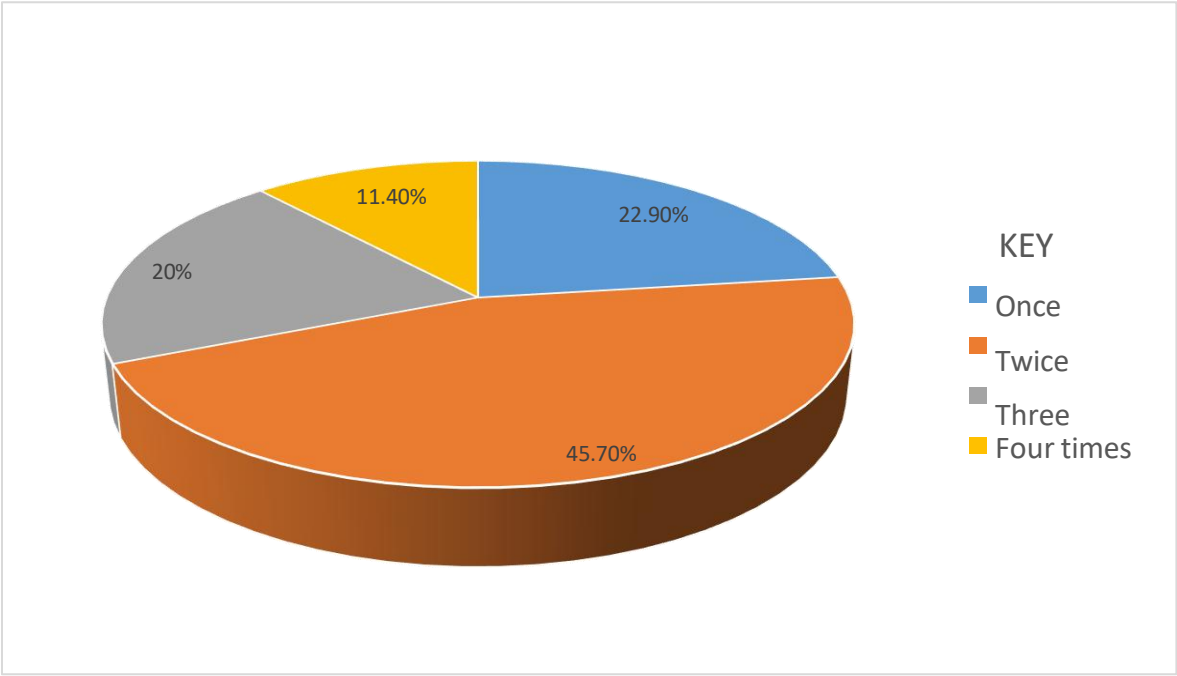

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Figure 2: shows that the majority, Majority 16/35 (45.7%), of the respondents attended Antenatal Care Clinic twice while 22.90% attended once, 20 % stated that they attended three times, and 4/35(11.4%) of the respondents attended Antenatal Care clinic.

Figure 3: Showing the area of residence of residents

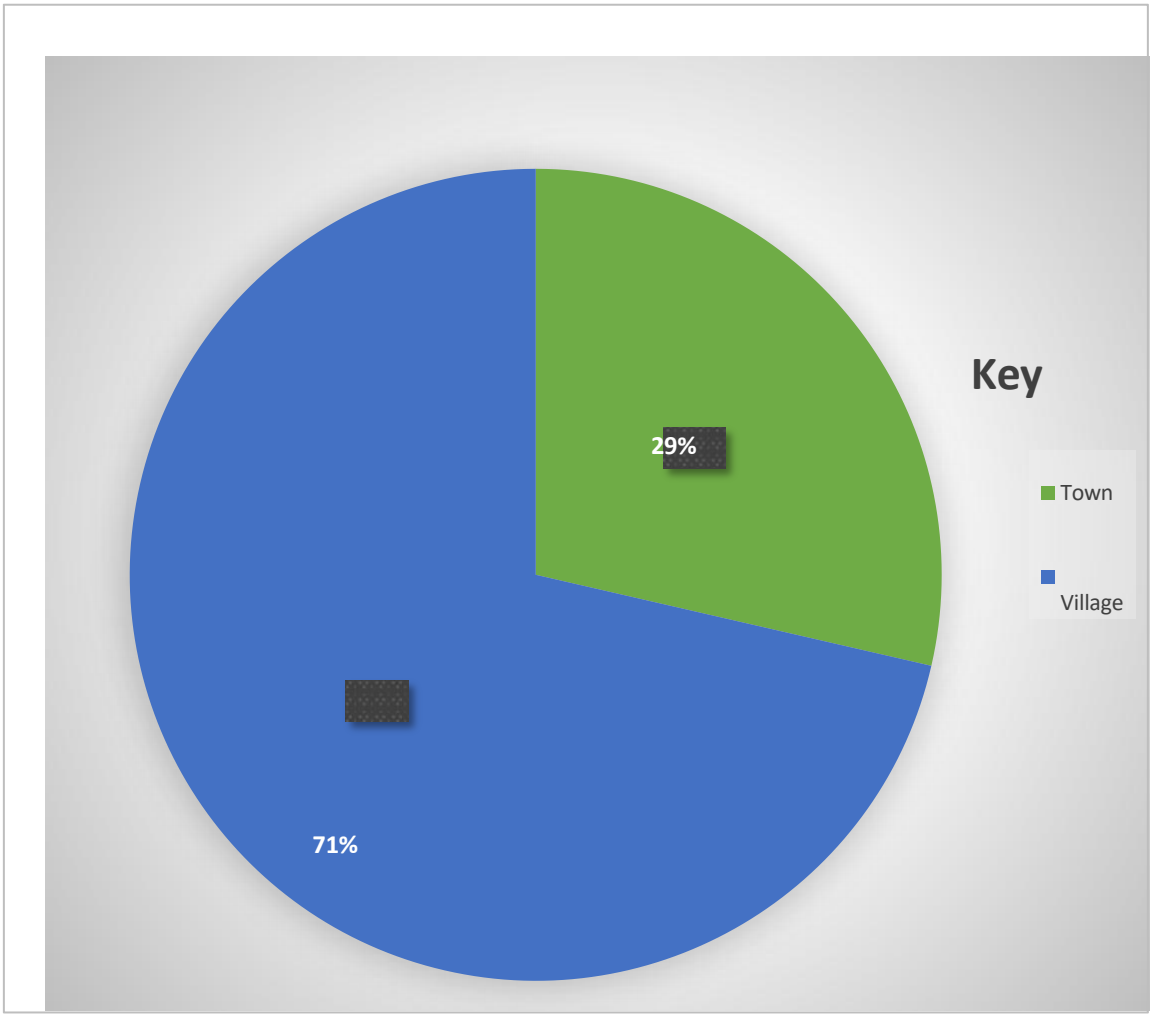

Figure 3 shows that the majority, 25/35 (71.4%), of the respondents stay in the village, while 10/35 (28.6%) of the respondents reside in town.

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Figure 4: Showing how long the respondents took before going to the hospital after the onset of labor (n=35).

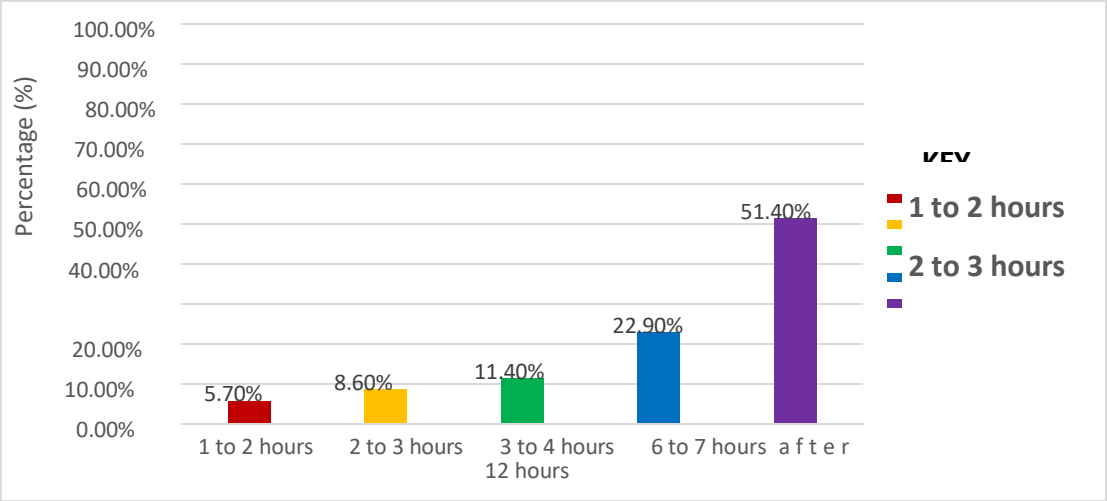

Figure 4: Shows that; Majority 18/35 (51.4%) of the respondents went to the hospital after 12 hours of onset of labour, 2/35(5.7%) of the respondents went to the hospital within 1 to 2 hours after onset of labor.

Table 4: Showing the reason for referring the respondent to the hospital for doctors' attention (n=35).

Variable	Frequency (f)	Percentage (%)
Reason for referring the respondent to the hospital for doctors' attention		
First-time delivery	14	40
Use of herbal medicines	5	14.3
My age	8	22.8
Being short	3	8.6
Having strong labor pains for 24 hours or More	2	5.7
Referring from traditional birth attendants	3	8.6
Total	35	100%

Table 4: Shows that; Majority 14/35 (40%) of the respondents reported being referred to the hospital for doctors' attention because it was their first of time delivery while 2/35(5.7%) of the respondents said that having strong labour pains for 24 hours or more.

Table 5: Showing conditions that caused failure of vaginal delivery.

Variable	Frequency (n=35)	Percentage (%)
Conditions that caused failure of vaginal delivery		
Baby lying in the wrong position	11	31.4
Baby presenting in a wrong way	8	22.9
Big baby	10	28.6
Abnormal baby	6	17.1
Carrying two joined babies	0	0
Total	35	100%

Table 5 shows that 11/35 (31.4%) of the respondents reported babies were lying in the wrong position, while 6/32(17.1%) said that they were told that they had an abnormal baby.

Hospital-related factors contributing to obstructed labour

Figure 5: Showing if the midwives took and recorded the respondents' observations frequently on the chart.

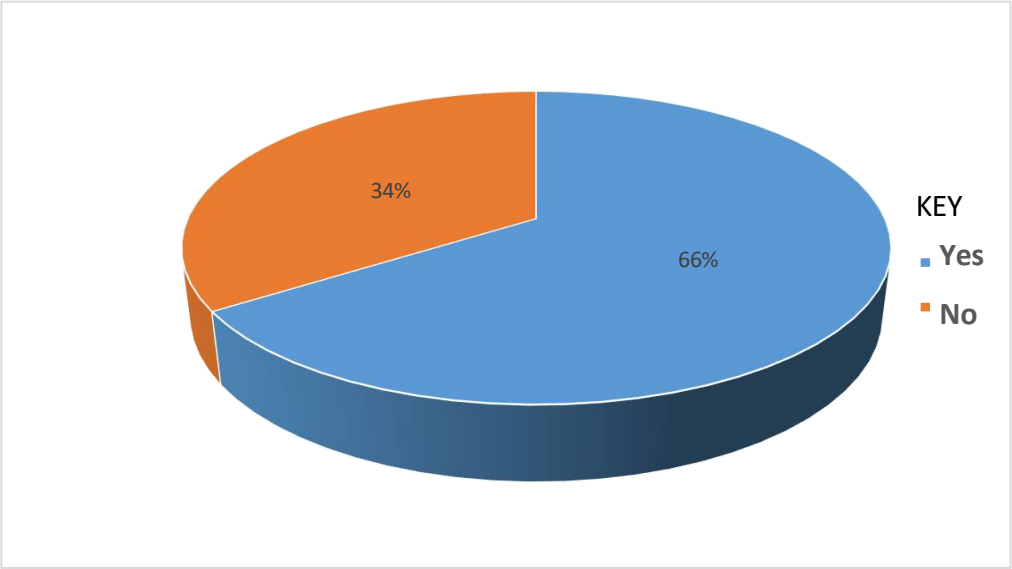

Figure 5 shows that the most, 23/35(65.7%), were recorded on the charts, while 12/35(34.3%) of the respondents were not recorded on charts.

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Figure 6: showing distance of respondents' home to the hospital (n=35)

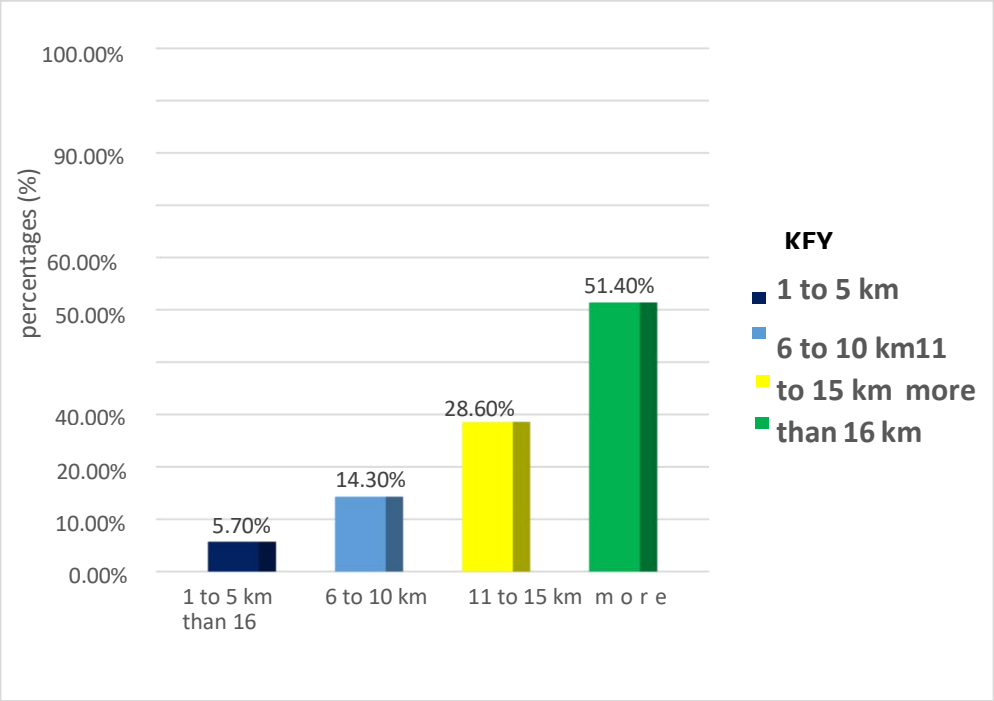

Figure 6 shows that the majority, 18/35 (51.4%), of the respondents reported a distance of more than 17 km from their home to the hospital, while 2/35 (5.7%) of the respondents reported a distance of 1 to 5 km to the hospital.

Narrative 2: When respondents reached the health facility, what did the health worker do?

Most of the respondents 12/35 (34.3%) reported that health workers performed vaginal examination, 10/35(28.6%) of the respondents stated that health workers checked for vital signs like blood pressure, temperature, pulse respiration 7/35 (20%) reported that health workers administered drugs while 6/35 (17.1%) of the respondents said that health workers first performed abdominal examination and listened to the fetal heart rate on their arrival to the health facility.

Discussion of results.

Maternal factors contributing to obstructed labor in the Maternity Ward at Soroti Region Referral Hospital

Majority 14/35 (40%) of the respondents had 1 child, being a primegravida was associated undeveloped pelvic bones especially below the age of 18 years because it could have led to obstructed labor due to deep arrest of the head. The study findings similar with findings by Akhter & Tarannaum, (2014) which showed that mothers were primigravidas, and other mothers were multiparous with 1 to 8 children.

More than half, 20/35 (57.1%) of the respondents who delivered from home reported fear of embarrassment. Mothers who fear being seen by health workers, especially male nurses and midwives, fear to deliver from the health facility. Home delivery is dangerous to mothers because the baby could lie in the wrong position, have an abnormal presentation, or be too big, associated with no diagnosis of danger signs, which could cause obstructed labor, hence making it inevitable to the mothers during births. This study was in line with a study conducted by Tolentino et al. (2019) in Eithopia, which stated that most of the mothers who had obstructed labor delivered at home due to the embarrassment they get in the hospital, so home delivery was a factor causing obstructed labor.

Most of the respondents, 13/35 (37.1%), reported delays in seeking health care because they went to Traditional Birth Attendants. Traditional Birth Attendants delay referring mothers to the hospital due to a lack of obstetric knowledge on the causes of obstructed labor; therefore, mothers present to the health facility with obstructed labor. The majority, 14/35 (40%) of the respondents reported that big babies led to the failure of women to deliver normally. Big babies were not able to pass via the birth canal due to two disproportionality leading to obstructed labor. These findings are in line with findings by Harrison et al. (2015), who stated that prolonged labor and failure to progress were seen in women with infants greater than 3500g. The

study findings answer research question number 2 on the study problem statement on the justification of the study.

The majority, 16/35 (45.7%) of the respondents attended antenatal clinics twice. The World Health Organization recommends that mothers should receive at least 4 antenatal care visits to have a safe pregnancy and baby. This was due to the distance to the health facility associated with lack of transport money to go for Antenatal care. Less than 4 antenatal care visits led to no detection of obstructed labour risks; hence, mothers ended up with obstructed labour. This study is similar to the study findings, which showed that mothers who developed obstructed labor did not attend Antenatal Care (Akhter & Tarannaum, 2014; Bako et al., 2018) & Kayiga et al., 2016).

The majority 25/35 (71.4%) of the respondents were village residents, this was because most referrals with obstructed labor came from distant areas from Soroti City and hence lived in villages. Living in villages was associated with obstructed labor and low medical services provided with the absence of services like CT scans, which would be used to detect risks to obstructed labour like abnormal lies leading to late diagnosis, hence the mother ends up in obstructed labour. The study findings were in line with the findings by Ayenew (2021), who stated that living in rural areas was a strong predictor of obstructed labor.

The majority, 18/35 (51.4%) of the respondents went to the hospital 12 hours after the onset of labor. This finding shows there was a delay in the referral of the mother. They could not identify that labor was prolonged or obstructed due to home deliveries where mothers thought they were delivering at home but were forced to go to the health facility when they developed obstructed labor. This finding is in line with a study that found that mothers who visited hospitals 12 hours after the onset of labor were most likely to develop obstructed labor (Ayenew, 2021).

Fetal-related factors contributing to obstructed labor in Maternity Ward at Soroti Region Referral Hospital.

Majority 11/35 (31.4%) of the respondents reported babies were laying in wrong position. Abnormal lie like breech and shoulder presentation was associated with polyhydramnios or failure of the baby to rotate led to obstructed labour among mothers. This study was in concurs with a study by Ayenew, (2021) who carried out a study in Ethiopia and found out that malposition was a factor leading to obstructed labour among mothers.

Hospital-related factors contributing to obstructed labor among mothers in Maternity Ward at Soroti Region Referral Hospital.

Most of the respondents 23/35(65.7%), said that their observations were recorded on the charts. This was very important because it is the role of all midwives to monitor all mothers who come to labor with a history of labor-like pains, and recording on partograph helps to detect abnormalities and hence reduce chances of obstructed labor. This study's findings agree with a study conducted by Mugyenyi et al. (2024) and Wube et al. (2018), which stated that the use of a partograph helped to reduce obstructed labor.

The majority, 18/35 (51.4%), reported a distance of more than 17 km from the health facility. This was due to a large catchment area served by Soroti Regional Referral Hospital as many mothers came from a distant area and were referred but delayed on the way towards the hospital, leading to obstructed labour among mothers. This study was in agreement with a study that stated that mothers who moved for an estimated distance of 10 to 50 kilometers from the hospital had higher odds of causing obstructed labor (Desta et al., 2022)

Most of the respondents 12/35 (34.3%) reported that health workers performed the vaginal examination. Vaginal examinations were done to assess the progress of labor and detect other abnormalities which could cause obstructed labor hence leading to low incidences of obstructed labor.

Conclusion

The following factors were associated with obstructed labor among mothers. Fetal malposition and malpresentation, Long distances from the hospital, Maternal age, prolonged labor, and inadequate ANC attendance.

Recommendations.

The obstetricians should promote awareness to the general public about the causes of obstructed labor and other maternal complications to reduce maternal and child deaths and, hence, improve their well-being.

The District Health Officer Soroti District should lobby for more ambulances to aid transportation of mothers from villages to the Regional Referral Hospital to reduce on the delays during referral of patients.

The midwives should monitor mothers using partographs to detect abnormalities and refer them appropriately.

The midwives are to intensify Health Education of mothers to attend Antenatal and deliver from health facility.

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List of abbreviations.

SRRH: soroti Regional Referral Hospital
SSCN: Soroti School of Comprehensive Nursing.
WHO: World Health Organisation.
MoH: Ministry of Health

Source of funding.
There is no source of funding.

Conflict of interest.
The authors declare no conflict of interest.

Availability of data.
Data used in this study is available upon request from the corresponding author.

Authors contribution
SK designed the study, conducted data collection, cleaned and analyzed data, and drafted the manuscript. RAO supervised all stages of the study, from the conceptualization of the topic to manuscript writing.

Authors biography.
Shaluwa Kainamirembe is a student with a diploma in Nursing at Soroti School of Comprehensive Nursing.
Ruth Amoding Oluka is a research supervisor at Soroti School of Comprehensive Nursing.

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