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Knowledge of caretakers towards neonatal danger signs in Masindi General Hospital in Masindi district. A cross-sectional study.

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ABSTRACT

Background:
The study aimed to assess the level of knowledge of caretakers towards neonatal danger signs in Masindi General Hospital in Masindi district.

Methodology:
A cross-sectional study was conducted at Masindi General Hospital among caretakers of neonates in postnatal and pediatric wards. A sample of 70 respondents was obtained using Burton's formula and selected through simple random sampling. Data were collected using structured questionnaires. Inclusion required consent, while non-eligible caretakers were excluded. Pretesting and trained assistants ensured data quality. Data were analyzed using tally sheets and presented in tables and charts. Ethical approval, confidentiality, and informed consent were strictly observed throughout the study period.

Results:
Among 70 respondents, 52 (74.3%) were female and 18 (25.7%) were male. Most were aged 26-35 years, 30 (42.9%), followed by 19-25 years, 28 (40.0%), and 16-18 years, 12 (17.1%). Education levels included primary 19 (27.2%), O-level 26 (37.1%), and A-level and above 25 (35.7%). Most resided in Masindi Town, 30 (42.9%). Knowledge was highest for fever 56 (80.0%) and difficulty breathing 49 (70.0%), while abdominal distension and bluish skin were lowest at 15 (21.4%). Overall, 54 (74%) had received information, mainly from health facilities 36 (51.4%) and ANC sessions 30 (42.9%). Confidence levels showed 28 (40.0%) somewhat confident, 18 (25.7%) very confident, 14 (20.0%) not confident, and 10 (14.3%) unsure. Infections 52 (74.3%) were the leading cause of neonatal illness, followed by birth complications 33 (47.1%), poor feeding 30 (42.9%), lack of hygiene 32 (45.7%), and delayed care 29 (41.4%).

Conclusion:
Knowledge of neonatal danger signs was moderate, with fever and breathing difficulty most recognized.

Recommendation:
The health facility should strengthen health education during Antenatal Care (ANC) and Postnatal Care (PNC) sessions to improve knowledge of neonatal danger signs among caretakers.

Keywords: *Neonatal danger signs, Caretakers' knowledge, pediatric care, Masindi General Hospital, Newborn morbidity*.
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BACKGROUND OF THE STUDY

Neonatal danger signs are critical indicators that signal severe illness in newborns and require timely recognition and intervention to reduce morbidity and mortality. Despite their importance, studies across Uganda and other countries reveal significant knowledge gaps among caretakers. In Ethiopia, only 31.3% of mothers had good knowledge of neonatal danger signs, with urban residence and higher education being associated with better awareness (Anmut et al., 2017). Similarly, in Jordan, only 15.2% of women knew all danger signs during pregnancy, 21.1% during labor, and 11.9% postpartum, with education and antenatal care visits improving knowledge (Okour et al., 2012).

In Uganda, knowledge varies widely. A study in rural eastern Uganda reported that only 14.8% of women knew at least three neonatal danger signs, and birth preparedness was a key factor influencing knowledge (Sandberg et al., 2014). Another study showed 58.2% of mothers recognized at least three danger signs, while Mukunya et al. (2019) reported 35.2% had good knowledge. Fever, difficulty breathing, and convulsions were the most commonly recognized signs, whereas poor feeding, bluish or pale skin, excessive crying, and pus in the eyes were often missed. Socio-economic factors, low antenatal attendance, cultural beliefs, and limited access to health education contributed to these gaps (Kananura et al., 2016; Owor et al., 2019).

At Masindi General Hospital, most caretakers received information through health facilities, ANC, and PNC sessions, yet gaps remain in recognition of less obvious danger signs, such as abdominal distension and skin discoloration. These knowledge deficits directly impact

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care-seeking behavior, leading to delayed treatment and increased neonatal morbidity and mortality. The evidence underscores the need for targeted community and facility-based health education programs to improve caretakers' knowledge, confidence, and practices regarding neonatal danger signs.

The study aimed to assess the level of knowledge of caretakers towards neonatal danger signs in Masindi General Hospital in Masindi district.

METHODOLOGY

Study design

A cross-sectional study design was employed because it enables data collection from a dynamic population within a short period of time.

Study area

The study was conducted in Masindi General Hospital, located in Masindi town, Masindi municipality sub-county, Masindi district, bordering Hoima district. The major economic activity being carried out was farming; people obtained health care services in Masindi General Hospital. The hospital serves Masindi district and the surrounding Bunyoro sub-county region of Uganda. The nearby referral hospital is the Hoima regional referral hospital and is 55.5km away from Masindi general hospital. The hospital serves more than 500000 people. Masindi General Hospital offers a range of services, including outpatient and inpatient care, maternity and theatre services, and diagnostic services like imaging and laboratory work.

Study population

The study population comprised caretakers of neonates attending health services on the postnatal and pediatric ward at Masindi General Hospital.

Sample size determination

The sample size was determined using Burton's method.

n=QR/O

Where;

N=14*5/1

N=sample size (70 respondents)

Q=Number of days for data collection. (14 days)

R=Maximum number of respondents to be interviewed per day (5 respondents)

O=Time to be spent on each respondent. (1 hour)

Sampling Technique

Simple random sampling was used to select respondents for participation in the study. This method was chosen because it is time-saving, ensures that each respondent has an equal chance of being selected, and minimizes bias.

Sampling Procedure

A random sampling method was used to obtain 70 respondents at Masindi General Hospital. Papers with similar characteristics, including size, shape, texture, weight, and folding style, were used to ensure fairness in the selection process. The folded papers were put into a single box and mixed. Each caretaker was asked to pick a single folded paper independently, and those who picked numbers from 1 to 5 were provided with a questionnaire to proceed with the study. However, those who had a number beyond 5 were eliminated from the study. This method was used for 14 days until all 70 respondents were selected. This method helped to avoid biases in choosing principal respondents.

Study variables.

Dependent variables.

These included neonatal danger signs.

Independent variable

These included knowledge of caretakers towards neonatal danger signs.

Selective criteria

Inclusion criteria

The research included all caretakers of neonates on the pediatrics ward and postnatal who consented to take part in the study from Masindi General Hospital in Masindi district.

Exclusion criteria

The research excluded caretakers who were not attending to neonates and who were not in the pediatrics ward and the postnatal ward at the time of the data collection.

Data collection method

The questionnaire method was used because it enables the collection of data from many respondents in a short period of time.

Data collection tools.

A self-administered structured questionnaire was used in data collection, with both open and closed-ended questions.

Data collection procedure.

After receiving an introductory letter from the Research Committee of Kampala Institute of Health Professionals, permission to begin data collection was sought from the hospital administration, which was granted.

Five papers were folded, and one was randomly selected to determine the order of data collection. Upon arrival at the hospital, a caretaker was randomly selected, with assistance, to participate in the study.

Once selected, the caretaker was informed about the study procedures, purpose, and ethical considerations, including consent and confidentiality. Those who agreed to participate were given a questionnaire. Participants who were unable to

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read were assisted in completing the questionnaire. After completion, the questionnaires were collected, checked for completeness, and safely stored.

Data Quality Control

Research Assistants were trained on how to correctly fill out questionnaires and ensure ethical considerations during research processes to enhance data validity.

The study was carried out for one month to ensure ample time was given to all respondents.

Pretesting of data collection tools, specifically self-administered questionnaires, was carried out a week prior to the start of actual data collection to check for their effectiveness and reduce errors. Pretesting was carried out at Kirasa health center III by giving questionnaires to be answered according to so as to check the effectiveness of self-administered questionnaires and to rectify any errors before actual data collection.

Data analysis and presentations.

Data were tallied manually using a pen, paper, and a tally sheet. The summarized information was then presented in the form of frequency distribution tables, pie charts, and bar graphs using Microsoft Excel and Microsoft Word, accompanied by descriptive narratives.

Ethical considerations.

This research report was presented to the committee of Kampala Institute of Health Professionals, and after approval, a letter was issued that was presented to the person in charge of Masindi General Hospital, who then granted permission to the researcher to obtain information from the respondents. Consent was obtained from all respondents before enrolling them in the study. Utmost privacy and confidentiality on the information that was obtained from respondents were ensured, and the researcher did not offer any incentives or gifts to the respondents to fill out the questionnaire.

RESULTS

Demographic of Respondents

Table 1: Shows demographics of respondents *(n=70)*

Variable	Category	Frequency	Percentage (%)
Gender	Male	18	25.7
	Female	52	74.3
Total		70	100
Age	16–18	12	17.1
	19–25	28	40.0
	26–35	30	42.9
Total		70	100
Religion	Christianity	41	58.6
	Muslim	24	34.3
	Others	5	7.1
Total		70	100
Education	Primary	19	27.2
	O-level	26	37.1
	A-level & above	25	35.7
Total		70	100
Residence	Masindi Town	30	42.9
	Kigulia	12	17.1
	Kirasa	10	14.3
	Bigando	8	11.4
	Other areas	10	14.3
Total		70	100

From table 1; majority 52 (74.3%) were females and least 18 (25.7%) were male, most (28) 40%were aged 19–35 years, those aged 26-35 were (30) 42.9% and the least (12) 17.1% were aged 16-18 and, and the largest (30) 42.9% proportion resided in Masindi Town, (12) 17.1% resided in kigulia, (10) 14.3% resided in Kirasa (8) 11.4 resided in bigando and (10) 14.3% resided in other places.

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Knowledge of neonatal danger signs

Table 2: Shows knowledge of caretakers about neonatal dangers *(n=70)*

Danger Sign	Frequency	Percentage (%)
Fever	56	80.0
Hypothermia	30	42.9
Difficulty breathing	49	70.0
Poor feeding	46	65.7
Convulsions	28	40.0
Jaundice	35	50.0
Vomiting everything	26	37.1
Diarrhea	24	34.3
Umbilical infection	32	45.7
Skin boils/rashes	20	28.6
Lethargy/unconsciousness	21	30.0
Bleeding umbilical/skin	18	25.7
Excessive crying	22	31.4
Abdominal distension	15	21.4
Bluish/pale skin	15	21.4
Total	413	624.2

From table 2, fever 56(80%) and difficulty breathing 49(70%) were the most recognized neonatal danger signs, while bluish/pale skin and abdominal distension 15(21.4%) were the least recognized.

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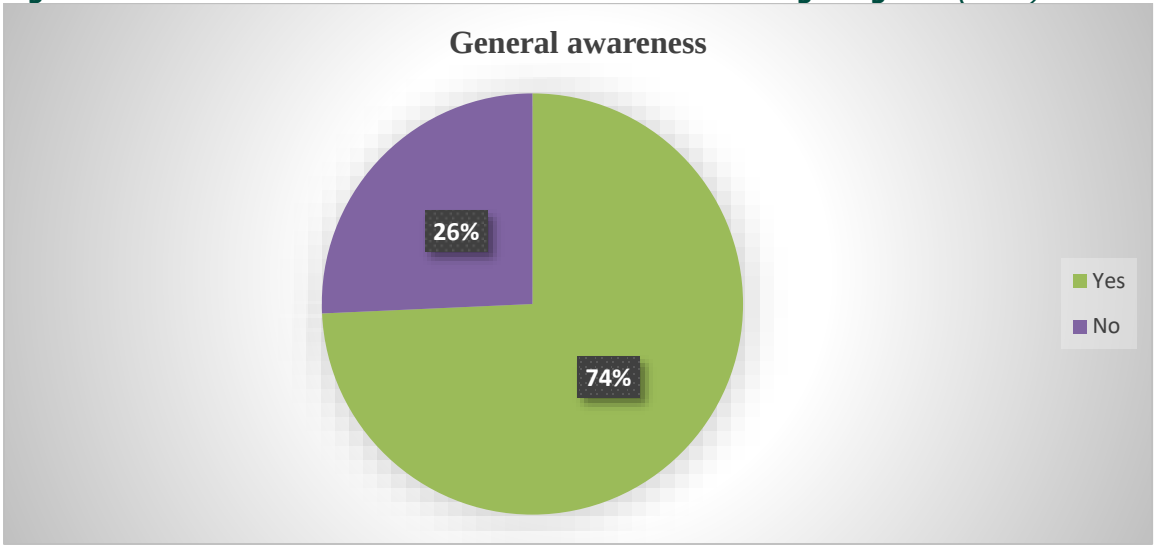
Figure 1 shows caretakers' information about neonatal danger signs *(n=70)*



In Figure 1, the majority, 54.76(74%) of respondents reported having received information about neonatal danger signs, and 18.2(26%) reported having never received information about neonatal danger signs.

Table 3: Shows the source of information about neonatal danger signs among caretakers of neonates *(n=70)*

Source	Frequency	Percentage (%)
Health facility (hospital/clinic)	36	51.4
Community health worker (VHT)	15	21.4
Media (radio/TV/internet)	8	11.4
Family/friends	7	10.0
ANC sessions	30	42.9
PNC sessions	22	31.4
Other	2	2.9
Total	**120**	**171.4**

Table 3 shows hospitals/clinics 36 (51.4%) were the most common source of information, followed by community health workers, and the other 2 (2.9%) were the least common source of information.

Confidence in identifying neonatal danger signs

Table 4: Shows confidence levels of caretakers of neonates about knowledge of neonatal danger signs *(n=70)*

Level	Frequency	Percentage (%)
Very confident	18	25.7
Somehow confident	28	40.0
Not confident	14	20.0
Not sure	10	14.3
Total	70	100

As shown in Table 4, the majority, 28 (40%) of the respondents showed some confidence, while those who were not sure had the least, 10(14.3%).

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Table 5: Shows the main causes of neonatal illness *(n=70)*

Cause	Frequency	Percentage (%)
Infections	52	74.3
Birth complications	33	47.1
Poor feeding	30	42.9
Lack of hygiene	32	45.7
Delayed medical care	29	41.4
Other	3	4.3
Total	179	255.7

Table 5 presents the main causes of neonatal illness among the respondents (n = 70). Infections were the most commonly reported cause, accounting for 52 responses (74.3%). This was followed by birth complications with 33 responses (47.1%), lack of hygiene with 32 responses (45.7%), and poor feeding reported by 30 respondents (42.9%). Delayed medical care was also identified by 29 respondents (41.4%). A small proportion of respondents (3, 4.3%) mentioned other causes.

DISCUSSION

Demographics of Respondents

The majority of respondents were female (74.3%), and most were aged between 19–35 years, most resided in Masindi Town (42.9%), and the majority had secondary education (O-level and above), the number of women was high because women are primary caregivers of newborns in most Ugandan households, explaining their high representation, the 19–35 age group represents the most fertile and child-bearing population, most of the caretakers resided in Masindi town this reflects easier access to the hospital. This implies that educational interventions would be more effective since many respondents have at least a secondary education; however, health promotion should also target men because their involvement influences health-seeking behavior. Similar demographic patterns were reported by Sandberg et al. (2014) and Anmut et al. (2017), where most respondents were young mothers and primary caregivers.

Knowledge of caretakers towards neonatal danger signs

Most recognized signs were fever (80%), difficulty breathing (70%), and poor feeding (65.7%), while subtle signs such as cyanosis and abdominal distension were least recognized (21.4%). This is because common signs are easily noticeable and frequently communicated during ANC/PNC visits, and other clinical signs require deeper medical knowledge. This implies that Poor recognition of subtle signs can lead to delayed care and increased risk of complications such as sepsis or respiratory failure. These findings match Mukunya et al. (2019) and Ekwochi et al. (2015), who found that caregivers recognize visible signs more than clinical ones.

The majority of the caretakers (74%) had received information on neonatal danger signs, which indicated increased Ministry of Health and VHT engagement since health facilities are the main education points, and this also implied that health promotion is working, but the 26% with no information showed an educational gap. This information is similar to that of Okawa et al. (2019), who found that ANC/PNC sessions are key sources of newborn health information.

Health facilities (51.4%) and ANC sessions (42.9%) were the most common sources of information about neonatal danger signs. This indicated that health workers are trusted information providers and that routine ANC/PNC visits allowed repeated exposure to health messages, which implied that strengthening ANC/PNC would greatly improve maternal knowledge. This is Consistent with Waiswa et al. (2015), who emphasized the central role of health workers in educating caregivers.

About 40% of the caretakers were “somehow confident,” while 14.3% were “not sure.” This could be due to Partial knowledge that leads to partial confidence, or Caregivers recognized common signs but not rare ones. This implies that low confidence may cause delays in care-seeking. This matches Okungu et al. (2018), who found that limited knowledge reduces caregiver confidence.

Most identified neonatal danger signs were infections (74.3%) and poor hygiene (45.7%). This could be due to frequent health worker emphasis on infection prevention and the high prevalence of sepsis cases in Uganda. This showed caregivers may appropriately prioritize hygiene-related prevention measures. This was supported by Turyasiima et al. (2020), who identified infections as the leading cause of neonatal morbidity.

CONCLUSION

Knowledge of neonatal danger signs was moderate, with fever and breathing difficulty most recognized.

RECOMMENDATION

The government should extend the use of mass media and Village Health Teams (VHTs) to improve awareness of neonatal danger signs among caretakers of neonates.

The government should also promote further research into cultural determinants affecting knowledge of neonatal danger signs.

The health facility should strengthen health education during Antenatal Care (ANC) and Postnatal Care (PNC)

sessions to improve knowledge of neonatal danger signs among caretakers.

Acknowledgement

Compiling a report requires guidance and support from almost everyone involved in the process. It was therefore on this ground that I wish to extend me since gratitude and appreciation to the following:

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List of abbreviations

ANC	Antenatal Care
PNC	Postnatal Care
VHT	Village Health Team
NMR	Neonatal Mortality Rate
KAP	Knowledge, Attitude, and Practice
WHO	World Health Organization
SNNPR	Southern Nations, Nationalities, and Peoples' Region

Source of funding

The study received no external funding.

Conflict of interest

The authors declare no conflict of interest.

Data availability

Data is available upon request from the author.

Author contributions

MR: collected the data.
VN: supervised the study.

Informed consent

Written informed consent was obtained from parents or legal guardians of all participants, and assent was obtained from the children prior to participation.

Author biography

Mukhutaar Ruraliire is a student pursuing a diploma in clinical medicine and community health.
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George Masete: research supervisor at Kampala Institute of Health Professionals.

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