Knowledge Attitude and Practices towards Prevention of Brucellosis among Cattle Keepers Aged (15-45) Years in Lyantonde General Hospital Lyantonde District. A Cross-sectional Study.

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Abstract

Background:
The purpose of the study is to determine knowledge attitudes and practices toward the prevention of brucellosis among cattle keepers aged (15-to 45) years in Lyantonde general hospital Lyantonde district

Methodology:
The study design was a convenience sampling technique in nature and the researcher employed simply Convenience sampling technique to select 50 study participants. The questionnaire was used as a data collection tool on a sample size of 50 respondents; data were analyzed manually using a scientific calculator by tallying, counting, and presented in a computer program to generate tables, graphs, and pie-charts

Results:
96% have ever heard about brucellosis, 56% have heard brucellosis from health workers, 70% know how brucellosis is spread, 64% know that raw milk can cause brucellosis, 70% know how to prevent brucellosis, 64% are aware that undercooked meat can cause brucellosis, 64% also know that contact with animal products can cause brucellosis and 66% know that animal by-products are the major risk factors, 74% have a positive attitude, 60% have the perception that brucellosis is a health problem, 70% have a perception that medical intervention can stop brucellosis spread, 96% take raw milk, 68% have ever tested for brucellosis, 52% have ever got in contact with the aborted fetus, 86% got in contact with any other animal products and 60% seek medical treatment from health facilities.

Conclusion:
The majority of the respondents have good knowledge and a positive attitude towards the prevention of brucellosis and poor practice.

Recommendation:
The ministry of health (MOH) should put guidelines on proper handling of animal products and provide massive sensitization on the control and prevention of brucellosis.

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1 Background of the study

Brucellosis is a bacterial disease caused by various Brucella species including Brucella abortus (cattle), B. melitenesis (goats), B Suis (pigs), and B. Ovis (sheep) according to UCG but majorly the cause of human brucellosis is caused by B abortus, B. Melitenesis, and B Suis. Humans generally acquire

the disease through direct contact with infected animals by eating or drinking contaminated animal products or by inhaling airborne agents.

Most cases are caused by ingesting unpasteurized milk or cheese from infected cattle, sheep, goats, and camels (WHO, 2014). Brucellosis is one of the most widespread zoonosis transmitted by animals and in endemic areas.

Human brucellosis has serious public health consequences. Expansion of animal industries and urbanization and lack of hygienic measures in animal husbandry and food handling, partly account for brucellosis remaining a public health hazard (WHO, 2014). Annually approximately 500,000 cases of brucellosis have been reported in a study on knowledge, attitude, and practices related to Brucellosis in the study of Khyber Pukhtun Khwa Province, Pakistan, and considered a serious threat to public health.

In Africa, 30,000 people have been analyzed with brucellosis, and data reviewed that the average prevalence was 11% in 2013. Among hospital patients which were consistent with the clinical picture, the prevalence was 7%. These data suggest that brucellosis is endemic across the African and Asia continents and is a major cause of disease in humans and livestock (Franc *et al* 2018). A report that was done by Kudzaishe Vhoko *et al.,* (2010), on estimating the prevalence of brucellosis in Zimbabwe stated that 119 samples were collected from communal samples and the prevalence rate was 1.0%. The report that was done in Kenya by Peninal Munyua (2015), on high incidences of human brucellosis in the pastoral community showed an incidence of 84 cases per 100,000 persons per year.

The most recent review of the disease indicates that the highest incidence of brucellosis in Africa was recorded in Algeria at 84.3 per million of the population per year, and the lowest in Uganda at 0.9 per million of the population per year. In a recent report, FAO estimated brucellosis prevalence in Uganda at a national level to be 10% in cattle and 5.5% in cattle keepers.

In Uganda, Human brucellosis has been reported to be prevalent in both rural and urban settings. Recent statistics revealed that 12.6% of informally marketed milk in Kampala was contaminated with Brucella abortus at purchase and that the annual human incidence rate was estimated to be 0.5 per 10,000 people (Makita *et al,* 2010).

This is close to the prevalence of 13.3% among patients in Kampala Studies on animal brucellosis have also been done in Uganda, reporting a herd prevalence of 55.6% and is consistent with the high prevalence reported in the general population in rural areas in Uganda 11.7% and 13.4% or among butchers in Mbarara 7% and Kampala 12% districts (Migisha *et al.,* 2018), and an animal prevalence of 15.8% in the pastoral dairy system in the Mbarara district, while figures of up to 100% at herd level and 30% at an animal level were reported in the central district of Nakasongola. Brucellosis is also prevalent among Ugandan wildlife and also pastoral communities including Lyantonde, Ssembabule, Kazo, and Kiruhura district Ibanda. (Kansiime *et al,* 2015).

Recently, a cross-sectional study of the disease was done in two sub-counties of Kazo, Buremba, and Ibanda districts in Western Uganda found that the prevalence of 38.4% and 26% in cows and goats respectively (Mugabi Robert, 2012)

The annual prevalence of human brucellosis in 2015 was 51.6% and 33.5% at Mbarara teaching hospital and Lyantonde hospital. This depicts a high prevalence of the disease at these facilities (Kansiime *et al.,* 2015). The specific objectives were to determine the; knowledge of prevention of brucellosis among cattle keepers aged (15-45)years in Lyantonde general hospital Lyantonde district, Attitude towards prevention of brucellosis among cattle keepers aged (15-45)years in Lyantonde general hospital Lyantonde district, and practices towards prevention of brucellosis among cattle keepers aged (15-45) years in Lyantonde general hospital Lyantonde district.

2   Methodology

Study area

The study was conducted at Lyantonde General Hospital Lyantonde District. The hospital was established by the government of the Republic of Uganda and is under their full control to provide health services to the population of Lyantonde District and the surrounding districts. The hospital is situated at approximately the center of Lyantonde Town council at Lyantonde Rural Division and it serves about 5 million people in the area of Lyantonde rural and urban division and the surrounding sub-counties like Kinuuka, Lyakajjura kaliiro, Mpumudde among others consisting of about

700 thousand people who come to seek medical care at the facility.

Study design

A Cross-sectional study was undertaken. The design was used because it helps the researcher to collect quantitative data.

Study population

The study population comprised cattle keepers aged 15-45 years both male and female who were at risk of being infected with brucellosis infection

Sample size determination

The sample size was determined by using the Kish and Lisle (1967) formula, which states that;

N=a2bc/x2

Where

N=desired sample size

a= standard normal deviation usually set at 1.96 which corresponds to a 95% confidence level

b= proportion of survey population with particulars under investigation and where its unknown 50% is used

c= probability that the researcher will get a certain amount of error. 50% is considered to cater for that.

X= degree of accuracy which ranges from 0.01-0.1

Therefore, it's; $(1.96)2 \times 0.52 \times 0.52 \div 0.092$

=128 respondents

However, due to financial and time constraints, a sample of 50 respondents will be used.

Selection criteria

This was composed of;

Inclusion criteria

Patients within the age bracket of 15-45 years, were ready to consent freely and fully participate in the study.

Exclusion criteria

Patients not within the age bracket of 15-45 years and those who did not participate in the study.

Study variables

The dependent variable

The dependent variable for the study was the prevention of brucellosis.

The independent variable

The independent variable in this study was knowledge attitude practices towards prevention of brucellosis among cattle keepers aged 15-45 years Lyantonde General Hospital Lyantonde District.

Sampling technique

A convenient sampling technique was employed to select 50 respondents because of the low turn-up of clients therefore those would be available and consented hence enrolled in the study

Data collection tool

As for the study, data was collected using a questionnaire which is defined as a predetermined, written list of questions typed in English that were answered by the respondent without a supervisor or explanation by the interviewer, therefore this helped the researcher to reduce the possibility of getting bias from the respondent. As a structured type of questionnaire was designed to allow the respondents to write the response they wanted and complete them in time. It further enabled the researcher to collect data from a large population in a short period.

Pre-testing of a questionnaire

The questionnaires were printed in English and then pre-tested at Lyantonde General Hospital which was aimed at evaluating the validity and reliability of the tool for data collection.

Quality control

The questionnaires were printed in English language and pre-tested in Lyantonde General Hospital. The major aim was to ensure that they are valid, reliable, and relevant to the study.

Training of two research assistants; the researcher trained research assistants to ease the data collection process. The researcher gave ample time to respondents to allow all questions to be answered by the participants for proper data quality.

S.O.Ps; The researcher after the study had to pilot the study in the health facility where it was done to assess how it works, which was then used by other institutions in the future.

Data collection procedure

An introduction letter was obtained from the principal Kampala School of Health Sciences and then taken to the office of the D.H.O Lyantonde district who forwarded the researcher to the medical superintendent of Lyantonde General Hospital. Who granted permission to proceed with the data collection with the facility and at every department that granted permission to collect data from there? After the exercise participants were thanked for their contribution to the study and the researcher checked through the data filled in the questionnaires before respondents left the facility to ensure that the questionnaires were filled

3   Data analysis and presentation

Data was analyzed manually using A4 sheets and then fed into Microsoft excel to generate bar graphs, tables, and pie charts for easy presentation.

Ethical consideration

The researcher introduced the topic and the purpose of the study to the respondents and then thereafter signed the consent form first before participating in the study. The respondent was assured of confidentiality as no name appeared on the questionnaire. No participant shall be forced to participate in the study and all study materials used during the interview were safely kept in a lock and key cupboard.

Anticipated study limitations and their possible solutions

Some respondents hesitated to give information when approached. Other respondents provided wrong information while some did not have the time to fill out the entire questionnaire. This was mitigated by getting a fully informed consent where the benefits and risks of participating in the study were addressed.

Some respondents were not willing to participate in the study freely and this was solved by fully explaining to them the purpose of the study. Other respondents were absent at the time of the interview and this was solved by automatically excluding them from the study.

The research study was a very lengthy and tiresome process and yet the researcher had very limited time to conduct it. This was solved by employing two research assistants.

Ideally, the study was supposed to be conducted in all departments of the health unit since a large sample gave more accurate data. However, time and financial constraints a smaller

Study Findings

Social-demographic data

From the table above; more than half of the respondents (70%) are males whereas (30%) of the respondents are females.

Most of the respondents (40%) were aged between 30-40 years whereas the least (10%) were aged between 40-45 years.

It was noted the highest number of respondents (60%) was among Protestants and the lowest (6%) among Muslim respondents.

It also showed a high number of respondents (60%) in un-educated persons and the lowest level (8%) in tertiary.

A relatively high level (80%) of cattle keepers and a low level (2%) in both health workers and peasants, there was also a high number of respondents (70%) among married people and low respondents (3%) widow.

The study also indicated most number of respondents (90%) among Banyankole and low respondents (4%) amongst Baganda.

Knowledge towards prevention of brucellosis among cattle keepers aged 15-45 years.

From the figure 1; most of the respondents (96%) had heard of brucellosis whereas the least (4%) had not heard of brucellosis.

From the table 2; most of the respondents (56%) got information about brucellosis from health workers whereas the least (8%) had got information from others like school.

From the figure 2; more than half of the respondents (70%) know how brucellosis is spread whereas the least (28%) don't understand what the spread of brucellosis means.

From the figure 3; more respondents (64%) knew that taking raw milk causes brucellosis whereas (36%) of respondents did not know that taking raw milk could cause brucellosis.

The figure 4; indicates that more respondents (70%) did not know how to prevent brucellosis whereas (30%) of the respondents knew how to prevent brucellosis.

The figure 5; showed that more than half of the respondents (64%) knew that undercooked meat can cause brucellosis whereas (36%) of the respondents did not know that undercooked meat can cause brucellosis.

The table 3; indicated that the majority (92%) of the respondents didn't know about the symptoms of brucellosis whereas a minority of the respondents (8%) knew about the symptoms of brucellosis.

The figure 6; showed a high number (64%) of the respondents knew that other animal products like ghee could cause brucellosis whereas a small number of respondents (36%) never knew that other animal products can cause brucellosis.

From the figure 7; the majority of the respondents (66%) knew that animal byproducts are risk factors for brucellosis whereas a minority of the respondents (4%) knew what risk factors mean.

Table 1. shows the distribution of respondents in bio.   (N=50)

Gender	RESPONSE	FREQEUNCY (f)	PERCENTAGE (%)
	Male	35	70
	Female	15	30
Age	15-20	10	20
	20-30	15	30
	30-40	20	40
	40-45	5	10
Religion	Protestants	30	60
	Born again	10	20
	Catholic	7	14
	Muslim	3	6
Education level	Primary	10	20
	Secondary	6	12
	Tertiary	4	8
	None	30	60
Occupation	Cattle keepers	40	80
	Peasant	2	4
	Health worker	2	4
	Butcher men	6	12
Marital status	Single	10	20
	Married	35	70
	Widow	3	6
	Separated	2	4
Tribe	Muganda	2	4
	Munyankole	45	90
	Banyarwanda	3	6
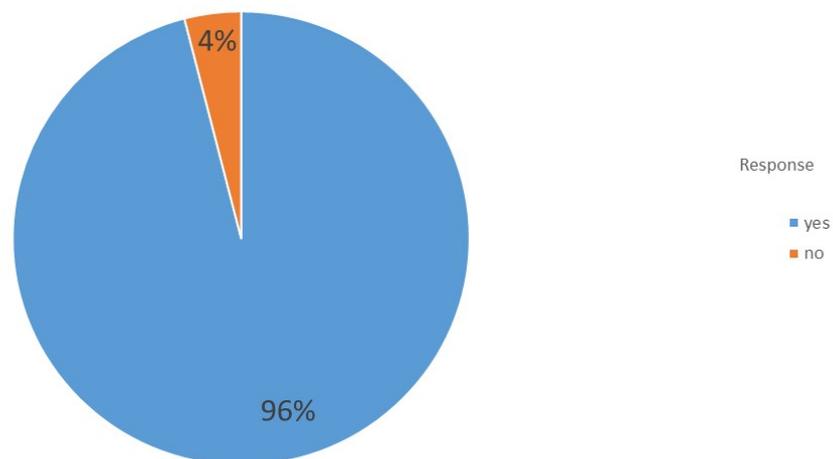
Figure 1. Shows the distribution of respondents who have heard of brucellosis. (N=50)
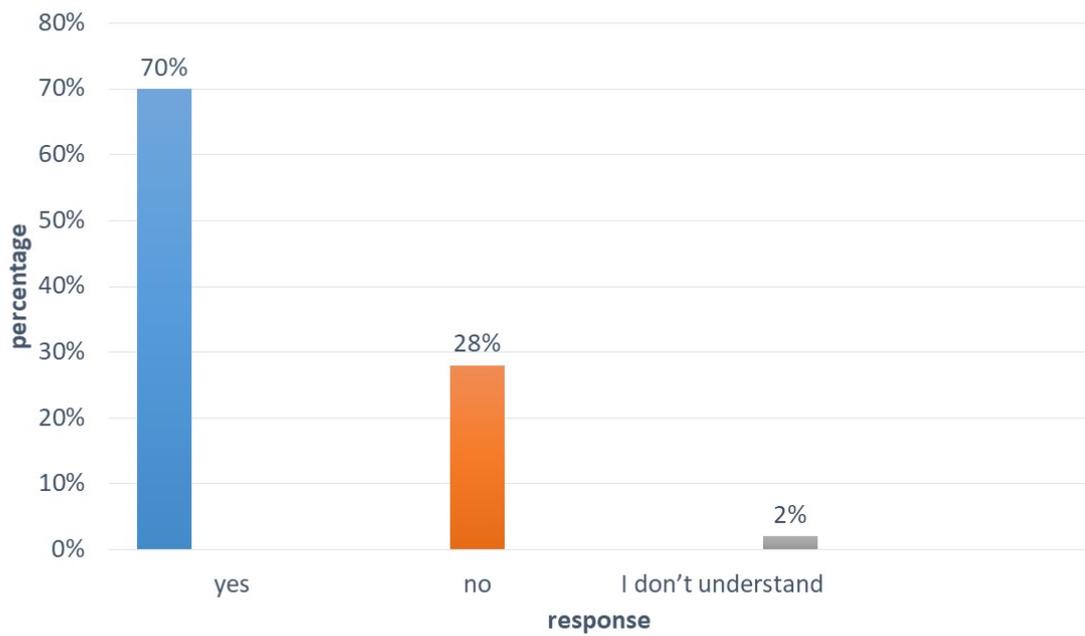
Figure 2. Shows the distribution of respondents on how brucellosis is spread. (N=50)
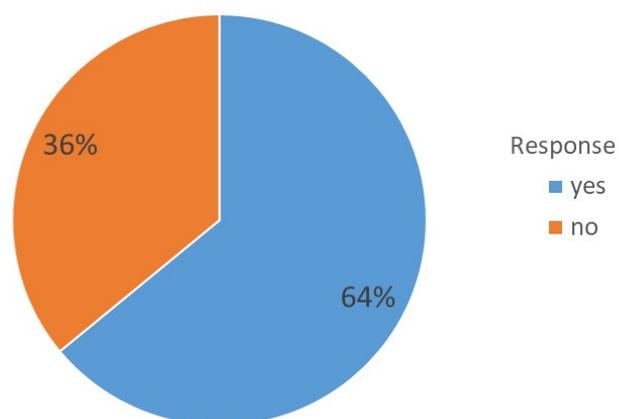
Figure 3. Shows the distribution of respondents on whether taking raw milk causes brucellosis. (N=50)
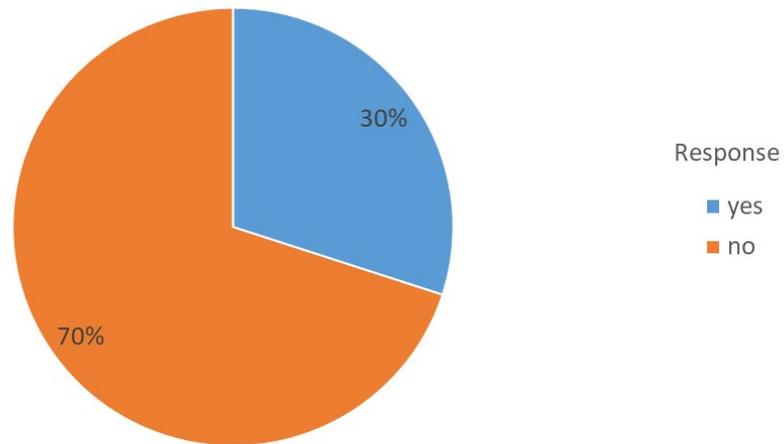
Figure 4. Shows distribution of respondents on whether they know how to prevent brucellosis. (N=50)
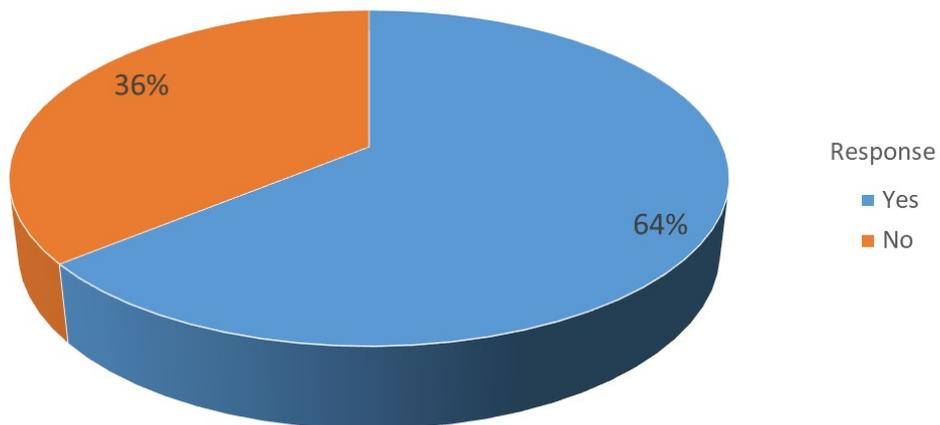

Figure 5. Shows distribution of respondents on whether they know if undercooked meat causes brucellosis. (N=50)
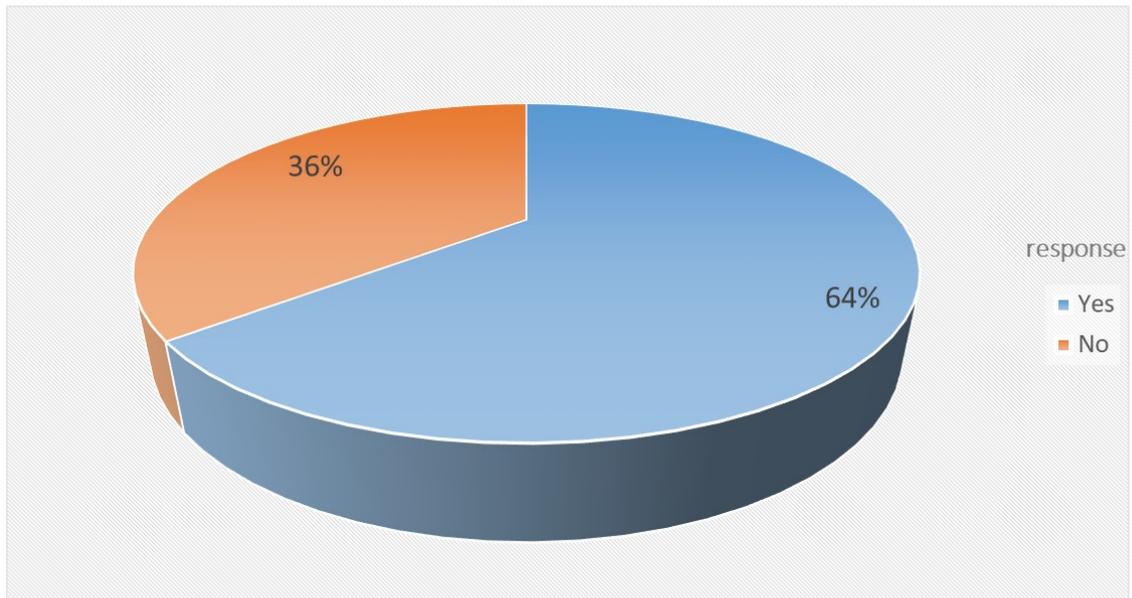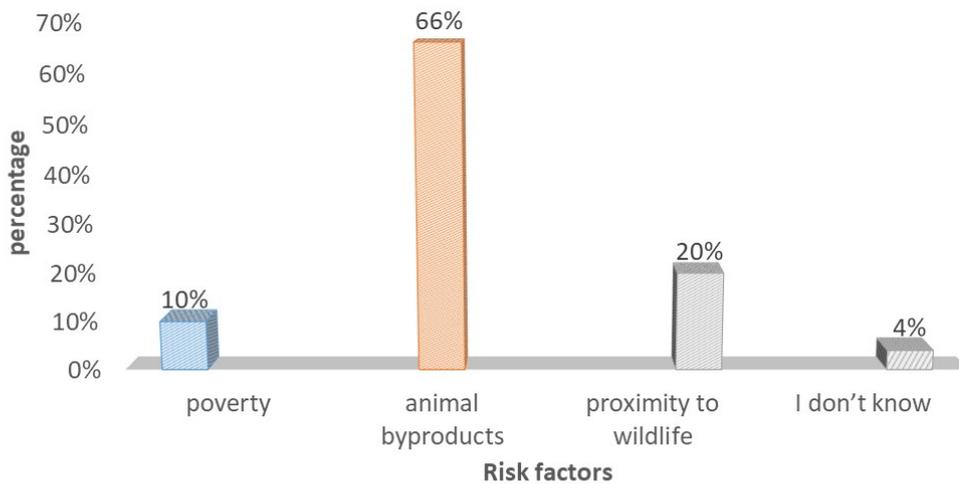
Figure 6. Shows distribution of respondents on whether they know that other animal products can lead to brucellosis. (N=50)

Figure 7. Shows the distribution of respondents on whether they know the risk factors of brucellosis.

Table 2. Shows the distribution of the respondents to where they got information (N=50)

Source	Frequency (f)	Percentage (%)
Health worker	28	56
Over the radio	8	16
Youth group	10	20
Others	4	8
Total	**50**	**100**

Table 3. Shows the distribution of respondents on whether they know symptoms of brucellosis. (N=50)

RESPONSE	FREQUENCY (F)	PERCENTAGE (%)
YES	4	8
NO	46	92
TOTAL	50	100

Attitude towards prevention of brucellosis among cattle keepers aged 15-45 years

From the table above; the majority of the respondents (74%) had a positive attitude toward brucellosis whereas a minority of the respondents (6%) had neither a positive nor negative attitude.

From the figure 8; more than half of the respondents (60%) thought that brucellosis is a health problem whereas (40%) of the respondents never thought brucellosis to be a health problem in the area.

From the figure 9; the majority of the respondents (70%) never thought that medical intervention can spread brucellosis whereas a minority of the respondents (10%) didn't know the essence of medical intervention.

From the figure 10; most of the respondents (80%) indicated that health workers are not sensitizing about brucellosis whereas (20%) said health workers are sensitized.

Practices towards prevention of brucellosis among cattle keepers aged 15-45 years

From the table above; the majority of the respondents (96%) take raw or unpasteurized milk whereas a minority of the respondents (4%) do not take raw milk.

From the figure 11; most of the respondents (68%) do brucellosis testing whereas (4%) of the respondents don't understand what brucellosis testing means.

From the figure 12; a moderate number of respondents (52 %) have ever got in contact with an aborted fetus from animals whereas a slight number of respondents (48%) have never gotten in contact with an aborted fetus from animals.

From the above table; a higher number of respondents (86%) have ever got in contact with other animal byproducts like ghee, or raw meat whereas (12%) of the respondents have never got in contact and 2% others of the respondents specified other products like placenta.

From the above 13; the majority of the respondents (60%) seek medical treatment from a health facility whereas a minority of the respondents (8%) practice self-medication.

4   Discussion:

Knowledge towards prevention of brucellosis among cattle keepers aged 15-45 year

The study revealed that the majority of the respondents (96%) had never heard of brucellosis, this could be that majority of the respondents were looking for solutions to the problem.

Furthermore, the study revealed that most of the respondents 70% knew how brucellosis is spread and 28% did not know what the spread of brucellosis was this also attributed to a high response on knowledge about brucellosis this study was not in line with the study finding by (Sabir et al 2021) in which 97% of the population was unaware of the spread and transmission of brucellosis. However, the 28% that was not aware could be the reason why there is the prevalence of brucellosis in these cattle keepers

The study also revealed that more than a half of the respondents (64%) had knowledge that tak-

Table 4. Shows the distribution of respondents on what they think about brucellosis.   (N=50)

Response	Frequency (f)	Percentage (%)
Positive	37	74
Negative	10	20
None	3	6
TOTAL	50	100
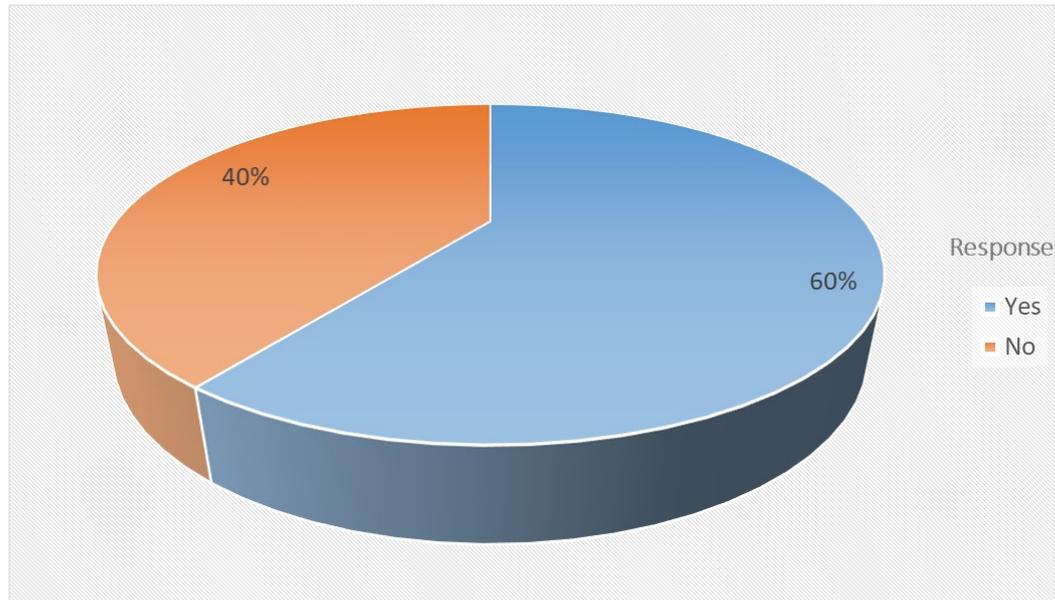
Figure 8. Shows the distribution of respondents on whether brucellosis is a health problem in the area. (N=50)

Table 5. Shows the distribution of respondents on whether they take raw milk or unpasturalised (N=50)

Response	Frequency (f)	Percentage (%)
Yes	48	96
No	2	4
Total	50	100

Table 6. Shows the distribution of respondents on whether they got in contact with other animal products. (N=50)

Response	Frequency (f)	Percentage (%)
Yes	43	86
No	6	12
If yes specify	1	2
Total	50	100
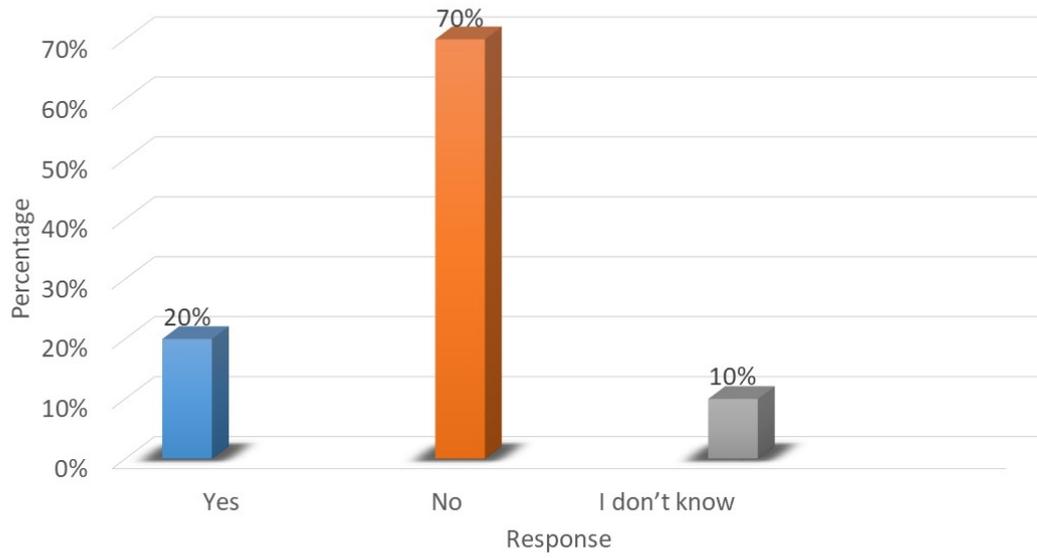
Figure 9. Shows distribution of respondents on whether they think medical intervention can stop spread of brucellosis. (N=50)
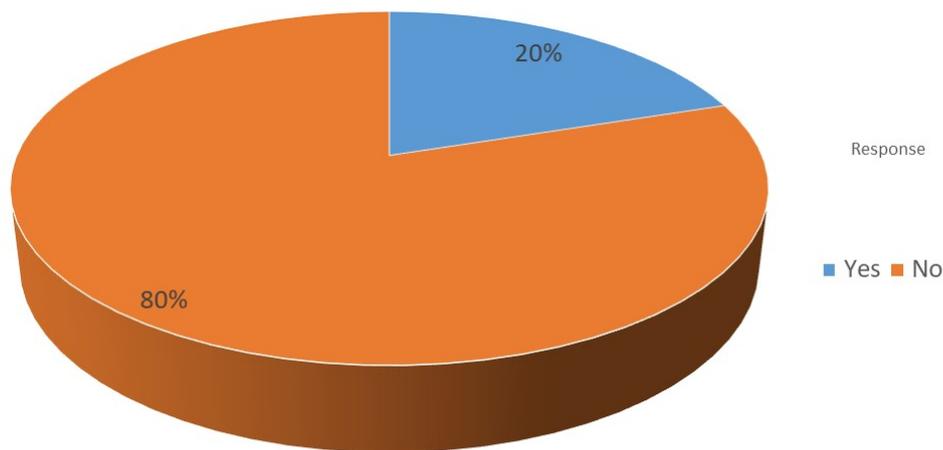

Figure 10. Shows the distribution of respondents on whether the health workers are sensitizing about brucellosis. (N=50)
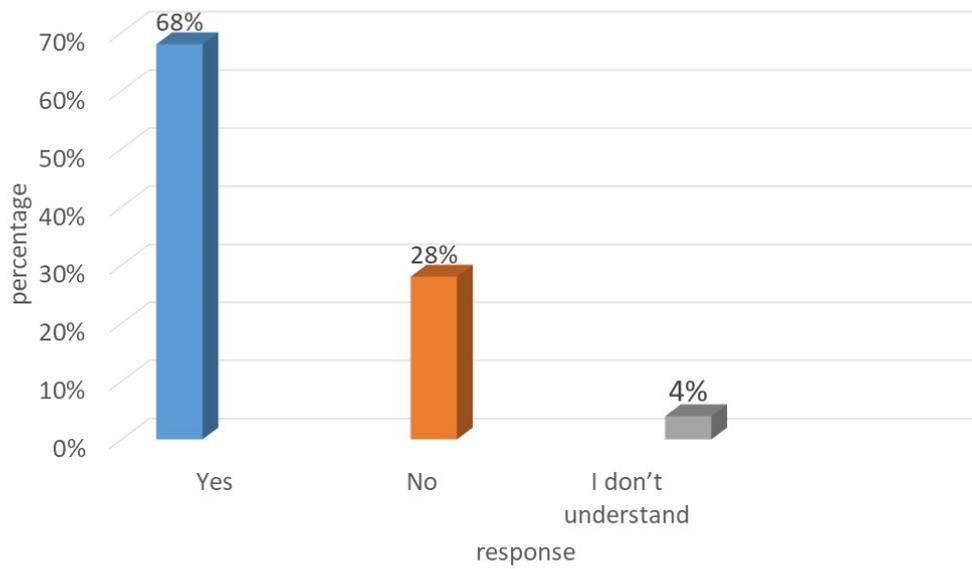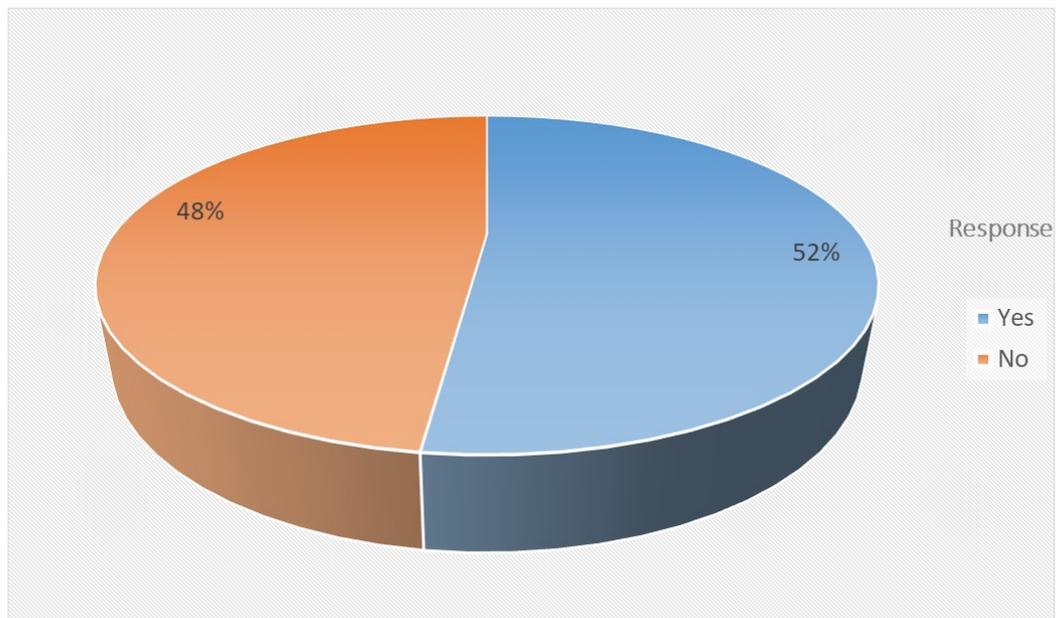
Figure 11. Shows distribution of respondents. (N=50)

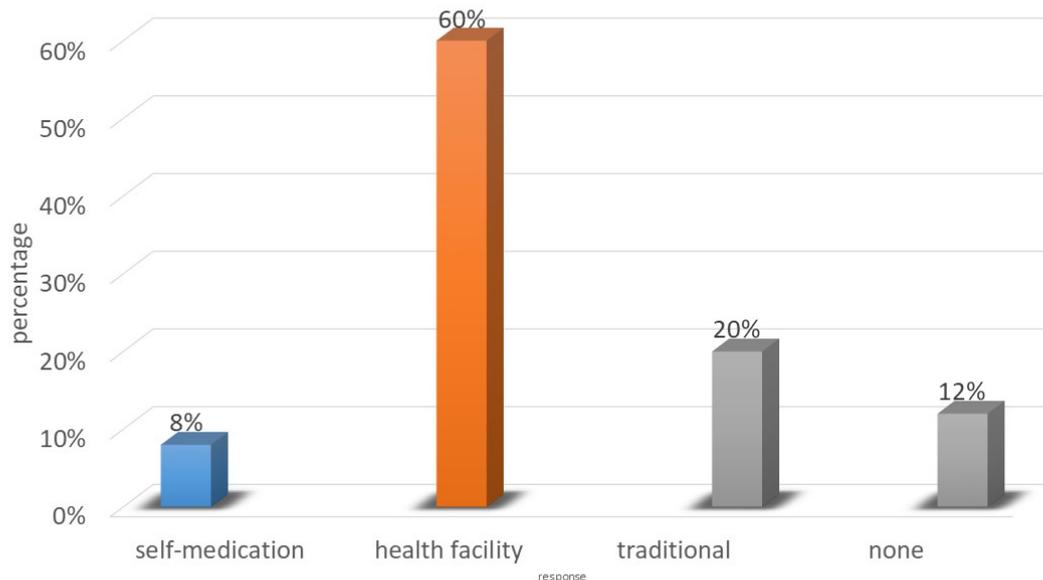**Figure 12.** Shows the distribution of respondents on whether they got in contact with aborted fetus. (N=50)

Figure 13. Shows distribution of respondents on whether they seek medical treatment.   (N=50)

ing raw milk can cause brucellosis and this could be due to information got from medical personnel and health workers indicated by (56%) of the respondents.

The study also indicated that (70%) of the respondents lacked knowledge about the prevention of brucellosis compared to 30% of the respondents who knew about it. This reflects low intervention of medical personnel and massive sensitization on prevention of the disease and this was in line with the study findings by (Sabir et al 2021) in which 80% of participants had little knowledge about prevention and brucellosis.

The study also indicated that the majority of the respondents 84% did not know the symptoms of brucellosis and a minority of the respondents 16% knew the symptoms of brucellosis. This can lead to the failure of the respondents to fully recognize the disease.

The study also reflected that most of the respondents 64% were aware that contact with animal products can lead to brucellosis and a minority 36% never knew that contact can cause brucellosis. This mostly showed that it could be little intervention of health workers.

Attitude towards prevention of brucellosis among cattle keepers aged 15-45 years

A study also revealed that the majority of the respondents 74% showed a positive attitude towards brucellosis and a relative minority 20% with a negative attitude and at least 6% did not even think about brucellosis as a disease this was also due to slight sensitization from radios and health workers. This was in line with study findings by (Fazal et al 2019). 63.8% displayed a high level of interest and positive attitude towards protecting themselves against brucellosis and were willing to receive more information about the disease.

Study also showed that most of the respondents 60% had a perception that brucellosis is a health problem in the area whereas 40% of the respondents had no perception of the disease, this was especially due to a lack of enough knowledge on the disease, this was not in line with the study findings (Megan E Peck at el 2019) which indicated that participants had a very low perceived risk of the infection with the majority (91.7%) reporting that they or a member of their household were not at risk of the disease.

The study also revealed that the majority of the respondents 70% had a perception that medical intervention can stop the spread of brucellosis as well as the minority of the respondents 4% did not know the essence of medical intervention.

From the study findings; the majority of the respondents 80% have not perceived the effects of brucellosis from health workers as well as the minority 20% have perceived the information from health workers, this has been due to a lack enough health workers and health facilities respectively.

Practices towards prevention of brucellosis among cattle keepers aged 15-45 years

From the study findings, most of the respondents 96% take raw milk, as well as the least 2% of the respondents, did not take raw milk. This practice was majorly due to low educational levels among the cattle keepers, this was in line with the study findings by (Lindahl et al 2015)

That indicated that the majority 66% of these respondents sold their unpasteurized dairy products on an everyday basis. Close to 30% of the households consumed unpasteurized dairy products from the cows on regular basis. This practice puts them at risk of developing the disease

The study further revealed, that more than a half of the participants 68% have ever had a brucellosis test because some of them had sought medical help from the health facilities as well as the minority 4% did not know anything about testing for brucellosis and this wasn't in line with the study findings by (Sabir et al 2021) which indicated that effective control strategies could not be currently implemented due to lack of awareness, high-risk practices and absence of preventive measures hence indicated that creation of awareness could high effectiveness on the control practices of brucellosis disease.

The study further indicated that a relatively high number of respondents 52% had ever got in contact with an aborted fetus which indicates a poor practice towards the spread of brucellosis as well as the least number of respondents 48% have never gotten in contact with an aborted fetus.

The study also revealed that the majority of the participants 86% had ever gotten in contact with other products like ghee, slaughtered meat, and others respectively as well as the minority 12% had never gotten in contact with animal products which indicates a poor practice that can easily lead to the spread of the disease.

5   Conclusion

From the study findings, most respondents demonstrated knowledge of brucella spread and how it presents.

However, a section that is still not aware and still practicing consumption of raw dairy products could be responsible for the presence of the disease among this section of cattle keepers.

Recommendations

The ministry of health (MOH) should put guidelines on the proper handling of animal products and provide massive sensitization on the control and prevention of brucellosis

It should also encourage animal vaccination against brucellosis as well as provide adequate treatment to those who are affected by the disease

The district health officer DHO should be aware of the prevalence of the disease to provide adequate services to the hospital.

The medical superintendent should also be able to carry out follow-ups and provide adequate information about the disease.

The local leaders should also carry out the task of educating people on how to prevent themselves from being infected by the disease.

6   Acknowledgement

ingness to provide me with all the necessary information required. Their co-operation is paramount towards the success of this report.

Sincere thanks go to my classmates and all the students of Kampala school of health sciences for their love, comfort, and teamwork which helped me to complete the course, I deeply treasure the contributions of all the above persons and ask God to richly bless them all.

7   List of Abbreviations

BAT:Brucellosis Agglutination Test

BMC:Biomedical Center

CBO:Community Based Organization.

CNS : Central Nervous System

FAO:Food and Agriculture Organization

MOH   : Ministry Of Health

NGO:Non-Governmental Organization

NTD:Neglected Tropical Disease

UAHEB:Uganda Allied Health Examination Board

UCG:Uganda clinical guidelines

WHO: World Health Organization

8   Definition of Key Terms

Adolescent: For the purpose of the study it refers to an individual aged thirteen to nineteen years being a male or a female.

Attitude : It is psychological construct, a mental and emotional entity that   inheres to or characterizes a person

Brucellosis: A zoonotic bacterial infection of acute onset that commonly affect people working with infected live stock or associated with fresh animal products

Case : This refers to an instance of a specific condition or set of symptoms.

Cattle keepers: These refer to group of people who rare animals on a large scale especially long horned cattle characterize a person gained through experience or association

Infection: The actor process of infecting characterized by an uncontrolled growth of harmful microorganisms in a host.

Knowledge: It refers to the theoretical understanding of a subject

Practice: Is the actual application or use of idea, belief or methods as opposed to theories about such application or use.

Youth : The quality or state of being young and it's the part of life following childhood; the period of existence preceding maturity or the early part of life from childhood.

Zoonotic diseases: These are illnesses that are spread between animals and people

A   Publisher details:

Table 7. References:

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