Prevalence, Public Significance and Financial Loss of Hydatid Cyst on Cattle Slaughtered at Nekemte Municipal Abattoir, Western Ethiopia

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Abstract: A cross-sectional study was conducted at Nekemte Municipal Abattoir of western Ethiopia to determine the prevalence, Public Significance and financial loss of Bovine hydatidosis from December 2013 to April 2014. Hydatid cyst count, characterization and financial loss estimation were done on 531 cattle slaughtered in the abattoir. Out of 531 slaughtered cattle, 91 (17.1%) cattle were found to be harbored by the cysts. The prevalence of the disease significantly varies with the breed and origin of the animals (p<0.05). However, the prevalence of the disease was no statistically significant difference among sex, body condition score and age groups (p>0.05). Through detail postmortem meat inspection in the abattoir, 106 visceral organs were found harboring one or more Hydatid cyst. The infestation of the lungs, liver, spleen, heart and kidneys were found to be 47.3%, 30.8%, 2.20%, 1.10 and 3.3% respectively. From the total of 295 Hydatid cysts counted, 174 (59.0%), 113 (38.3%) and 8 (2.71%) were found to be small, medium, large cysts respectively and (53.2%) (21.0%) and (25.8%) were sterile, fertile and calcified respectively. The rate of cyst calcification was higher in the liver than in the lung while fertility rate was higher among the cysts of the lung. The annual direct financial losses from organ and carcass condemnation due to this disease at the abattoir were estimated to be 3,996,000 Ethiopian Birr (ETB). During study period eight Hydatidosis cases were reported from Nekemte Referral Hospital. Thus; Bovine hydatidosis is considerably a prevalent disease in cattle, with serious public health concern reflections and causes substantial financial losses in cattle in the study area.

Key words: Abattoir · Hydatidosis · Cattle · Financial Loss · Prevalence

INTRODUCTION

Human population is growing at a rate much faster than food production in the World especially in developing countries, which are unable to assure adequate food to their people. Developing countries have nearly two third of the world’s livestock production but produces less than a third of the world’s meat and a fifth of its milk [1]. Similarly, Ethiopia owns large livestock population of which Cattle accounts 44.3 million [2]. In the country, Cattle are important source of income for rural communities and are one of the nation’s major sources of foreign currency from export. However, this great potential is not properly exploited. This is because of endemic disease burdens, traditional management system, inferior genetic makeup coupled with malnutrition and absence of well developed market infrastructure [3].

Of the diseases that cause serious problems, parasitism represents a major impact on livestock production in the tropic [6]. Among the parasitic disease Metacestode of *Taeniais and Echinococcusis* are the most important diseases that have economic as well as public health significance. Hydatidosis is caused by the dog tape worm Echinococcus and its larval stage, the Hydatid cyst. This parasite is found world widely and cause serious public health problems in certain parts of the world [5]. Larvae of Echinococcusis or Hydatidosis are a disease of mammals due to the developments of
cysts in certain organs or viscera [6]. The larval stage (Metacestode) of this tapeworm has both public health and economic significance. The problem associated with tapeworm is more serious in Ethiopia because of the common habits of consuming of under cooked meat.

Different studies have shown that cystic echinococcosis (E. granulosus) represented considerable economic and public health significance in different countries [7-9]. Present estimates suggest that cystic Hydatidosis, caused by E. granulosus, results in the loss of 1 to 3 million disability adjusted life years per annual. The annual cost of treating cases and economic losses to the livestock industry probably amounts to 2 billion US$. Alveolar echinococcosis caused by E. multilocularis, results in the loss of about 650,000 disability adjusted life years per year [10].

In Africa, Hydatidosis is reported more commonly in cattle, which are communally owned or raised on free range and associated more intimately with domestic dogs. Hydatidosis in domestic ruminants inflicts enormous economic loss due to the condemnation of affected organs and lowering of the meat, milk and wool production. Similarly, in Ethiopia, the disease has been known and documented as early as 1970s. Hydatidosis is the major cause of organ condemnation in most Ethiopian abattoirs and leads huge financial losses. Several studies were focusing only on the prevalence and financial significance of the diseases in many abattoirs of Ethiopia [8, 9, 11, 12]. However, to establish appropriate strategy for prevention and controls, it is very important to know public health significance about the disease to specific agro-ecological zones with respect to socio-economic status. Thus, the study was design to determine prevalence and public health significance and estimate financial loss due to Hydatidosis at Nekemte Municipal Abattoir, western Ethiopia.

**Study Area:** The study was conducted in western Oromia regional state, East Wollega zone at Nekemte Municipal Abattoir. Nekemte Town is found 331 km West of Addis Ababa, the capital city of Ethiopia. The climate is highland and conducive for animal production. The annual average rainfall is 1800 mm. It is located in latitude and longitude of 9°5’N 36°33’E / 9.083°N 36.55°E and an elevation of 2,088 meters. The average temperature was 21°C [13]. The abattoir an average of 30 cattle every day and 9,000 heads of cattle are slaughtered at the abattoir annually.

**MATERIALS AND METHODS**

**Study Population:** Animal population for this study was cattle brought to the abattoir from different areas mainly from Arjo, Bandira, Diga, Getema, Nekemte, Uke and Sasiga. Accordingly, those animals were subjected as a study population for active abattoir survey.

A convenient sampling technique was used to select the study subject. All Hydatidosis reported patient from the surgical department of Nekemte Referral Hospital were included during the study period. About eight (8) patients’ cases were reported during the study period in this study.

**Study Design:** A cross sectional was conducted from December 2013-April 2014 to determine the prevalence, public health significance and financial loss of Hydatidosis at the study area.

**Sample Size and Sampling Methods:** The total number of cattle required for the study was calculated according to [14]. Systematic random sampling was used to select the study animals. By considering 30.6 [49] expected prevalence and 95% confidence level with a 5% desired absolute precision. Thus:

\[
n = \frac{1.96^2(p)(1-p)}{d^2}
\]

where \(n=\) sample size, \(p=\) Expected prevalence and \(d=\) Desired level of precision (5%). Even though the required sample size was 323, additional 208 samples were included to increase the precision so that 531 animals were included in the study.

**Active Abattoir Survey:** The active abattoir survey was conducted during meat inspection on randomly selected 531 cattle slaughtered at Nekemte Municipal Abattoir. In the survey, study animal were selected by systematic random sampling on the basis of the entrance of animals into lairage. In line with these, associated risk factors such as age, sex, origin, breed and body condition score were recorded during anti-mortem inspection. During ante-mortem inspection each week, two days visit was made for ante-mortem inspection on individual animals for assessment of associated risk factors. Every visit, each animal was identified based on enumerated marks on its body tagging before slaughter. Animal origin was also recorded as where they bought from. The age of the animals was estimated on the basis of the dentitions and is conventionally classified as young (<2 years), adult (2 to 5 years) and old (>5 years) [15].
During postmortem inspection, a detail carcass and predilection site of the suspected parasite was thoroughly inspected and the number of organ infected with the parasite and the number of cysts per each organ was also recorded. Up on examination the postmortem judgments to be passed on the organs were recorded and the direct financial loss was estimated [16, 17]. For confirmation of cyst fertility and viability, all encountered fertile cysts were taken to Veterinary Parasitology laboratory, Wollega University. The diameter of the cyst were arbitrarily classified into three categories: small (<5cm), medium (between 5-10cm) and large (>10cm) (Oostburg et al., 2000; Kebede et al., 2009). The cyst volume was also classified into three categories: low (volume < 6ml), medium (between 6-20ml) and high (>20ml).

Furthermore, the collected cysts were classified based on the presence (known as fertile cyst) and absence (known as infertile cysts) of brood capsule containing protoscolices in Hydatid fluid. Likewise, infertile cysts were further classified as sterile (fluid filled cysts without any protoscolices) and calcified [9]. Fertile cysts were also subjected for viability test. To determine viability of protoscolices for Hydatid cyst, a drop of fluid consisting of protoscolices was placed on microscope slide and after covering with cover slip observation for the amoeboid like peristaltic movement of protoscolices with an objective of ×40. When it became doubtful to observe such movements, a drop of 0.1% aqueous eosin solution was added to equal volume of protoscolices in Hydatid fluid on a microscope slide with the principle that viable protoscolices should completely or partially exclude the dye while the dead one take it up [18].

Hospital Based Case Study: All suspected Taeniasis cases who were visiting the Nekemt Referral Hospital during the study period were sampled. About eight (8) patients were infested by the parasitic cysts and the cysts were removed surgically from different body parts (Table 7).

Financial Loss Estimation: The annual direct financial losses were estimated and calculated on the basis of the condemned organs [16, 17].

Data Management Analysis: All the data that was collected are entered to MS excel spread sheet program to create data base and it was filtered before analyzed by using SPSS version 20. Descriptive statistics was used to determine the prevalence of the disease and Chi-square test was used to determine any association between the disease with age, sex and body condition score and origin. In all the analyses, confidence level was held at 95% and P<0.05 was set for significance.

Ethical Consideration: Before any attempt to collect data, the protocol was approved by Institutional Review Board (IRB) of College of Medical and Health Sciences, Wollega University. Official permission was also obtained from Nekemt Referral Hospital. The anonymity was warranted for all those records review.

RESULTS

Prevalence and Associated Risk Factors of Hydatidosis: The overall prevalence of Hydatidosis was found to be 91 (17.1%) in which one or more cysts were harbored per organ. During detail postmortem examination, single and multiple infections of organs were recorded. Of the total 91 cattle harboring the cysts and 106 organs were condemned; 77 (84.6%) were found to be involved only a single organ and the remaining 14 (15.4%) had a multiple organ involvement. The study indicated that Hydatidosis affect female animals than male. Based on body score condition, lean cattle were more infested by Bovine Hydatidosis, while both young and adult cattle were infested (Table 1).

Anatomical Distribution of Metacestode: During detail postmortem inspection of the slaughtered cattle, a total of 295 Hydatid cysts were detected on different organs. The study was indicated that Hydatid cysts were highly found in lungs (47.3%), liver (30.8%), lung and liver (14.3%), kidney (3.3%), spleen (2.2%) and heart (1.1%) respectively (Table 2).

Laboratory Test Results

Cyst Size (Diameter and Volume): During laboratory test, eight large cysts were observed on the lungs, liver and spleen which measuring more than 10cm in diameter. But, small size cysts were more found in liver than other organs. The total cyst counted with respect to size in each infested organ of cattle (Table 3).

The selected Hydatid cysts were further examined for fertility test and higher fertile cyst 43 (25.3%) were inspected on lung than other organs due to soft consistence and favor development. About 76 (25.8%) cysts were found to be calcified, but high percentage of calcification were found in liver, 62(52.5%). The intensity of Hydatidosis infestation showed higher in lung (average of 3 cysts per organ) followed by liver (2 Cyst per organ) (Table 4).
Table 1: The prevalence of Hydatid cyst occurrence with various potential risk factors

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Category</th>
<th>N of Inspected</th>
<th>+ ve</th>
<th>P-value</th>
<th>x²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
<td>32</td>
<td>13(42.0%)</td>
<td>0.09</td>
<td>2.64</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>499</td>
<td>78 (15.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Young</td>
<td>50</td>
<td>19(38%)</td>
<td>0.15</td>
<td>2.56</td>
</tr>
<tr>
<td></td>
<td>Adult</td>
<td>481</td>
<td>82 (17.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breed</td>
<td>Local</td>
<td>503</td>
<td>432 (85.8%)</td>
<td>0.00</td>
<td>8.98</td>
</tr>
<tr>
<td></td>
<td>Cross</td>
<td>28</td>
<td>26 (92.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Body Condition Score</td>
<td>Lean</td>
<td>48</td>
<td>9 (18.8%)</td>
<td>0.12</td>
<td>3.75</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>194</td>
<td>28 (14.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fat</td>
<td>289</td>
<td>54 (18.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Origin</td>
<td>Arjo</td>
<td>92</td>
<td>8 (8.7%)</td>
<td>0.01</td>
<td>25.4</td>
</tr>
<tr>
<td></td>
<td>Bandira</td>
<td>135</td>
<td>34 (25.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diga</td>
<td>90</td>
<td>24 (26.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Getema</td>
<td>41</td>
<td>4 (9.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nekemte</td>
<td>22</td>
<td>2 (9.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sasiga</td>
<td>49</td>
<td>14 (28.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Uke</td>
<td>102</td>
<td>17 (16.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>531</td>
<td>531</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: The total number, relative prevalence and number of cysts harbored in affected organs

<table>
<thead>
<tr>
<th>Organ</th>
<th>N of infected organs</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>43</td>
<td>47.25</td>
</tr>
<tr>
<td>Liver</td>
<td>28</td>
<td>30.76</td>
</tr>
<tr>
<td>Lung and liver</td>
<td>13</td>
<td>14.28</td>
</tr>
<tr>
<td>Heart</td>
<td>1</td>
<td>1.09</td>
</tr>
<tr>
<td>Kidney</td>
<td>3</td>
<td>3.29</td>
</tr>
<tr>
<td>Lung, liver and spleen</td>
<td>1</td>
<td>1.09</td>
</tr>
<tr>
<td>Spleen</td>
<td>2</td>
<td>2.19</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 3: Cyst size and counts in relation with organ involvements in infested cattle slaughtered at Nekemte Municipal abattoir.

<table>
<thead>
<tr>
<th>Organ</th>
<th>Small (46.5%)</th>
<th>Medium (50.0%)</th>
<th>Large (3.50%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>79</td>
<td>85</td>
<td>6</td>
<td>170</td>
</tr>
<tr>
<td>Liver</td>
<td>90 (76.3%)</td>
<td>27 (23.0%)</td>
<td>1 (1%)</td>
<td>118</td>
</tr>
<tr>
<td>Heart</td>
<td>2 (100%)</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Kidney</td>
<td>3 (100%)</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Spleen</td>
<td>0</td>
<td>1 (50%)</td>
<td>1 (50%)</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>174 (59.0%)</td>
<td>113 (38.3%)</td>
<td>8 (2.71%)</td>
<td>295</td>
</tr>
</tbody>
</table>

Fertility test

Table 4: Fertility and viability of Hydatid cyst in different organs.

<table>
<thead>
<tr>
<th>Organ</th>
<th>Fertile (25.3%)</th>
<th>Sterile (67.6%)</th>
<th>Calcified (7.05%)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>43 (25.3%)</td>
<td>115 (67.6%)</td>
<td>12 (7.05%)</td>
<td>170</td>
</tr>
<tr>
<td>Liver</td>
<td>19 (16.1%)</td>
<td>37 (31.4%)</td>
<td>62 (52.5%)</td>
<td>118</td>
</tr>
<tr>
<td>Heart</td>
<td>0</td>
<td>2 (100%)</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Kidney</td>
<td>0</td>
<td>0</td>
<td>2 (100%)</td>
<td>2</td>
</tr>
<tr>
<td>Spleen</td>
<td>0</td>
<td>3 (100%)</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>62 (21.0%)</td>
<td>157 (53.2%)</td>
<td>76 (25.8%)</td>
<td>295</td>
</tr>
</tbody>
</table>

Table 5: Viability of Hydatid cyst in different organs of Slaughtered cattle in study area

<table>
<thead>
<tr>
<th>Organ</th>
<th>N of cyst examined</th>
<th>Viable (%)</th>
<th>Non-viable (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lungs</td>
<td>43</td>
<td>7 (16.3%)</td>
<td>36 (83.7)</td>
</tr>
<tr>
<td>Liver</td>
<td>28</td>
<td>12 (42.9)</td>
<td>16 (57.1)</td>
</tr>
<tr>
<td>Lung and Liver</td>
<td>13</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Heart</td>
<td>1</td>
<td>0 (0.0)</td>
<td>1 (100)</td>
</tr>
<tr>
<td>Kidney</td>
<td>3</td>
<td>0 (0.0)</td>
<td>3 (100)</td>
</tr>
<tr>
<td>Lung, liver and spleen</td>
<td>1</td>
<td>0 (0.0)</td>
<td>1 (100)</td>
</tr>
<tr>
<td>Spleen</td>
<td>2</td>
<td>0 (0.0)</td>
<td>2 (100)</td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>19 (20.9%)</td>
<td>72 (79.1%)</td>
</tr>
</tbody>
</table>
The Viability Test: About 91% of the cysts were further examined for viability test and the viability percentage of protoscolices was higher in the lung (5.9%) than in the other organs while the percentage of calcified cysts was 36.8%, the highest in the liver (Table 5).

Estimated Financial Losses: The direct financial loss due to Bovine hydatidosis was estimated. About 57 lungs, 42 livers, 3 kidneys, 3 spleens and 1 hearts were condemned during the study period with financial loss of 963,000 ETB, 2,844,000 ETB, 108,000 ETB, 27,000 ETB and 54,000 ETB respectively. This was estimated by considering annual slaughter rate of cattle (9000), prevalence of the disease per each organ and mean retail market price of each organ. Thus, the total estimated annual financial loss on cattle slaughtered at Nekemte municipal abattoir due to Hydatidosis was found to be 3,996,000 ETB (21,031.58 USD) (Table 6).

Hospital Based Findings: During study period eight Hydatidosis cases were reported from Nekemte Referral Hospital. This revealed the transmission of T. saginata infestation from animals to humans. The occurrence of the diseases was observed in both sex and varies age groups (Table 7).

DISCUSSION

In the present study, the prevalence of Bovine hydatidosis on cattle slaughtered at Nekemte Municipal Abattoir was found to be 17.1%. The finding was almost similar to that reported as 17.4% [19] in Wollo, 16.85% [20] in Wolaita Sodo, 15.4% [21] in Hawassa and 16% [22] in Dessie municipal abattoir. However, the finding was lower than the findings reported from different areas of the country, 52.69% in Hawassa [20], 34.05% in Bahir Dar [9], 48.9% in Debre Markos [23], 32.1% in Mekele [8] and 22% in Tigray [9]. But, it was higher than the findings of 24, 25, 33 who reported 3.2%, 3.65% and 3.6% prevalence at central part of Ethiopia, Jimma and Addis Ababa localized abattoirs, respectively. The difference among these studies might be due to differences in agro-climatic conditions of the study areas, culture of raw meat consumption, probability of incision made at inspection site from abattoir to abattoir, dose and viability of eggs and or larvae consumed [26].

The findings of the study showed that there was significant difference in the prevalence of Hydatidosis between the breeds (p=0.01). The proportion of Hydatid cysts were slightly higher in cross breeds (92.8%) as compared to local breeds (85.8%) [27, 28]. This might be attributed to differences in management systems, lack of regular de worming to local cattle breeds. Furthermore, it can be assumed that it might be due to lack of interest of farmers about local cattle as well as taking more care to cross breed than local breed. Moreover, local breeds are kept under extensive production system as compared to cross breeds which are kept under semi-intensive farming system.

The study also revealed that there was significant difference in the prevalence of the disease between origins of animals (p=0.01). Higher prevalence was reported at Sasiga (28.6%), Diga (26.7) and Bandira (25.2%) respectively. The finding was in line with the
finding of [21] at Wolaita Sodo. This might be due to
difference in culture, social activity, animal husbandry
systems, lack of proper removal of condemned
organs/carcass and control measures and attitude to dogs
in different regions might have contributed to the
variation in prevalence of the disease in different areas
of a country [29, 30]. However, in the present study, the
prevalence of the disease was not statistically significant
with the age, sex and body condition scores (P>0.05).
Similar findings were reported by Kebede etal.[31] at
Debre zeit and by Ahmed [32] at Mekele, by McManus
[29], (26.25%) in Hawassa [32] reported (21.2%) at
Nekemte.

In this study, Hydatid cysts were found predominantly in lungs and liver representing 47.3% and
30.8% respectively. The finding was in parallel with the
studies conducted in different corners of Ethiopia [19, 34]
which showed that the lung and liver are the most
common sites of Hydatid cyst in domestic animals.
This could be justified by the fact that lungs and liver
possess greater capillary fields which allow the organs to
efficiently filter the ingested oncospheres from the blood
liver and lungs. This undergoes sequential filtration of
blood from portal veins which is followed by pulmonary
filtering actions before other organs are invaded.
Only those oncospheres which transfer the blood will
reach the systemic circulation and other tissues [35].

High numbers of medium and large size cysts were
found in lungs than in the liver, while the liver harbored
higher number of small and calcified cysts. The reason for
higher percentage of medium and large cysts in the lungs
is due to soft structure of the lung, while the higher yield
of calcified and small cysts in liver could be attributed to
relatively higher reticulo-endothelial cells and abundant
connective tissue reaction of the organ. The higher
proportion of small cysts may be due to immunological
response of the host which might preclude expansion of
cysts life [36, 37]. In examining the condition of cyst
fertility and viability, the findings of 53.2% sterile, 21%
fertile and 25.8% calcified were examined. It may be
concluded that more than half of the cysts in cattle were
infertile. The variation infertility rate among different
species and in different geographical zone could be due
to the differences in the strain of E. granulosus [30]. Most
of the Hydatid cysts from cattle are considered to be
sterile [38].

In comparison of the fertility rate among the organs,
it was higher in lungs than in liver. It has been stated that
the relatively softer consistency of the lung tissue allows
easier development of the cysts and the fertility rate of
Hydatid cysts may show a tendency to increase with
advancing the age of the hosts [6]. This could be
attributed to reduced immunological compatibility of
animals at their older age of infection. The variation
between tissue resistances of the infected organs
may also influence the fertility rate of Hydatid cysts.
The fertility rates observed in this study are medium;
however, could serve as potential source to infection and
perpetuate the cycle of Hydatidosis when infected
animals are slaughtered and infected raw offal fed to dogs
and also leftovers during backyard slaughter are eaten by
wild carnivores. It was observed that majority of the
households had livestock, including cattle, sheep, goat
donkeys, which are the intermediate host of the
parasite. Similarly, many households had dogs and cats,
which were not de-wormed regularly and were managed
under free range production system.

In the present study, the prevalence of Human
Taeniasis was determined in Nekemte Referral Hospital
during the study period. About eight patients were
infested with the disease. This result was in line with the
findings that were reported from USSR and India [39].
The transmission of T. saginata infection from animals to
humans depends on the habit of eating raw or semi-raw
meat dishes like “kitfo” in Ethiopia and in other countries
like meat tartar Shashlik in USSR baserterma in near east
[10, 40]. There is also significant difference (p < 0.05)
among age groups in which adult and older age groups
higher prevalence associated with long-term exposure
and the habit of preferring raw meat consumption than
young groups. Moreover in the present study, there
was a strong association between sexes and Taeniasis
(p < 0.05). This might be due to the cultural and social
factors in which the males are usually involved in
slaughter houses and butchery as well has having
access to the hotels meal. This result is in agreement
with different reports in various parts of our country
[27, 41 and [42] in Nigeria; [43] in Iran reported the higher
prevalence of Taeniasis in males than females. It
expresses that there is strong discrimination of females on
consumption of raw meat.

The study revealed direct financial loss due to the
disease was estimated to be 3,996,000 ETB (21, 0315. 80
USD) during the study period on the peculiar organs
examined. Affected organs were condemned accordingly
as per the degree of infestation. This result was higher
than reports conducted (83,890 ETB) by Tembo [44].
However, this result was lower than the report conducted
by [45-48] from Iran who reported 8.2 million and 13,880
USD, respectively. Variations in the amount of financial
lost in different abattoirs probably due to the differences in the prevalence of diseases, rejection rate of organs, slaughtering capacity of the abattoirs, local market price of organs and management of animals.

CONCLUSION

The study indicated that the disease was prevalent in the study area. Moreover, direct financial loss was estimated due to condemnation of organs and/or carcass condemnation. This study identified the zoonotic impacts of Bovine hydatidosis active abattoir and hospital surveys, which clearly indicates the existence of the parasites in the present time. The continuous existence of Metacestode in the study area alarm different stakeholders to look and improve methods to control and prevent the disease. Thus, cooperation between the public health and official veterinary authorities are crucial to eradication the diseases unless the lifecycle will continue.

ACKNOWLEDGEMENTS

The authors would like to thank Wollega University, School of Veterinary Medicine for the financial fund to conduct the research work. The study participants, Nekemte Referral Hospital Surgery department and all individuals who render help during the study are highly acknowledged.

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