Review Article

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A habit of raw farm animal blood consumption and public awareness about associated health risks in Konso district

Abstract

Zoonoses are infections naturally transmitted between vertebrate animals and humans. An exploratory questionnaire-based survey of rural community was carried out from September 2015 to June 2016 in Konso district, to assess local knowledge, attitudes and public awareness about health risks of raw farm animal blood consumption. A combination of closed and open-ended questions, focus group discussions and ranking techniques were employed to gather information on perceptions concerning the raw blood consumption and awareness about its zoonotic potentials. The results demonstrated that domestic animal raw blood consumption is a common habit but awareness about potential health risks is minimal. Based on the major findings possible recommendations were forwarded.

Keywords: antibiotic, consumption, konso, raw meat/blood, risks, village, zoonoses

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Introduction

Consumption of undercooked animal products is a well-established risk factor for acquiring many infectious diseases.[1,2] In Ethiopia, raw blood food animals particularly ruminants are consumed in a dish known as dhika sa'a. The main ingredients of dhika sa'a include coagulated, fresh, uncooked blood mixed with local drink Chaka.

In Ethiopia the habit of consuming fresh meat locally in the form of Kurt and or kitifo is very common and thus community of the study area have a similar cultural value towards consumption of raw meat or blood. However, as most of food animals in the area are slaughtered without any veterinary supervision especially in the backyard of some "cheka" groceries with in the villages, where animals are slaughtered without any routine inspection methods in the poor hygienic slaughtering yards.[3]

Considering that most backyard slaughter slabs and houses are not adequately regulated and given that there is a higher level of contact with raw meat, so it can be argued that there is an even greater risk of meat-borne zoonosis in this type of facility.[4]

In Ethiopia, many studies were conducted over years especially on the prevalence of public health significance of infectious zoonotic diseases. For instance, studies have identified occupational exposure to pigs and consumption of specific traditional pork dishes as key risk factors for contracting *S. Suis* infection.[5] However, there were no precise and consistent information accessed either to investigate zoonotic impact of raw farm animal blood consumption or level of public awareness about its potential health impacts in Ethiopia. Similarly, there was no any evidence of research and or survey reported and published for the public in the survey area related with the public health significances of either zoonotic diseases or awareness's related to these in the path of human food chain from food animals. Therefore, we investigated consumption of ruminants dhika sa'a in Konso and explored community perceptions regarding associated disease risks in purposively selected villages of Konso district.

Study design and data collection

A semi-structured closed and open-ended questionnaire was developed to assess perceptions, knowledge and attitudes toward health impacts of raw blood consumption among rural community in 13 villages of Konso district. Data collection followed the approach described by Gonsalves et al.[6] Each village were selected by cluster sampling to represent the district population. A quantitative survey on raw blood consumption was administered to randomly assigned respondents from purposively selected rural villages based on their abundance of backyard slaughter facilities and their proximity to communal rural marketing centers. Field surveyors visited backyard slaughter facilities as part of their routine survey schedules and interviewed 1 member per facility individually. A total of 130 participants from selected villages were interviewed. The study was approved by ethical committees at the Wollo University. The study was conducted during the period of September 2015 to June 2016.

Data analysis

The data collected on the questionnaires and from the focus group discussion were stored and analyzed using version 6.04 of the Epi Info software package (Centers for Disease Control and Prevention, Atlanta, GA). The relationships between dependent and various independent factors were explored in χ^2 tests. A P-value of 0.05 was considered indicative of a statistically significant difference.

Results

The total number of respondents was 130, as the demographic characteristics of the respondents were summarized in table 1 below. There was more males (98, 43%) than females involved in the survey and higher proportion of the respondents (99, 76.2%) was those individuals practicing a mixed farming system, most of them having no formal education or illiterate (55, 42.3%) and the father (87, 66.9%) takes higher position of involvement in the survey as he is the head of the house (Table 1).

Table 1 Demographic characteristics of the respondents

Demographics	Category	Frequency	Percent
Sex	Male	98	75.4
	Female	32	24.6
		130	**100**
Family position	Father	87	66.9
	Mother	28	21.5
	Daughter	4	3.1
	Son	11	8.5
		130	**100**
Occupation	Mixed farm	99	76.2
	Civil servant	15	11.5
	Others (students, butcheries, merchants)	16	12.3
		130	**100**
Educational level	Primary	43	33
	Secondary	11	8.5
	Diploma	14	10.8
	Degree	7	5.4
	Illiterate	55	42.3
Total		**130**	**100**

Awareness about potential health risks of consuming raw blood

All the respondents asked for observation of slaughtering process, hygiene and the habit of meat/blood consumption and all of them answered that they observed the manner of slaughtering; its hygienic status is poor, and the people of the area have a habit of consuming both raw and or cooked blood/meat and there was no statistical significance relation between respondents in terms of sex, occupation, educational level, position in family and site. The respondents also answered that mostly slaughtering of food animals take place in the backyard of slaughtering houses and in some local groceries (77.7%) and in addition to these in some sites of the survey area in open communal market (22.3%) as indicated in Figure 1 & 2.

Almost around 94% of the people of the area have knowledge of zoonotic diseases where about ninety-two of the respondents (70.8%) have a knowledge of more than one of the diseases, as for example taeniosis "xosota", anthrax "apa sanka", rabies "pakala", and or tuberculosis "kofigna", where as some of the respondents only concerned with taeniasis (6.9%) and some of respondent's knowledge limited on TB, rabies and taeniasis (16.2%) only. These mean taeniosis is the most common zoonotic disease known by all individuals of the survey area in the all survey sites. One hundred and nine of the respondents answered that there was no any animal health professional or practitioner who either inspects the meat or creates awareness about the risk of consuming raw meat or blood. People in the study area consume meat or blood of uninspected food animals only by looking the animal physical condition.

Figure 1 Slaughtering of cattle on the bare land and small ruminants' on cradles in open market at Fasha village.

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Figure 2 Flaying and evisceration taking place on the bare land by butchers at Fasha open market.

About eighty-five of the respondents answered that routine inspection methods may be used when the health condition of the animal is severely at risk and rather than conditionally approve and follow up those needs veterinary intervention because fear of the death animal which would result in a financial loss of the owner, the animals allowed to be soon slaughtered for consumption. According to the respondents in the study area 5.4% of them slaughter the animal and consume meat only after heat treatment, 0.8% trim the damaged organs or tissues and16.15 follow professional decision and the majority 77.0% either trim the affected part or consume after proper heat treatment as indicated in Table 2.

Table 2 Awareness about potential health risks of consuming raw meat/blood

Variable	Categories	Frequency	Percent
Area of slaughtering	Backyard of houses/groceries	101	77.7
	Open market in addition to backyard slaughtering houses/groceries	29	22.3
		130	**100**
Hygiene of the slaughtering area and houses	Poor	130	100
	Good	0	0
		130	**130**
Knowledge of zoonosis	Yes	122	93.8
	No	8	6.2
		130	**100**
Zoonotic diseases	Taeniasis	9	6.9
	TB and taeniasis	21	16.1
	Others (anthrax, TB, taeniosis, rabies)	92	70.8
		122	96.9
Habitation of meat inspection veterinarian	Yes	21	16.2
	No	109	83.8
		130	**100**
Local meat inspection methods	Visualization only before slaughtering (whether animal was active and alert).	27	20.8
	Use routine inspection methods for severely diseased animal	86	66.2
Fate of abnormal organs	Consumed only after heat treatment	7	5.4
	Trim off and offer for the pet animal and consume the health one without cooking	1	0.8
	Follow only the professional decision	21	16.1
	Apply the first two for the same carcass at the same time but for the different cases	101	77.7

Knowledge on zoonotic diseases by risk factors

The statistical difference was found between sexes (P<0.001) and the males have more knowledge than the females. Considering members of family sons have more knowledge than the other family membranes. No statistical difference was found in between educational levels, sites, animal health practitioners else than veterinarians and occupational groups (P>0.05).

Focus group interview result

One focus group within each purposively selected village with a total of thirteen groups interviewed on the basis of habit of raw blood consumption habit and perception about zoonoses.

Based on the response of different focus interviewed the consumption of raw meat or blood is a common practice in the study area, and the cultural value behind the consumption of raw blood was; it believed that consuming the raw blood especially in its very fresh form treats a "kaypata" a word express to a very small sized semi scribed nodule dispersed on and in the surface of the body mostly expressed onto the path of gastrointestinal tract starting from tongue or oral cavity to the intestinal end and mostly causes pain in the throat and or esophageal canal and makes the swallowing and mastication difficult and if manifested outside on the body, expressed on the lateral sides of the lion skin, on the skin of stomach and on the face (especially in child's less than one year of age) may cause itching. Also, people of the study area believe that the consumption of fresh blood restores the volume of the blood if a case of anemic condition is suspected. However, more than half of the focus groups whom interviewed have no knowledge of Zoonoses in relation with raw blood consumption as they believed the case is only related for raw meat. The habit of raw meat consumption was not found related with cultural value but only for the palatability reason as most of focus group responded.

The group was also interviewed for the way the animals were slaughtered and all the groups responded that slaughtering takes place inhumanly without stunning the animal and the animals were manually restrained forcefully especially bovines and then the incision starts with removing of the head and proceeds until all the organs splited and separated for consumption. The slaughtering mostly takes place by butteries or any individual with a killing skill, but was without any protective cloths and the cleaning of the slaughtering instruments and areas were answered as very poor. After the slaughtering of the animal the instruments (knifes and an axe) are even not washed properly for the next use and in most cases, they are simply cleaned with a dirty towel or rub on skin of slaughtered animal.

Slaughtering area in the open market on the bare land and the meat is placed on the cradles made of locally available 4-6 woody material covered with dirty mat (Figure 2 & 3). The cradles are also used for the better flaying and bleeding of the small ruminants (Figure 2) and are mostly licked by different stray dogs, wild cats/foxes or wild birds like vultures after the end of the marketing. In thus the chance of the zoonotic diseases transmission from wild life's or stray dogs to the nearby community will be high as those are the reservoirs of many emerging zoonotic diseases. Slaughtering of the food animals in the study area were related to some special time conditions and in a large communal open market the slaughtering of both cattle and shoat would take place at least once in a week, but in backyard of slaughtering houses and local groceries only sheep and goats are mostly slaughtered for human consumption. However, in the times of special holy days slaughtering of cattle in a group (Ikub) or in a case of culture based values of the society (for example Parka), is much more than sheep.

Figure 3 Open market meat sell and blood collection from ram on cradles at Fasha village.

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Discussion

The level of awareness about zoonoses was found very poor as about 77.7% of respondents answered the diseased animal have allowed to be slaughtered intentionally for human consumption in different sites of the survey area and the peoples use a wrong measure for consumption as compared with scientific rules. This was because absences of veterinary professional in most sites of the survey area in addition majority of the respondents had no formal education. The current finding is in line with[7] where they concluded that 87% small scale holders had low to fair level of knowledge regarding zoonosis. This could be due to remoteness, lack of health facilities, poor extension services, and low training status on rearing and handling of animals, and low literacy rate which have been reported as major contributors to the low level of awareness among dairy farmers.[8]

The habit of eating uninspected backyard slaughtered meat was also seen to be very high as reported in a previous survey.[9,10] This could be due to the low level of awareness of the public on the importance of using inspected meat because of cultural beliefs that raw meat is better than cooked one and the deeply established traditional habit of eating raw meat in the country. In contrast Girma et al.[11] indicated that all respondents in the Addis Ababa have awareness about the zoonotic diseases because habits of regular meat consumption pattern in city, the veterinary and human health care authorities might have supplied the information to the public about the potential threat to the health of human beings through the consumption of meat from infected animals and about the diseases that may be transmitted to humans through the infected animals.

The present survey also found that no statistical significant difference was found between educational levels, sites, animal health practitioners else than veterinarians and occupational groups about the knowledge of zoonosis (P>0.05) and these may due to the distribution of appropriate information about the issue of zoonosis by extension workers through non-formal education. This is in consistent with the work of Jagadeesh Babu et al. (2015) in India whom interviewed farmers and agricultural workers with primary level of education and above that and the other categories of respondents with different levels of education, and confirm no difference was observed among them with regarding the awareness about zoonotic diseases, and eventually mentioned that the source of information about zoonotic diseases where non-formal education through extension workers and information through newspapers and television were as important source of information on Zoonoses. These report also somewhat coincide with the researches of Munyeme et al.[8] as it also reported that age, education, and occupation did not affect the knowledge level and awareness of farmers toward zoonotic diseases significantly and may be due to the reason that exposure to disease, training, and extension contacts might have played their role.[12–15]

The statistical significance difference found between sexes in the survey area may due to increased opportunity for males in enjoying of education from the primary level to the higher level but these may not common for females due to wrong cultural imposition on them by the local peoples that they believes females are born only to bear child's and so they are enforced be married early even they have got the chance of enjoying education without accomplishing to the end they fail at the initial level.[16–18]

Conclusion and recommendations

This study revealed that many of the livestock keepers also not aware of concept of antimicrobial resistance and did not know the use of antibiotics can have effect on health of their animals and their own. Another significant health risks result from the food of animal origin is zoonotic diseases. The knowledge about zoonotic diseases among the livestock keepers was found insignificant with the level of education however, in regard with level of awareness it was found very poor. Therefore, based on this conclusion the following recommendations are forwarded;

A. Extension of education campaign and distribution of information by public health workers and vet professionals about zoonosis in the survey area should be made for the prevention of infectious diseases.

B. Professional services interventions should have promoted by the government in expanding the construction of the legal abattoirs enrolled by the relevant veterinary professionals.

C. Government should promote the distribution of veterinarians to different sites of the study area as those are the main sources for the knowledge of antibiotics usage and handling practices, and have a paramount role in controlling the major challenges of the livestock species in the study area and in turn managing the misuse antibiotics in animals.

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Conflict of interest

The authors declare there is no conflict of interest.

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