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Estimation of the Awareness And Knowledge about Milk Borne Diseases and hygienic practices among Dairy Workers and Consumers In Khartoum State

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Abstract

This study had been done to estimate the knowledge and awareness of dairy workers and the consumers of milk about milk borne diseases associated with milk contamination and effect on public health, the study done from July 2018 to July 2020 in Khartoum state. A total of 200 respondents were selected randomly(30 dairy holders, 50 farm workers, 25 milk sellers, and 95 milk consumers) using structural questionnaire with questions consisting demographic characters of the respondents from the seven localities of Khartoum state (Khartoum, Jabal Awlia, Sharg alnil, Bahry, Umdurman, Umbadda, Karary). The results revealed that the age 18-45 years in dairy holders were 13(43.3%), milk farmers 40(80.0%), milk sellers 17(68.0%), and milk consumers were 20(21.0). Most of the respondents were studied primary education .About 143(79.17%) of them were known milk borne diseases,but 57(20.83%)were not known the disease. The incidence of the infection by consuming raw milk was 16.7% in dairy holders, 46.0% in milk farmers, 8.0% in milk sellers, and 30.5%in consumers. From the results we can concluded that most of the respondents were knowing the milk borne diseases, but they are showing poor unsatisfactory awareness by practicing of hygienic measures.

Keywords : awareness , milk borne diseases, raw milk , hygienic practices.

Introduction :

Milk contains the essential nutritional components required by consumers of all ages but it can easily be contaminated with pathogenic bacteria during milking, collection , storage or distribution and sailing for consumers, so it is a very efficient vehicle for bringing a large number of people into contact with potential microbial hazards(Jordan, 2007), and it must be pasteurized before consumption to decrease the risk of contracting zoonotic diseases . Bryan in 1983 said that milk is an ideal medium for bacterial growth, and may easily be contaminated due to its nutrient composition. Pangloli *et al.* (2008) reported that the bad hygienic practices and poor cleanness of equipment, the surrounding air in the farms, and the other environmental factors including housing conditions, water supply, and feeding of animals have an important effect on the milk contamination.

Usually contaminated environments are a potential source of food-borne pathogens and spoilage bacteria present in raw milk bulk tank in the dairy farms, which are affecting the milk quality and emerging public health risk (Kagkli *et al* 2007 and Van Kessel *et al* 2004). Lack of knowledge about clean milk production, use of unclean milking equipment and lack of potable water for cleaning purposes were some of the factors which contributed to the poor hygienic quality of raw milk in the farms (Godefay and Molla, 2000).

According to government, the majority of the farmers have mixed herds of cattle, sheep and goats and most of them are small holders having few numbers of cattle varies from 1 to 50, but there are several large scale farms with hundreds to few thousand milking cattle in Khartoum state and

hundreds of dairy farms are grouped together and have 10 to 25 thousand cattle per settlement. The majority of milk is sold to middlemen, who transport milk to the markets, and it sold directly (untreated or unboiled) to consumers and street based milk bars. In some cases milk bars cook milk before selling, some Producers produce about 5,000 to 30,000 liters of fresh milk per day. Mechanization grade at the dairy farms is very low with exception of the commercial large-scale farms ,and animals are hand milked even at farms with over hundred milking animals.

Cattle are loose housed in paddocks with roofs for shade , with temperatures raise to 40°C and above, the housing conditions are not suitable for high producing dairy cattle,(Rijksdienst voor Ondernemend Nederland 2016).

Generally germs contaminate raw milk make people sick and symptoms of illness differ from person to person depending on the type of germ, the amount of contamination, and the person's immune defenses.

Most of milk producers in Khartoum State are unaware of the effect of animal health and environmental conditions on producing safe milk due to absence of full certification of employees, absence of technical staff, retardation of milk production and processing system and lack of training and extension programs (Abdalla and Elhagaz, 2011) .

Thus the objective of this study was to estimate the knowledge and awareness of dairy workers and the consumers about milk contamination and its effect on public health .

Material and methods

Aim of study:

The aim of the study was to estimate the knowledge and awareness about milk borne diseases and hygienic practices of milk among dairy holders, milk farmers, milk sellers and milk consumers .

Area of study :

Khartoum is the capital of Sudan, it localized in the semi-desert zone, devided into three major parts(Khartoum, Khartoum Bahry , and Umdurman) and they consist of seven localities (Khartoum, Jabal awlia , Khartoum bahri , sharg al nil , Umdurman, Umbadda , and Karary) .

Data collection :

A total of 200 respondents (30 dairy holders, 50 milk farmers, 25 milk Sellers , and 95 consumers) were randomly interviewed by a questionnaire in the period from July 2018 to July 2020. The questionnaire was designed to collect information about consumption of raw milk, awareness of interviewers about milk borne diseases transmitted to consumers via contamination of un pasteurized and un boiled milk, and the questions consisting of age of the interviewers (less than 18 years, 18 - 45 years, more than 45 years), occupation(dairy holders, farmers, sellers, consumers), education level (un educated, primary, secondary, university education) prefer to consume (raw milk or pasteurized milk), sources of milk (from the animal directly, from the utensils of storage or transportation, or from the markets), awareness about milk borne diseases, history of infection if it occurred, symptoms, treatment, and how to avoid and control infection and diseases, manual or mechanical milking , age of milking machine if used, cleaning and sterilization of machine, cleaning of milking animals , washing of their udders, use of towels for drying udders,incidence of mastitis, sites of milking inside the farm, storage of milk inside the farm, daily production per liters, presence of animals other than cows (sheep and goat), and sources of obtaining animals (born in the farm or purchased from the markets) .

The selection of respondents was according to the population density of the localities

of Khartoum state and they were distributed as shown in table (1):
Distribution of respondents according to their localities: Table (1)

Localit			Respondents group		Tota
Khartoum	6	10	4	22	42
Jabal Awlia	4	9	3	16	32
Bahry	3	5	3	10	21
Sharg alnil	4	8	5	14	31
Umdurman	3	5	3	10	21
Umbadda	5	7	3	13	28
Karary	5	6	4	10	25
Total	30	50	25	95	200

Statistical Analysis :

The statistical Package for Social Sciences (SPSS) software was used to analyze the data collected from the questionnaire.

Results

The results showed that age of 13 (43.3%) dairy holders was 18 – 45 years and 17 (56.7%) was more than 45 years , 40(80%) farmers were 18 -45 years and 10(20%) were more than 45 years , 17(68%) milk sellers were 18 – 45 and 8(32%) were more than 45 years , 20(21%) consumers aged less than 18 years , 20(21%) aged 18 – 45 , and 55(58%) were more than 45 years , (table 2):

Table (2) Shows percentage of age of respondents :

ilk workers and consumers	ge/ years			Total
	ss than 18	3 - 45	ore than 45	
Dairy holders	0 (0%)	13 (43.3%)	17 (56.7%)	30 (15%)
Milk farmers	0 (0%)	40 (80%)	10 (20%)	50 (25%)
Milk sellers	0 (0%)	17 (68%)	8 (32%)	25 (12.5%)
Milk consumers	20 (21%)	20 (21%)	55 (58%)	95 (47.5.8%)
Total	20 (10%)	90 (45%)	90 (45%)	200

The education revealed that 15 (50%) of dairy holders were secondary educated , 7(23.3%) were primary, 5 (16.7%) of them were of university education and 3 (10%) were non educated . 9 (18%) farmers were non educated , 24 (48%) of primary education , 17 (34%)were secondary educated and no one was of university education. The secondary educated were more between milk sellers who were 15 (60%) ,6 (24%) were primary , 4 (16%) were non educated and no one was graduated . 95 milk consumers were interviewed, 35(36.8%) of them were of primary education, 24 (25.3%) of secondary, 20 (21%) of university education and 16(16.8%) were non educated (table 3):

Table(3) shows the level of education of respondents:

spondents	evels of education ıeducated	rimary ducation	econdary ducation	niversity ducation	otal
Dairy holders	3 (10%)	7 (23.3%)	15 (50%)	5 (16.7%)	30
Milk farmers	9 (18%)	31 (62%)	10 (20%)	-	50
Milk sellers	4 (16%)	15 (60%)	6 (24%)	-	25
Consumers	16 (16.8%)	35 (36.8%)	24 (25.3%)	20 (21%)	95
Total	32(16%)	88 (44%)	55 (27.5%)	25 (12.5%)	200

The awareness and knowledge about milk borne diseases between the respondents were differ from one group to another as shown in table(4):

Table (4):Awareness and knowledge of the respondents about milk borne diseases in Khartoum state:

Groups	Total	No. of awared	No. of non awared
Dairy holders	30	27 (90%)	3 (10%)
Milk farmers	50	20 (40%)	30 (60%)
Milk sellers	25	18 (72%)	7 (28%)
Consumers	95	68 (71.6%)	27 (28.4%)
Total	200	143 (79.17%)	57 (20.83%)

Table (5) was shown the incidence of infection between the respondents and their exposure to diseases due to consuming raw milk and it was high in milk farmers (46%) than other groups:

Table (5) :Incidence of infection between the respondents:

Groups	Total	No. of infected people	No. of non infected people
Dairy holders	30	5 (16.7 %)	25 (83.3%)
Milk farmers	50	23 (46 %)	22(54%)
Milk sellers	25	2 (8 %)	23(92%)
Consumers	95	29 (30.5%)	66(69.5%)
Total	200	59 (29.5%)	141(70,5%)

All the livestock workers (3 groups: A,B,C) prefer to consume raw milk directly from the udder and milk utensils while the majority of consumers who buy milk from the sellers and markets prefer to cook or boil milk and less of them consume pasteurized milk.

Statistical analysis

The statistical model consisted of the variables: Location, Occupation, Awareness about milk borne diseases, age of respondents , Education level,and the Incidence of Infection which was set as the dependent variable and the rest as factors, and the analysis was performed with 95% confidence interval ($P < 0.05$) Moreover, the Parameter Estimates study found that milk-farms workers are most vulnerable to infection with milk borne bacteria, followed by consumers and dairy holders respectively. Location, age group, education level, and awareness were all found to

be not significant. The Likelihood Ratio Tests showed a significance of 0.001, which means that the full model statistically significantly predicts the dependent variable.

Discussion:

The results of the questionnaire showed that all dairy workers were more than 18 years in age, most of them were studied primary education, about 143(79.17%) were known milk borne diseases, and the incidence of the infection by consuming raw milk was 16.7% in dairy holders, 46.0% in milk farmers, 8.0% in milk sellers, and 30.5%in consumers, there for we can concluded that most of them were knowing the milk borne diseases, but they are showing poor, unsatisfactory awareness by practicing hygienic measures. 60% of milk farmers (group B) who carry out the process of milking and collecting milk in milk containers lack knowledge and less awared about diseases transmitted to humans through contaminated milk and this plays a major role in the occurrence of zoonotic diseases and their impact on public health so farmers are in need to be educated about the risk of milk borne diseases, this was in agreement with Babu *et al* (2015) who reported a low level of knowledge among farm workers, while 90% , 72% and 71.6% of dairy holders (group A), milk sellers (group C) and consumers (group D), respectively, were awared about milk borne diseases so awareness and knowledge was high among them and this is in agreement with (Emmanuel *et al.* 2015).

livestock workers (3 groups: A,B,C) prefer to consume raw milk directly from the udder and milk utensils and this was cited as the most possible way of contracting milk-borne diseases, Chahota *et al.* (2003) found same results .

According to the questionnaire, In some farms milk animals are purchased from other farms and markets and introduced to the dairy herd not examined or isolated to insure that they are free from diseases, and this may lead to spread of some infectious diseases among the herd and be sources of infection to farmers and contamination of milk which effect public health and this was agree with Jaspal *et al.* (2016) who reported that newly purchased animal if suffered from diseases such as brucellosis or tuberculosis may act as a potential source of infection to farmers as well as to other animals. Lack of awareness about the transmission of zoonotic diseases put farm workers and milk consumers at high-risk to get zoonotic diseases, therefore, they have to be educated and trained about hygienic practices to avoid contamination of milk and produce safe and healthy products. we can concluded that all dairy workers and final consumers were in need of awareness about food borne diseases and the risk of consuming raw milk on public health, and dairy workers have to be awared and well trained to follow hygienic measures and practices as cleaning and sanitation of milk equipment, washing lactating animals and their udders and dry them by using sterilized towels and wash their hands before milking , cleaning of milking area, use clean water for washing, and good feeding of animals to produce a clean, healthy uncontaminated milk.

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