Raw milk consumption and its implication for Public Health

Raw milk consumption behavior and possible risk factors among dairy producers in urban and peri urban areas of Debre-Zeit, Ethiopia: Implication for public health

Fanta Dessisa[a, *], Kohei Makita[b,c], Akafte Teklua, Girma Zewde[a], Delia Grace[b]

[a] Faculty of Veterinary Medicine, Addis Ababa University, PO Box 34, Debre Zeit, Ethiopia
[b] Improving Market Opportunities Theme, International Livestock Research Institute (ILRI), PO Box 30709, Nairobi, Kenya
[c] School of Veterinary Medicine, Rakuno Gakuen University, 069-8501, Ebetsu, Japan
* contact authour: e-mail fntdesi@yahoo.com; cellphone +251 0911030412

INTRODUCTION

Milk is a very good source of energy, proteins and minerals for infants and young children who have only few alternative sources for these nutrients. Besides its beneficial effects on nutrition, milk might also be a source of zoonotic infections (Faye and Loiseau 2000). Several surveys have detected food borne pathogens in raw milk and milk products: *Mycobacterium bovis*, *Brucella* spp., *Listeria monocytogenes*, *Staphylococcus aureus* and others (Alehegn, 2004; Oliver et al, 2005; Ameni et al., 2007). Consumption of raw milk is a high-risk behavior and will continue to cause morbidity and mortality until people stop consuming raw milk and raw milk products (Keene, 1999). In Ethiopia, raw milk and raw milk products often consumed under unsatisfactory hygiene conditions (Ashenafi and Beyene, 1994; Kassahun and Fikadu, 2009; Wubete, 2004). However, there is a paucity of citable scientific data on the magnitude of raw milk consumption behavior and the risk factors for the behavior in and around Debre-Zeit.

MATERIALS AND METHODS

Study area: In and around Debre-Zeit town, Ethiopia

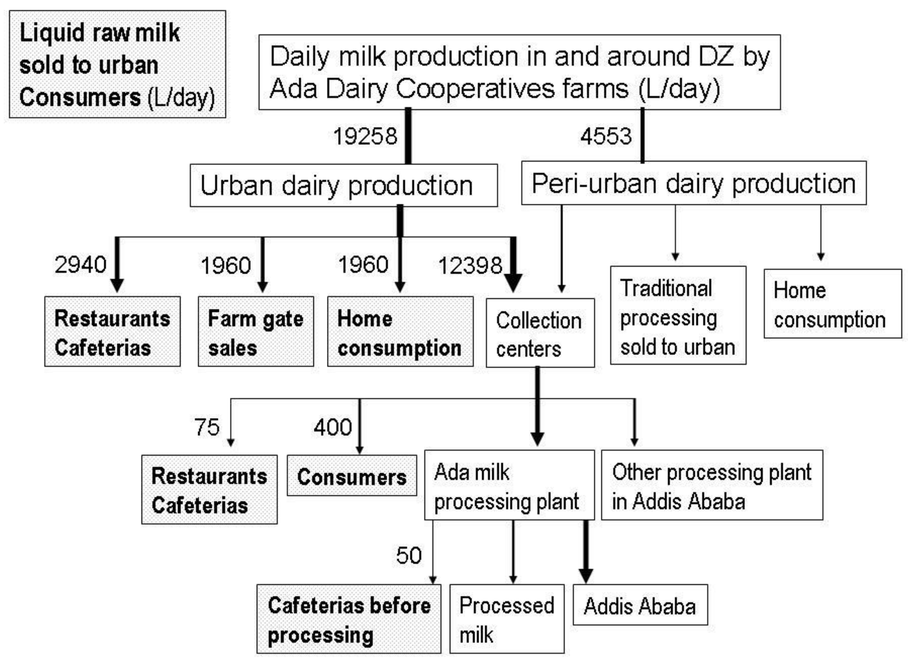
Study design: A cross sectional study design involving questionnaire survey
Sample size: 170 dairy farmers comprising urban (n=131) and peri urban (n=39) participated in the study.

Data management and analysis: Data entered into a Microsoft Excel spreadsheet and R 2.8.1 Statistical package was used for performing X2 test, odd ratio, univariate and multivariate analyses. Statistical significance was accepted at $P < 0.05$.

OBJECTIVES

To generate baseline information on raw milk consumption behavior, milk handling practices and risk factors associated with consumption of raw milk among dairy farming communities in urban and peri urban areas of Debre-zeit.

Figure 3. Milk value chain and milk quantity



Left: A dairy farmer supplying milk to the collector and waiting for quality test (alcohol test and lactodensimeter reading). Middle: Milk collector checking freshness of milk with alcohol test and adulteration (water) with lactometer reading. Right: milk collection center where raw milk is collected from dairy farmers and raw milk, cheese and pasteurized milk is sold to consumers.

RESULTS

1. Consumption of raw milk

Of the 170 participants, 31.8% (n=54) producers had a habit of consuming raw milk. The proportion of dairy farmers consuming raw milk was significantly higher in peri urban areas (94.8%) than in urban areas of Debre-Zeit (13.0%, $X^2=89.3$, df=1, OR=124.1, $p<0.001$). Of the factors tested, only residing in peri-urban areas was significantly associated with consumption of raw milk ($p<0.001$). The majority of dairy farmers (85.6%) were unaware of milk borne diseases associated with consumption of raw milk.

Figure 1.

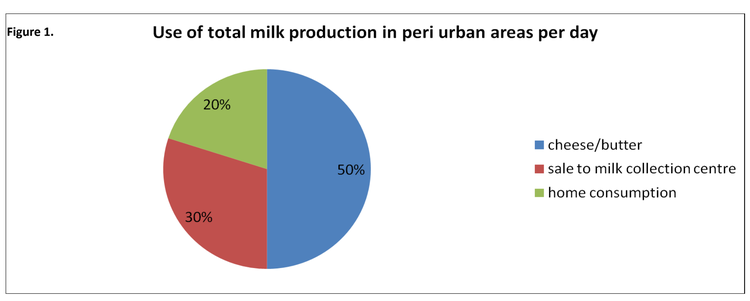
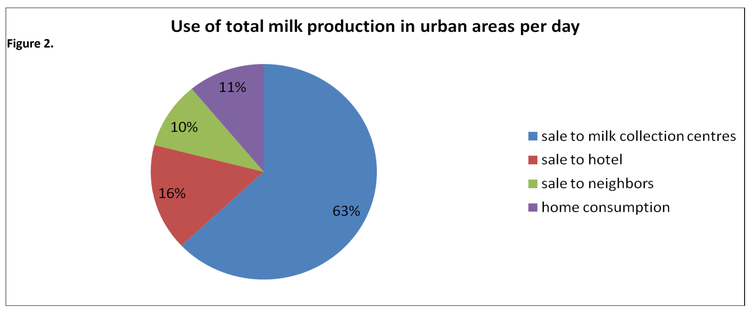


Figure 2.



2. Farming systems

- 131/170 (77.1%) were urban dairy farmers and 39/170 (22.9%) were peri urban dairy farmers
- urban dairy farmers: 121/131 (92.4%) keep crossbreed (Holstein-Friesian x indigenous) and the rest (7.6%, 10/131) keep indigenous breed of lactating dairy cows in zero grazing units
- peri urban dairy farmers: 39/39 (100%) keep indigenous cattle in free grazing production systems

3. Operation of dairy production and sales destination

- All dairy cow owners milk their cows by hand
- 120/170 (70.6%) and the rest n=50 (29.4%) of the dairy farmers use metallic and plastic bucket respectively
- No cooling practice of the milk at farm level
- Supply milk to collection center twice a day (morning and evening)
- 41/170 (24.1%), 33/170(19.4%) and 27.1% (n=46) use clay pot, plastic mixing bowl respectively to store milk at home
- 50/170 (29.4 %) consume the milk in less than one day
- The proportion of farmers who stored milk at room temperature (79/170, 46.5%) was significantly higher than those who stored at refrigeration temperature (41/170, 24.1%) ($x2=13.9$, df=2, $p=0.001$)
- Storage of milk at room temperature for more than a day for milk fermentation was a common practice among those who do not boil milk for consumption (41/50, 82%)

CONCLUSION

The study revealed the habit of raw milk consumption, poor milk handling practices and inadequate knowledge of milk borne diseases among dairy producers implying the risk of milk borne diseases in the study area. Furthermore, traditional milk fermentation was found to be popular. Future study should investigate its effect to milk hygiene.

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