

The sanitary conditions of public food and drink establishments in the district town of Zeway, Southern Ethiopia

Abera Kumie¹, Kalkidan Genete², Helina Worku², Eshetu Kebede², Frehun Ayele², Habtamu Mulugeta²

Abstract

Background: The magnitude of the sanitary conditions of food and drink establishments in urban centres of Ethiopia is very limited and unknown in most cases.

Objective: To assess, the sanitary-hygienic conditions of public catering establishments in the district town of Zeway, Southern Ethiopia.

Methods: A cross sectional descriptive study was conducted in all existing food and drink establishments.

Results: Local informal catering establishments is considerably high in town with the ratio of about 1:1 to that of formal sectors. A piped water supply was found in all establishments. About 59% of the establishments had some kind of human waste management means, dry pit latrine being the commonest. Liquid waste and refuse management were found to be grossly inadequate in 73.5% and 81% of establishments, respectively. Some kind of acceptable type of clients' hand washing, soiled dish and glass washing facilities were found in 29.9%, 66.6%, and 72.8% of establishments, respectively. Food handlers in 14.8% of establishments had some form of active skin and respiratory infections. The personal hygiene of food handlers in most establishments was very poor and that only 21.65% of them had acceptable type of over coats used while working. Glass washing facilities, latrine availability, and water source type are strongly associated with the presence of licence, OR=10.62 (3.66,37.09), OR=23.80 (8.72,67.8), OR=183.42 (37.78,1632.28), respectively.

Conclusion and Recommendation: The poor sanitary conditions of food and drink establishments favours the transmission of food borne communicable diseases. A public intervention towards the improvement of the establishments is highly recommended. [*Ethiop. J. Health Dev.* 2002;16(1):95-104]

Introduction

In many urban centres, eating and drinking in public establishments, such as hotels, restaurants, snack bars is a common practice in many countries. These establishments prepare, handle, and serve large quantities of food and drink to large groups of people within a short period of time implying a possible risk of infections if sanitary and hygienic norms are not strictly followed. The world health status review indicates that the health problem of is mainly linked to inadequate sanitation (1). Water and sanitation were emerged as a primary health care component with the view to alleviate the associated morbidity and mortality (2-4). Despite the international and local efforts towards improving sanitary conditions changes are not satisfactory in many African Countries (5,6).

The Federal Ministry of Health of Ethiopia acknowledges the depth of the problem by stating that

¹Department of Community Health, Faculty of Medicine, Addis Ababa University, P.O. Box 9086 Addis Ababa, Ethiopia;

²Final Year Medical Students, Addis Ababa University developing nations

nutritional problems and communicable diseases are the leading causes for the out patient attendance and causes of hospitalization most of which are attributed to poor sanitation (7). The decentralization of authorities and responsibilities as per the health policy (8) have strengthened the capacity of some regions to devise and update their sanitary codes that are implemented through a sanitary inspection networks, although a lot needs to be worked on this matter (9,10).

Although published data are very limited in this area, it was found that gross insanitary conditions prevail in food and drink establishments in the capital city, Addis Ababa, and in an emerging city of Awassa (11,12).

Data on the sanitation aspect of food and drink establishment is very limited in Ethiopia. The purpose of this study is to assess the status of sanitary provisions related to safe and adequate water supply, the availability of safe and hygienic excreta and waste management, and food handlers personal hygiene in public food and drink establishments found in a district town of Zeway that would serve as a baseline data for towns similar to study area.

Methods

The study design was a descriptive cross-sectional undertaken in the month of February 2001. Zeway, town is located in the Southern part of Ethiopia at 160 kms from Addis Ababa, the capital. The Wereda has an estimated population of 135289 (projected for 2000) with an average household size of 4.8 persons (13).

The study units were all mass catering establishments found in Zeway at the time of study. Such establishments include hotels, bars, restaurants, food groceries, butcheries, "tej bets", "shahi bets", snack bars that are operating at the time of the study and serving foods and drinks to the public regardless of the licencing status.

The data collection was undertaken using pretested standardized questionnaire through house to house visits by five trained senior medical students who were attending a Rural Community Health Training Programme in the

district. The questionnaire was originally prepared in English and then translated into Amharic for data collection. The concerned officials from town Municipality and Health Centre were informed about the purpose of the survey and interviewed on the organizational aspect of sanitary services rendered to catering establishments. Variables on the demographical characteristics of the establishment owners; the physical structure of the establishments; the sanitary facilities like latrine, water supply, solid waste management; and food handlers personal hygiene were assessed and compared to the existing international and local sanitary guidelines. A minimum of one food handler from the kitchen and one from those serving the dinning, per establishment, was physically checked to assess their personal hygiene and presence of any infection at the time of visit for data collection. A random selection was applied if the number of workers was greater than one. Tape meter was used for the measurement of bed room and its window dimensions. The presence of licence was checked by observing the legal certificate.

The Following Operational definitions were used based on existing guidelines (14,15,).

Operational definitions:

The study subjects are defined as follows.

Hotel: an establishment rendering a bed room service (sleeping) other than serving foods, both alcoholic and non alcoholic drinks, cakes, and recreational facilities.

Restaurant ("Migb bet"): a food establishment rendering food and drink services. It largely depends on both services: foods (breakfast, lunch and dinner, alcoholic and non alcoholic drinks).

Cafeteria: food establishment rendering hot snack foods, break fasts, lunch and supper with non-alcoholic beverages. Raw meat, kitfo, and alcohols are not served in cafeteria.

Bar ("Buna bet"): a food establishment mainly depending on alcoholic and non alcoholic beverages.

Snack bar: a food establishment rendering foods that can be served quickly and hot, and non alcoholic drinks. 'Shahi bet, Kurs bet, etc are examples.

'Tej bet: a food establishment mainly rendering the local drink made of honey or a blend of sugar and honey locally known as "Tej ". Foods may be also served with "Tej".

Grocery: a drinking establishment depending mainly on both alcoholic and non-alcoholic drinks. Foods and hot drinks are not usually served in groceries. Some one can purchase drinks for take home or can drink in grocery it self.

Butchery: a food establishment meant mainly for raw meat sale for take home. Raw meat for eating in situ in butcheries is widely practised illegally.

'Menafesha bet' an establishment serving food, drinks (hot, alcoholic, non alcoholic) with some kind of recreational facilities mainly green areas.

Pastry ('Cake bet'): a food establishment that mainly serves hot drinks (tea, coffee) and fresh cakes any time in the day time. A cold soft drink can be also served in pastry.

The quality of data were ensured through training of data collectors and pretesting the questionnaire. Checking the completeness, accuracy, and uniformity of the collected data strictly supervised and followed accordingly. Data entry, cleaning, and analysis were made using EPI-INFO Version 6.0 statistical packages.

Results

A total of 147 food and drink establishments were identified in the study. About 82% (121) of them are involved in more than one services of which 40% (48) of them are engaged in rendering bed services. Only 16 establishments out of 115 mass caterings have fridges for storing food. Seventy eight percent of the establishments were on service for less than 10 years. Half of them were licenced (Table 1).

All establishments get piped water from the municipal source. The majority, 56.5% (83) have access to privately owned piped water.

Table 1: **Distribution of food and drink establishments by type and license status in Zeway, February 2001 (N=147).**

Characteristics	Frequency	Percentage
Type of establishment		
Hotel	48	32.7
Local restaurants ("migb bet")		42.9
Restaurant	63	6.8
Snack bars	10	4.8
Butchery	7	3.4
Grocery	5	3.4
Bar	5	2.7
"Tej Bet"	4	2.7
Pastry	4	0.7
	1	
License status		
Licensed	73	49.7
Not licensed	74	50.3
Type of services		
Exclusively food	22	15.0
Exclusively drinks	9	6.1
Food and drinks	67	45.6
Food, drink, and bed	29	19.7
Drinks and bed	17	11.6
Other mixed services*	3	2.1
Location		
Kebele 01	79	53.7
Keble 02	68	46.3

*One with night club and two with butchery services

About 80% (117) do not have any access to water reservoir of any type that could be used during failures in the central water supply system. About 59% (87) establishments have some kind of latrine. The common type of excreta disposal system is found to be dry pit latrine, 76% (66), with the majority, 85% (56), presenting with out vent pipes. About 75% (65) of visited latrines were found to be clean at the time of the visit for data collection. Food remains and other type of refuse are not properly handled and disposed by the majority of the establishments. Zeway municipality has only one damp truck type for refuse collection. Unguarded open holes located on the out skirt of the town serve as a means of final disposal. Water supply and sanitation status of the establishments are in dictated in Table 2.

Table 2: **Water supply and sanitation status of food and drink establishments in Zeway, February 2001 (N=147).**

Characteristics	Frequency	Percent
Water supply		
Piped private	83	56.5
Piped shared	31	21.1
Piped public stand post	33	22.4
Latrine availability		
Flush type	21	14.3
Dry pit latrine	66	44.9
Not available	60	40.8
Liquid waste final disposal system		
Open surface/ditch	108	73.5
Septic tank or latrine	39	26.5
Refuse managements <i>torage means</i>		
Any type of refuse bin availability	98	66.7
Proper refuse bin availability	49	33.3
<i>Collection and or disposal methods</i>		
Menicipal collection	28	19.0
Local disposal (burning, open field, burial)	119	81.0

Tapped barrel type facility is commonly used by the majority as a means of clients' hand washing. The mean service capacity for wash basins and wash troughs were 1 and 2.78 persons at a time, respectively. About 82% (120) of the establishments had some kind of dish washing devices, 81% (97) of which used "bowl and/or bucket" system as a surrogate to sink or vat washing devices. Glass washing facilities were found nearly in all establishments, 70% (102) of which were "bowl and/or bucket" system. Two compartments for both soiled dish washing and glass washing are widely used by food and drink establishments.

Existing sanitary washing facilities are indicated in Table 3.

Food handlers were found in 83% (122) of food and drink establishments with an average number of two (range: 1 to 18) food handlers per establishment. Skin infections on open surfaces, respiratory infections, eye and nose discharges were observed among food handlers working in 14.8% (18) establishments, the most common being skin lesions. Only 41.8% (51) establishments were found to have some kind of outer working garments for their food handlers (Table 4).

Table 3: **Distribution of washing facilities of food and drink establishments in Zeway, February 2001.**

Characteristics	Frequency	Percent
Hand washing facilities type		
Wash basin (standard ceramic, fixed)	13	8.8
Wash through (cemented, fixed)	31	21.1
Tapped barrel type	57	38.8
Mixed type	2	1.4
Not available	44	29.0
Type of dish washing facility		
One compartment	22	15.0
Two compartment	69	46.9
Three compartment	29	19.8
Not available	27	18.4
Type of glass washing facility		
One compartment	38	25.9
Two compartment	83	56.5
Three compartment	24	16.3
Not available	2	1.4

Table 4: **Personal hygiene status of food handlers of food and drink establishments in Zeway, February 2001.**

Characteristics	Frequency	Percent
Physical check up (n=122)		
Fingers cut short	60	49.2
Finger ornaments worn	35	28.7
Having Head cover	59	40.1
Presence of separate shower	87	28.7
Number of establishments with food handlers having some kind of infection	18	14.8
Working gowns colour (n=51)		
White textile	11	21.6
Coloured textile (red, blue, gray, green)	40	78.4
Number of establishments with food handlers having	4	3.3

Half of the kitchens were found to be congested with kitchen wares and also used as storage. Cockroaches were also prevalent in half of the inspected kitchens. The wall and ceiling conditions of a dining rooms were found to be in good conditions, 58.5% (86) and 51% (75), respectively. Sanitary conditions of the visited bed rooms looked to be on the average acceptable and were characterized to have: about adequate size; appropriate surface structure and colour of walls, floors and ceiling. Refuse handling in bed rooms, however, lacked proper bins in the majority, 85% (41). The sanitary conditions of buildings of kitchen, dining rooms and bed rooms are indicated in Table 5.

A representative bedroom in each establishment serving such services was randomly selected and measured its floor and window area. The mean (SD) bed room and window area were calculated to be 7.98 (2.94) m² and 1.14 (0.59) m², respectively. 29% (14) of them were found to have a window/ bed room floor area ratio of less than 0.10 which is a low index for the supply of adequate day light illumination. Sixty percent (29) of bed room rendering establishments have wash basin, water closet and shower facilities inside the room.

The sanitary washing facilities, latrine status, water source, years of service, and building ownership status were all significantly associated with the licencing status (Table 6). The licence is issued and renewed by the Office of Trade and Tourism when the Health Sanitarian approves the establishment for meeting the sanitary-hygienic provisions.

Table 5: **The sanitary conditions of buildings of food and drink establishments in Zeway, February 2001.**

Characteristics	Frequency	Percent
Kitchen (n=103)		
Presence of visible smoke particles on wall	25	24.3
Presence of overcrowding	52	50.5
Having a cover for Injera container at the time of visit for data collection	18	17.5
Presence of vectors (cockroaches, flies)	51	49.5
Dinning room (n=147)		
Wall in good condition	86	58.5
Ceniling in good condition	75	51.0
Adequate lighting	95	64.6
Adequate ventilation	106	72.1
Chairs and tables in good condition	97	66.0
Bed room (n=48)		
Clean matrass and linens	41	85.4
Wall in good condition	37	77.1
Ceiling in good condition	36	75.0
Adequate lighting	43	89.6
Adequate ventilation	45	93.7
Dust bin availability	7	14.6

Table 6: **Sanitary conditions by licence status of food and drink establishments in Zeway, February 2001 (n=147).**

Characteristics	Licensed	Not licensed	OR(95%CI)
Dish washing facility (n=120)*			
Three compartments	19	10	1.00
One and two compartments	29	62	4.06(1.55,10.83)
Glass washing facility*			
Two compartments	66	41	10.62(3.66,37.09)
One compartments	5	33	1.00
Latrine status			
Available	66	21	23.80(8.72,67.8)
Not available	7	53	1.00
Water source			
Piped private	71	12	183.42(37.78,1632.28)
Piped shared	2	62	1.00
Years of service			
Less than 5 years	29	63	1.00
5-9 years	16	7	4.97(1.68,15.12)
10 years and above	28	4	15.21(4.61,63.65)
Building type			
Privately owned	32	15	3.07(1.38,6.83)
Rented	41	59	1.00

* Establishments without washing compartments were not included

Discussion

The present study found that about half of the public eating and drinking establishment render services without any permit from the concerned authorities, and do not meet local sanitary standards. The rate of licence in this study was found to be considerably less than that of similar studies undertaken in Awassa and Addis Ababa (11,12). Glass washing facilities, latrine availability, and water source type are strongly associated with the presence of licence, OR=10.62 (3.66,37.09), OR=23.80 (8.72,67.8), OR=183.42 (37.78,1632.28), respectively, indicating that the legal binding process makes the regularly inspected and licenced ones in a better status in terms of sanitation as compared to the unli-censed ones. Establishments with longer years of service were more likely to acquire a legal permit. Although the present Ethiopian Commercial registration and Business Licencing Proclamation (16) assumes licence exemption for small scale business and that some Regional States do not insist to have a licence below a capital of Birr 5000, the concerned bodies need to pay serious attention on a holistic enforcement of the primary needs of sanitation on these informal sectors serving the public.

Good public health safety requires the establishments to fulfill basic sanitation provisions. The findings showed that there is gross inadequacy in the provisions of latrine for consumers, insanitary liquid waste management, and improper refuse disposal in 41%, 73.5%, and 81% of the establishments, respectively. Consumers' hand washing and, dish and glass washing facilities are also poorly equipped in a quarter of the establishments. This is an indication that there always exist risks of food contamination at many points in the chain of events at the establishments. The above situation is much worse in Zeway town when compared to the findings in Addis Ababa and Awassa (11,12). The findings in Awassa indicated 64%, 27.9%, 57.3% of the study subjects had no latrines, dispose liquid and solid wastes in open fields, respectively (12).

Food contamination can not only happen as a result of the poor facilities, but is also strongly associated with the personnel engaged in the food handling process until consumption. The existing poor personal hygiene and improper outer working clothing in most establishments, and the presence of obvious infections (just the iceberg) among the observed food handlers are strong grounds for the favourable chain of transmission for food borne communicable diseases (17,18). Managers of establishments must be encouraged to enforce elementary but very basic healthy working conditions. Creating awareness through continued training of both food handlers and owners managers, continued sanitary inspection, and the introduction of hazard analysis in food processing establishments are required for the creation of necessary conditions that would safeguard the health of the public. One solution to the improvement of sanitary conditions is the application of hazard analysis critical control points (HACCP), reinforced with sanitary inspection services and hygiene education, which is widely used world wide in food processing units in order to safeguard the food product and the health of the public at large (19). The evaluation by HACCP was demonstrated to be effective and efficient in a study for the evaluation of safety of domestic food preparation in Malaysia (20).

The existing poor sanitary conditions in the public eating and drinking establishments is also consistent with the physical conditions of kitchen. The presence of obvious smoke on roofs and walls, vectors specially cockroaches, and uncovered food items are petty sanitary offences that would contaminate food at its point of departure for service. The dinning rooms and bed rooms in most cases were found to be relatively acceptable from the sanitary point of view: less overcrowding, walls and ceilings in good condition, and clean bed linens in bed rooms. The average (SD) area for the bedroom, 7.98m^2 (2.94m^2) is about the recommended limit adapted for local use (14,15).

The presence sanitation inspection service rendered to food establishments is very encouraging, but service coverage is low and limited mainly among the licenced ones for the last one month prior the study. The improved sanitation conditions in the licenced ones is considered to be the product of continued inspection and enforcements in renewing the work permit. The proportion of unfit food establishments were decreased as the regulatory function of sanitary inspection pursuant to the sanitary codes is implemented on continued basis in Addis Ababa (21).

Conclusions and recommendations

In conclusion from this descriptive study it can be said that there exist gross unsanitary conditions that do not meet the national and regional sanitary codes related to waste management, dish and glass washing facilities, food handlers health, and the physical conditions of kitchen. The informal establishments had the worst conditions. The dining rooms and bed rooms were found to be in a relatively better conditions as compared to that of the food handling and processing. The licencing and inspection actions are positive enabling and reinforcing factors for improving mass catering environment.

The following recommendations are made based on the study: maintain regular sanitary inspections regardless of the legal work permit; create awareness on healthy work environment on a continued basis during inspection and licencing; regularly follow food handlers health conditions; and solicit a sustained support from local authorities.

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