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Research Article

FOOD SAFETY AND HYGIENE PRACTICES FOLLOWED BY STREET FOOD VENDORS OF VADODARA CITY

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ABSTRACT

The street food denotes to a wide-ranging variety of ready-to eat foods and beverages which are prepared and sold in public places. The food borne diseases are one of the public health issues which may arise from poor food handling and sanitation practices. The unhygienic food preparation conditions and handling of street food results in possible health risk. Here the street food vendors play a role in ensuring and maintaining the food safety and hygiene throughout the cycle of production, processing, serving and disposal. Hence, this research work was conducted to find out the food storage facilities in and around food stall and to observe the hygienic practices followed by the street food vendors while preparation and serving of food. The data were gathered through questionnaire on a sample of 60 street food vendors (10 from each six locales of Vadodara city) selected through purposive random sampling method. Descriptive and relational statistics was used for presenting the results. The findings of the study revealed that the food stalls had good facilities in and around their food stalls and the vendors followed hygiene practices while preparation and serving of food. It was also found that the environment around food stall was not clean and storage of food items was not good. A significant relationship was found between the environment around food stall storage facilities at the stall. The number of employees working at the food stall was dependent on the total monthly income of the family and duration of opening the stall. The findings of the study would provide feedback for the public, street food vendors and government. The government should take some steps to provide street food vendors infrastructure where they can prepare food in clean and hygienic environment and also train them.

INTRODUCTION

Street foods are defined by the Food and Agricultural Organisation (FAO) as Ready-to-eat foods and sold by vendors and hawkers in streets and other similar public places (FAO, 1997). On the other hand the food sold by street vendors or street foods is defined as foods and beverages ready for consumption, prepared and / or sold in public places without the need for another process or preparation (WHO, 1996; Food and Agricultural Organization of the United Nations, 2013).

Street foods are a source of culturally accepted, inexpensive, convenient and often appealing foods for both urban and rural populations worldwide (Ohiokpehdi, 2003; Muinde and Kuria, 2005; Namugumya and Muyanja, 2011). The street food industry plays an important role in cities and towns of many developing countries, both economically and in meeting food demands of city dwellers (Williams, 2001). Vending of street food in urban areas is a growing and worldwide phenomenon and today street foods are important sources of daily foods for massive urban population (WHO, 2006). Food borne diseases are important public health issues in the globe and the problem is more noticeable in developing countries due to prevailing poor handling and sanitation practices, inadequate food safety laws, weak regulatory system, lack of financial recources to invest on safer equipment and lack of education for food handlers (Tessama *et. al*., 2014). Food handlers play a major role in ensuring food safety throughout the chain of producing, processing, storage and preparation of food.The preparation and handling of street food by the typical vendor can result in potential significant health risk for the consumer and there is special cause for concern, because of health risks that are related to unsafe food (WHO, 1996). Mishandling and disregard for good hygiene measures on their part may result in food contamination and its attendant consequences (Emmaneul *et. al*., 2015). Food poisoning and other food related disease like typhoid and cholera could result if food is not properly handled and prepared (Cojia, 2000). The foods are often prepared under unsanitary

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conditions and stored for long periods in unsuitable conditions before selling (Mathee *et. al*., 1996). Food safely is a broad term that incorporates several conditions, which include the handling, preparation and storage of foods in terms of preventing food borne diseases, i.e., illness caused by bacteria or other micro organisms, including toxins in food (WHO, 2010). Since the points of sale of the mobile vendors that sell foods in the streets usually do not have the same facilities available in formal shops, street foods are included among those factors responsible for foodborne diseases (Samapundo *et. al*., 2015). It is a common pratice that street food have nutritional components of an unhealthy diet and higher risk of contamination by physical, chemical and biological agents, i.e. becomes a serious concern in terms of food safety (Choudhury *et.al*., 2011; Nonato *et. al*., 2012).

Food poisoning, food borne diseases and food safety have been declared a major public health concern by international health agencies and street foods have in many studies been associated with microbiological contamination and low hygienic standards (WHO, 2006). Food is an important basic necessity which is essential for health and wellbeing of humans. Hence, street food vendors are of massive important for public health of thousands of people everyday. The present study was undertaken with the following objectives

Objectives of study

1. To ascertain information regarding street food vendors and their food stall.
2. To find out the facilities available and environment in and around the food stall.
3. To find out the food storage facilities at the food stall.
4. To observe the hygiene practices followed by street food vendors while preparation and serving of food.

METHODOLOGY

A descriptive survey design was used to answer questions concerning the perceived sense of food safety and hygiene practices of street food vendors. The sampleconsisted of 60 street food vendors from different locales of vadodara city viz. Karelibaug, alkapuri, fatehgunj, sangam, university road and race course. Out of these 6 locales, 10 street food vendors were considered as sample. The purposiverandom sampling technique was opted as the mode for selecting the sample. The data were collected through a sturctured questionnaire. The questionnaire contained four sections. Section one had questions which elicits personal information of the respondents. Questions regarding facilities and environment in and around food stalls were included in section two. The statements pertaining to assessment of hygiene practices adopted by food stall vendors were contained in section three. The section four elicited statements concerning the food staorage facilities at the food stall. The presence and absences of the faciltity and practices were assessed by response "Followed" or "Not Followed", "Present" or "Not Present", "Applied" or "Not Applied" but in order to maintain consistency and clarity in the responses the responses are presented here in the form of "Yes" and "No". Each response was assigned scores. For each positive response the scores assigned was "one" and for negative response 'zero' was assigned. The total scores of each respondent were calculated. Higher scores indicated high extent of food safety and hygiene practices followed by the street food vendors. The minimum and maximum possible scores of each of the scales were divided into 3 categories having equal interval for all the scales which determined the extent of food safety and hygiene practices followed. The scale was subjected to establishment of content validity. The reliability coefficient derived was 0.786 through test – retest reliability.

Major Findings

The findings of the study obtained through the analysis of the data supported discussion and interpretations are presented here.

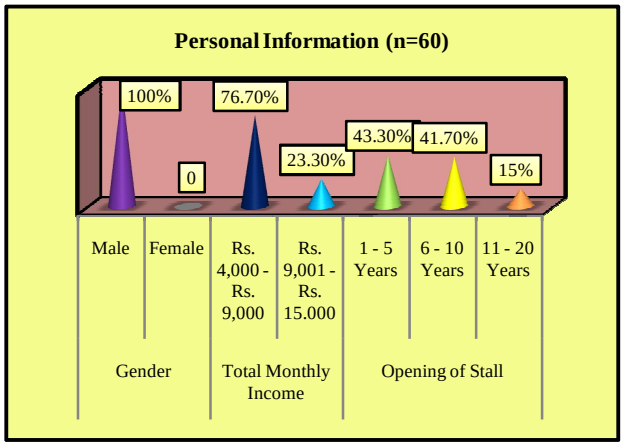

Fig 1 Distribution of respondents according to their personal information

Personal information of the respondents: This section contained information regarding gender, total monthly income of vendor and duration of time working at food stalls. It was found that all of the street food vendors were male. A little more than three fourth of them had total monthly income ranged between 4,000/- to 9,000/-. Less than one half of the respondents were working at the food stalls since 1 to 5 year (43.30%) followed by 6 to 10 years (41.70%).

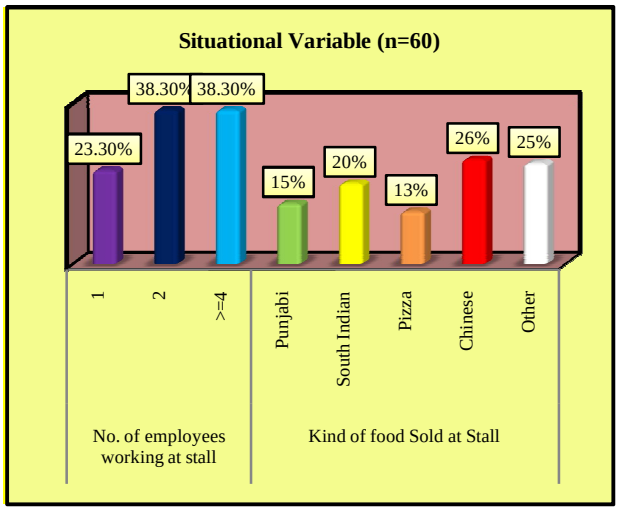

Fig 2 Distribution of respondents according to their situational variables

Information regarding food stalls of the vendors: The information regarding number of people working at the stall and kind of food sold at the stall was gathered. It was found that almost equal percentage i.e. 38.30 per cent of the respondents had 2 or more than 4 people working at food stall. A little more than one fourth of the street food vendors were selling chinese food (26%) followed by panipuri (25%) and south indian food (20%).

Facilities and environment in and around food stall: The data revealed that majority of the street food vendors had wheelbarrow kind of food stall. Nearly three fourth of the food stalls were made up of iron. More than two third of the street food vendors used to prepare food on site. In less than three fourth food stalls, the facility of hand washing was not available. Less than two third of the stalls had waste water disposal facilities and majority of the food stalls had waste and food disposal practices in the form of dust bins. In less than three fourth of the food stalls, the rubbish were thrown in garbage bins.

In more than one half of the food stalls the environment around the food stall was not clean. Where in less than three fourth of the food stalls the water get accumulated around it. Majority of food stalls were not placed near any open drain. The majority of the food stalls were protected from the sun but more than one half of the food stalls were not protected from wind (58.33%) and dust (55%). The animals such as dogs, cows, cats etc. were evident around more than one half (58.33%) of the food stalls. Flies were evident around two third of the food stalls.

Hygiene practices followed by street food vendors: It was observed that less than three fourth of the street food vendors did not wash their hands with clean water each time before handling of food. More than one half of the street food vendors did not use to wash their hands with clean water before preparation of food. Majority of the street food vendors did not washed their hands with clean water before serving of food to the customers. Less than two third of the street food vendors wore clean and presentable clothes. Majority of the street food vendors did not use/wore apron while serving of food (95%), handling of food (86.67%) and preparation of food (73.33%).

Majority of the street food vendors handled raw food with bare hands. Very less percentage (3.33%) of the street food vendors were using disposable or reusable gloves where only 1.67 per cent of street food vendors' gloves were cleaned. More than two third of the street food vendors nails were clean and less than two third of them had short nails. Majority of the street food vendors' hairs were not covered while serving of food (96.67%), handling of food (93.33%) and preparation of food (78.33%).

About two third of the street food vendors used to blow air into polythene bags before filling food in them. Majority of the street food vendors did not use to smoke during handling of food while less than two third of them do not smoke during preparation of food. Majority of the street food vendors do not use the same utensils to prepare vegetarian and non-vegetarian food.

Storage facilities in and around the food stall: It was observed that more than one third of the street food vendors stored food openly in the stall, less than three fourth of them stored in a wheelbarrow and a little less than two third of them stored in a sealed container. Three fourth of the street food vendors use to keep raw and cooked product separately. Majority of the street food vendors kept previously cooked food in ice box or in refrigerator.

Weighted mean scores of food safety and hygiene practices followed by street food vendors: The weighted mean was computed for each factors for assessing the food safety and hygiene practices followed by the street food vendors.

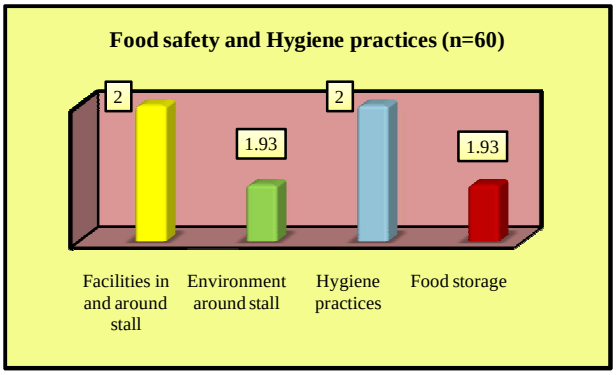

Fig 3 Distribution of respondents according to their food safety and hygiene practices

It was observed that mean scores for the factors "Facilities in and around the stall" and "Hygiene practices" were high. The mean scores of the factors "Environment in and around the food stall" and "Food storage facility" were found low.

Testing of Hypothesis

A number of hypotheses were formulated on the basis of objectives of the study. For the purpose of statistical analysis, the hypotheses were formulated in the null form. The results are presented here.

Ho_1: There existed no relationship between facilities in and around the stall, personal and situational variables, environment around the stall, hygiene practices and food storage.

Table 1 The co-efficient of correlation showing relationship between facilities in and around the stall, personal and situational variables, environment around the stall, hygiene practices and food storage

Sr. No.	Facilities in and around the stall	n	r - values	Level of Significance
1	Total monthly income	60	0.041	*N.S.
2	Duration of opening stall	60	0.091	*N.S.
3	No. of employees working	60	0.219	*N.S.
4	Environment around the stall	60	-0.087	*N.S.
5	Hygiene practices	60	0.083	*N.S.
6	Food storage	60	0.127	*N.S.

*N.S. = Not Significant

The data in table 1 revealed that there exists no significant relationship between facilities in and around the stall and selected personal variables (total monthly income), situational variables (duration of opening stall and no. of employees working), environment around the stall, hygiene practices and food storage. Hence the null hypothesis was accepted.

Table 2 The co-efficient of correlation showing relationship between environment around the stall, personal and situational variables, hygiene practices and food storage

Sr. No.	Environment around the stall	n	r - values	Level of Significance
1	Total monthly income	60	-0.084	*N.S.
2	Duration of opening stall	60	-0.116	*N.S.
3	No. of employees working	60	-0.039	*N.S.
4	Hygiene practices	60	0.026	*N.S.
5	Food storage	60	0.0268	0.05

*N.S. = Not Significant

Ho_2: There existed no relationship between environment around the stall, personal and situational variables, hygiene practices and food storage.

The data in table 2 revealed that there exists no significant relationship between facilities in and around the stall and selected personal variables (total monthly income), situational variables (duration of opening stall and no. of employees working), Facilities in and around the stall, environment around the stall and hygiene practices. There exists significant relationship between Environment around the stall and food storage. Hence the null hypothesis was partially accepted.

Ho_3: There existed no relationship between hygiene practices, personal and situational variables, and food storage.

Table 3 The co-efficient of correlation showing relationship between hygiene practices, personal and situational variables, and food storage

Sr. No.	Hygiene practices	n	r - values	Level of Significance
1	Total monthly income	60	-0.042	*N.S.
2	Duration of opening stall	60	-0.224	*N.S.
3	No. of employees working	60	0.039	*N.S.
5	Food storage	60	-0.054	*N.S.

*N.S. = Not Significant

The data in table 3 revealed that there exists no significant relationship between hygiene practices and selected personal variables (total monthly income), situational variables (duration of opening stall and no. of employees working), facilities in and around the stall, environment around the stall and food storage. Hence the null hypothesis was accepted.

Ho_4: There existed no relationship between food storage, personal and situational variables.

Table 4 The co-efficient of correlation showing relationship between food storage, personal and situational variables

Sr. No.	Food storage	n	r - values	Level of Significance
1	Total monthly income	60	-0.174	*N.S.
2	Duration of opening stall	60	0.105	*N.S.
3	No. of employees working	60	-0.100	*N.S.

*N.S. = Not Significant

The data in table 4 revealed that there exists no significant relationship between food storage and selected personal variables (total monthly income) and situational variables (duration of opening stall and no. of employees working), Hence the null hypothesis was accepted.

Ho_5: There existed no relationship between personal and situational variables of the respondents.

Table 5 The co-efficient of correlation showing relationship between personal and situational variables of the respondents

Sr. No.	Selected Variables	n	r - values	Level of Significance
1	Total monthly income Duration of opening stall	60	0.145	*N.S.
2	Total monthly income No. of employees working	60	0.620	0.01
3	Duration of opening stall No. of employees working	60	0.360	0.01

*N.S. = Not Significant

The data in table 5 revealed that there exists no significant relationship between total monthly income and duration of opening stall. There exists a relationship between total monthly income, no. of employees working and duration of opening stall. Hence the null hypothesis was partially accepted.

CONCLUSION AND IMPLICATION

This study was planned to find out the food safety and hygiene practices of street food vendors of Vadodara city. The results showed that all of the respondents were male where more than three fourth of them were earning Rs. 4,000/- to Rs. 9,000/- per month. Less than one half of the respondents had opened the stall since one to five years. In more than one third of the food stalls four and more than four employees were employed. In more than one fourth of the food stalls Chinese food items were sold. It was also found that the food stalls had good facilities in and around their food stalls and the vendors followed hygiene practices. The environment around food stall was not clean and storage of food items was not good. The mean weighted score found supported the findings. The environment around food stall had significant relationship with the storage at the stall. The number of employees working at the food stall was dependent on the total monthly income of the family and duration of opening the stall. It can be concluded that eating out is the culture adopted by majority now a days. Therefore, it is necessary that food sold at the food stall should be hygienic. The unhygienic conditions around the food stall and food leads to various deadly diseases. It becomes utmost important to train the street food vendors about unsafe conditions of food preparationand environment which leads to food borne diseases. The government should join hands and build standardized infrastructure at the sites of vending which can reduce the risk of spreading diseases.

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