Research Article

Food hygiene practice among mothers and its association with occurrence of diarrhea in under-five children in selected rural community area

Rajat Joshi[1], Atul Kumar[2], Shobha Masih[2]

[1]Department of Nursing, Doon Institute of Medical Science, Dehradun, Uttarakhand, India, [2]Department of Nursing, Himalayan College of Nursing, Swami Rama Himalayan University, Dehradun, Uttarakhand, India

Correspondence to: Rajat Joshi, E-mail: rajat.joshi27@gmail.com

Received: December 03, 2019; **Accepted:** December 29, 2019

ABSTRACT

Background: Diarrhea is the condition of having at least three loose or liquid bowel movements each day. Diarrhea is the main cause of death among under-five children in India. It often lasts for a few days and can result in dehydration due to fluid loss. Mother's basic knowledge of diarrhea depends on various factors such as educational status, prior experience of managing the disease, and food hygiene. Diarrheal diseases remain an important cause of mortality and morbidity among children, particularly in low- and middle-income countries. **Objective:** The main aim is to measure the food hygiene practice among mothers and occurrence of diarrhea in under-five children. **Materials and Methods:** A non-experimental descriptive research design was conducted among 186 under-five children, mothers were selected using convenient sampling technique who fulfill inclusion criteria from the rural area of Doiwala block. Information was collected with the help of structure questionnaire on child feeding hygiene practice and practice checklist on food hygiene. Ethical permission and written consent were taken from the ethical committee of university and participants. **Results:** The research finding highlights that less than half of mothers (44.6%) use bowel spoon for feeding to their child. Majority of mothers (84.9%) wash his child hand with soap. Most of the mothers (74.2%) were not wash vegetables after cutting. Only 63% had check expiry of the food material before giving it to the child. Most of mothers (97.3%) wash hand of child before eating food. Nearby 38.2% of children had diarrhea in the past 6 months due to the unhygienic food practice. **Conclusion:** The investigator observed that there is a need to improved food hygiene practice among under 5-year children mothers because diarrhea is directly related to unhygienic food condition. The under-five children are totally depend on the mothers. If mothers will not improve food hygiene practice, then children will suffer from the diarrhea disease again and again.

KEY WORDS: Food Hygiene Practice; Occurrence of Diarrhea; Under-Five Children Mothers

INTRODUCTION

Diarrhea is a common disease and one of the major determinants of childhood morbidity and mortality. Diarrhea is one of the main causes of death in children under 5 years of age in India. As per the WHO (2017), roughly 1.7 million children die due to diarrhea-related diseases every year.[1] The Government of India through its diarrhea disease control program planned to reduce infant mortality due to diarrhea.[2] One of the most common causes of infectious diarrhea is a lack of clean water. Often, improper fecal disposal and open defecation lead to contamination of groundwater, another leading cause of infectious diarrhea.[3] Poverty is a good indicator of the rate of infectious diarrhea in a population. Diarrhea accounts for an estimated 3.6% of the global burden of disease, as expressed in disability-adjusted life years.[4]

Access this article online	
Website: http://www.ijmsph.com	Quick Response code
DOI: 10.5455/ijmsph.2020.1233929122019	

Diarrhea incidence remains a tremendous burden on children in low- and middle-income countries.[5] There are multiple determinants for diarrhea, such as child malnutrition, low socioeconomic status, education of mothers, lack of safe drinking water, inadequate sanitation and poor hygiene, crowding. These determinants of diarrheal disease are strongly linked to poverty and social inequities.[6]

Despite the substantially declining mortality rate from diarrhea in developing countries, diarrhea still accounts for approximately 11% of all mortality in children under 5 years of age.[7]

Although the determinants of diarrhea among children are well described, information on the part of food hygiene practices play a role in the development of diarrhea and malnutrition among children in low socioeconomic urban communities is lacking.[8]

Children are the most valuable asset for any society. They are the builders of the future of any nation. So that we call as "Today Children health – Tomorrow's wealth."[9] Mothers basic knowledge of diarrhea depends on various factors such as educational status, prior experience of managing the disease, and food hygiene.It is necessary for the mother to follow the basic principle for the preparation of safe food for infants and young children and diarrhea is directly related to the effect of food hygiene practice of mother.[1] Prevention of infectious diarrhea is by improved sanitation, clean drinking water, and handwashing with soap. When children have diarrhea, it is recommended that they continue to eat healthy food and babies continue to be breastfed.[9]

MATERIALS AND METHODS

A non-experimental descriptive research design was adopted to assess the food hygiene practice and its association with occurrence of diarrhea among under five children mother's, 186 mothers were selected by using non probability convenient sampling technique. The tools used for the study were Demographic questionnaire, Self-developed structure knowledge questionnaire and self-reported Practice checklist. Validity and reliability of the tools was tested, Data was analyzed by descriptive and inferential statistics using SPSS. Ethical Permission was taken from Ethical committee, S.R.H.U and informed written consent was taken from participants.

RESULTS

According to Table 1, less than half of children (32.3%) were in the age group between 3 and 4 years and more than half of children (51.6%) are male, near half of mothers (48.9%) having 2 child. Less than half of mothers (40.9%) had higher secondary education and maximum of mothers (60.8%) belong joint family, majority of mother (88.7%) were housewife, and only 38.2% of children were having diarrhea in the past 6 months. Most of the mothers (78.0%) were not take any medical assistance to treated diarrhea.

Other variables from Table 2 show that most of the mothers (66.1%) were non-vegetarian. Maximum mothers (97.3%)

Table 1: Personal characteristics of the study participants, *n*=186

Personal characteristics	Frequency (f)	Percentage
Child age		
6 months–1 year	23	12.3
1–2 years	23	12.3
2–3 years	56	30.1
3–4 years	60	32.3
4–5 years	24	12.9
Gender of child		
Male	96	51.6
Female	90	48.4
Number of children		
1	80	43
2	91	48.9
3	15	8.1
Educational status of mother		
No formal education	15	8.1
Primary education	5	2.7
Secondary education	36	19.4
Higher secondary education	76	40.9
Graduation	54	29
Types of family		
Nuclear	47	25.3
Joint	113	60.8
Extended	26	14
Religion		
Hindu	170	91.4
Muslim	16	8.6
Monthly family income (Rs.)		
1000–10,000	41	22
10,001–20,000	70	37.6
20,001–30,000	66	35.5
>30,000	9	4.8
Occupation of mother		
Housewife	165	88.7
Employed	21	11.3
Child have diarrhea in the past 6 months		
Yes	71	38.2
No	115	61.8
Medical assistance		
Yes	41	22
No	145	78

having source of drinking water was tube well. Maximum of mothers (68.8%) stored water in roof tank. Majority of mothers (75.3%) use burning method for disposed waste. Nearby half of mothers (52.2%) drainage system was close drainage. Majority of mothers (93.0%) were had own toilet. Maximum of mothers (59.1%) house were not any mosquito/flies breading area near around the house. Majority of mothers (71.0%) cut the nails of their child in between 0 and 7 days. Majority of mothers (88.7%) uses other material to clean utensils. Maximum of mothers (67.2%) were use Aquaguard at their home.

Table 2: Other variables, *n*=186

Variables	Frequency (f)	Percentage
Types of diet		
Vegetarian	63	33.9
Non-vegetarian	123	66.1
Source of drinking water		
Tube well	181	97.3
River	5	2.7
Storage of water at home		
Underground water tank	53	28.5
Roof tank	128	68.8
Bucket/vessels/containers	5	2.7
Waste disposal		
Burn	140	75.3
Dumping	13	7
Through in open ground	26	14
Waste collector vehicle	7	3.8
Drainage system at home		
Open drainage	86	46.2
Close drainage	97	52.2
Soak pits	3	1.6
Defecation		
Own toilet	173	93
Open defecation	13	7
Cattle at home		
Yes	73	39.2
No	113	60.8
Mosquito/flies breading area near/around		
Yes	76	40.9
No	110	59.1
Cut the nails of your child		
0–7 days	132	71
>7 days	54	29
Material used for cleaning utensils		
Detergent	21	11.3
Utensils cleaner	165	88.7
Filtration method use at home for drinking water		
Aquaguard	125	67.2
Chlorine tablet	14	7.5
No method use	47	25.3

Child Feeding Hygiene Practice among Mothers of Under-five Children

Finding of research study highlights that more than half of mothers (63.9%) give normal food to their child at home, nearby 44.6% of mothers was using bowel spoon for feeding their child. All of mothers clean bottle before every feeding of her child but only 42.5% of mothers clean bottle by boiling water with soap.

Practice Checklist on Food Hygiene among Under-five Mother

Highlight some research finding that 86% of mothers wash vegetables before cutting, but 74.2% were not wash vegetables after cutting, 71.5% of mothers were not kept leftover food in refrigerator. About 91.9% of mothers reheat the food before child eating that is not good practice. Only 70.4% of mothers boil/filter drinking water before giving to the child and 95.7% of mothers were not have separate utensils for the child.

Pie chart shows that only 38.20% of children have diarrhea in the past 6 months due to the unhygienic food practice and 61.80% under-five children not suffering from diarrhea [Figure 1].

Findings from Table 3 showed that there was a significant association between handwashing after sneezing, wash utensils before using, mop flour with disinfectant daily, use store water for cooking food, and separate utensils for the baby with occurrence of diarrhea; hence, it can interpreted statistically that the mothers who were not doing handwashing after sneezing their child suffer with diarrhea, mothers who were not wash utensils before using their child suffer with diarrhea.

Findings from Table 4 showed that there was a significant association between child age, monthly family income, occupation of mother, source of drinking water, drainage system at home, mosquito/flies breading area near/around house, and cut the nails of child with occurrence of diarrhea.

DISCUSSION

The findings of the study demonstrated that all of the mothers (100%) wash hand after going toilet. Maximum of mothers (74.2%) were not wash vegetables after cutting. About 71.5% of mothers were not kept leftover food in refrigerator. Most of the mothers (91.9%) reheat the food before child eating, above half of the mothers (57.5%) used store water for cooking food.

The present study findings are supported by Seksaria and Sheth (2014) in that study more than half (59%) mothers were unaware of the safe temperatures for heating leftover food.[10]

Table 3: Association between the food hygiene practice among mother and occurrence of diarrhea in under-five children in selected community

Practice of food hygiene	F	Diarrhea present in the past 6 months (F)		χ^2	*P*-value
		Yes	No		
Handwashing hand after sneezing				6.525**	0.011
Yes	10	0	10		
No	176	71	105		
Food preparation and storage					
Wash utensils before using				6.237*	0.013
Yes	155	53	102		
No	31	18	13		
House cleaning					
Mop flour with disinfectant daily				8.851*	0.003
Yes	86	23	63		
No	100	48	52		
Other					
Do you use store water for cooking food				4.774*	0.029
Yes	107	48	59		
No	79	23	56		
Separate utensils for the baby				13.540**	0.001
Yes	8	8	0		
No	178	63	115		

*Chi-square, **Fisher's exact test

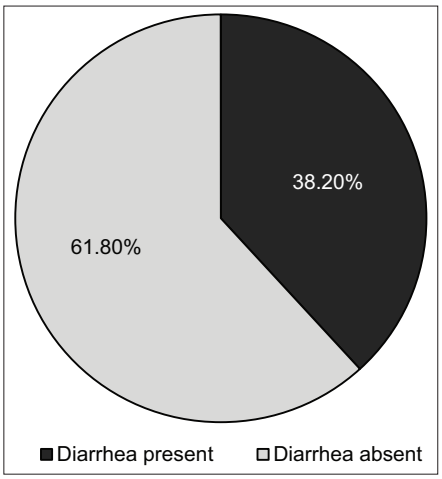

Figure 1: Presence of diarrhea in the past 6 months

The findings of the study demonstrated that below half (38.2%) children had diarrhea in the past 6 months due to the unhygienic food practice, the present study findings are supported by the previous study conducted by Danquah *et al*. (2012), Ghana. Childhood diarrhea was most prevalent (36%) for children whose mother reported that they did not wash their hand with water and soap after defecation.

The findings of the present study concluded that there was a statistically association between the food hygiene practice among mother and occurrence of diarrhea in under-five children in selected community. The findings of another study revealed that Takanashi *et al.* (2009), Viet Nam. The study shows that a significant association with the prevalence of diarrhea and food hygiene practices was the separation of utensils for raw and cooked food and the place of preparing food for coking in bivariate analysis.[8]

The findings of the present study concluded that there was a statistically association between selected demographic variables and occurrence of diarrhea in under-five children in selected community. The present study findings are supported by the previous study conducted by Diouf *et al*. (2014), in Burundi.[11]

Limitation

There are several limitations in the study that need to be acknowledged by researcher. First of all sample size also very less it can be generalized in general population, the second is related research methodology in this researcher use only explorative research design in place of this researcher can do some experimental study to find out the factors related to food hygiene practices of mothers and convenience sampling method due to that there will be a chance of sampling bias. The third is self-develop research tools.

Strength

Selection of statistical test by the researcher is based on the distribution of the data. Researcher highlights that knowledge and hygiene practice regarding the occurrence of diarrhea among under-five children mother's.

Table 4: Association in selected demographic variables and occurrence of diarrhea in under-five children in selected community

Demographic variables	F	Diarrhea present in the past 6 months (F)		χ^2	*P*-value
		Yes	No		
Child age				27.781*	0.001
6 months–1 year	23	3	20		
1–2 years	23	8	15		
2–3 years	56	14	42		
3–4 years	60	38	22		
4–5 years	24	8	16		
Monthly family income (Rs.)				8.611**	0.035
1000–10,000	41	16	25		
10,001–20,000	66	22	37		
20,001–30,000	70	33	44		
>30,000	9	0	9		
Occupation				14.615**	0.001
Housewife	165	71	94		
Employed	21	0	21		
Source of drinking water				8.322**	0.004
Tube well	181	66	115		
River	5	5	0		
Hand pump	0	0	0		
Drainage system at home				9.550**	0.008
Open drainage	86	39	47		
Close drainage	97	29	68		
Soak pits	3	3	0		
Mosquito/flies breading area near/around house				13.551*	0.001
Yes	71	41	30		
No	115	35	80		
Cut the nails of your child				8.474**	0.014
0–7 days	132	47	85		
>7 days	54	24	30		

*Chi-square, **Fisher's exact test

CONCLUSION

The result from this study reveals that mother of under-five children has knowledge and practice regarding food hygiene that can prevent diarrhea among children. Only 38.2% of children had diarrhea in the past 6 months due to the unhygienic food practice.

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How to cite this article: Joshi R, Kumar A, Masih S. Food hygiene practice among mothers and its association with occurrence of diarrhea in under-five children in selected rural community area. Int J Med Sci Public Health 2020;9(2):179-184.

Source of Support: Nil, **Conflicts of Interest:** None declared.