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Impact of Nutrition Counseling on Food Safety Awareness and Attitude of the Respondents Belonging to Slum Areas of Ludhiana

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Abstract

A random selection of 150 young mothers (children ≤ 5 years) from slum areas of Ludhiana was done and various issues were enquired related to food safety awareness and their attitude towards food safety. The results of the study revealed that during pre testing, the respondent's mean awareness score came out to be 6.58 out of the maximum of 15 which was below average and it was highest for the respondents aged between 27-29 years (7.18), the income category Rs. 1600-2000 (7.22) and large family size (6.83). This showed that the respondents were not considerably aware about the food safety issues during pretesting. The attitude of the respondents during pretesting was better in the age category of 27-29 years, the income category Rs. 1000-1500 and large family size. After imparting the nutrition counseling for the period of 3 months, the post mean awareness score of all the respondents improved as it was 12.11 out of the maximum of 15. On the basis of various categories the highest mean score of 12.48 was in the age category of 23-26 years, family income for Rs. 1000-1500 (12.25) and small family size (12.16). The respondents in the age group of 24-26 years, the income category > Rs. 2000 and small family size showed an improvement in the attitude towards food safety. This showed that after imparting the nutrition counseling on the various aspects of food safety, the respondents were considerably aware about the food safety issues as well as their attitude towards food safety improved. There was a gain in knowledge (5.53) and 1.84 times quantum of improvement after nutrition counseling. Results of paired t- test revealed a significant difference in the pre and post awareness score of the respondent's i.e. 0.19 ($p<0.05$) and their attitude towards food safety i.e. 1.04 ($p<0.05$).
Keywords: Food Safety Awareness, Attitude towards food safety, Nutrition counseling.

1. Introduction

Food Safety is the assurance that food will not cause harm to the consumers when it is prepared or eaten (WHO 2004). Poor food handling and hygiene practices in the domestic kitchen are thought to cause a significant number of food borne illnesses. Domestic food preparation can negate much of the efforts of primary and secondary food producers to provide clean safe food (Jay *et al* 1999). Surveys of food borne disease outbreaks worldwide have shown that most cases of food borne diseases occur in handling food during preparation whether in homes or in food sector (WHO 2000). Most cases of food borne illnesses are preventable if food protection principles are followed from production to consumption. Since, it is currently impossible for food producers to ensure a pathogen free food supply, the home food preparers is a critical link in the chain to prevent food borne illnesses. Between 50 and 87 percent of the reported outbreaks of food borne illnesses are associated with food prepared at home (Redmond and Griffith 2003).

Several studies have revealed that the mothers' level of education has a positive impact on her knowledge and how she deals with child health care issues (Saeed and Bani 2000). Providing nutritional and health education to the infant's mothers should be helpful for improving infant's feeding pattern and ensuring the adequate growth and development of infants (Yin *et al* 2009). Thus, the present study is planned in this direction.

2. Materials and Methods

The study was undertaken to find out the impact of nutrition counseling on food safety awareness and attitude of respondents belonging to slum areas of Ludhiana. A random selection of 10 slums in Ludhiana city was made and from each slum 15 mothers (children below 5 years) were randomly selected. Thus, making the sample of 150 young mothers.

Data was collected by personally administering the questionnaire to the mothers of slum areas pertaining to awareness and attitude of the respondents regarding concepts of food safety. Total 15 questions were framed regarding food safety issues and scoring was done out of 15, each carrying one mark for the correct answer and zero for the incorrect answer for the awareness and for analyzing the attitude 9 statements were asked and for each statement a score of 5 was given to 'Strongly Agree' and score of 1 was given to 'Strongly Disagree'.

For the purpose of finding out the relation between food safety awareness score and attitude of the respondents, correlation analysis was used.

3. Results and Discussion

3.1 Food safety awareness score

For the purpose of analyzing the overall food safety awareness followed by the respondents of slum areas they were asked 15 basic questions pertaining to the food safety. Depending upon the correctness of the responses, the respondents were given scores out of 15.

3.1.1 Food safety awareness score (Pre Intervention)

Results available from the study have been analyzed and scores thus obtained have been presented in the table 1 according to various parameters such as age, family income and family size. It can be seen from table 1 that mean awareness score of all the subjects came out to be 6.58 out of the maximum of 15. This indicates that the subjects were not considerably aware about the food safety issues. There was a significant difference in the mean awareness score of the different categories segregated on the basis of age ($p<0.01$). The mean awareness score of the respondents, aged between 27-29 years came out to be highest (7.18) among age category followed by the mean awareness score for the respondents aged between 24-26 years i.e. 6.73 then the lowest awareness score was been seen between the youngest of three categories i.e. 21-23 years which came out to be 5.4.

Table 1: Awareness Score (Pre Intervention)

Category	Mean score± S E	N	F-value
Total	6.58 ±0.117	150	-
Age			
21-23	5.40± 0.132	30	16.876*
24-26	6.73±0.142	80	
27-29	7.18±0.263	40	
Family income			
1000-1500	6.40± 0.152	20	11.604*
1600-2000	7.22± 0.199	60	
More than 2000	6.09±0.156	70	
Family size			
Large	6.83 ±0.173	80	5.704*
Small	6.30±0.150	70	

** significant at 1%*

Mohammad *et al* (2013) in his study to determine the level of knowledge and awareness regarding children's food safety issues among the school-based street food vendors showed that elderly (≥45 years) vendors were 17.73 times more likely to have adequate level of knowledge and awareness than the vendors belonging to age group 15–24 years. Individuals who had an education of higher than primary level were 9.87 times more likely to possess adequate level of knowledge and awareness than those who did not have any formal education. The majority of school-based street food vendors showed an inadequate level of knowledge and awareness of children's food safety issues.

On the basis of family income i.e. the monthly income the middle category i.e. Rs. 1600-2000 obtained highest mean awareness score which came out to be 7.22 followed by mean awareness score of 6.4 and 6.09 from the income category Rs. 1000-1500 and >Rs. 2000 respectively. There was a significant difference in the mean awareness score on the basis of family income. Li-Cohen and Bruhn (2002) in their

study suggested that women, lower income households, people 65years and older practiced safer food handlings than men, higher income households and people younger than 65 years.

On the basis of family size there was a slight difference in the mean awareness score of the 2 categories i.e. large (more than 4 members) families score came out to be 6.83 where as the score of small families (less than 4 members) came out to be 6.3. So, large families have higher score than the small families. There was a significant difference among the mean of the small and large family size ($p<0.01$).

3.1.2 Food safety Awareness score (Post Intervention)

In order to see the impact of nutrition counseling on the awareness of the respondents, the questionnaire was post tested on the respondents. It can be seen from table 2 that awareness score of all the subjects increased as the post mean awareness score came out to be 12.11 out of the maximum of 15. From the available data, it can be stated that subjects were considerably aware about the food safety issues after receiving nutrition counseling. As evident from the table, the mean awareness score of the respondents, aged between 24-26 years came out to be highest (12.48) among age category followed by the mean awareness score for the respondents aged between 21-23 years i.e. 12.40 then the lowest awareness score was been seen 27-29 years which came out to be 11.18. There was a significant difference in the post mean awareness score.

Table 2: Awareness score (Post Intervention)

Category	Mean score± S E	N	F-value
Total	12.11± 0.110	150	-
Age			
21-23	12.40 ±0.298	30	15.875*
24-26	12.48± 0.104	80	
27-29	11.18± 0.223	40	
Family income			
1000-1500	12.25± 0.143	20	.119
1600-2000	12.08 ± 0.188	60	
More than 2000	12.10 ± 0.169	70	
Family size			
Large	12.08±0.991	80	33.778*
Small	12.16± 1.674	70	

** significant at 1%*

On the basis of family income, first category i.e. Rs. 1000-1500 scored highest mean awareness score which came out to be 12.25 followed by mean score 12.10 from >Rs. 2000 category and Rs. 1600-2000 its mean awareness score came out to be 12.08. The respondents showed an increase in the mean score of the awareness towards food safety but there was no significant difference in the mean awareness score among categories on the basis of family income.

On the basis of family size there was a significant difference in the mean awareness score of the 2 categories i.e. for large families score came out to be 12.08 where as the score of small families came out to be 12.16. Thus, small families have higher score than the large families in the post test of the awareness related to food safety.

In order to find out the difference in the awareness of food safety among the respondents before and after the nutrition counseling, paired t- test was applied and the results revealed that there was a significant difference in the pre and post awareness score of the respondent's i.e. 0.19 ($p<0.05$). This shows that nutrition counseling had a significant impact on the awareness of mothers regarding food safety.

For calculating the gain in knowledge, pre test scores were subtracted from the post test scores. Results revealed that Gain in Knowledge (Score of Post Test - Score of Pre Test) i.e. 12.11-6.58 which came out to be 5.53. Similarly the quantum of improvement was calculated from the posttest scores divided by pre test scores which came out to be 1.84.Thus, after imparting nutrition counseling there was 1.84 times improvement in the quantum of knowledge. Elsa et al (2006) studied Nutrition counseling by physicians can improve patients' dietary behaviors and is affected by physicians' nutrition practices and attitudes, such as the perceived relevance of nutrition counseling. Students, who consumed more fruit and vegetables, believed that they would be more credible if they ate a healthy diet, were not Asian or white, or intended to specialize in primary care counseled patients about nutrition more frequently.

3.2 Attitude Towards Food Safety

In order to find out the attitude of the respondents towards food safety focus group discussions were conducted in a group of 15 mothers. Various topics related to food safety were discussed in which the interviewer enacted as a modular.

3.2.1 Attitude Towards Food Safety (Pre Intervention)

The responses given by the mothers were analyzed critically in order to find out their attitude towards food safety. The analysis of focus group discussions revealed that the respondents were not having good attitude towards food safety. They did not felt the importance of keeping food covered, giving freshly prepared food to the child, boiling the water, tying of hair while cooking and washing of hands. Along with the focus group discussions, the responses were asked to rate nine statements relating to the food safety on the rating scale. The respondents were asked to rate the statements on the basis of the extent of their agreement with the statement (from 'Strongly Agree' to 'Strongly Disagree'). For analyzing the statement a score of 5 was given to 'Strongly Agree' and score of 1 was given to 'Strongly Disagree'. The respondents were agreeing to the statement that freshly prepared food is good for health with the highest mean score of 3.4. They also understood the importance of keeping the food covered (3.2) and sterilization of bottles (3.2). The respondents felt that sterilization of the bottles is important with a score of 3.2 ignoring the fact that the resources were very limited for them due to which this was not practiced. Respondents also agreed to that leftover food cause any health problems with the mean score of 2.93. Even the

importance of handwashing with soap before cooking was felt important among the respondents with the mean score of 2.93. Rao *et al* (2007) conducted a similar study in South Asia revealed that food safety awareness and practices were good among mothers perhaps due to the Indian food ethics passed on to them through generations. Home cooked food are considered to be safer than prepared foods bought from outside. Data obtained from the respondents regarding their attitude towards food safety was analyzed on the basis of various parameters. It was revealed that the respondents in the age category of 27-29 years and monthly income of Rs. 1000-1500 were having better attitude towards food safety.

Consumer attitude and perception towards microbial food safety in the domestic kitchen was assessed by Redmond and Griffith in 2004. Results showed that attitudes towards implementation of key food safety behaviors including cross contamination, cooking and storage were positive, however, attitudes towards other practices, for example cooling, were negative.

3.2.2 Attitude towards food safety (Post Intervention)

After imparting the nutrition counseling for a period of 3 months, again the focus group discussions were conducted, recorded and analyzed in order to find out the attitude of the respondents towards food safety. The analysis of focus group discussions after nutrition counseling revealed that the respondents had developed better attitude towards food safety as now they gave more emphasis to keeping food covered, giving freshly prepared food to the child, boiling the water, tying of hair while cooking and washing of hands. Along with focus group discussions, the respondents were asked to rate nine statements relating to food safety on a rating scale of 'Strongly Agree' to 'Strongly Disagree'. After nutrition counseling the respondents realized the importance of sterilization of bottles which scored a highest mean score (4.67), keeping food covered (4.6) and freshly prepared food is good for health (4.6). Other statements pertaining to attitude of respondents towards food safety also scored high after nutrition counseling like: tying hair while working in the kitchen (4.47) cutting of nails regularly (4.4), hand washing with soap before cooking (4.33), leftover food cause any health problems (4.27), holding the bottles from nipples cause increase in microbial content (4.27), and boiling of water before consumption (4.2). Thus, concluded that nutrition counseling had a significant effect on improving the attitude of the consumers towards food safety. Though they had limited resources to translate this better attitude into practice. Data obtained from the respondents regarding their attitude towards food safety was analyzed on the basis of various parameters. It was revealed that the respondents in the age category of 24-26 years and monthly income of > Rs. 2000 were having better attitude towards food safety.

Canan *et al* (2010) seeks to determine the attitudes of women, who are mainly in charge of preparing food at home, towards food safety. The food safety attitudes of women varied according to education and age. Therefore, it is important that food safety education provided is continuous in order for the effects of the education to be lasting. Food safety requires correct handling from production through consumption. Poor food-handling practices in the home kitchen are thought to cause a significant number of food borne illnesses.

In order to find out the difference in the attitude of the respondents towards food safety before and after nutrition counseling, paired t- test was applied. The results revealed that there was a significant difference among the attitude of food safety among the respondents i.e. 1.04 ($p<0.05$). This shows that there was an improvement in the attitude of the young mothers (children below 5 years).

3.3 Correlation between Awareness and Attitude towards food safety

A significant positive correlation was found between awareness about food safety and attitude of the respondents. This show with an increase in awareness there was an increase in attitude of the respondents with coefficient of 0.475 ($p<0.05$). Gholamreza *et al* (2012) in their study investigate the knowledge and attitude of students regarding health and food safety**.** The results showed that 68 percent of students had good knowledge and 31 percent had average knowledge about health and food safety. The students had good attitude towards health and food safety. There was a significant difference between women and men in terms of awareness ($P=0.002$). Also, There was a significance difference among students of different schools of knowledge ($P=0.001$). But no statistically significant difference was observed between age groups. Having awareness towards health and food safety is considered an important issue. Although the students had good knowledge, the inclusion of a course offered to promote their knowledge in this regard seems necessary.

4. Conclusion

1. All the respondents were having below average scores in terms of pre awareness score, and pre attitude score.
2. After nutrition counseling, a significant improvement in food safety awareness score, and attitude towards food safety ($p<0.05$)
3. After nutrition counseling, there was gain in knowledge regarding food safety (5.53) and quantum of improvement (1.84).
4. A significant positive correlation was found between food safety awareness and attitude towards food safety ($p<0.05$)

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