PJN
ISSN 1680-5194

PAKISTAN JOURNAL OF NUTRITION

ANSInet
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
Mob: +92 300 3008585, Fax: +92 41 8815544
E-mail: editorpjn@gmail.com

Pakistan Journal of Nutrition 14 (11): 792-798, 2015
ISSN 1680-5194

Influence of an Inquiry-Based Learning Model on Maternal Behavior in Response to Diarrhea in Children under the Age of Five Years at the Tempe Health Center, Wajo Regency, Indonesia

Mappeaty Nyorong[1] and Hamzah Burhan[2]
[1]Department of Health Promotion and Behavioral Sciences,
School of Public Health, Hasanuddin University, Makassar, South Sulawesi, Indonesia
[2]Tempe Health Center, Wajo Regency, Indonesia

Abstract: Diarrhea remains a cause of death in children under the age of five years around the world. This research study aimed to analyze the influence of an inquiry learning model on maternal behavior in response to diarrhea in children under the age of five years at the Tempe Health Center, Wajo Regency. This research was a quasi-experiment with a randomized pre-test post-test control group design and was performed at the Tempe and Pitumpanua Health Centers, Wajo Regency. The study population consisted of mothers with children under age five that suffered from diarrhea and the sample size was 60 respondents. Samples were chosen by simple random sampling. Data collection was performed using questionnaires. The data were analyzed using paired t-tests, Wilcoxon signed-rank tests, independent sample t-tests and Mann-Whitney U-tests. The results of this study indicate that an inquiry learning model influenced the response of mothers to diarrhea in children under the age of five years at the Tempe Health Center, with a significant change in the average knowledge score and attitude score of the mothers in the intervention and control groups (differences of 29.26 and 12.67, respectively). The practice of training mothers in the application of oral rehydration therapy generated a difference of 15.5 between the average practice scores of the control and intervention groups. These findings suggest that an inquiry learning model is more effective at improving maternal behavior in response to diarrhea in children under age five at the Tempe Health Center, Wajo Regency.

Key words: Inquiry learning model, mothers' knowledge, attitudes, practices and diarrhea

INTRODUCTION

Diarrhea remains a cause of death around the world and diarrhea causes the death of 1.8 million children under five years of age annually. Diarrhea kills many more children than AIDS, malaria and measles (WHO, 2009). The World Health Organization WHO estimated that 4 million cases of diarrhea occurred worldwide, with 2.2 million resulting deaths. Diarrhea kills approximately 4 million people every year in developing countries and diarrhea continues to be a major problem in developed countries as well. In developing countries, the average child under 5 years of age experiences 3 episodes of diarrhea each year. This condition contributes to 21%, an unacceptable amount, of all deaths in developing countries. In Indonesia, diarrhea remains one of the greatest causes of morbidity and mortality (Balitbangkes, 2013).

Thus far, cases of diarrhea in Indonesia remain high and could lead to an extraordinary outbreak that would cause death, especially for infants and children under five years of age. Based on the report by Basic Health Research, diarrhea is the main cause of death in infants (31.4%) and children under five years of age (25.2%). Approximately 162,000 deaths of children under age five are caused by diarrhea every year and approximately 460 children under age five die due to this condition every day. The five provinces with the highest incidence of diarrhea in children under five years of age include Aceh (10.2%), Papua (9.6%), DKI Jakarta (8.9%), South Sulawesi (8.1%) and Banten (8.0%); these figures are much higher than the national target of 3.5% (Balitbangkes, 2013).

The number of cases of diarrhea in children under five years of age in Wajo Regency fluctuates annually. In 2011, 3,786 cases were recorded and at the end of 2012, this number decreased to 3.234 cases. This figure increased in 2013, with 4.334 reported cases. Then, in 2013, 12.942 cases were handled by the Tempe Health Center and Wajo Regency Hospital and 3 infants died (Wajo, 2014).

The profile data of the Tempe Health Center indicates that during the past 3 years, the number of diarrhea cases in children under age five in the Tempe area has increased. In 2011, 578 cases of diarrhea in children

Corresponding Author: Mappeaty Nyorong, Department of Health Promotion and Behavioral Sciences, School of Public Health, Hasanuddin University, Makassar, South Sulawesi, Indonesia

under five years were reported; this number rose to 794 cases in 2012 and then to 948 cases in 2013, with 54.7% of cases serviced (Tempe Health Center, 2014). The increase in cases of diarrhea in children under age five treated in a hospital or by a health service is influenced by the mother's knowledge, as maternal knowledge of diarrhea handling and management is important for early preventive action when children are suffering from diarrhea. A study by Bachrach and Gardner found that the lack of maternal knowledge about oral rehydration is a factor that increases the risk of dehydration in an affected child (Tempe Health Center, 2014). The level of a mother's knowledge about diarrhea determines the efforts that will be undertaken to protect her child from the negative impacts of diarrhea, such as lack of nutrition, dehydration and death. Macdonald *et al.* (2006) found that in Indonesia, only 38% of mothers know the symptoms of dehydration in children suffering from diarrhea (Macdonald *et al*., 2006). One of the interventions for diarrhea that can solve the lack of knowledge problem is health education. Effective methods should be developed to help mothers in the early detection and prevention of diarrhea in children. Joseph and Naregal found that in India, health education was the most effective means of providing knowledge to mothers for household-based diarrhea management and prevention (Joseph and Naregal, 2014).

Sanjaya suggested that an inquiry learning model is an educational model that develops creativity in finding and solving problems posed to the learners on the subject of interest (Sanjaya, 2009). Research into inquiry learning models performed by Sever and Guven with 25 students found that students who studied using an inquiry learning model exhibited more positive behavior and discipline than students who studied conventionally (Sever and Guven, 2014). "The consequence of conflating all human behavior under the single rubric of 'meaning' is that one loses sight of some important distinctions that need to be made in developing a language-based theory of learning" (Wells, 1999). "When employed simply as a learning methodology in what will otherwise for the most part continue to be a traditional curriculum (inquiry-based learning) can be implemented either tactically at the modular level" (Wells, 1999). "Accordingly, the students comprising an IBL group will come to the learning situation from as many different directions and in as many different states of readiness to learn, as there are students in the group. Student autonomy in these circumstances is a given since each student must find their own way in the search for meaning" (Cleverly, 2003).

Research by Haroun (2010) found that intervention through health education improved maternal knowledge of and behavior in response to diarrhea in children under five years of age, as evidenced by changes between pre-test and post-test results Haroun (2010). Another research study by Vyas in Gandhinagar involving 380 mothers with children under five years of age found that health education is quite effective at improving maternal knowledge and skills in Oralit management and early prevention of diarrhea in children under age five, with an increase from 35 to 75.01% (Vyas, 2009). Villareal (2011) found an increase of 94.1% in maternal knowledge of acute diarrhea after intervention and of 88.3% in the mothers' attitude (Villareal, 2011).

The use of oral rehydration solution (ORS) has been recommended for handling diarrhea and this suggestion is in accordance with the research by Munos *et al.* (2010) that the use of oral rehydration solution can prevent 93% of deaths of children under age five due to diarrhea (Munos *et al*., 2010). Thus, this study aimed to evaluate the influence of an inquiry learning model at the Tempe Health Center on maternal behavior in response to diarrhea in children under five years of age.

Goal: To analyze the influence of an inquiry learning model at the Tempe Health Center on maternal behavior in response to diarrhea in children under age five.

Hypotheses:

1: An inquiry learning model will influence maternal knowledge of diarrhea related to children under five years of age.
2: An inquiry learning model will influence maternal attitudes toward diarrhea related to children under age five.
3: An inquiry learning model will influence mothers' skills in applying oral rehydration therapy for children under five years of age.

MATERIALS AND METHODS

Location and design: This research was performed at two working area clinics in Wajo Regency: Tempe Health Center for the intervention group and Pitumpanua Health Center for the control group. The research study was a quasi-experiment with a randomized pre-test/post-test control group design aimed to determine the influence of an inquiry learning model on maternal knowledge of and attitudes toward diarrhea in children under five years of age and the mothers' skill in the administration of oral rehydration therapy.

Population and samples: The population consisted of children under five years of age (aged 12-59 months) who experienced diarrhea at least once during a three-month period and were registered at a health center. The intervention group used the Tempe Health Center as the working area and the control group was based at the Pitumpanua Health Center area. The Tempe and Pitumpanua Health Centers enrolled 30 samples, selected by simple random sampling, as respondents

at the Tempe Health Center who fulfilled the inclusion criteria, including mothers who had never received guidance about diarrhea in children under age five or the application of oral rehydration therapy, who demonstrated good communication and who were ready to be a respondent.

Data collection method: The intervention group participated in the inquiry learning model and the control group participated in a conventional learning model. Relevant developments were recorded by the researchers over 6 weeks. Data collection was performed using questionnaires containing questions about the respondents' characteristics, knowledge and attitudes about the incidence of diarrhea in children under age five and skill in applying oral rehydration therapy. To confirm that the questionnaire was useful in fulfilling the requirements of this study, the researchers evaluated the validity and reliability of the questionnaire.

Data analysis: The frequency distribution of the respondent characteristics and various variables were analyzed as univariate data. For the bivariate analysis, mean-dependent and independent statistical tests were used.

RESULTS

Respondent characteristics: Table 1 shows that the most common respondent age group was 26-31 years old, comprising 50% of the intervention group and 46.7% of the control group. In terms of respondent education level, 30% of the intervention group had finished primary school and 36.7% of the control group had graduated from high school. The majority of the respondents in the intervention and control groups were housewives (66.7 and 80%, respectively).

Univariate analysis: Table 2 shows that the average respondent knowledge score in the intervention group in the pre-test was 11.47 and the scores increased to 18.60 in post-test 1 and to 19.80 in post-test 2. The control respondents scored 10.17 in the diarrhea knowledge pre-test, with an increase to 15.83 in post-test 1 and then a decrease to 14.13 in post-test 2.

Table 3 shows the average respondent attitude about diarrhea in both groups. In the intervention group, the mean score was 39.60 in the pre-test and increased to 61.73 and 65.27 in post-test 1 and 2, respectively. In the control group, the average diarrhea attitude score was 37.27 for pre-test, with an increase to 53.00 for post-test 1 and then a decrease to 52.60 in post-test 2.

Table 4 shows that the average respondent score in the application of oral rehydration therapy was reasonable and accurate for both groups. For the intervention group, the scores increased from 4.80 to 6.40 and then to 7.43 in the pre-test, post-test 1 and post-test 2, respectively. In the control group, the average practice score for the pre-test was 4.50, with increases to 5.33 in post-test 1 and to 7.43 in post-test 2.

Bivariate analysis: Table 5 shows the influence of the inquiry learning model on maternal behavior towards diarrhea in children under age five. In terms of the knowledge score, the difference of 8.33 between the average respondent score for the pre-test and post-test 2 was statistically significant ($p = 0.000$, paired t-test). The average intervention respondent attitude score increased by 25.67 and this difference was statistically significant ($p = 0.000$, Wilcoxon test). The oral rehydration therapy practice scores also increased significantly (difference of 2.63, Wilcoxon test $p = 0.000$). Thus, these results suggest that the inquiry learning model affected the respondents' knowledge and attitudes about diarrhea, as well as their skill in applying oral rehydration therapy.

Table 6 shows the differences in the average scores between the intervention and control groups in terms of knowledge of and attitude toward diarrhea in children under age five and the mothers' ability to administer oral rehydration therapy. A significant difference between the intervention and control groups was found for the knowledge scores in post-test 1 and 2 (Mann-Whitney U-test $p = 0.000$ for both post-tests), with a 29.26 point difference between groups for post-test 2. The independent samples t-test indicated that no significant difference existed between the pre-test attitude scores of the intervention and control groups ($p = 0.369$), but the post-test 1 and 2 scores were significantly different (both $p = 0.000$), with the intervention group post-test 2 score 12.67 points higher than that of the control group. Similarly, no difference in the mothers' application of oral rehydration therapy was observed in the pre-test (Mann-Whitney U-test $p = 0.378$), whereas a significant difference was found between groups for post-test 1 ($p = 0.003$) and post-test 2 ($p = 0.000$), with a difference of 15.5 points for post-test 2.

DISCUSSION

Inquiry learning models are a type of learning model that attempts to instill the basics of scientific thought in the participants and to develop their creativity in problem solving by actively engaging the participants in the intended subject area. The benefits of the inquiry learning model include the following: (a) it stresses the balanced development of cognitive, affective and psychomotor aspects; (b) it provides a space for learners to study in accordance with their individual learning style; (c) it is compatible with the modern study of psychology and (d) it can serve students with good to above average abilities (Sanjaya, 2009).

When comparing the pre-test and post-test 2 results, a significant increase of 8.33% was observed for the

Table 1: General characteristics of the respondents in the intervention and control groups

	---------- Intervention ----------		---------- Control ----------	
Respondents characteristics	n	%	n	%
Age groups				
20-25	9	30.0	6	20.0
26-31	15	50.0	14	46.7
32-37	6	20.0	10	33.3
Levels of education				
Have not completed primary school	3	10.0	1	3.3
Completed primary school	9	30.0	5	16.7
Completed junior high school	8	26.7	9	30.0
Completed senior high school	5	16.7	11	36.7
Graduated, higher education	5	16.7	4	13.3
Work activities				
Housewife	20	66.7	24	80.0
Civil servants/staffs	2	6.7	3	10.0
Indonesian Army/Police	0	0.0	0	0.0
Entrepreneur/trader	8	26.7	2	6.7
Farmers/Fishermen/Labour	0	0.0	1	3.3

Source: Primary Data 2015

Table 2: Respondent knowledge scores for the intervention and control groups in the pre-test, post-test 1 and post-test 2

	---------- Knowledge score ----------		
Statistics	Pre-test	Post-test 1	Post-test 2
Intervention			
Minimum	8	15	16
Maximum	15	22	23
Mean	11.47	18.60	19.80
SD	1.756	1.499	1.769
Control			
Minimum	8	12	10
Maximum	13	20	18
Mean	10.17	15.83	14.13
SD	1.555	2.102	1.776

Source: Primary Data 2015

Table 3: Respondent attitude scores for the intervention and control groups in the pre-test, post-test 1 and post-test 2

	---------- Attitude score ----------		
Statistics	Pre-test	Post-test 1	Post-test 2
Intervention			
Minimum	26	46	44
Maximum	67	72	72
Mean	39.60	61.73	65.27
SD	10.506	8.030	6.405
Controls			
Minimum	23	32	32
Maximum	58	71	61
Mean	37.27	53.00	52.60
SD	9.414	9.763	7.964

Source: Primary Data 2015

intervention group knowledge scores (paired t-test p = 0.000), indicating that the inquiry learning model influenced the respondents' knowledge about diarrhea in children under five years of age. This finding is highlighted by several questionnaire statements that the respondents were able to answer more correctly after inquiry learning. One of the knowledge statements involving risk factors for diarrhea in children under age five was "not breast-feeding infants exclusively for six months is a risk factor for diarrhea. "In the pre-test, 30% of respondents answered this question correctly, compared to 86.7% in post-test 2, an increase of 56.7%. Our findings are in agreement with those of a study by Abdi who found that students at Senior High School, Kermanshah, Iran, who studied using an inquiry model achieved higher evaluation scores than those who studied with a conventional model (5.121; p = 0.03) (Abdi, 2014). Ansari *et al*. (2013) in Moral, Nepal studied 630 mothers with children under five years of age who received health education intervention and found that maternal knowledge, attitude and practice improved in both groups (p<0.05) (Ansari *et al*., 2013).

Table 4: Respondent practice scores for the intervention and control groups in applying oral rehydration therapy in the pre-test, post-test 1 and post-test 2

	---------- Practice score ----------		
Statistics value	Pre-test	Post-test 1	Post-test 2
Intervention			
Minimum	3	4	6
Maximum	7	9	9
Mean	4.80	6.40	7.43
SD	1.243	1.429	1.040
Control			
Minimum	3	3	4
Maximum	7	8	9
Mean	4.50	5.33	6.33
SD	1.075	1.124	1.093

Source: Primary Data 2015

The respondents' attitude scores increased by 25.56 points between the pre-test and post-test 2 (Wilcoxon signed-rank test p = 0.000), indicating that the inquiry learning helped the participants adopt a more positive attitude about diarrhea in children under age five. This change is demonstrated by several statements that the respondents answered more positively. For example, for the attitude statement that" the oral rehydration solution is only suitable for light and rare category dehydration",

Table 5: Respondent knowledge, attitude and practice scores for the intervention and control groups in the pre-test, post-test 1 and post-test 2

	---------- Knowledge score ----------			
Statistics	Pre-test	Post-test 1	Post-test 2	p-value
Intervention				
n	30	30	30	
Mean	11.47	18.60	19.80	
SD	1.756	1.499	1.769	
SE	0.321	0.274	0.323	p = 0.000
Control				
n	30	30	30	
Mean	10.17	15.83	14.13	
SD	1.555	2.102	1.776	
SE	0.284	0.384	0.324	p = 0.000
	---------- Attitude score ----------			
Intervention				
n	30	30	30	
Mean	39.60	61.73	65.27	
SD	10.506	8.030	6.405	
SE	1.918	1.466	1.169	p = 0.000
Control				
n	30	30	30	
Mean	37.27	53.00	52.60	
SD	9.414	9.763	7.964	
SE	1.719	1.782	1.454	p = 0.000
	---------- Practice score ----------			
Intervention				
n	30	30	30	
Mean	4.80	6.40	7.43	
SD	1.243	1.429	1.040	
SE	0.227	0.261	0.190	p = 0.000
Control				
n	30	30	30	
Mean	4.50	5.33	6.33	
SD	1.075	1.124	1.093	
SE	0.196	0.205	0.200	p = 0.000

Source: Primary data 2015

an increase of 76.3% (23.7% in the pre-test to 100% in post-test 2) was observed for respondents with a positive attitude. This result corresponds with Cabatbat's research in the city of Zamboanga involving 138 mothers, which reported a significant improvement in knowledge after intervention about the causes, prevention and treatment of diarrhea complications ($p<0.05$) (Cabatbat, 2012). An increase in the mothers' attitudes about diarrhea prevention for children less than five years of age was also observed ($p<0.05$) after the intervention. Research by Kolahi and Shekarriz found that educational intervention can positively impact the attitudes and practices of maternal management of diarrhea in children under age five (Kolahi, 2008). Similarly, another research study revealed that educational intervention increased maternal knowledge about and practices in preventing diarrhea (Haroun, 2010; Kolahi, 2008; Pahwa *et al*., 2010).

The practice scores increased by 2.63 between the pre-test and post-test 2 and this difference was found to be statistically significant (Wilcoxon signed-rank test $p = 0.000$), indicating that the inquiry learning model influenced the respondents' practices in applying oral rehydration therapy. This change is highlighted by the increase in the number of responses to several statements involving good and correct practices. One of the practice statements with more affirmative responses was "when my children reach 1-5 years old, I will give them rehydration oral solution, as much as 200 ml in 1 glass, "with which 85.3% of the respondents agreed in post-test 2, compared to 33.3% in the pre-test, reflecting an increase of 52%.

This research parallels that by Pahwa *et al*. (2010) in India, which indicated an increase in maternal knowledge regarding oral rehydration therapy (65 to 98%, $p = 0.000$), skills in preparing salt-sugar solutions (10 to 74%, $p = 0.000$) and the use of rehydration oral packages in handling diarrhea (12 to 65%, $p = 0.000$; 12 to 75%, $p = 0.005$) after intervention (Pahwa *et al*., 2010). Shah (2011) demonstrated a significant increase in mothers' ability to aid in the recovery of their sons from diarrhea using local ORS (oral rehydration solution) and the preparation of salt-sugar solutions (29.7 to 83 and 24.7 to 97%, respectively, $p<0.001$) after intervention (Shah, 2011). Ramezankhani *et al*. (2014) suggested that comprehensive health education for mothers can prevent the incidence of diarrhea in children under five years of age (Ramezankhani, 2014).

A difference of 2926 was observed between the average respondent post-test 2 knowledge scores for the intervention and control groups (Mann-Whitney U-test $p = 0.000$). For the post-test 2 attitude and practice scores, differences of 12.67 and 15.5, respectively, were obtained when comparing the intervention and control groups (Mann-Whitney U-test $p = 0.000$). These results indicate that the intervention, compared to the control education model, generated a significant difference in terms of the respondents' knowledge and attitudes about diarrhea in children under five years of age, as well as the respondents' practices in applying oral rehydration therapy.

These findings are in agreement with those of a study by Haroun (2010) performed in Al Maki state of Gezira, which found that after intervention (discussion, videos and role-playing), maternal knowledge increased from 25.5 to 86.3%, attitude in handling of diarrhea increased from 25 to 77% and practice in managing diarrhea increased from 28 to 74% (Haroun, 2010). Shaimaa and Abdel-Aziz (2015) also performed a study in Cairo and found that maternal knowledge about handling diarrhea increased from 68% prior to intervention to 92.7% after intervention ($p = 0.001$) and that maternal practices in diarrhea management increased significantly from 44.3% before intervention to 97% after wards ($p = 0.001$) (Shaimaa and Abdel-Aziz, 2015). According to Das (2013) the intervention process can increase mothers' ability to use rehydration oral solutions for diarrhea treatment by 160% (Das, 2013). Research by Chauhan *et al*. in Ahmedabad, India, demonstrated that maternal knowledge about acute

Table 6: Differences in the respondent knowledge, attitude and practice scores between the intervention and control groups for the pre-test, post-test 1 and post-test 2

	Knowledge					
	Pre-test		Post-test 1		Post-test 2	
Statistics value	Intervention	Control	Intervention	Control	Intervention	Control
n	30	30	30	30	30	30
Mean rank	36.65	24.35	41.23	19.77	45.13	15.87
p-value	0.006	0.006	0.000	0.000	0.000	0.000
	Attitude					
n	30	30	30	30	30	30
Mean	39.60	37.27	61.73	53.00	65.27	52.60
SD	10.506	9.414	8.030	9.763	6.405	9.964
SE	1.918	1.719	1.466	1.782	1.169	1.454
p-value	0.369	0.369	0.000	0.000	0.000	0.000
	Practice					
n	30	30	30	30	30	30
Mean rank	33.42	28.58	36.93	24.07	38.25	22.75
p-value	0.378	0.378	0.003	0.003	0.000	0.000

Source: Primary Data 2015

diarrhea management increased significantly from 32.9 to 80.9 after intervention (p = 0.01), with a real increase in mothers' ability to apply oral rehydration therapy after receiving an intervention such as a demonstration and training (p = 0.0001) (Chauhan *et al*., 2015). According to Ghimire *et al*. (2010) and Shah (2011) one means of reducing the incidence of diarrhea in children under five years of age is to improve health counseling of activities such as the exclusive use of breast-feeding, the use of soap when washing hands, the use of clean water and proper handling of diarrhea in children (Ghimire *et al*., 2010; Shah, 2012).

Conclusions: This research evaluated a model of inquiry learning that influenced maternal knowledge and attitudes regarding diarrhea in children under five years of age and the mothers' ability to apply oral rehydration therapy. The results suggest that the inquiry learning model was more effective at improving the mothers' attitudes towards diarrhea in children under age five at Tempe Health Center, Wajo Regency. Thus, we recommend that the Health Department in Wajo Regency develop health education about diarrhea using an inquiry learning model and that all Wajo Regency Health Department officers receive training in the inquiry learning model.

ACKNOWLEDGMENTS

The authors thank all participants, as well as the heads of the Tempe Health Center and Pitumpanua Health Center, for providing us with a research space during the study. We would like to thank all of the villagers of Tempe and Pitumpanua, especially the mothers of children with diarrhea, for being great collaborators.

Conflict of interest statement: The authors received aid for this research from the Wajo Regency Department of Health, which provided us with a permission letter for performing research for 6 weeks and special space in both the Tempe and Pitumpanua Health Centers.

REFERENCES

Abdi, A., 2014. The Effect of Inquiry-based Learning Method on Students' Academic Achievement in Science Course. Universal J. Edu. Res., 2: 37-41.

Ansari, M., M.I.M. Ibrahim and P.R. Shankar, 2013. Mothers' Knowledge, Attitude and Practice Regarding Diarrhea and its Management in Morang Nepal: An Interventional Study. Trop. J. Pharmaceutical Res., 11: 847-854.

Balitbangkes, 2013. Laporan Riset Kesehatan Dasar (RISKESDAS) Tahun 2013, K.K. RI, Editor. 2013: Jakarta.

Cleverly, D., 2003. Implementing inquiry-based learning in nursing. 2003: Psychology Press.

Cabatbat, A.M., 2012. An Educational Intervention on the Management of Diarrhea: Focus on the Knowledge, Attitudes and Practices Among Mothers in Bangkerohan, Ipil, Zamboanga Del Sur. 2012, Health Research and Development Information Network.

Chauhan, S., A. Chauhan and A. Shukla, 2015. A study on the effect of skill-based health education on management of acute diarrheal diseases. Int. J. Med. Sci. and Public Health, 4: 81-84.

Das, J.K., Zohra S. Lassi, Rehana A. Salam and Zulfiqar A. Bhutta, 2013. Effect of community based interventions on childhood diarrhea and pneumonia: uptake of treatment modalities and impact on mortality. BMC Public Health, 13: 29.

Ghimire, M., Y.V. Pradhan and M.K. Maskey, 2010. Community-based interventions for diarrhoeal diseases and acute respiratory infections in Nepal. Bulletin of the World Health Organization, 88: 216-221.

Haroun, H.M., M.S. Mahfouz, M. El Mukhtar and A. Salah, 2010. Assessment of the effect of health education on mothers in Al Maki area, Gezira state, to improve homecare for children under five with diarrhea. J. Family and Community Med., 17: 141.

Joseph, T. and P. Naregal, 2014. A Study to Assess the Effectiveness of Health Education on Knowledge with Reference to Prevention and Home Management of Diarrhoea Among Mothers of Under Five Children in Selected Rural Area at Karad Taluka. Int. J. Sci. Res., 3: 1329-1333.

Kolahi, A.A.A.S.R., 2008. Maternal knowledge and Practice Towards Oral Rehydration Therapy in Acute Diarrheal Disease in Less than Five Years Old Children in Southern of Tehran J. Trop. Infect. Dis., 44: 45-50.

Macdonald, S., M. Moralejo and M. Matthews, 2006. Maternal understanding of diarrhoea-related dehydration and its influence on ORS use in Indonesia. Asia-Pacific journal of public health/Asia-Pacific Academic Consortium for Public Health, 19: 34-39.

Munos, M.K., C.L.F. Walker and R.E. Black, 2010. The effect of oral rehydration solution and recommended home fluids on diarrhoea mortality. Int. J. Epidemiol., 39: 75-87.

Pahwa, S., G.T. Kumar and G. Toteja, 2010. Performance of a community-based health and nutrition-education intervention in the management of diarrhoea in a slum of Delhi, India. J. Health Population and Nutr., 28: 553.

Ramezankhani, A., Nahid Arjmand Kermani, Hossein Hatami and Niloofar Bagheri, 2014. The effect of mothers' comprehensive health education program on the prevention of diarrhea in children. Pajoohandeh J., 19: 137-141.

Sanjaya, W., 2009. Stategi Pembelajaran Berorientasi Standar Proses Pendidikan. 2009, Jakarta: Kencana.

Sever, D. and M. Guven, 2014. Effect of Inquiry-based Learning Approach on Student Resistance in a Science and Technology Course. Educational Sciences: Theory and Practice, 14: 1601-1605.

Shah, M.S., A. Ahmad, N. Khalique, S. Afzal, M.A. Ansari and Z. Khan, 2011. Home-based management of acute diarrhoeal disease in an urban slum of Aligarh, India. J. Infection in Developing Countries, 6: 137-142.

Shaimaa, B. and M.A.M.Y.S.G. Abdel-Aziz, 2015. Assessing the Impact of a Community-Based Health and Nutrition Education on the management of Diarrhea in an Urban District, Cairo, Agypt. Global J. Health Sci., 2015.

Shah, D., P. Choudhury, P. Gupta, J.L. Mathew, T. Gera, S. Gogia, P. Mohan, R. Panda and S. Menon, 2012. Promoting appropriate management of diarrhea: a systematic review of literature for advocacy and action: UNICEF-PHFI series on newborn and child health, India. Ind. Pediat., 49: 627-649.

Tempe Health Center, 2014. Profil Kesehatan Puskesmas Tempe Tahun 2014, H. Department, Editor. 2014: Tempe: Kabupaten Wajo.

Vyas, S., 2009. Impact of education on rural women about preparing ors and sss: a study of the primary health centre, uvarsad, gandhinagar. Health and Population: Perspectives and Issues, 32: 124-130.

Villareal, G., Laura Álvarez, Katherine Jiménez, Karina Martínez, Etilvia Martínez and Carolina Ojeda, 2011. Educational intervention for the prevention of diarrheal diseases in the Mano de Dios neighborhood, Sincelejo, Colombia: A success experience. Colombia Medica, 42: 319-326.

WHO, 2009. Diarrhoea Why Children are Still Dying and What Can be Done. 2009 12 January 2015]; Available from: http://whqlibdoc. Who. Int/ publications/ 2009/ 9789241598415_eng.pdf.

Wajo, H.D.O., 2014. Profil Kesehatan Kabupaten Wajo Tahun 2011-2013, H. Department, Editor. 2014: Sengkang: Kabupaten Wajo.

Wells, G., 1999. Dialogic inquiry: Towardss a socio-cultural practice and theory of education. 1999: Cambridge University Press.