

Effectiveness of Structured Teaching Programme on Knowledge Regarding Otitis Media and Its Prevention among Mothers of Under Five Children: A Pre-Experimental Study

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ABSTRACT

Background: Otitis media is the inflammation of the middle ear. Every year, over 700 million people get otitis media. Otitis media-related hearing loss nearly doubles in children aged 1 to 5 years¹. Most affected people live in low-income countries, including Nepal.

Methods: A pre-experimental one-group pre-test post-test design was used to assess the effectiveness of the structural teaching programme (STP) on otitis media and its prevention. A purposive sampling technique was used. The study included 120 mothers of under-five children residing in the rural community of Lalitpur, Nepal. For respondents who could read, write, a structured knowledge questionnaire was distributed, and for those who could not, interviews were conducted.

Results: The mean pre-test knowledge score was 44.2% (SD 9.3%), whereas the mean post-test knowledge score was 85.8% (7.8 %.), and the enhancement mean knowledge was 41.6% (SD 9.7%). When a paired t-test was done, the obtained value of 33.22 was found to be significant at 0.05. A significant association was found between respondents' pretest knowledge levels of otitis media and its prevention and socio-demographic variables such as age, type of family, the number of children, education status, occupation, monthly income, and whether they had heard about it before.

Conclusion: The majority of the participants had inadequate knowledge about otitis media and its prevention. The mean pre-test and post-

test knowledge scores of respondents differed significantly. As a result, the study found that STP was effective.

Key words: effectiveness, structural teaching programme, knowledge, mothers of under five children.

INTRODUCTION

Otitis media is the inflammation of the middle ear. It can be acute or chronic. It is usually associated with upper respiratory tract infections². World Health Organization (WHO) defines chronic suppuration as ear discharge lasting 2 weeks or more through a persistent tympanic membrane perforation, otolaryngologists define the duration of the discharge as more than 6 weeks³. Otitis media is common among children worldwide. The prevalence of otitis media related hearing loss almost doubles in those aged 1 to 5 years in South Asia. Every year, 21,000 people worldwide die from complications related to otitis media. More than 700 million people contract otitis media every year¹. The WHO has reported more than 80% of children experience acute otitis media before they are 5 years old and effusion before they reach school age, especially 6-month-olds to 4-year-olds⁴.

Otitis media is common in low-income countries. WHO estimates that otitis media is the cause of 60% of hearing loss in children under the age of 15. Otitis media is more common (75%) in developing countries than in developed countries (49%). Of the total, 31% of cases of chronic otitis media are accompanied by hearing loss. According to estimates, hearing loss affects 466 million individuals worldwide, 34 million of whom are children. In Nepal, 7.4% of people have suffered from a middle ear infection, while 16.6% of the population has hearing loss⁵. Hearing loss is one of the main sequelae of chronic otitis media, but there are potentially life-threatening complications such as acute mastoiditis, chronic and recurrent otitis media, neck abscess meningitis, cerebral abscess, and facial palsy⁶. A particular problem in developing countries is that patients with the diseases are often present until they get severe sickness, and this leads to higher morbidity and mortality⁵.

Although otitis media can occur, 80-90% of cases occur in children younger than 6 years who are diagnosed with acute otitis media during the first year of life and are much more likely to develop recurrent otitis media and chronic otitis effusion than children in whom the first middle ear infection occurs after age 1 year. Sometimes it may be a serious condition⁷. Mothers provide continuous and complete care for their children. Therefore, the researchers feel the need to assess the knowledge regarding otitis media and its prevention among mothers of under-five children.

RESEARCH METHODOLOGY

A pre experimental one group pre-test post-test design was adopted to evaluate the effectiveness of structured teaching programme on knowledge regarding otitis media and its prevention among mothers of under five children residing in a selected rural community of Lalitpur, Nepal. The study sample size consisted of 120 mothers of under-five children. Purposive sampling technique was used. The study includes

mothers of under five children who are willing to participate in study, both can and cannot read and write Nepali and/or English and are present during the time of data collection. The study excludes mothers who had already participated in educational program regarding otitis media and its prevention, who have not under five children and the mothers who are in medical profession.

A structured teaching program and a structured questionnaire were prepared. The tool used for the study was comprised of socio-demographic information, a structured knowledge questionnaire, and a structured teaching program on knowledge regarding otitis media and its prevention. The questions were developed with multiple-choice questions with a maximum of three distracters and one correct answer. The correct response is given a score of one, and the incorrect response is given a score of zero. Thus, the maximum possible score for this structured questionnaire was 32. The resulting knowledge score ranged as follows:

Knowledge Score	Number Of Items	Percentage
Inadequate	0 – 15	≤50 % Score
Moderate	16 – 22	51 – 75 % Score
Adequate	23– 32	76 – 100 % Score

Formal permission was obtained from the concerned administrative office of the rural community of Lalitpur, Nepal. Samples were selected according to the inclusion criteria. Subject confidentiality and anonymity were maintained, and written consent was obtained. The questionnaire was administered to each of the 120 respondents. On average, it took approximately 30 minutes to complete the test. Then structural teaching was provided at the completion of the study with a brief explanation of its objectives and contents. On the day 8th, a post-test was done for all respondents. The development of STP contains about definition of otitis media, its types, risk factors of otitis media in children, causes, signs and symptoms, diagnosis, management, complication and

community level prevention of otitis media. The reliability of the structured knowledge questionnaire was established by using the split-half method. In order to establish reliability, the tool was administered to 12 samples that fulfilled the inclusion criteria. The reliability of the tool was found using Spearman-Brown's formula. The result showed the coefficient correlation $r = 0.96$. Therefore, the tool was considered to be highly reliable for conducting the study. The obtained data were analyzed using both descriptive and inferential statistics. Demographic data containing respondents' characteristics were analyzed using frequencies and percentages. The knowledge score before and after the administration of the STP was calculated by using the mean, standard deviation, and t-test. The significant difference between mean pretest and post-test knowledge scores was calculated by using a paired t-test. The level of significance was set at <0.05 level. The effect of STP was analyzed by a paired t-test. The association between selected baseline variables and the pre-test level of knowledge regarding otitis media and its prevention was analyzed by using the chi-square test.

RESULT

Classification of Respondents by Demographic Characteristics

The classification of respondents by their demographic characteristics indicates that 21.7% of respondents were in the age group of 18–25 years, 48.3% were in the 26–33-year group, 20% were in the 34–41 year group, and 10% were in the 42–49 year group. With respect to educational level, 43.4% of the respondents had primary education, 38.3% had secondary education, and only 18.3% of the respondents had completed higher secondary. With respect to occupational status, 14 (23.3%) were self-employed, 10 (16.7%) worked in the private sector, 8(13.3%) worked in the government sector, and 28(46.7%) were housewives. Similarly, with regard to receiving prior information on the prevention of otitis

media, the majority of the respondents 23 (61.7%) did not have such information, and only 23 (38.3%) of them had knowledge. Of the respondents who had such information, 7 (11.7%) got the information from health personnel and 37 (61.7%) respondents did not have any information. The majority of respondents 27 (45%) were Hindu and remaining were of other religions. The family income per month is divided into 3 sub-categories: (Rs.10, 001-15,000), (Rs.15, 001-20,000); and more than (Rs.20, 000). The number of respondents in each subcategory was 18 (30%), 31 (51.7%), and 11 (18.3%) respectively. Based on the type of family, the majority 33 (55%) respondents were in a nuclear family. Regarding the number of children, 13 (21.6%) participants had one child, 28(46.7%) had 2 children, and 19 (31.7%) had three children.

Overall and aspect wise pre-test knowledge level on otitis media and its prevention

Table 1: Classification of respondent pre-test knowledge level on otitis media and its prevention (n=120)

Knowledge Level	Category	N	%
Inadequate	≤ 50 % Score	82	68.3
Moderate	51-75 % Score	38	31.7
Adequate	> 75 % Score	0	0.0

The data represented in table 1 shows that the majority of respondents, 82 (68.3%), had insufficient knowledge (50%), while the remaining 38 (31.7%) had a moderate level of knowledge (51-75%). No respondents had adequate (>75% score) knowledge regarding the subject matter.

Overall and aspect wise post-test knowledge scores of respondents on otitis media and its prevention

Table 2: Classification of respondents of post-test knowledge level on otitis media and its prevention (n=120)

Knowledge Level	Category	N	%
Inadequate	≤ 50 % Score	0	0.0
Moderate	51-75 % Score	36	30.0
Adequate	> 75 % Score	84	70.0

Table 2 reveals that the majority of the respondents, 84 (70.0%), attained a score of

75% or higher, whereas the remaining 36 75 %. respondents (30.0%) achieved a score of 51-

Table 3: Aspect wise post-test mean knowledge scores of respondents on otitis media and its prevention (n=120)

No.	Knowledge Aspects	Statements	Max. Score	Knowledge Scores			
				Mean	SD	Mean (%)	SD (%)
I	General information	14	14	12.28	1.35	87.7	9.7
II	Causes, risk factors, signs and symptoms	8	8	6.77	0.98	84.6	12.3
III	Complications, prevention and management	10	10	8.40	1.04	84.0	10.4
	Combined	32	32	27.45	2.51	85.8	7.8

Table 3 showed that post-test mean knowledge score on general information was 87.7% (SD 9.7%), the score on causes, risk factors, signs and symptoms was 84.6% (SD 12.3%), and the score on complications, prevention and management of otitis media was 84% (SD 10.4%). The combined knowledge score was 85.8% (SD 10.4%).

Overall pre-test and post-test knowledge mean scores of respondents to evaluate the effectiveness of STP on otitis media and its prevention

Table 4: Overall pre-test and post-test mean knowledge scores on otitis media and its prevention (n=120)

Aspects	Max. Score	Knowledge Scores				Paired 't' Test
		Mean	SD	Mean (%)	SD (%)	
Pre-test	32	14.15	2.97	44.2	9.3	33.22*
Post-test	32	27.45	2.51	85.8	7.8	
Enhancement	32	13.30	3.11	41.6	9.7	

* Significant at 5% level, 't' (0.05,59df) = 1.96

The data depicted in table 4 showed that the mean pre-test knowledge score was 44.2% (SD 9.3%), whereas the mean post-test score was found to be 85.5% (7.8%) and the enhancement mean knowledge was 41.6% (SD 9.7%). When a paired t-test was done, the obtained value of 33.22 was found to be

significant at the 0.05 level. From this, it is evident that the 't' value is found (1.96 with 59 df) to be significant. There is a statistically significant difference between the mean pre-test and post-test knowledge scores of mothers with under-five children about otitis media and its prevention.

Comparison mean pre-test and post-test knowledge scores of respondents'' on otitis media and its prevention

Table 5: Comparison mean pre-test and post-test knowledge scores of respondents'' on self-medication and its adverse effects (n=120)

No.	Knowledge Aspects	Respondents Knowledge (%)						Paired 't' Test
		Pre-test		Post-test		Enhancement		
		Mean	SD	Mean	SD	Mean	SD	
I	General information	54.0	10.7	87.7	9.7	33.7	12.1	21.57*
II	Causes, Risk factors, Signs and symptoms	34.2	19.1	84.6	12.3	50.4	20.8	18.77*
III	Complications, Prevention and Management	38.5	11.3	84.0	10.4	45.5	15.3	23.04*
	Combined	44.2	9.3	85.8	7.8	41.6	9.7	33.22*

* Significant at 5% level, t (0.05,59df) = 1.96

The data depicted in table 5 shows that for general information on otitis media, the obtained 't' value is 21.57, which is found to be significant at 0.05 level (t = 1.96). In the area of causes, risk factors, signs and symptoms, the obtained t value is 18.77, which is found to be significant at 0.05 level (t = 1.96). In the aspect of complications,

prevention, and management, the obtained 't' value is 23.04, which is found to be significant at 0.05 level (t = 1.96). From the above statistical information, it is evident that the structured teaching program was effective in enhancing the knowledge of women under 5 years of age regarding otitis media and its prevention for all knowledge

aspects under investigation.

Association between demographic variables and Pre-test Knowledge level on Self-medication and its adverse effects

A research hypothesis (H2) was developed to investigate the relationship between selected socio-demographic variables and the mean pre-test knowledge level of mothers of under-five children about otitis media and its prevention. There is a significant association between selected socio-demographic variables and the mean pre-test knowledge score of mothers of under-five children regarding otitis media and its prevention. With regards to the association between the age group of participants and the chi-square value of 1.60, it was found to be less than the table value $P < 0.05$ (7.815) at a 0.5 level of significance. There is no significant association between the age group and the knowledge level of mothers of under-five children regarding otitis media and its prevention.

Concerning the relationship between participants' educational level, the chi-square value was 0.21, which was found to be less than the table value $P > 0.05$ (5.991) at 0.5 level of significance. There is no significant association between the educational level and knowledge level of mothers of under-five children regarding otitis media and its prevention. Concerning the relationship between participant occupational status and chi-square value, which was found to be less than the table value $P > 0.05$ (7.815) at 0.5 level of significance, based on these, the research hypothesis is rejected and the null hypothesis is accepted. Therefore, there is no significant association between the educational level and knowledge level of mothers of under-five children regarding otitis media and its prevention.

With regards to the association between perceived prior information about otitis media and its prevention, the chi-square value was found to be 4.50, which was found to be more than the table value

$P < 0.05$ (3.841) at 0.5 level of significance. There is a significant association between perceived prior information and the knowledge level of mothers of under-five children regarding otitis media and its prevention. With regards to the association between the source of information about otitis media and its prevention in mothers of under-five children, the chi-square value was 17.82, which was found to be more than the table value $P < 0.05$ (9.488) at 0.5 level of significance. Based on these, the research hypothesis is accepted and the null hypothesis is rejected. Therefore, there is a significant association between the source of information about otitis media and its prevention.

Regarding the association between the religion of participants, the chi-square value was 11.13, which was found to be more than the table value $P < 0.05$ (7.815) at a 0.5 level of significance. There is a significant association between religion and the knowledge level of mothers of under-five children regarding otitis media and its prevention. The association between family income per month of participants and the obtained chi-square value was 0.63, which was found to be less than the table value $P > 0.05$ (5.991) at 0.5 level of significance. Based on these, the research hypothesis is rejected and the null hypothesis is accepted. Therefore, there is no significant association between the family income of mothers of under-five children and the prevention of otitis media.

The association between the type of family and the number of participants obtained in chi-square value was 6.07, which was found to be more than the table value $P < 0.05$ (5.991) at 0.5 level of significance. There is a significant association between the type of family member and the knowledge level of mothers of under-five children regarding otitis media and its prevention. With regards to the association between the number of children of participants, the chi-square value was 6.07, which was found to be more than the table value $P < 0.05$ (5.991) at 0.5 level of significance. Based on these, the research

hypothesis is accepted and the null hypothesis is rejected. Therefore, there is a significant association between the number of children and the knowledge level of mothers of under-five children regarding otitis media and its prevention.

DISCUSSION

To discuss the significant findings of data analysis in accordance with the objectives and stated hypothesis of this study, it was observed that the mean pre-test knowledge score of respondents regarding otitis media and its prevention was inadequate. The majority of respondents, 82 (68.3), had insufficient knowledge (50% Score), while 38 (31.7%) had a moderate level of knowledge (51-75%) Score. No respondents had adequate (>75% score) knowledge regarding the subject matter. The finding is supported by the study conducted in Kigali, Rwanda reveals that 76.6 % of parents were knowledgeable about ear infections, 89.1% of respondents were aware of ear infections. Correlating knowledge with the choice of seeking treatment, responses were 33%. There was a need to improve the community's awareness and access to primary healthcare facilities for the care of ear infections, especially in rural areas⁸.

Regarding the post-test knowledge scores of respondents on otitis media and its prevention, most of the respondents, 84 (70.0%), attained a score of 75% or higher, whereas the remaining 36 respondents (30.0%) achieved a score of 51–75%. It is observed from the finding that the respondents had aspect-wise mean percentage scores of 87.7% (SD 9.7%) in the area of general information, causes, risk factors, signs and symptoms were 84.6%(12.3); complications, prevention and management were 84%(SD 10.4); and combined was 85.8% (SD 7.8). The mean percentage was found to be highest regarding knowledge scores on otitis media and its prevention, at 41.6%. Another similar study conducted in the Udipi district, India showed that the majority of

84% of mothers had a moderate level of knowledge level and 14% of mothers had an inadequate knowledge level in the pre-test. The mean pre-test knowledge score and attitude score were (12+_2.6) and (12.72+_5.49), respectively. In the post-test majority, 64% of mothers had an adequate knowledge level and 34% of mothers had a moderate level of knowledge. The mean post-test knowledge and attitude scores were 16.78 and 25.82 higher than the mean pre-test knowledge scores of 8.90 and 12.72⁹.

The computed chi-square test proved that there was a significant association between pre-test knowledge scores of mothers of under-five children regarding otitis media and its prevention and selected baseline variables like age group, educational level, number of children, religion, and whether they had heard about otitis media and its prevention. A similar study conducted in Riyadh, Saudi Arabia revealed that there was a statistically significant relationship found between good care-seeking practice and age, as well as socioeconomic status ($P < 0.05$ each). Knowledge, attitude, and practice regarding child ear infections were positive in the majority of parents¹⁰.

CONCLUSION

The present study was an enriching and novel experience for investigators in the field of research. The study revealed that a structural teaching programme as a mode of teaching otitis media and its prevention effectively improved the knowledge level of respondents. The mothers of under-five children who received a structured teaching program were satisfied with the knowledge they received regarding otitis media and its prevention. In this area, there is still exits for advancement in knowledge. The researchers emphasize the important role of health professionals in educating mothers about the serious potential complications of otitis media.

Declaration by Authors

Ethical Approval: Approved

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