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Original Research Article

Effectiveness of Self Instructional Module (SIM) Regarding Knowledge on Prevention of Iodine Deficiency Disorders (IDDs) in Children among Primary School Teachers of Selected School, Bangalore

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ABSTRACT

Background: In developing countries, IDDs are considered as serious public health problems as it can result into mental retardation, abortion, still birth, growth retardation and goiter. The children in iodine deficient areas have lower intellectual quotient than children who get enough iodized diet.
Objectives: The aim of this study was to evaluate the effectiveness of self instructional module (SIM) regarding knowledge on prevention of IDDs in children among primary school teachers.
Methods and Material: Pre and post test design was carried out among 60 primary school teachers from four primary schools, who were selected by Non Probability Convenience Sampling technique. Statistical analysis was done using descriptive, paired –t test and chi-square test.
Results: The findings revealed that 80% of the teachers had inadequate and 20% had moderate knowledge before SIM. After the introduction of the SIM, the proportion of teachers with adequate knowledge was 70% and 30% of the teacher showed moderate knowledge. The mean score percentage of knowledge increased from 37.8% to 74.3%, with enhancement in mean score percentage of 36.5%. The post test mean score of knowledge (25.28) was comparably more than the pre test mean (12.85) and it was found to be statistically significant (t-value= 27.98, df= 59) at 0.05 level. Chi-square test revealed that there was statistically significant association between pre-test knowledge score with income ($\chi 2$= 8.444, P =<0.05) and location of school ($\chi 2$= 7.858, P= <0.05).
Conclusion: The study concluded that SIM was significantly effective in enhancing knowledge of primary school teachers regarding prevention on IDDs in children and can help in preventing the complication of iodine deficiency among children.

Key words: Knowledge; Prevention of iodine deficiency disorders; Primary school teachers. Self instructional module

INTRODUCTION

Iodine deficiency is a major public health problem for populations throughout the world, particularly for pregnant women and young children. The most devastating outcomes of iodine deficiency are increased perinatal mortality and mental retardation. It gives rise to Goitre as well as cretinism, which results in developmental delays and other health problems. According to World Health Organization (WHO) in 2007, nearly 2 billion individuals had insufficient iodine intake. [1]

Globally 2.2 billion people live in areas with Iodine deficiency. In India, 200 million people are at risk of iodine deficiency disorders (IDDs), 54.4 million people have goiter and 8.8 million people

have IDDs related mental/motor handicaps. It is a major public health problem in 211 of 245 districts surveyed. [2] It is estimated that more than 200 million people are at risk of IDDs while the number of persons suffering from goiter and other Iodine deficiency disorder is above 70 million. High prevalence of goiter and cretinism exists in Himalayan and Sub-Himalayan areas including Jammu and Kashmir, Arunachal Pradesh. [3]

The daily recommended iodine intakes are: 50 micrograms for infants (first 12 months of age), 90 mg for children (2- 6 years of age) 120 mg for school children (7-12 years of age), 150 mg for adults (beyond 12 years of age) and 200 mg for pregnant and lactating women. [4] Iodine deficiency disorder leads to impaired school performance and lowered intelligence quotient (IQ). People living in areas affected by severe Iodine Deficiency Disorders (IDDs) may have an IQ of up to about 13.5 points below that of those from comparable communities in areas where there is no iodine deficiency. This mental deficiency has an immediate effect on child learning capacity, women's health, the quality of life of communities, and economic productivity. [5]

The researcher personally experienced that lack of iodine intake will decrease mental and physical activities in school age children (6-12years). Teachers play a vital role in observing the daily activities of children both curriculum and co-curricular in the school. Iodine deficiency is a preventable disorder and early diagnosis can prevent complications. So it is essential for the teachers to have adequate knowledge regarding Iodine deficiency disorders (IDDs) that can enable them to identify deteriorating mental and physical ability in children thereby helping them to overcome life threatening problems. The study aim was to evaluate the effectiveness of self instructional module (SIM) regarding knowledge on prevention of IDDs in children among primary school teachers of selected schools, Bangalore.

MATERIALS AND METHODOLOGY

A Pre Experimental - One group pre test post test design was conducted in four selected primary schools in Bangalore, namely SJR Kengeri Public School at Kengeri Upanagar, St. Clare Convent School at Hunasemaradapalya, Surabhi Public School at Kengeri Hobali, and Sri Visveswars Swamy High School at Sulikere. The study was conducted during the month of July 2010. Approval was taken from the related organization to collect data. Informed consent was obtained from the respondents and they were assured anonymity and confidentiality of the information provided by them.

The Non Probability Convenience Sampling technique was used to assess the effectiveness of SIM on knowledge regarding prevention of IDDs in children with 60 primary school teachers.

In this design the effect of the independent variable (SIM on prevention of IDDs in children) was measured on the dependent variable (knowledge of the primary school teachers).

The content validity of the instrument was established by extensive literature review and thorough consultation with research advisor, peers and five experts (>80% rating score for content validity). Five experts comprise of four nurse educators in the field of Community Health Nursing and one statistician for establishing content validity.

Self Instructional Module (SIM) was developed by researcher herself. Pilot Study was done among six teachers of selected three Government Lower Primary Schools (GLPS) of Bangalore, located at Halebyrohalli, Hosabyrohalli and Kommaghatta. Reliability of the instrument was tested using the split half technique with the Spearman Brown's Prophecy formula, which gave satisfactory value of 0.90.

The Main study was done among 60 samples. Pre-test was conducted through structured knowledge questionnaire along with adequate explanation for about 20-30

minutes. The researcher administered the SIM to each participant on the same day of data collection and after seven days of administration of the SIM, posttest was conducted. Risk/Benefit analysis showed no any particular risk and no any personal benefit for the respondents. Respondents were assured of their participation in this study as voluntary. They were informed of being free to withdraw to participate from the study if they feel uncomfortable. Anonymity and confidentiality was maintained by keeping the data source protected by the researcher through proper storage of the filled instruments and through use of code numbers instead of the names in transferring the data from questionnaire to data sheet.

The collected data was checked for accuracy, completeness and out of range, scored immediately and were organized properly after each day of data collection and before entry. The data was entered in Microsoft excel and was analyzed by using SPSS 20 version. The data was analyzed by using descriptive and inferential statistics. Frequency and percentage distribution mean and standard deviation was used to analyze demographic variables and level of knowledge on prevention of iodine deficiency disorders in children. Mean and Standard deviation were used to analyze the level of knowledge on prevention of iodine deficiency disorders in children. Paired t-test were used to analyze the difference between mean pre-test and post-test knowledge and chi-square test was used to analyze the association between pretest levels of knowledge on prevention of iodine deficiency disorders in children among primary school teachers with their selected demographic variables.

RESULTS

The table 1 depicts the socio demographic characteristics of primary school teachers. Among primary school teachers (N=60), the age distribution showed that majority of the respondents (63.3%) were aged between 21-30 years, 23.3% were aged between 31-40 years, 11.7% were aged between 31-35 years and 1.7% was between 51-60 years. Majority of the respondents (86.7%) were female and 13.3% were male. Religion wise distribution of the respondents indicated that 78.3% were Hindu, 15% were Christian and 5% were Muslim and 1.7% was followers of other religion. In context to marital status, 41.7% respondents were unmarried and 58.3% were married. In relation to educational status, majority of the respondents (45%) had completed B. Ed, 18.3% had completed D. Ed and 36.7% had no specialized general subjects.

Table 1: Distribution of school teachers according to demographic variables N= 60

Demographic characteristics	Number (N=60)	Percent
Age in years		
21-30	38	63.3
31-40	14	23.3
41-50	7	11.7
51-60	1	1.7
Gender		
Male	8	13.3
Female	52	86.7
Religion		
Hindu	47	78.3
Christian	9	15
Muslim	3	5
Others specify	1	1.7
Marital Status		
Unmarried	25	41.7
Married	35	58.3
Educational Status		
D.Ed	11	18.3
B.Ed	27	45
Other	22	36.7
Income per month		
≤5000	17	28.3
5001-7500	12	20
7501-10000	27	45
10001 & above	4	6.7
Years of experience		
1 to 5	38	63.3
6 to 10	12	20
11 to 15	6	10
16 and above	4	6.7
Location of School		
Urban	23	38.3
Rural	37	61.7
Type of school		
Government	7	11.7
Private	53	88.3
Have you ever school about iodine deficiency disorders?		
Yes	53	88.3
No	7	11.7
Source of information	(N=53)	
Elders& Relatives	3	5.7
Health personnel	20	37.7
Mass media	26	37.7
Others specify	4	7.5

Few of the respondents (6.7%) had more than 10000 monthly incomes. The majority of respondents (45%) had their monthly income between Rs.7, 501 and 10,000; 20.0% had a monthly income between Rs. 5,001 and 7,500; 28.3% had a monthly income less than 5,000.

With regard to the years of experience, 63.3% primary school teachers had 1-5 years of experience, 20% of them had 6-10 years experience while 10% of the subjects had 11-15 years of experience and remaining 6.7% had above 16 years of experience.

Majority of the respondents (61.7%) were teaching in rural schools and remaining 38.3% were teaching in urban schools. Most of the respondents (88.3%) were teaching in private schools and remaining 11.7% were teaching in government schools.

Among total respondents, 53 (88.3%) had heard about iodine deficiency disorders from various sources and only a few (11.7%) had not heard about iodine deficiency disorders. In reference to source of information on prevention of iodine deficiency disorders (N=53), most of the respondents (49%) had heard from mass media, 37.7% from health personnel, 5.6% from elders/relatives and the remaining 7.5% had heard from other sources.

Table 2: Distribution of school teachers according to level of knowledge score N= 60

Level of knowledge	Pre test		Post test	
	Number	Percent	Number	Percent
Inadequate (<50%)	48	80	-	-
Moderately adequate (50-75%)	12	20	18	30
Adequate (>75%)	-	-	42	70
Total	**60**	**100**	**60**	**100**

The data in table 2 shows that in pre-test 80% of respondents had poor knowledge and 12% had moderately average knowledge whereas post test showed that 30% of the respondents had moderately adequate knowledge and more than half (70%) confirmed to have adequate knowledge in prevention of iodine deficiency disorder in children.

Table 3: Mean standard deviation, range and mean score percent of knowledge regarding prevention iodine deficiency disorders before and after Self Instructional Module. N= 60

Aspects of Knowledge	Maximum Score	Pre test				Post test			
		Range	Mean	SD	Mean%	Range	Mean	SD	Mean%
General information	5	0-5	2.32	1.01	46.4	3-5	3.97	0.68	79.4
Meaning and causes	5	0-4	2.00	1.04	40.0	2-5	3.70	0.78	74.0
Clinical manifestation	8	0-6	2.88	1.48	36.0	3-8	5.65	1.41	70.6
Diagnotic measures and management	4	0-3	1.23	0.69	30.7	1-4	2.78	0.64	69.5
Prevention and control	12	1-8	4.42	1.67	36.8	6-12	9.18	1.64	76.5
Over all	**34**	**4-20**	**12.85**	**3.92**	**37.8**	**17-33**	**25.28**	**3.62**	**74.3**

Paired't' value: 28.026*, t60= 1.67

Table 3 shows that the mean post-test knowledge score (25.28 ± 3.62) was greater than the mean pre-test score (12.85 ± 3.92). The calculated "t" value (28.026) was greater than the table value (t60= 1.67, $p<0.05$). This indicated that Self Instructional Module was effective in increasing the knowledge of primary school teachers regarding prevention of Iodine deficiency disorder in children.

Table 4: Enhancement of knowledge before and after SIM and its significance N= 60

Aspects of knowledge	Enhancement			Paired t-value	p-value
	Mean	SD	Mean%		
General information	1.65	0.86	33.0	14.85	p< 0.05
Meaning and causes	1.70	0.94	34.0	13.94	p< 0.05
Clinical manifestation	2.77	1.41	34.6	15.10	p< 0.05
Diagnostic measures and management	1.55	0.83	38.7	14.42	p< 0.05
Prevention and control	4.77	2.15	39.7	17.17	p< 0.05
Over all	**12.43**	**3.44**	**36.5**	**27.98**	**p< 0.05**

t60= 1.67

Table 4 shows that mean post-test knowledge score relatively higher than mean pre-test knowledge scores in all aspects. Knowledge score in each aspect was found to be statistically significant. The calculated t value of all aspects; general information (t=14.85), meaning and causes (t=13.94), clinical manifestation (t=15.10), diagnostic measures and management (t=14.42) and prevention and control (t=17.17) were higher than table value (t60=1.67) which indicates that the self instructional module on prevention of iodine deficiency disorder was effective in increasing the knowledge of primary school teachers.

Association between pre-test knowledge score and demographic variables

There was no association between pre-test knowledge score and demographic variable. The pre-test knowledge score was independent of all variables such as age ($\chi 2$= 0.986, P =>0.05), gender ($\chi 2$= 1.741, P =>0.05), religion ($\chi 2$= 2.097, P =>0.05), marital status ($\chi 2$= 0.122, P =>0.05), educational status ($\chi 2$= 3.676, P =>0.05), years of experience ($\chi 2$= 1.019, P =>0.05) and types of school ($\chi 2$= 3.338, P =>0.05). However, it was found to have association between pre-test knowledge score with income ($\chi 2$= 8.444, P =<0.05) and location of school ($\chi 2$= 7.858, P =<0.05).

DISCUSSION

The finding of this study showed that Self Instructional Module (SIM) was effective in increasing the knowledge of primary school teachers regarding prevention on IDDs in children. Different studies conducted with pre and post design using SIM approach showed increase in knowledge among school teachers. [6,7] Other studies conducted by providing educational intervention also had reported an effectiveness of programs on increasing knowledge in IDDs. [8]

CONCLUSION

The present study showed that SIM helps primary teachers to improve their knowledge on various aspects of IIDs. The result shows that there is great requirement for health personnel to educate the teachers regarding prevention of IDDs in children.

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