Study to Evaluate the Effectiveness of Self Instructional Module (SIM) on Knowledge Regarding Swine Flu among School Children

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Abstract **- School age children represent about 25% of the total population. The population's exact size suggests that the health care of the school children can contribute to the overall health status of the country. Swine flu is the disease caused by Influenza A, a single-stranded, negative-sense RNA virus. This virus preferentially infects young people under 25 years of age. Swine flu can be prevented through vaccination and simple precautions such as washing hands regularly with soap and water and disinfecting hands and surfaces with antibacterial cleaners. So, there is an absolute need to increase the school children's knowledge regarding swine flu. Therefore, the investigator developed and administered a Self-Instructional Module (SIM) regarding swine flu among school children. The result of this study revealed that 74 (74%) school children had inadequate knowledge, 26 (26%) had moderately adequate knowledge, and no one had adequate knowledge in the pre-test, and 11 (11%) had moderately adequate knowledge, 89 (89%) had adequate knowledge, and no one had inadequate knowledge in post-test. While comparing the total level of knowledge between pre-test and post-test, the difference mean value was 11.92 with a standard deviation of 3.66, and the calculated t value was 32.55. It was statistically significant at P<0.05 level. This shows a significant increase in the level of knowledge of school children regarding swine flu after the administration of SIM.**

Index Terms **- Swine Flu, School Children, Self Instructional Module, Knowledge.**

I.INTRODUCTION

Infectious disease, which predates the creation of humans, will undoubtedly continue to be one of the primary dimensions and determinants of human history, as it has been in the past [1]. The H1N1 virus is a relatively new influenza virus type that causes symptoms comparable to the common flu [2]. Initially, the H1N1 virus was renamed "swine flu" because many of the genes found in this new virus are present in pigs (swine), despite being mainly capable of transmitting person to person infection. The classical swine flu virus (Influenza type A H1N1 virus) was first isolated from a pig in 1930 [3].

The novel influenza A (H1N1) virus was first identified in Mexico in April 2009. Epidemiology reports showed 177000 deaths soon after the outbreak of the H1N1 virus in the United States and Mexico. Then, the World Health Organization (WHO) declared influenza as a pandemic [4]. Between August 30, 2009, and June 12, 2010, the Centers for Disease Control and Prevention (CDC) recorded 279 lab-confirmed influenza-related pediatric deaths (four times the average in the previous five influenza seasons). According to the report, 52 children under the age of two died, 30 children aged two to four died, 103 children aged five to eleven died, and 94 children aged twelve to seventeen died. The 2009 pandemic H1N1 strain was connected to 226 deaths, 51 to an undetermined subtype of influenza A, and two to influenza B.

During the whole H1N1 pandemic season, from April 1 to May 1, 2010, hospitalization rates for children under the age of four were 8.3 per 10000, and for those aged five to seventeen, they were four per 10000 [5].

The Government of India started screening people from the affected countries at airports for swine flu symptoms, the first case of flu in India was found at Hyderabad airport on May 13 2009 [6]. CDC reported the following confirmed swine flu cases in India; Maharashtra reported 197 deaths and approximately

3600 people infected by the swine flu. Kerala reported 27 confirmed swine flu cases. In New Delhi, thirteen cases of swine flu had been reported. The number of cases of swine flu in India has increased due to eight Tamil Nadu residents. Karnataka has recorded five swine flu deaths, bringing the total number of deaths to 117. So far, there have been 38 swine flu deaths in Bangalore. Andhra Pradesh and Gujarat reported 43 and 2 cases respectively [5].

Swine flu attacks never stopped. Again India had an outbreak of the H1N1 virus in 2015. The Health Ministry in India (March 30, 2015) indicated that as of March 29, 2015, 2,044 individuals have died due to swine flu, and the number of infected people has reached 32877. The highest death toll was reported in Gujarat (387 deaths), with Rajasthan not far behind with 378 deaths [7]. Several types of research show that H1N1 virus infection is a significant health care problem because the high percentage of the population affected children significantly and the highest rate of illness occurred in crowded areas [8]. Swine flu is a preventable disease, and it can be prevented through self-awareness and behavior modification. Children are fast learners and easily can be moulded positively. So, the investigator decided to develop and administer the self-instructional module (SIM) on swine flu to increase the knowledge level of school children.

A. *Statement of the problem*

A study to evaluate the effectiveness of self-instructional module on knowledge regarding swine flu among school children in selected school, Gwalior, Madhya Pradesh.

B. *Objectives*

- To assess the level of knowledge regarding swine flu among school children before and after administration of self-instructional module.
- To find out the effectiveness of self-instructional module on swine flu among school children.
- To determine the association between the post-test level of knowledge regarding swine flu with the selected demographic variables.

C. *Variables*

- *Independent variable*

The Independent variable of this study is the self-instructional module regarding swine flu.

- *Dependent variable:*

The dependent variable of this study is the level of school children's knowledge regarding swine flu.

D. *Hypothesis*

The mean post-test knowledge score of the school children on swine flu will be significantly higher than their mean pre-test knowledge score.

E. *Assumptions*

- Schoolchildren may have limited knowledge regarding swine flu.
- School children need accurate information regarding swine flu.
- School children are interested to know about the swine flu and willing to use SIM.
- Self-instructional module (SIM) is a good teaching and learning strategy to create awareness of swine flu among school children.

F. *Delimitations*

- The sample size of the study was delimited to 100 only.
- The data collection period was delimited to four weeks.
- This study was delimited to school children studying in 8th, 9th and 10th standard of Ebenezer Higher Secondary school, Gwalior, Madhya Pradesh.

II. MATERIAL AND METHODS

A. Research approach and design

A quantitative approach with a pre-experimental "one group pre and post-test design" was adopted for this study to evaluate the effectiveness of SIM on knowledge regarding swine flu among school children in selected school, Gwalior, M.P.

B. Setting

This study was conducted in Gwalior, Madhya Pradesh, at Ebenezer Higher Secondary School. It was chosen due to its proximity to the population under investigation. It is affiliated with the state secondary education board. It offers education from pre-kindergarten to the 12th grade.

C. Population

The present study population consisted of boys or girls who were studying in 8th, 9th and 10th standard in the age group of 13-15 years.

D. Sample, sample size and sampling technique

The sample of this study consists of boys or girls studying in 8th, 9th and 10th standard in the age group of 13 to15 years in Ebenezer Higher Secondary School, Gwalior, Madhya Pradesh, and the sample size was hundred. The samples for this study were chosen using a convenient sampling strategy.

E. Criteria for sample selection

Inclusion criteria

- The school children were willing to participate in the study.
- The school children who were available at the data collection time.
- Both boys and girls were included.
- The school children were studying in 8th, 9th and 10th standard in the age group of 13 to15 years.

Exclusion criteria

- The school children who were not willing to participate in the study.
- The school children who were not available during the study.

F. Description of the tool

The tool consists of two parts,

Part-I

Part-I describes the demographic variables including, age in years, gender, educational qualification, monthly family income, residential area, type of family, method of prevention from swine flu by whole family members, method of prevention from swine flu in school, the occurrence of swine flu cases in the family within a year and source of information regarding swine flu. The investigator developed this part by referring to various textbooks, the internet and journals.

Part-II

The structured questionnaires were developed based on the review of literature and personal experience of the investigator. This part has 26 questions regarding swine flu and is divided into two sections. Section A, General aspects of swine flu, contains 15 questions regarding definition, incidence rate, risk factors and causes, signs and symptoms and assessment of swine flu. Section B - Management and prevention of swine flu has 11 questions regarding management, methods of prevention and complications of swine flu.

Scoring procedure of structured questionnaires and score interpretation

The possible score for this tool were 0 and 1. That was ‘score 1’ for the right answer and ‘score 0’ for the wrong answer. The total score was 26. The scores were interpreted like inadequate knowledge (0-50 % / 0-13), moderately adequate knowledge (51-75 % / 14- 20) and adequate knowledge (>75 %/ 21-26).

G. Testing of the tool

In order to establish the reliability of the tool, it was administered to ten school students. The split-half technique obtained reliability. The reliability of the tool was 0.90. Thus the tool was found highly significant and reliable.

H. Description of self-instructional module

After reviewing the literature, the investigator developed the self-instructional module for school children with personal experience. The SIM covered the areas of definition, incidence rate, causes, signs and symptoms, assessment, management, methods of prevention and complications of swine flu. Each area comprises separate objectives, content, learning activities and evaluation measures.

I. Data collection procedure

This study was conducted in Ebenezer Higher Secondary School, Gwalior, Madhya Pradesh. The formal approval was obtained from the concerned authority before the study. The hundred school children (100) were selected using a convenient sampling technique. The willingness of the school children was obtained with a consent form. After the self-introduction, the investigator explained the purpose of the study and requested for giving frank replies. The investigator collected the demographic variables and monitored school children's current level of knowledge regarding swine flu using structured questionnaires (pre-test). After that, SIM on swine flu was handed over to children and requested to go through and learn. After seven days, the post-test was conducted by distributing the same questionnaires to

the same samples. The data were analyzed using the Statistical Package for Social Sciences (SPSS), and the result was interpreted.

III. RESULTS

A. Demographic variables of the school children

In the age of the school children, 30 (30%) were in 13 years, 35 (35%) in 14 years and remaining 35(35%) in 15 years. Out of 100 school children, 45 (45%) were male, and 55(55%) were female. With regards to educational qualification, 32 (32%) were studying 8th standard, 33 (33%) were studying 9th standard, and the remaining 35 (35%) were in 10th standard. The monthly family income of 14(14%) school children were less than Rs. 10000, 43 (43%) had an income of Rs. 10001 to Rs. 20000, 24(24%) had an income of Rs. 20001 to Rs. 30000 and 19(19%) had an income of above Rs. 30000. With consideration of residential area, most of the school children, 83(83%), belong to an urban area, and only 17(17%) were from the rural area. Out of 100 school children, 52 (52%) of the school children were from nuclear families, 33(33%) were from a joint family, and 15(15%) of them were in the extended family.

Regarding the method of prevention from swine flu by whole family members, 15(15%) school children family were using protective wear like a mask, majority of the school children family, 50(50%) were not taking any prevention method, and 35(35%) used to avoid exposure to swine flu-like not going to a crowded area. Regarding the method of prevention from swine flu in school, the majority of the school children, fifty-four (54%) were not using any prevention method, 34(34%) were doing hygienic hand washing practices, and 12 children were using protective wear like a mask. Out of 100 school children, 62(62%) had swine flu cases in the family within a year, and 38(38%) were not having swine flu cases within a year. Regarding the source of information regarding swine flu, most school children, 77(77%), were getting it from mass media. Eight (8%) and 5(5%) were getting information from teachers, friends, & relatives, respectively. Ten 10(10%) were getting information from health professionals.

B. The level of knowledge regarding swine flu among school children before and after administration of self instructional module

Table I and figure 1 show the distribution of the level of knowledge regarding swine flu among school children before and after the self-administration of the self-instructional module. The result revealed that 74 (74%) school children had inadequate knowledge, 26 (26%) had moderately adequate knowledge, and no one had adequate knowledge before administration of the self-instructional module (pre-test). And post-test (after administration of self-instructional module) results revealed that 11 (11%) had moderately adequate knowledge, 89 (89%) had adequate knowledge, and no one had inadequate knowledge.

Table I: Distribution of the level of knowledge regarding swine flu among school children in pre and post-test

Sl. No.	Inadequate knowledge (0 – 50%)	Moderately adequate knowledge (51 – 75%)	Adequate knowledge (> 75%)
Pre test	74 %	26%	0%
Post test	0%	11%	89%

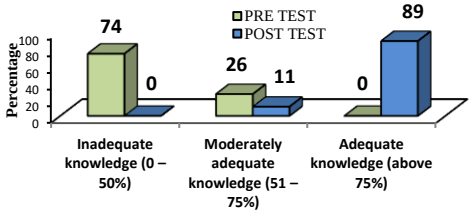

Fig. 1: Distribution of the level of knowledge regarding swine flu among schoolchildren pre and post-test

C. Effectiveness of self instructional module on swine flu among school children

1) Area wise distribution of level of knowledge regarding swine flu among school children

Table II shows the area wise distribution of level of knowledge regarding swine flu among school children. Regarding general aspects of swine flu, the pre and post-test mean were 5.11 and 11.84, respectively with a standard deviation of 1.65 and 1.83. Considering the management and prevention of swine flu, the pre and post-test mean were 4.66 and 9.28 respectively with a standard deviation of 2.16 and 1.24. The total pre-test mean and standard deviation were 9.77 and 3.10 respectively with a standard error of the mean of 0.31. The post-test mean and standard deviation were 21.69 and 1.71 respectively with a standard error of the mean of 0.17.

Table II: Area wise distribution of level of knowledge regarding swine flu among school children

Sl. No.	Classification of knowledge	Pre-test			Post-test		
		Mean	SD	SEM	Mean	SD	SEM
1.	General aspects of swine flu	5.11	1.65	0.166	11.84	1.83	0.18
2.	Management and prevention of swine flu	4.66	2.16	0.21	9.28	1.24	0.12
3.	Total	9.77	3.10	0.31	21.69	1.71	0.17

Note: SD= Standard deviation , SEM= Standard error of the Mean

2) Area wise distribution of difference in level of knowledge regarding swine flu among school children between pre and post test

Regarding the general aspects of swine flu, the mean difference was 6.73 with a calculated t value of 28.35. It was significant at the 0.05 level. The level of knowledge about the management and prevention of swine flu was significant at 0.05 level. The mean difference was 4.62 with a calculated t value of 20.40. While comparing the total level of knowledge between pre-test and post-test, the difference mean value was 11.92 with a calculated t value of 32.55. It was statistically significant at P<0.05 level. This shows a significant increase in the level of knowledge of school children regarding swine flu after the administration of SIM. Table III shows the area wise distribution of the difference in the level of knowledge regarding swine flu among school children between pre and post-test.

Table III: Area wise distribution of difference in level of knowledge regarding swine flu among school children between pre and post test

Sl. No	Classification of knowledge	DM (đ)	SD (s)	SEM	't' test value
1.	General aspects of swine flu	6.73	2.37	0.23	28.35*
2.	Management and prevention of swine flu	4.62	2.26	0.22	20.40*
3.	Total	11.92	3.66	0.36	32.55*

Note: DM =Difference mean**,** SD= Standard deviation, SEM= Standard error of the Mean, ***** =*Significant* P<0.05

D. Association between the post test level of knowledge regarding swine flu with the selected demographic variables

The association between the post-test level of knowledge regarding swine flu of school children with the selected demographic variables revealed that, there was a significant association between the post test level of knowledge with demographic variables including age in years, educational qualification, monthly family income, type of family and source of information regarding swine flu with $\chi 2$ value of 8.99, 8.23, 10.83, 15.72 and 45.94 respectively. It was statistically significant at P<0.05 level. There was no significant association between the post test level of knowledge with some demographic variables including gender, residential area, method of prevention from swine flu by whole family members, method of prevention from swine flu in school and occurrence of swine flu cases in family within a year.

IV. DISCUSSION

With the source of information about swine flu majority of students source 56 (93.3%) were gain knowledge through mass media.

The result of this study, 74 (74%) school children had inadequate knowledge, 26 (26%) had moderately adequate knowledge, and no one had adequate knowledge in the pre-test, and 11 (11%) had moderately adequate knowledge, 89 (89%) had adequate knowledge, and no one had inadequate knowledge in post-test. This is consistent with the Jeeva Jose (2018) study, in which the majority of 26 (86.6 %) high school children demonstrated insufficient knowledge, 4 (13.3 %) demonstrated moderately adequate knowledge, and 0% demonstrated adequate knowledge regarding swine flu. In the post-test, majority of them, 23 (76.7%) had adequate knowledge, 7 (23.3%) had moderately adequate knowledge, 0% had inadequate knowledge [9]. Also, present study report supports by another study conducted by Sara Tom (2020), which shows a majority of the adolescents (70%) had an excellent knowledge score in the post-test as compared to the pre-test, and the mean post-test knowledge score (x2= 16.45) was apparently higher than the mean pre-test

knowledge score (x1= 11.25) regarding swine flu [10].

While comparing the total level of knowledge between pre-test and post-test, the difference mean value was 11.92 with a standard deviation of 3.66, and the calculated t value was 32.55. The standard error of the mean was 0.36. It was statistically significant at the $P<0.05$ level. These results were related to another study conducted by M. Raghavendran, et al. in 2017. Their study results showed that the difference mean value was 59 and calculated t value was 14.64 with significant knowledge improvement on swine flu among higher secondary students at the level of $P<0.05$ level [11]. This study shows the association between the post-test level of knowledge with age, educational qualification, monthly family income, type of family and source of infection regarding swine is the same as in the study conducted by Nandkumar R. Kakade and S. V. Kakade (2014) [12].

V. CONCLUSION

The above study concluded that structured teaching program has improved the level of knowledge among high school students on swine flu and its prevention they increased level of knowledge after STP. Influenza virus is an excellent player of hiding and seeks, continuously appearing at least once every year after the 2009 pandemic, affecting all age groups around the globe, particularly in children. Self-learning is the best method for permanent learning. So, the investigator developed and administered SIM regarding swine flu among school children. The study's primary objective, which was to increase the children's knowledge level through self-study, was accomplished.

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