

Original Research Article

## Effectiveness of Self Instructional Module (SIM) on Current Trends of Vaccination in Terms of Knowledge and Practices among Nursing Students: A Quasi Experimental Study

Ms. Shilpa Sharma<sup>1</sup>, Ms. Eenu<sup>2</sup>, Ms. Uma J. Deaver<sup>3</sup>, Dr. Jyoti Sarin<sup>4</sup>

<sup>1</sup>M.Sc. Nursing Final Year Student, Department of Medical Surgical Nursing, M.M College of Nursing, Maharishi Markandeshwar (Deemed to be University), Ambala, Haryana, India

<sup>2</sup>Assistant Professor Department of Community Health Nursing, M.M. College of Nursing, Maharishi Markandeshwar (Deemed to be University), Ambala, Haryana, India

<sup>3</sup>Associate Professor Department of Medical Surgical Nursing, M.M College of Nursing, Maharishi Markandeshwar (Deemed to be University), Ambala, Haryana, India

<sup>4</sup>Principal, M.M College of Nursing, Maharishi Markandeshwar (Deemed to be University), Ambala, Haryana, India

Corresponding Author: Ms. Shilpa Sharma

### ABSTRACT

An integral part of the overall health system is immunization system and it focus on vaccine preventable diseases. Every country has its own immunization schedule according to what is operationally feasible and socially acceptable. Vaccination has proved to be most cost-effective part of health promotion.

A Quasi experimental: pre test post test design was used to assess the effectiveness of Self Instructional Module (SIM) on current trends of vaccination in terms of knowledge and practices among nursing students. By using convenience sampling technique a sample of sixty nursing students was selected. Structured Knowledge Questionnaire was used as data collection tools to assess knowledge regarding current trends of vaccination and observational checklist through OSCE method was used to assess practices. The findings of the study showed that the mean post test knowledge and practices scores of nursing students was 30.08 and 11.55 respectively and the mean pre test knowledge and practices score was 20.07 and 6.10 respectively. There was a significant association of post-test knowledge score with “which vaccine nursing students have administered?” ( $F=3.80$ ,  $P=0.03$ ) at 0.05 level of significance while there was no significant association in post-test practice score. The study concluded that SIM is effective as a method to improve the knowledge and practices of nursing students regarding current trends of vaccination.

**Key words:** effectiveness, SIM, current trends of vaccination, knowledge, practice, nursing students.

### INTRODUCTION

Majority of the mortality and morbidity can be averted by simple measures like appropriate vaccination, hygienic measures and good nutrition. It is proved that most cost-effective part of health promotion is vaccination. In United Kingdom school age children (90%) are completely immunized and the incidence rates of vaccine preventable diseases had

decreased by more than 90%. Saudi Arabia was one of the developing countries which increased its immunization programme to reach its full coverage. <sup>[1]</sup>

According to WHO data, the IPV can be administered in combination with other vaccines. Hence pentavalent vaccine was introduced as a combination vaccine. It is administered in a 3-dose schedule, which offers protection against diphtheria, tetanus,

pertussis (DPT), hepatitis B, and Haemophilus influenza type B (Hib). World Health Organization (WHO) and Global Alliance for Vaccine & Immunization (GAVI) recommended the vaccine widely as a substitute for prevailing vaccination practices against the above mentioned diseases and viruses. [2] Giving pentavalent vaccine will reduce the number of pricks to child. [3]

To increase student's knowledge and improve their performance a collection of activities, methods and programs can be used in order to complete their own tasks and do their jobs. Studies have shown that Module and lecture methods have similar effects on improving the knowledge and practice of nurses in oncology wards. Multifaceted approach may be best suited when teaching Evidenced Based practices (EBP) to health students; the use of technology to promote EBP through mobile devices, simulation, and the web is on the rise; and the duration of the interventions varying from some hours to even months. [4]

A quasi experimental study was conducted to assess the knowledge of vaccination among 60 nursing students in a tertiary care hospital. A questionnaire with multiple choice answers was administered to the students and any doubts regarding the questions were clarified before they started answering. The result of the study showed that none of the students scored even 50%. Only 11.6% students knew the correct dose, site and route of administration of BCG vaccine. The awareness and knowledge about the adverse reactions and its management was uniformly low. Only 2 students knew about the specific diseases prevented by the specific vaccines. The findings of the study concluded that emphasis should be laid on the need for adequate and right knowledge about vaccines and immunization schedule along with the hands on experience of the nursing students. [5]

## METHODOLOGY

Quantitative research approach was adopted for the study and the design was "Quasi experimental: One group Pre-test Post-test Design. The independent variable was Self Instructional Module on current trends of vaccination through email and the dependent variable were knowledge and practices of nursing students regarding current trends of vaccination.

### **Sampling Criteria: Following nursing students were included in the study those:-**

1. Studying in B.Sc. Nursing 4<sup>th</sup> year and Post Basic B.Sc. Nursing 2<sup>nd</sup> year.
2. Present on the day of data collection.

A quasi experimental design was taken up and 60 nursing students were selected by convenience sampling technique. The reliability coefficient for structured knowledge questionnaire and observational checklist through OSCE were calculated by KR-20 and inter-rater (Cohen's Kappa) method and it was found to be 0.76 and 0.87 respectively.

Ethical approval was obtained from the ethical committee of Maharishi Markandeshwar (Deemed to be University) Mullana, Ambala to conduct the final study. Permission for pilot study was taken from the M.M. Institute of Nursing, Mullana, Ambala. Permission for final study was taken from the M.M. College of Nursing, Mullana, Ambala. Purpose of the study was explained to sample subjects before data collection.

Selected Variables was used to collect data and to assess previous knowledge and practices regarding current trends of vaccination by using structured knowledge questionnaire and observational checklist through OSCE respectively. Pre test was taken on first day and post test was taken on 15<sup>th</sup> day. Structured Knowledge Questionnaire consisted of 45 multiple choice questions which are further categorized into four levels, very good (>80%), good (65-80%), average (51-64%), below average ( $\leq 50$ ).

Observational checklist through OSCE consisted of four stations each section is of five marks. They are further categorized into four levels, very good (>80%), good (65-80%), average (51-64%), below average ( $\leq 50$ ).

### Development of tools

The tools were developed after reviewing the literature, seeking opinion from the experts. The content validity of the tools was established by 9 experts. Performa for selected variables consists of 7 items. Structured Knowledge Questionnaire to assess knowledge on current trends of vaccination consists of 45 questions. Observational Checklist through OSCE to assess practices on current trends of vaccination consists of 4 questions. The reliability coefficient for structured knowledge questionnaire and practices checklist through OSCE were calculated by KR20 and inter rater reliability (Cohen's kappa), and was found to be 0.76 and 0.87 respectively.

The final data was collected from October to November 2017 using structured knowledge questionnaire and Observational Checklist through OSCE. Permission was obtained from Class coordinators of B.Sc. Nursing 4<sup>th</sup> year and Post Basic B.Sc. Nursing 2<sup>nd</sup> Year. On day 1<sup>st</sup>, pre assessment of knowledge and practices was done by structured knowledge questionnaire and observational checklist through OSCE and same day intervention was given to the nursing students via email. On day 15<sup>th</sup> post implementation assessment of knowledge and observational checklist through OSCE was done.

### Statistical Analysis

Data was analysed using Statistical Package for Social Sciences (SPSS) version 20. Data analysis was done by using descriptive statistics i.e. mean, standard deviation and inferential statistics such as t-test, ANOVA. Pearson's correlation coefficient was used to check the relationship between the variable. Level of

significance for the present study was  $p \leq 0.05$ .

## RESULT

### Section I: Selected Variables

Level of significance Frequency and percentage distribution of selected variables showed that out of 60 nursing students, most of students (60%) were in the age group of 19-21 years. Majority (85%) of nursing students were from B.Sc. Nursing 4<sup>th</sup> year and female (80%). Most of them (68.3%) had never done immunization previously; out of 19 Nursing students majority (84.2%) had administered OPV, majority (81.7%) nursing students had never attended the Pulse Polio Vaccination Programme during their community posting. (72.7%) B.Sc. Nursing 4<sup>th</sup> year students attended pulse polio vaccination programme in September 2017.

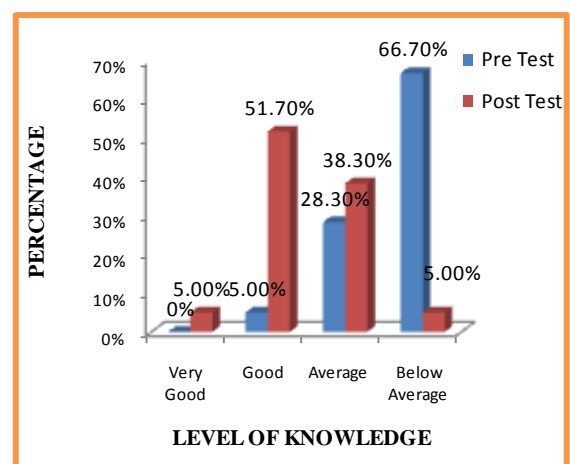


Figure 1: Bar graph showing mean pre-test and post-test knowledge score obtained by nursing students on current trends of vaccination.

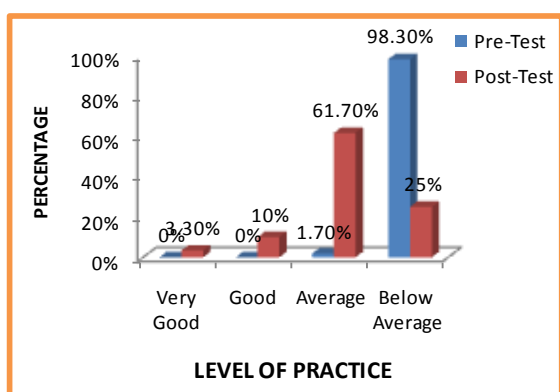
Figure 1 shows the frequency and percentage distribution of nursing students in terms of level of knowledge. In pre-test of structured knowledge questionnaire most of the nursing students (66.7%) had below average, 28.3% had average knowledge and only 5% had good knowledge whereas in post-test nearly half (51.7%) of nursing students had good knowledge, one third (38.3%) of them had average knowledge, only 5% had very good and below average knowledge on current trends of vaccination.

**Table 1: Range, Mean, Standard Deviation and Median of Pre-Test and Post-Test Knowledge Score of Nursing Students on Current Trends of Vaccination. N=60**

Knowledge Test	Range	Mean ± S.D.	Median
Pre-Test	7-32	20.07±5.11	20
Post-Test	16-37	30.08±4.12	30

Maximum Score=45 Minimum Score=00

Table 1 shows that mean post test knowledge score (30.08±4.12) was higher than mean pre-test knowledge score (20.07±5.11). The median for post test was 30 and for pre test was 20. These findings showed that nursing students developed good knowledge on current trends of vaccination.



**Figure 2: Bar graph showing mean pre-test and post-test practice score obtained by nursing students on current trends of vaccination.**

Figure 2 shows the overall frequency and percentage distribution of nursing students in terms of level of practice. In pre-test of observational checklist through OSCE majority of nursing students (98.3%) had below average, only (1.7%) had average practices. Whereas in post-test most of nursing students (61.7%) had average practices, few (25%) had below average practices, very few (10%) had good and only (3.3%) had very good practices.

**Table 2: Range, Mean, Standard Deviation and Median of Pre-Test and Post-Test Practice Score of Nursing Students on Current Trends of Vaccination. N=60**

Practice Test	Range	Mean ± S.D.	Median
Pre-Test	1-11	6.10±2.13	06
Post-Test	6-19	11.55±2.32	11

Maximum Score = 20 Minimum Score = 00

Table 2 shows that mean post test practice score (11.55±2.32) was higher than mean pre-test practice score (6.10±2.13). The median for post test was 11 and for pre test was 6. These findings show that nursing students developed good practices on current trends of vaccination.

**Table 3: ANOVA and t- Value Showing Association of Mean Post-Test Knowledge Score of Nursing students Regarding Current trends of vaccination With Selected Variables. N=60**

S.No	Selected Variables	Mean	F/t	df	p value
<b>1.</b>	<b>Age (years)</b>				
1.1	19-21	29.97	0.06	2/57	0.94 <sup>NS</sup>
1.2	22-23	30.13			
1.3	24-26	31.00			
<b>2.</b>	<b>Class</b>				
2.1	B.Sc. (N) 4 <sup>th</sup> Year	29.71	1.72	58	0.09 <sup>NS</sup>
2.2	Post Basic B.Sc. (N) 2 <sup>nd</sup> Year	32.22			
<b>3.</b>	<b>Gender</b>				
3.1	Female	30.56	1.84	58	0.07 <sup>NS</sup>
3.2	Male	28.17			
<b>4.</b>	<b>Have you given any immunization previously?</b>				
4.1	Yes	29.95	1.73	58	0.86 <sup>NS</sup>
4.2	No	30.15			
<b>5.</b>	<b>Which vaccine have you administered? (n=19)</b>				
5.1	OPV	31.12	3.80	3/15	0.03*
5.2	Hepatitis B, B.C.G.	26.00			
5.3	T.T.	29.00			
5.4	B.C.G.	16.00			
<b>6.</b>	<b>Have you attended the Pulse Polio Vaccination Programme during your Community posting?</b>				
6.1	Yes	28.36	1.55	58	0.12 <sup>NS</sup>
6.2	No	30.47			
<b>7.</b>	<b>When did you attend the Pulse Polio Vaccination Programme? (n=11)</b>				
7.1	September,2017	28.25	0.17	9	0.86 <sup>NS</sup>
7.2	Don't Know	28.67			

\*Significant (p<0.05) <sup>NS</sup> Not significant(p>0.05)

Table 3 depicts the ANOVA/‘t’ value of age (0.94), class (0.09), gender (0.07), have you given any immunization previously (0.86), have you attended the Pulse Polio vaccination programme during your community posting (0.12) and when did you attended Pulse Polio vaccination programme (0.86) were found to be non significant.

Thus knowledge score of nursing students were independent of selected variable whereas computed ANOVA value of which vaccine have you administer (0.03) was found to be statistically significant at 0.05 level of significance and it denotes the association with knowledge.

**Table 4: ANOVA and t- Value Showing Association of Level of Mean Post-Test Practice Score of Nursing students Regarding Current trends of vaccination With Selected Variables. N=60**

S.No.	Sample Characteristics	Mean	F/t	df	p value
<b>1.</b>	<b>Age (years)</b>				
1.1	19-21	11.19	1.48	2/57	0.23 <sup>NS</sup>
1.2	22-23	11.95			
1.3	25-27	13.50			
<b>2.</b>	<b>Class</b>				
2.1	Post Basic B.Sc.(N) Year	11.89	0.47	58	0.63 <sup>NS</sup>
2.2	B.Sc. (N) 4 <sup>th</sup> Year	11.49			
<b>3.</b>	<b>Gender</b>				
3.1	Female	11.67	0.77	58	0.44 <sup>NS</sup>
3.2	Male	11.08			
<b>4.</b>	<b>Have you given any immunization previously?</b>				
4.1	Yes	11.63	0.18	58	0.85 <sup>NS</sup>
4.2	No	11.51			
<b>5.</b>	<b>Which vaccine have you administered? (n=19)</b>				
5.1	OPV	12.06	1.90	3/15	0.17 <sup>NS</sup>
5.2	Hep.B, B.C.G.	11.00			
5.3	T.T.	11.00			
5.4	B.C.G.	06.00			
<b>6.</b>	<b>Have you attended the Pulse Polio Vaccination Programme during your Community posting?</b>				
6.1	Yes	11.27	0.43	58	0.66 <sup>NS</sup>
6.2	No	11.61			
<b>7.</b>	<b>When did you attend the Pulse Polio Vaccination Programme? (n=11)</b>				
7.1	September,2017	10.75	1.72	9	0.11 <sup>NS</sup>
7.2	Don't Know	12.67			

\*Significant (p<0.05) <sup>NS</sup> Not significant

Table 4 depicts the ANOVA/‘t’ value of age (0.23), class (0.63), gender (0.44), have you given any immunization previously (0.85), which vaccine have you administer (0.17), have you attended the Pulse Polio vaccination programme during your community posting (0.66) and when did you attended Pulse Polio vaccination programme (0.11) were found to be non significant. Thus knowledge score of nursing students were independent of sample characteristics. It denotes the no association with practice.

## DISCUSSION

In present study, out of 60 nursing students, 60% of the nursing students were in the age group 19-21 years, 85% of nursing students were from B.Sc. Nursing

4th year, 80% of them were female. The findings of the study were consistent with a study conducted by Taranga Reang et al to assess knowledge and practice regarding Hepatitis B among nursing students attending tertiary care hospitals in Agartala city which showed that (50.2%) of nursing students were in age group of 19-22 years, 73.3% of nursing students were females. [6]

In the present study, pre test and post test knowledge mean score was 20.07 and 30.08 respectively which shows an increase in scores after administration of SIM. The findings of the study were consistent with a study conducted by Mr. Paramesha et. al to assess the effectiveness of self instructional module of knowledge on utilization of emergency crash cart system among 4th year B.Sc. nursing in hospital of selected

nursing colleges in Mysore which showed that the nursing students knowledge before SIM was low with a mean score of 18.35, and post test knowledge score increased to 23.69, which reveals the effectiveness of self-instructional module. [7]

In the present study, the practice of the nursing students was assessed by observational checklist using the OSCE method which revealed that the practice pre test and post test mean score with SD was  $6.10 \pm 2.13$  and  $11.55 \pm 2.32$  respectively which was consistent with a study conducted by Prasuna Jelly and Rakesh Sharma to assess different approaches (OSCE vs. TEM) in clinical skills of nursing students where the means with SD of OSCE was  $65.43 \pm 3.43$  against the maximum possible scores of 75 for OSCE. [8]

In the present study, the sample characteristic which vaccine have you administered? was only significantly associated with knowledge which was inconsistent with a study of Mr. Hazaratali Panari et al. to assess the knowledge of mothers of under five children on immunization in Halaga Village, Belgaum, Karnataka. The findings of study revealed that there was no significant association between knowledge on immunization and selected demographic variables. [9]

## CONCLUSION

The SIM was effective in enhancing knowledge and practices of nursing students on current trends of vaccination. There was significant relationship in the knowledge and practice among nursing students on current trends of vaccination.

## Recommendations

1. The study can be replicated on a larger sample of nursing students in different colleges for making wider generalization of the findings.
2. A study can be conducted using other teaching strategies like video teaching, lecture cum discussion, etc. regarding Current trends of vaccination.

3. A study can be conducted on to assess attitude regarding current trends of vaccination among staff nurses.
4. A longitudinal study can be conducted by using "Time series design" to find out the effectiveness of teaching strategy.
5. A comparative study can be conducted to assess knowledge and practices regarding current trends of vaccination among B.Sc. Nursing students and Health Personnel working in PHC, CHC.

## ACKNOWLEDGEMENT

We are thankful to all the participants of study.

## Conflict of Interest

The authors declare no conflict of interest.

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How to cite this article: Sharma S, Eenu, Deaver UJ. Effectiveness of self instructional module (SIM) on current trends of vaccination in terms of knowledge and practices among nursing students: a quasi experimental study. *Int J Health Sci Res.* 2018; 8(10):196-202.

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