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Original Research Article

Effect of 'SMART health education model' on knowledge and attitudes of school students in rural area about 'Swachh Bharat Abhiyan of India' and sanitation practices

Nikita J. Utpat[1]*, Rahul R. Bogam[2]

[1]Undergraduate Student, Bharati Vidyapeeth University Medical College, Pune, Maharashtra, India
[2]Assistant Professor, Department of Family and Community Medicine, King Faisal University, Saudi Arabia

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***Correspondence:**
Dr. Nikita J. Utpat,
E-mail: niks0108@gmail.com

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ABSTRACT

Background: India has been facing various sanitation problems like open defecation, insanitary toilets, improper waste disposal, manual scavenging etc. Poor sanitation in schools, particularly rural schools are health hazards and affects school attendance, retention and educational performance. Several studies reported poor knowledge about sanitation practices among school students in India, so there is need to inculcate good sanitation practices among them. 'Swachh Bharat Abhiyan' is national level health campaign of India which was launched on 2nd October 2014. The present study was first study to create awareness among school students about 'Swachh Bharat Abhiyan' as well as sanitation practices through 'SMART Health Education Model'.
Methods: An interventional study was conducted in one of the randomly selected public schools in rural field practice area of Bharati Vidyapeeth University Medical College, Pune. The study participants were 100 students belonging to 5th and 6th class and they were exposed to structured 'SMART Health Education Model'. Entire data from pre and post intervention questionnaire was entered into 'Microsoft Office Excel Sheet' and analysed by using 'Paired t test'.
Results: Significant improvement in knowledge about sanitation practices was found after applying 'SMART Model' (Pre-test mean marks: 4.17, post-test mean marks: 9.52, $t = 24.31$, $p<0.001$). The study reported favourable attitudes of participants towards 'Swachh Bharat Abhiyan'.
Conclusions: It indicates that even a simple intervention like 'SMART Model' can make significant change in knowledge of school students about personal and environmental hygiene.

Keywords: Rural, Swachh Bharat Abhiyan, Sanitation, School children, SMART health education model

INTRODUCTION

Sanitation in India continues to be an inadequate, despite longstanding efforts by various levels of government and communities at improving coverage.[1] India has been facing many sanitation related issues like open defecation, insanitary toilets, improper waste disposal, manual scavenging etc.

National Sample Survey Office (NSSO) 2012 report underlined the abysmal state of sanitation in the country, particularly in rural India.[1] It is estimated that one in every 10 deaths in villages is linked to poor sanitation

and hygiene.[1] UNICEF also reports that the majority (71%) of those without sanitation live in rural areas and 90% of all open defecation takes place in rural areas.[2,3]

Poor sanitation in schools, particularly in rural schools are health hazards and affects school attendance, retention and educational performance.[3] So there is need to inculcate good sanitation practices among them. Several studies reported poor knowledge about sanitation practices among school students in India.[4-6]

School provides an excellent opportunity for children to learn about healthy hygiene practices and is also identified as a powerful channel of communicating sanitation related messages to homes and communities. Several studies reiterated the need of proper health education interventions for school children, for improvement regarding personal hygiene among them, throughout the nation.[7-9]

'Swachh Bharat Abhiyan' is national level health campaign of India which was launched on 2nd October 2014. This campaign is India's biggest ever cleanliness drive with objective of having clean and hygienic India so every citizen of India has access to hygiene facilities which will consist of toilets, waste disposal systems, village cleanliness and safe drinking water supply.[10]

To the best of our knowledge, no study has been so far undertaken in India to create an awareness among school students in rural area about 'Swachh Bharat Abhiyan' as well as sanitation practices through 'SMART Health Education Model'.

Objectives

- To assess the knowledge and attitudes of school students about 'Swachh Bharat Abhiyan' of India.
- To evaluate the effectiveness of 'SMART Health Education Model' on their knowledge and attitudes pertaining to sanitation practices.
- To involve undergraduate medical students in the application of 'SMART Health Education Model' to educate school students about sanitation practices.

METHODS

Study Area

An interventional study which was implemented in one of the randomly selected Zillah Parishad (Public) Schools in Pirangut Village of Pune District, Maharashtra State, India. This area was identified as a rural field practice area of Bharati Vidyapeeth University Medical College, Pune.

Study population and sample size

Ethics Committee approval was obtained from the Institutional Ethics Committee (IRB: Institutional Ethics Committee, Bharati Vidyapeeth University Medical College, Pune, Ref no: BVDU/MC/12). Written permission was taken from the Principal of school and parents after explaining the purpose of study. The students belonging to 5th and 6th class in same school were identified as study participants. There were three divisions of 5th and 6th class each, consisting of 50 students in each division. One division of each class i.e. 5th and 6th having strength of 50 students each was randomly selected as study participants to make sample size 100.

Methods and procedures

Training of medical students

A group of six undergraduate medical students was trained for implementing modified and structured 'SMART Health Education Model'[11] in stepwise manner.

Orientation session

Initial orientation session was organized for study participants to sensitize them about the project. They were explained about the nature of study and were assured that the information given by them is required only for study purpose and will be kept confidential completely. Verbal consent was also taken from participants who were willing to participate in study.

Application of SMART Health Education Model

A structured, pretested, self-administered questionnaire consisting of 20 close ended questions in local language i.e. Marathi language was distributed to all study participants. They were allowed 20 minutes to complete questionnaire under strict supervision. A questionnaire comprised of seven questions on 'Swachh Bharat Abhiyan' and 13 questions related to common sanitation practices. A pre-test was followed by implementation of SMART Model by trained medical students.

SMART Health Education Model

Step 1: Skit /role play

It focused on 'prevention and control of vector borne diseases' like Malaria, Filaria, Dengue, etc. Skit emphasized on breeding places of vectors, common signs and symptoms of these diseases, vector control methods etc. It was performed by trained medical students and few selected school students (Duration: 30 minutes).

Step 2: Movie (film) show:

Three short films of 5 minutes duration prepared by 'Health Education Bureau, Government of Maharashtra' were shown to participants. Highlighted issue was 'Waste/Garbage Disposal' including dry and wet waste,

hazards of improper waste disposal, proper segregation of waste etc (Duration: 15 minutes).

Step 3: Adequate hand washing technique:

Live demonstration on 'Hand Washing' where six steps of hand washing as per UNICEF guidelines were shown to study participants (Duration: 15 minutes).

Step 4: Reinforcing games

It included various interesting and student friendly games which focused on common 'Water borne and food borne diseases' like Typhoid, Hepatitis A, Gastroenteritis etc. It highlighted important aspects like transmission, symptomatology, prevention and control of these diseases (Duration: 30 minutes).

Step 5: *Teach with case based studies:*

Structured case stories focusing on components of 'Personal Hygiene' were discussed with study participants and components of personal hygiene were summarized by participants at the end of discussion (Duration: 30 minutes).

Total duration of this activity was two hours**.** At every implementation step, active interaction and involvement of study participants were ensured and entire activity was supervised by trained faculty of Department of Community Medicine.

Post-intervention phase

At the end of programme, the same questionnaire was administered to all participants as a post test and responses were collected. To assess retention of knowledge and attitude of participants about sanitation practices, same questionnaire was given to the same study participants after the gap of *one month period* and responses were collected.

Statistical analysis

The pre and post-test marks were entered in 'Microsoft Office Excel Sheet' and analysed by using 'Paired t test'.

RESULTS

A total of 100 participants with age range of 11 to 12 years participated in the study. Out of these, 8 participants did not give post-test and were excluded from study. Hence data analysis was done for 92 participants. Out of 92 participants, 52 (56.52%) were females and 40 (43.47%) were male students. The marking system was assigned for knowledge related questions in the study.

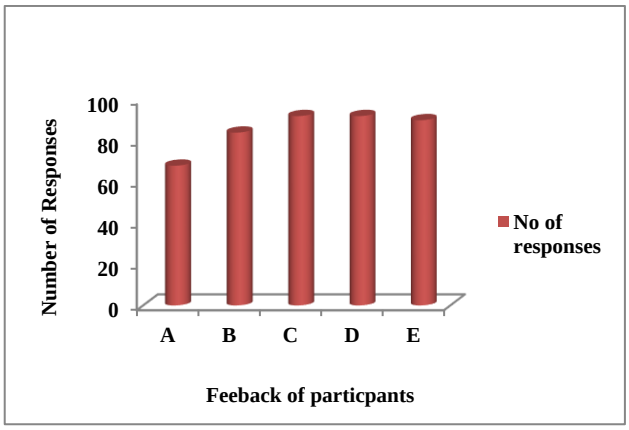
Mean Pre and Post intervention marks (Table 1) show that 'SMART Model' significantly enhanced the knowledge of participants about sanitation practices ($t = 24.31$, $p<0.001$). Table 1 reveals that the difference was found to be statistically significant.

Table 1: Mean marks of participants (n = 92).

	Mean marks (out of 20)	S.D.	t value	p-value
Pre intervention	4.17	1.94	24.31	< 0.001
Post intervention	9.52	1.67		

*Significant level: 0.05.

One month after an intervention, not only participants showed significant gain in knowledge about sanitation practices (Pre-intervention mean marks = 4.17, one month post intervention mean marks = 9.67, $t = 23.64$, $p<0.001$) but also reported positive attitudes towards 'Swachh Bharat Abhiyan'. It shows that 'SMART Model' helped participants not only to enhance the knowledge and attitudes about sanitation and 'Swachh Bharat Abhiyan' but also to retain it after one month period.



A = Innovative teaching method (73.91%); B = It can be implemented in other schools also (91.30%); C = Our knowledge about personal hygiene is improved (100%); D = Our attitude towards Swachh Bharat Abhiyan became more positive due to this activity (100%); E = It should be part of our school curriculum (100%).

Figure 1: Feedback of participants about SMART health education model.

In present study, all 92 (100%) participants were aware about 'Swachh Bharat Abhiyan'. Majority (95%) of participants had received information about 'Swachh Bharat Abhiyan' from Television and Radio while 5% of participants had obtained it from other sources like teachers, parents and newspaper etc. Table 2 shows attitudes of study participants about 'Swachh Bharat Abhiyan'.

Table 2: Attitudes of participants towards Swachh Bharat Abhiyan (n=92).

Question	No of participants with positive response before an intervention (%)	No of participants with positive response after an intervention (%)	No of participants with positive response one month after an intervention (%)
Do you think there is need of Swachh Bharat Abhiyan?	74 (80.43)	91(98.91)	92(100)
Do you think Swachh Bharat Abhiyan is effective?	67(72.82)	90(97.82)	90(97.82)
Is your participation in Swachh Bharat Abhiyan necessary?	84(91.30)	92(100)	92(100)
Do you think 'Schools and Students' can play a vital role in Swachh Bharat Abhiyan?	65(70.65)	90(97.82)	90(97.82)
Do you think that you can help Swachh Bharat Abhiyan by keeping your school clean?	72(78.26)	92(100)	92(100)

DISCUSSION

Various studies have shown inadequacy of knowledge and practices among school children pertaining to sanitation practices.[7-9] These studies identified 'Health Education' as a powerful tool to educate school children about personal as well as environmental hygiene. 'School' may be the best source where children can get quality education about health and hygiene; in fact it has been considered as 'Social Vaccine' and it can serve as a powerful preventive tool.[12] In present study, simple but innovative health education model i.e. 'SMART Model' was used to sensitize students about sanitation practices and it was found to be effective.

Dongre et al also observed that after giving an intervention of school health programme, there was statistically significant improvement in the personal hygiene of the school children.[8] After an intervention, statistically significant difference in knowledge and practices of students about personal hygiene was also seen in study conducted by Shrestha A, Angolkar M.[7]

Even though post-intervention knowledge of participants about sanitation practices was found to be more, there were inadequacies in knowledge of participants about certain aspects of personal hygiene before an application of 'SMART Model'. Around 52 (56.52%) participants were aware that they should wash their hands before eating. This study finding was comparable with study finding of Alyssa Vivasa et al in which most of the students reported hand washing before meals (99.0%).[9] Djibouti school hygiene and sanitation survey also reported good knowledge of students about hand washing as 98% of school students said that washing hands before meals is necessary.[13] Ansari SY and Warbhe PA also found better level of knowledge among students about hand washing as 98% of students used to wash their hand before and after meals.[14] Poor knowledge of students about this aspect in present study may be due to students were less exposed to hand hygiene education in schools.

The percentage of participants having good knowledge about 'daily bath' was 66.8% in present study. In survey conducted by the Ministry of Education and UNICEF, poor level of awareness was observed among students about bath as only 14.8% in the West Bank and 17.3% in Gaza reported taking a daily bath.[15]

Knowledge about diarrhoea among participants was found to be less before an intervention as only 51 (55.43%) of them could answer that contaminated water ingestion can cause diarrhoea. Present study finding corroborated with study finding of Maiti S et al where it showed that majority of the participants had poor knowledge regarding the concerned diseases at pre-awareness stage.[16]

One of the reasons of having poor knowledge of participants in above areas before an intervention may be less exposure of participants to various health awareness programmes in schools.

Majority of participants had got information about 'Swachh Bharat Abhiyan' from Television and Radio. This finding reiterates the importance of 'Mass-Media' as it can be powerful source of providing information about sanitation practices even in rural and remote areas. Participants had better level of attitude towards this national level health campaign and this level was enhanced after an implementation of 'SMART Model'.

Feedback from participants also indicates that they showed favourable response towards 'SMART Model'.

(Figure 1). All participants opined that 'SMART Model' should be included in their school curriculum.

Different teaching methodologies like didactic lecture, film show, role play, group discussion etc. are being used in current situations to sensitize school students about sanitation practices. However, the present study used innovative approach i.e. 'SMART Model' to teach students about sanitation practices. This model may be implemented in other schools in rural and urban areas to raise awareness about 'Swachh Bharat Abhiyan' and sanitation practices.

Limitations

There were limitations of present study. We can not definitively conclude that the post-intervention significant differences, that we found, are attributable to an intervention only. Second limitation was small sample size in present study. Various similar multicentric studies in larger samples are required for generalisation of findings.

Futuristic view

'SMART Health Education Model' can be implemented in other schools in rural and urban areas, marginalized communities to generate awareness about 'Swachh Bharat Abhiyan' and sanitation practices. Didactic lectures on sanitation practices should be replaced by this innovative teaching strategy and it can also be incorporated into school curriculum.

CONCLUSION

Present study showed significant improvement in student's knowledge regarding sanitation practices due to use of SMART Health Education Model. This model also helped students to develop their positive attitudes towards 'Swachh Bharat Abhiyan'. It indicates that even a simple intervention like 'SMART Model' can make significant change in knowledge of school students about personal and environmental hygiene.

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