Research Article

Assessment of knowledge regarding noncommunicable diseases and their risk factors among students of higher secondary school: an interventional study

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Abstract

Background: The development of noncommunicable diseases (NCDs) as a major public health issue in India is owing to a rise in aging population and changes in the behavior because of environmental factors. Adolescence, an age of transformation, is known for the susceptibility to taking up behavior that induces NCD development.

Objective: To assess the knowledge of children of higher secondary school regarding NCDs and their risk factors before and after educational interventional training.

Materials and Methods: This interventional study was conducted among purposively selected 116 students of Eklavya higher secondary school of Patan city, Gujarat, India, from March to May 2015. After taking permission from the principal and written consent of parents, baseline knowledge of students regarding NCDs and their risk factors was assessed by a predesigned, pretested, semi-structured questionnaire. Single educational training for 45 min was given to the students, and their postintervention knowledge for the same was assessed after the training. Assessment was done by Wilcoxon signed-rank test.

Result: Baseline knowledge of the students regarding the risk factors of hypertension such as high salt consumption, obesity, stress, and lack of physical activity was 25.9%, 23.3%, 65.5%, and 21.6%, respectively, which significantly increased to 73.3%, 61.2%, 92.2%, and 45.7%, respectively, after the intervention. Baseline knowledge of the students regarding the hazards of obesity such as hypertension, cancer, heart attack, and diabetes mellitus was 27.6%, 13.8%, 43.1%, and 22.4%, respectively, which significantly increased to 81.0%, 36.2%, 80.2%, and 51.7%, respectively, after the intervention. Baseline knowledge of the students regarding the hazards of smoking, alcohol consumption, and lack of physical activity such as cancer, hypertension, heart attack, and obesity was 74.1%, 14.7%, 26.7%, and 13.8%, respectively, which significantly increased to 89.7%, 56.0%, 74.1%, and 48.3%, respectively, after the intervention. Baseline knowledge of the students regarding preventive measure of NCDs such as meditation, avoiding cigarette smoking/alcohol consumption, and avoiding junk food was 11.2%, 11.2%, and 5.2%, respectively, which significantly increased to 40.5%, 46.6%, and 37.9%, respectively, after the intervention.

Conclusion: There was a significant improvement in the knowledge regarding NCDs of high-school children after our single educational session. Such education interventions are to be done on a regular basis to improve their knowledge and discourage them from adopting harmful lifestyles that cause NCDs.

KEY WORDS: Noncommunicable disease, NCDs, school children, knowledge, hypertension

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Introduction

Chronic diseases are defined as "an impairment of bodily structure and/or function that necessitates a modification of the patient's normal life, and has persisted over an extended period of time." Globally, noncommunicable Diseases (NCDs) are increasingly recognized as a major cause of morbidity and mortality. The World Health Report 2001 had indicated that

NCDs account for almost 60% of deaths and 46% of the global burden of disease. In today's world, most deaths (35 million) are attributed to NCDs and just over half of these (17 million) are the result of cardiovascular diseases (CVDs); more than one-third of these deaths occur in the middle-aged adults.[1]

The development of NCDs as a major public health issue in India is owing to a rise in aging population and changes in the behavior because of environmental factors. The Indian society and economy faces a grave threat because of the premature morbidity and mortality that is observed in the most productive phase of life. It is reported that, in 2005, NCDs accounted for 53% of all deaths in India. The estimated burden of NCDs in India is 2.4 million ischemic heart disease, 37.8 million diabetes, 2.4 million cancers, and 0.93 million stroke.[2]

A school is a key location for educating children about health, hygiene, and nutrition and for putting in place the interventions to promote the health of children.[3] Many adult health problems, for example, obesity and hypertension, have their early origins in childhood, because this is the time when lifestyles are formed. In primordial prevention, efforts are taken to keep back children from adopting harmful lifestyles. Individual and mass education form the key aspects of interference in primordial prevention.[1] Thus, this study was a humble effort to assess the knowledge of children of higher secondary school regarding NCDs and their risk factors before and after training.

Materials and Methods

This interventional study was conducted among purposively selected 116 students of Eklavya higher secondary school of Patan city, Gujarat, India, from March to May 2015. After taking permission from the principal and written consent of parents, baseline knowledge of students regarding NCDs and their risk factors was assessed by a predesigned, pretested, semi-structured questionnaire. The questionnaire was converted in vernacular language for assessment. Single educational interventional training for 45 min was given to selected students with lecture, charts, demonstration, and discussion. Postintervention knowledge of students for the same was assessed after training by the same questionnaire. Pre- and posttraining assessment was done by scoring method, and mean, standard deviation, and Wilcoxon signed-rank test were applied.

Result

Of the total 116 students, 74 (63.7%) were male children. The mean age of male and female children was 16.26 ± 0.8 years and 16.17 ± 0.7 years, respectively. Only 16.2% of male and 19% of female children revealed a positive family history for one or the other types of NCDs.

Baseline knowledge of students regarding the names of conditions such as hypertension, diabetes, coronary artery disease, obesity, cancer, blindness, accidents, and stroke was 47.4%, 53.4%, 44.0%, 34.5%, 50.9%, 53.4%, 38.0%, and 23.3%, respectively, which significantly increased after the training to 98.3%, 78.3%, 72.5%, 73.3%, 76.7%, 80.0%, 72.0%, and 69.2%, respectively [Figure 1]. Baseline knowledge of the students regarding normal range of blood pressure was 67.2%, which significantly increased to 99.1% after the intervention [Table 1]. Baseline knowledge of the students regarding the risk factors of hypertension such as high salt consumption, obesity, stress, and lack of physical activity was 25.9%, 23.3%, 65.5%, and 21.6%, respectively, which significantly increased to 73.3%, 61.2%, 92.2%, and 45.7%, respectively, after the intervention [Figure 2]. Baseline

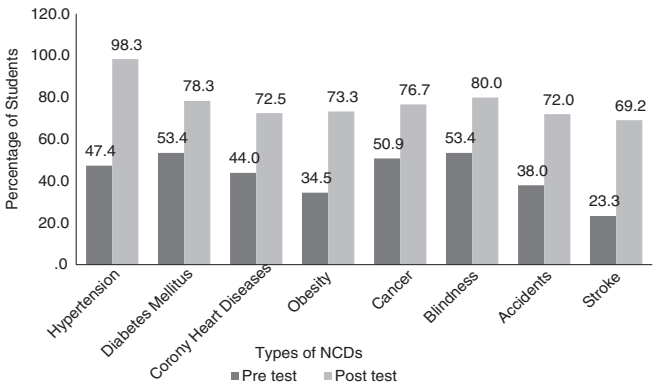

Figure 1: Distribution of the students according to the knowledge of names of NCDs before and after training ($Z = -4.78$; $p < 0.001$).

Table 1: Distribution of the students according to the knowledge of normal values of blood pressure before and after training

Knowledge regarding normal values of blood pressure			
Pretest		Posttest	
No. of students	%	No. of students	%
78	67.2	115	99.1

$Z = -6.41$; $p < 0.001$.

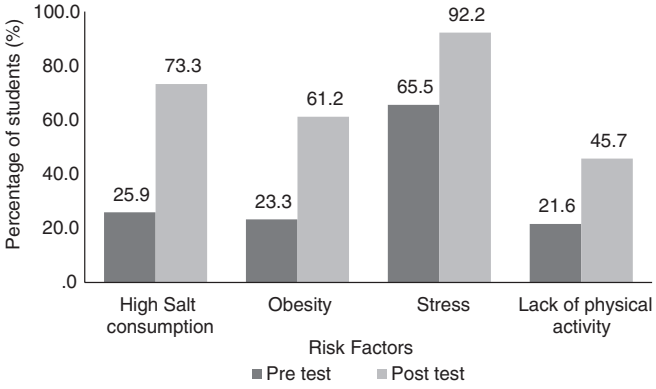

Figure 2: Distribution of the students according to the knowledge of risk factors of NCDs before and after training ($Z = -3.74$; $p < 0.001$).

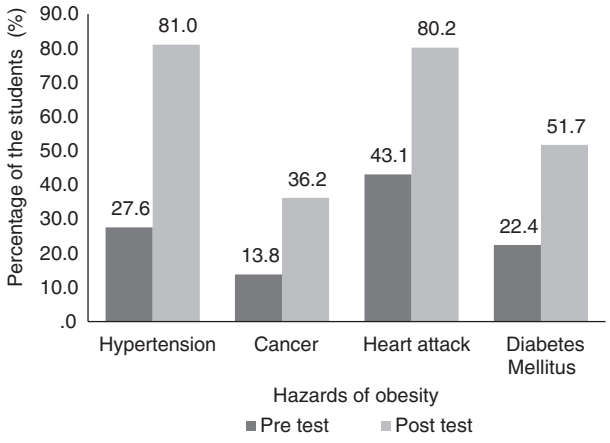

Figure 3: Distribution of the students according to the knowledge of hazards of obesity before and after training ($Z = -8.06$; $p < 0.001$).

Table 2: Distribution of the students according to the knowledge of cancer caused by smoking and or tobacco chewing before and after training

Types of cancer	Knowledge of the students about cancer caused by smoking and/or tobacco chewing			
	Pretest		Posttest	
	No. of students	%	No. of students	%
Lung cancer	95	81.9	111	95.7
Oral cancer	75	64.7	95	81.9

$Z = -6.59$; $p < 0.001$.

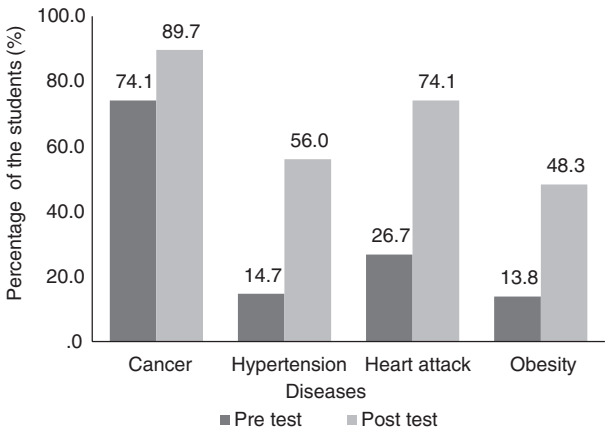

Figure 4: Distribution of the students according to the knowledge of hazards of smoking/alcohol consumption and lack of physical activity before and after training ($Z = -6.35$; $p < 0.001$)

knowledge of the students regarding the hazards of obesity such as hypertension, cancer, heart attack, and diabetes mellitus was 27.6%, 13.8%, 43.1%, and 22.4%, respectively, which significantly increased to 81.0%, 36.2%, 80.2%, and 51.7%, respectively, after the intervention [Figure 3]. Baseline knowledge of the students regarding hazards of smoking and tobacco chewing such as lung and mouth cancers was 81.9% and 64.7%, respectively, which significantly increased to 95.7% and 81.9%, respectively, after the intervention [Table 2]. Baseline knowledge of the students regarding the hazards of smoking, alcohol consumption, and lack of physical activity such as cancer, hypertension, heart attack, and obesity was 74.1%, 14.7%, 26.7%, and 13.8%, respectively, which significantly increased to 89.7%, 56.0%, 74.1%, and 48.3%, respectively, after the intervention [Figure 4]. Baseline knowledge of the students regarding the preventive measure of NCDs such as meditation, avoiding cigarette smoking/alcohol consumption, and avoiding junk food was 11.2%, 11.2%, and 5.2%, respectively, which significantly increased to 40.5%, 46.6%, and 37.9%, respectively, after the intervention [Table 3].

Discussion

Adolescence, an age of transformation, is known for the susceptibility to taking up behavior that induces NCD development. Hence, their knowledge scope and behavioral pliability makes them an attractive group for intervention. The fundamental principle of public health with regard to primary prevention (health promotion and specific protection) thus acquires contextual value. As a long-term measure for NCD prevention, health education is a priority in this population. Health education should reflect in increased awareness resulting in adoption of healthy behavior. This study intended to assess the awareness level regarding NCDs and their risk factors among rural intermediate school children. The awareness level of the study participants regarding NCDs and their risk factors was unsatisfactory.

Many studies have been conducted on students for the awareness of NCDs from different parts of India and abroad. While comparability of these studies could obviously be limited (awareness has multiple determinants), some may be quoted for their scope. A study conducted by Shaikh et a1.[4] among the entry year students of a medical university highlighted that the majority of the students (more than 70%) were aware about stress, high cholesterol, and obesity as the risk factors of hypertension. Goel and Singh [5] reported that 65.3% and 58.3% senior secondary school students of Chandigarh presented knowledge about hypertension and diabetes, respectively.

Table 3: Distribution of the students according to the knowledge of preventive measures of NCDs

Preventive measures of NCDs	Pretest		Posttest	
	No. of students	%	No. of students	%
Meditation	13	11.2	47	40.5
Avoiding cigarette smoking/alcohol consumption	13	11.2	54	46.6
Avoiding junk food	6	5.2	44	37.9

$Z = -8.21$; $p < 0.001$.

In the study carried out by Lorga et al.,[6] the lifestyle-related risk factors that were common to all CVDs were not well known among the students. This study also highlighted that only one-third of the students revealed knowledge of the risk factors of hypertension.

In this study, baseline knowledge of the students regarding normal range of blood pressure was 67.2%, which significantly increased to 99.1% after the intervention. A similar finding was obtained in a study conducted by Lorga et al.,[6] which reported that 71.02% of the students were not aware about the normal value of blood pressure.

Another study conducted by Jayakrishnan et al.[7] among adolescents in a rural area of Kerala reported almost two-thirds of the adolescents were aware of the various hazards of smoking such as oral cancer, CVDs, and respiratory diseases. In this study, baseline knowledge of the students regarding the hazards of smoking, alcohol consumption, and lack of physical activity such as cancer, hypertension, heart attack, and obesity was 74.1%, 14.7%, 26.7%, and 13.8%, respectively, which significantly increased to 89.7%, 56.0%, 74.1%, and 48.3%, respectively, after the intervention.

In the study done by Ade et al.,[8] it was reported that 62.6% of the students showed no knowledge about the prevention of NCDs. Only 127 (37.4%) students felt that NCDs are preventable. A school-based study by Taha[9] on intermediate and secondary school male students in Saudi Arabia reported that few (<50%) of the students knew about the beneficial effects of physical activity in the prevention of heart disease, hypertension, and diabetes mellitus. In our study, baseline knowledge of the students regarding preventive measures of NCDs such as meditation, avoiding cigarette smoking/alcohol consumption, and avoiding junk food was 11.2%, 11.2%, and 5.2%, respectively, which significantly increased to 40.5%, 46.6%, and 37.9%, respectively, after the intervention.

Adolescence is the period of life when children develop their behaviors and habits. Health education delivered in the classroom would enable students to refuse tobacco, refuse unhealthy diet choices such as salty food, and adopt practicing regular physical exercise in the long run.[10]

Conclusion

There was a significant improvement in the knowledge regarding NCDs of high-school children after our single educational session. Such education interventions are to be done on a regular basis to improve their knowledge and discourage them from adopting harmful lifestyles that cause NCDs.

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