
ORIGINAL ARTICLE

**Environmental Consciousness Level of Middle School Students of
Tekanpur area in Central India**

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ABSTRACT

Environmental awareness holds importance for several reasons; it nurtures a sense of connection to the natural world, encourages sustainable development, helps conservation of irreplaceable natural resources, vulnerable plant and animal species. Present study aims to assess awareness of environmental issues and attitude towards environment protection among middle school students. The study was carried out in Tekanpur, a town located in central India, by conducting survey on students of 13 middle schools. Total 300 students were participated in study. Self administered questionnaire was distributed to assess the level of awareness and attitude among participants. The results of study not only showed fairly good level of environmental awareness (34% medium level and 61% high level of awareness) among participating students but also very optimistic attitude towards protection of environment (43% medium and 50% higher category of awareness). There was no difference between gender for environmental awareness and their attitude towards environment protection as well. There is positive relationship was found ($r=0.333$) between environmental awareness and attitude towards environment protection among the students participated in the study.

Keywords: Environmental awareness, Environmental attitude, Environmental education, Middle School

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INTRODUCTION

In present situation the environmental issues grew much greater, not only among the developed countries, but also in developing and underdeveloped nations. The reason behind was consequences of environmental damages to some vital resources became so evident and panic and it is reflecting on day to day life [1]. In India because of large and increasing population and indiscriminate use of huge amount of natural resources the quality of environment has been significantly deteriorating to an alarming situation. Most of the land areas in the country show evidence of degradation. Condition of forest is dwindling due to overgrazing, over exploitation, encroachments, unsustainable practices. The priority issues are land degradation, loss of biodiversity, air pollution caused by vehicular traffic, management of fresh water and solid waste management. Along with these issues, global warming, water pollution and other environmental crisis like degradation of natural resources require high level of environmental awareness in students in order to protect environment. Here the 'environmental awareness' means growth and development of awareness, understanding and consciousness towards biophysical environment and its problems, including human interactions and effects [2], while environmental attitudes can be defined as collection of beliefs, affects and behavioral intentions of a person regarding environmental relation activities or issues. Attitude can also be defined as favorable or unfavorable feeling towards a related particular problem [3,4]. Development of positive or right attitude especially in younger generation depends not only on family but also on our education system. Now days in all boards of education, environmental studies are part of curriculum. By doing so, children are able to receive the education needed to understand the many facets associated with environmental awareness and environmental attitude. Further, environmental education will help to prepare human society to protect the ecological balance and our nature for future generation. Previous study also recommends providing special training to enhance awareness among students [5]. Students' environmental awareness is one of the important parameters to access nation's environmental status [6]. Sensible attitude for environment and good level

of environmental awareness decides behavior of citizen for sustainable society which ultimately decides nation's future. Environmental education is the process that sensitizes individual to explore environmental challenges, concern for the environment and motivation to improve or maintain environmental quality, skill to identify the issues and active participation for resolving the issues. Education can be effective when it is given to early years of life [7]. Especially experiences obtained during school life last forever. Several studies also indicated that many developing countries already equipped with environmental policies, legal framework and economic instruments which are regarded as highly sophisticated by international standards [8] and yet face the worsening of environmental conditions. India has adopted various international and national strategies to solve and mitigate many environmental issues such as environmental courts, environmentally friendly products, un-leading of petrol and ban on harmful pesticides, national water management councils, public liability insurance and pollution by motor vehicles, regulation of sea shore, natural river action plan, solar energy commission and prohibition of smoking in public place [9]. In spite of implementation of tough laws, environmental deterioration, suggest the development of right attitude of ours as well as our younger generation is the best way to protect environment. We should also prepare our next generation for the future that they will inherit. It is high time for our society and education system to indulge them environment conservation activities. In India and in other countries limited number of studies are available regarding environmental attitude and awareness among students of middle or primary classes [10,11]. Most of the studies have been carried out at either college or secondary school level [12-15]. Since our country dropout rate is very high when we go towards higher education and many of us does not reach to university level. It is essential to develop awareness at school stage; therefore, present study focuses on middle school students with the purpose to measure their awareness and attitude towards environment. Along with this we have also investigated the impact of media, family, school on their environmental awareness. This research will provide an insight into the opinions of the student's environmental pollution and their behaviors and actions concerning environmental protection.

MATERIAL AND METHODS

Design of the Study

The study was performed by conducting survey on middle school students (Standard 6th, 7th and 8th) during the period of November 2019 to December 2019. In this work we investigated the student's environmental awareness, attitude towards environment and sources of environment awareness. Three hundred students participated in the study from 13 different schools in town Tekanpur located at 25.98°N 78.27°E. It has an average elevation of 190 m (620ft), situated in the central part of India, in the state of Madhya Pradesh. Among 300 students participated in the survey, 154 were girls and 146 boys. Their age was in range of 10-14 and 10-13 years for girls and boys, respectively (Table 1).

Instrument of the study

A self-administered questionnaire was developed and there were 15 questions in the survey. The survey contained questions that were divided into three categories. These categories were 1) environmental awareness, 2) children's attitude towards environment and 3) sources of environmental awareness. For the analysis of environmental awareness, first five questions were chosen. These five questions were of multiple-choice types with one correct answer. Example of question: Does pollution affect your health? Response of each student was graded on numerical scale and score was calculated. According to score their level of knowledge was divided in three categories i.e. low (≤ 8), medium (12), high (> 16) level.

Next six questions were employed to analyze the attitude of students for environment protection. These questions were mainly focused on a) their contribution to save energy by activities such as switching off the electricity when not in use and b) protect environment by practicing proper disposal of solid waste etc, e.g. How do you dispose-off domestic waste water? Options (a) Septic tank (b) Municipal collection system (c) In open land (d) water bodies. The level of students' attitude in environmental protection was categorized in low (Score; up to 8), moderate (12 or 16) and high (20 or 24) based on score obtained. Last questions were framed to enquire students about source of awareness regarding environmental issues whether its radio/TV, internet, family, school, newspaper, comics, magazines or Non-Government Organization. After obtaining necessary consent from the school authority, the team went in to classroom and explained the research objective and the process of gathering information. The questionnaire was then distributed to the students. Investigators were present during the data collection process to answer queries raised by students. Here we have assumed that the students responding to the questionnaire with complete honesty and to the best of their knowledge. We also assumed that demographic variables such as socio-economic status, gender might present differences among students.

Statistical Analysis

Data was compiled in MS Excel spread sheet and analyzed using SPSS version 14 software. Our observations fulfilled the conditions for chi square test and Pearson correlation i.e. random data collection, independent sample and sufficient number of participants. Therefore, the data obtained was statistically analyzed using chi square (χ^2) test to examine influence of gender on environmental awareness and attitude[16]. Here we have hypothesized that Gender does not have influence on environmental awareness. Similar hypothesis was derived between Gender and pro environmental attitude. Pearson correlation[17] is used to find strength of relation between environmental awareness and attitude. A p value of less than 0.05 was considered statistically significant. Obtained results were compared to those of previous reports to evaluate and conclude.

RESULT

Background information

A total of 300 questionnaires were completed by students. The response was good. Every student was keen to answer the questions and tried their level best. Demographics of the sample are all summarized and presented in table 1.

Evaluation of environmental awareness:

Among the five questions asked most of the students (86.6% to 99%) gave correct answer for first four questions. When question was asked concerning right source of drinking water, 56.6% students were favored for Reverse Osmosis (RO) water while 17% students favored for municipal water supply and 15 % said for hand pump and 11% for water well (Table 2). Out of total 300 students 12(4%) come under low level of environmental awareness upon comparing the overall performance. A number of 103(34%) students fall under the medium category of awareness and 185(62%) students come in the category of high level of awareness. Here we have examined influence of gender on environmental awareness, we utilized chi square test by hypothesizing that gender has no effect on environmental awareness level. The calculated χ^2 value was found to be 150, which greater than the table value and therefore null hypothesis is accepted with 0.05 level of significance. There is no difference between male and female students' level of environmental awareness (Table 3).

Analysis of Attitude towards environment

To assess the attitude children towards environment six questions were framed. As far as disposal of house hold waste concern around 59 % take a pain to go near municipal waste container and discard solid waste and 49% said that they have proper disposal system for domestic water waste. Regarding individual habits three question were asked and more than 90 % children are involved in saving resources and 60 % students said they prefer to walk or cycle to public transport to save environment. When query was asked regarding their opinion about future keeping in mind present environmental condition 50% were though although its challenging but they are hopeful, while remaining were either uncertain or they thought its depressing (Table 4). A sum of 19 (6%) students out of 300 falls under low participation level, whereas 130 (43%) were among the moderate category. The students with high level of environmental attitude made the largest count of 151(51%) out of total 300 respondents (Table 5). As previously reported that attitude is relative term and may vary with gender, age and education [18], here we derived a null hypothesis i.e. there is no difference between male and female students' attitude towards environmental protection. This was further tested by chi square test. The chi square value found to be 156, which is quite greater than the table value, at 0.05 level of significance. It suggests the acceptance of null hypothesis, i.e. there is no dependence between the genders and attitude for environmental protection (Table 3).

Association between environmental awareness and attitude:

We have also examined that whether there is any association between environmental awareness and attitude. The cross tabulation of data shows that number of respondents with low level of awareness and low level of active participation was 11, whereas low level of awareness and moderate level of participation was just one. None of the students was found with low level of awareness and high level of participation. At the medium level of awareness 3, 47 and 53 students were participating with low, medium and high level respectively. And at high level of awareness 5, 82 and 98 students were in low, medium and high level of participation respectively. Pearson correlation was utilized to find the association between environmental awareness and attitude. The positive value of Pearson correlation coefficient value 0.333 suggests a good association environmental awareness and attitude in the same direction (Table 6 and 7).

Sources of environmental awareness:

We were also interested to know the source of environmental awareness among students. Students were given various options like newspaper, internet, radio/ TV, Family, School, Non-Government organization activities (NGO) and magazines. The best sources of knowledge about these environmental issues as chosen by the students are newspaper (66%). Internet (8.6%) and School environmental awareness education or activities (8%) contributed equally to enhance awareness level. Around 5 % students came to know about environmental issues from Family and Radio or TV. NGO and magazine are contributing minor role to enhance awareness among students (Figure 1).

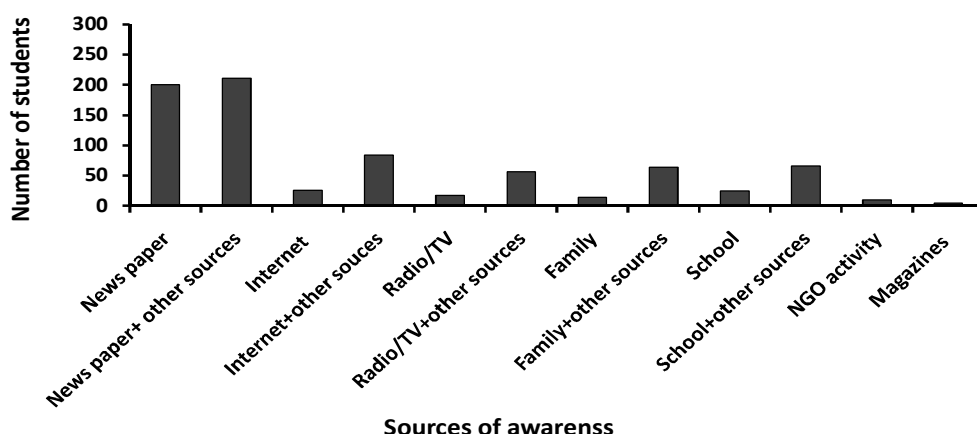


Figure: 1 Source of information for environmental issue

Table: 1 Demographies of the respondents

Variable/Category	Respondents (Percentage)	
Gender	Female	154(51.3%)
	Male	146 (48.6%)
Age (Years)	10	17(5.6%)
	11	33(11%)
	12	99(33%)
	13	106(35.3%)
	14	45(15%)
Grade	Class 6 th	64(21.3%)
	Class 7 th	89(29.6%)
	Class 8 th	147(49%)

Table: 2 Responses on the environmental awareness based questions

Questions	Correctly answered Respondents (Percentage)	Incorrectly answered Respondents (Percentage)
Does air pollution affect your health?	294(98%)	06(2%)
Do you think water pollution lead to health issue?	297(99%)	03(1%)
Which one is water borne disease?	260(93.3%)	40(13.3%)
Which one is air pollution mediated disease?	188(86.6%)	112(37.3%)
Which one should be right source of the drinking water?	170(56.6%)	130(43.3%)

Table: 3 Environmental awareness level of respondents

Gender	Knowledge Level (Score based)			Total (%)
	Low (8 or below)	Medium(12)	High (above 16)	
Female (%)	06(2%)	54(18%)	94(31.3%)	154(51.3%)
Male (%)	06(2%)	49(16.3%)	91(30.3%)	146(48.6%)
Total (%)	12(4%)	103(34.3%)	185(61.6%)	300(100%)

Chi Square	Value	Degree of freedom	Significance
	150	2	5.991
Significance at 0.05			

Table: 4 Responses on the environmental attitude based questions

Questions	Correctly answered	Incorrectly answered
How do you dispose domestic water	145(48.3%)	155(51.6%)
How do you dispose solid house hold waste	175(58.3%)	125(41.6%)
Given the current concern about environment how would you describe your future	150(50%)	150(50%)
Turn off light when I am not using	298(99.3%)	02(0.6%)
Walk or cycle to work	180(60%)	120(40%)
Closing tap water while brushing	294(98%)	6(2%)

Table: 5 Environmental attitude of respondent

Gender	Score			Total (%)
	Low	Moderate	High	
Female (%)	11(3.6%)	64(21.3%)	79(26.3%)	154(51.3%)
Male (%)	08(2.6%)	66(22%)	72(24%)	146 (48.6%)
Total (%)	19(6.3%)	130(43.3%)	151(50%)	300(100%)

Chi Square	Value	Degree of freedom	Significance
	156	2	5.991
Significance at 0.05			

Table: 6 Cross tabulation: Environmental awareness and attitude

Parameter	Respondent Count	Attitude			Total
		Low (%)	Moderate (%)	High (%)	
Knowledge level	Low	11(3.6%)	1(0.33%)	0(0%)	12(4%)
	Medium	3(1%)	47(15.6%)	53(17.6%)	103(34.3%)
	High	5(1.6%)	82(27.3)	98(32.6%)	185(61.6%)
Total (%)		19(6.3%)	130(43.3%)	151(50%)	300(100%)

Table: 7 Correlation between environmental awareness and environmental attitude

		Awareness	Attitude
Awareness	Pearson correlation	1.000	0.333*
	Sig. (2-tailed)	.	0.000
	N	300	300
Attitude	Pearson correlation	0.333*	1.000
	Sig. (2-tailed)	.000	.
	N	300	300
* Correlation is significant at the 0.01 level (2-tailed)			

DISCUSSION

It is very much evident from present report that middle school students have fairly good environmental awareness and attitude. Young students are very important force and can play a major role in protection of environment if they are timely guided to understand the environmental issues. Present study reveals that at low level of environmental awareness none of the students shows good attitude in environmental protection activities, and the attitude improves remarkably with the increase of environmental awareness. It confirms that increasing the level of awareness about such a prevailing problem is a very important step to change student's behavior towards pro environmental activities.

In present study we have also looked at influence of gender on environmental awareness. [19] in this report showed that males are more knowledgeable about environmental issues than females and in contrary to this report [20] showed females were more concern for protecting environment compared to males. Similar investigation is reported by T K Bhartiya on general public [14]. They claimed that in general public, female participants were better informed and possess better attitude in comparison to their counterpart. This difference could be due to the better learning environment and attitude during the student life. On the other hand, study conducted by Pareek and Sidan (1998) and Bhatangar (2012) [22,23], showed that there is no difference in the environmental awareness of males and females. In line with this our data also suggest that gender does not influence the environmental awareness and their attitude. This means that irrespective of gender, middle school students were aware of environmental issues at the same time they were equally participating for conservation and safety of environment.

Evaluation of environmental awareness suggest that most of the students are aware of pollution and its consequences but when we asked to student about right source of drinking water there were mixed response probably, they are not aware of the fact that in spite of good source of drinking water municipal water supply, hand pump and water well could be risky due to contamination. Area which we have considered for study is basically rural area and here few houses have RO water purification system. The good part of our finding is that majority of the students have very optimistic and positive attitude toward environment protection and they have very good habit saving natural resources like turning of the electricity switched, closing the tap water and walk or cycle to work. Around 59% of the student said that they properly dispose the house hold solid waste to municipal container while rest of them throw to nearby open place for their convenience and municipal container is little far from their houses. This problem can be easily rectified by increasing the number of containers so that everybody can have easy access of municipal waste container. Now days our municipal corporation is using mobile vehicles (door to door waste collection system) for waste collection and these vehicles are equipped with soothing music to let everyone know that vehicle is at their door and they can discard the solid waste. When student was asked about environment and their future 50% students said it is challenging but they are hopeful. This answer suggest that our next generation is very much concern about their future and determined to improve the present situation. We also tried to find the sources of awareness of students, whether it's TV/radio, internet, family, school or newspaper. To our surprise, print media 'newspaper' had emerged as one of the primary sources of awareness among children and playing vital role in spreading of environmental awareness. This finding further increases the media responsibility for environmental protection and it is suggested that media may be utilized extensively to facilitate the dissemination of environmental issues or information from all over the world besides the local ones. In our country in spite of significant internet user only 8% students had reported it as a source of information. These finding suggest that online awareness program should focus social media to reach a larger section of society. In a report similar recommendation were given about the importance of spreading information through other sources like social media and even internet and mobile games, which provide an entertaining educational approach for young students [24]. Running awareness campaign by NGO or by government are a very important measures to raise the level of environmental knowledge. The hon'ble Supreme Court of India (22nd November, 1991) had also directed the state government and education board to introduce environmental education as a compulsory subject at all level of educations. In fact, now all schools have environmental science as compulsory course work. To further increase environmental awareness of the student's integration of environmental education in curriculum, teachers training and training of trainers, campaign by various forums, conducting extra-curricular activities has to be strengthen for holistic approach.

Despite the fact that the majority of the participants knew that releasing waste water in open area or in small water body is not the good practice, around 52% population are disposing the water in open land. One reason behind this is they do not have properly connected water drainage system in their area and they are forced to release water in open area. This problem can be easily rectified by constructing proper drainage system in this area. In fact, government has launched the Clean India Campaign (Swatch Bharat mission) to develop proper disposal system which is one step ahead to provide healthy life style to people of rural area. Our study also showed that individuals are very much concern about environment by developing good habits of switching off the electricity and closing the tap water while not using it. These practices suggest that individual perceives him or her as an integral part of environment and with full conscious contributing to save environment and natural resources.

A limitation of this study was that information collected was restricted to the school in locality of Tekanpur region and cannot be generalized to all students which might not reflect the entire population of country. Moreover, positive environment attitude in rural area like Tekanpur giveus ray of hope for the bright future for the next generation.

CONCLUSION

Over the recent decades 'exponential deterioration of environment, drawn the attention of world towards a better quality of environment through sustainable development. In an attempt to attaining this goal, environmental awareness and education has become important to sensitize community for active participation for pro-environment behavior. The study examined the middle school students' environmental awareness level and their attitude. Study revealed that students of Tekanpur area of central India possess good environmental knowledge and thereby good attitude. Credit goes to their habit of newspaper reading, schools and parents' involvement. Their environmental awareness and hence attitude can be improved by increasing the role of schools and enhancing the utility of internet. Many

actions can be taken to provide the desired environment, including the involvement of more interactive lectures and activities about this issue within the educational system and encouraging its continuity throughout education life. The process of raising environmental awareness level should not be limited to schools, public authorities, NGOs and family member should also involve in environmental education. There was no difference in genders regarding environmental awareness and attitude. Survey also suggests that the good level of environmental awareness and attitude among the students was because of their regular and active participation in related activities. The study converges on the conclusion that environmental education via electronic media, print media, teachers and family member are factor that can enhance children's proenvironmental attitude and behavior.

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