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An Analysis of the Environmental Knowledge among College Students of Dharwad, Karnataka, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

Environmental education is considered essential to ensure the environmental quality for sustainable development. By providing knowledge to students, it is expected to promote awareness and develop positive attitude towards environment [1]. An analysis of the environmental knowledge among college students of Dharwad, Karnataka, India. This study was conducted during the year 2016-17. The objectives of this study, to measure the environmental awareness level among the college students and to study the general environmental practices among the college students. The sample of the study comprises of 50 students, data collected from three colleges of Dharwad district. The questionnaire method was used to collect the data. Appropriate statistical techniques like percentage, frequency and Garrett ranking test was used to analyze the data. The findings of the study revealed that, air pollution is the major problem faced in their daily life. Ozone layer is the Protective shield and earth's umbrella now it is damaging by increasing temperature of earth. Water is most affected or polluted by housing activities and agriculture is main causes for deforestation, Students agreement with regularly watching TV programmes about environmental issues to know the protection of environment.

Keywords: *Environment; knowledge; awareness; attitudes; practices.*

1. INTRODUCTION

The natural environment encompasses all living and non living things occurring naturally on earth or some region there of. It is an environment that encompasses the interaction of all living species, climate, weather and natural resources that affect human survival and economic activity environmental science is the application of knowledge from many disciplines to the study and management of the environment. Environment deals with the analysis of the conditions, circumstances and influences affecting life and how life in turn responds (Pardon and Anderson) 'environ' means the surroundings and 'ment' the actioning. Therefore, literally speaking, environmental science deals with the study of physical, chemical and biological conditions surrounding the living organisms which influences them internally or externally. In contrast to the natural environment is the built environment. In such areas where man has fundamentally transformed landscapes such as urban settings and agricultural land

conversion, the natural environment is greatly modified and diminished, with a much more simplified human environment largely replacing it. Environment issues are harmful effect of human activity on the biophysical environment [2]. Major current environmental issues may include climate change, pollution, environmental degradation, and resources depletion etc. The conservation movement lobbies for protection of endangered species and protection of any ecologically valuable natural areas, genetically modified foods and global warming [3]. The collective aim goals and objectives of this study is to know the knowledge and attitudes among the students about environmental issues. The knowledge is to help social groups and individuals gain a variety of experiences in and acquire a basic understanding of the environment and its associated problems and attitude is to help social groups and individuals acquire a set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection.



Glimpses of water pollution and air pollution

2. MATERIALS AND METHODS

The present study was conducted in Three colleges of Dharwad district namely University of Agricultural Sciences Dharwad, Government degree college Dharwad and Anjuman college Dharwad. The total sample size was Fifty. Seventeen samples each from each college. Multistage random sampling technique procedure was adopted for selection of the sample. The data regarding knowledge of environmental issues among college students. The questionnaire method was used for the collecting the data. Collected data was analysed with help of percentage, frequency and garrotte ranking test.

3. RESULTS AND DISCUSSION

The Fig. 1 shows that Important environmental issues which is faced by students in daily life according to Garrett Test the chart shows that majority of the students (68.58 %) were preferred the 1st rank to the Air pollution is environmental issue which is faced by students in their daily life followed by 2nd rank to water pollution (32.98%), 3rd rank to Noise pollution (56.58%), 4th rank to Global warming (48.26%), 5th rank to Climate change (47.72%), 6th rank to Ozone depletion (42.86%), 7th rank to Energy issues (41.12%), 8th rank to the Acid rain (32.28%). The contradictory results there is no significant difference between the attitude of science students of degree and B. Ed. college towards environmental pollution [4].

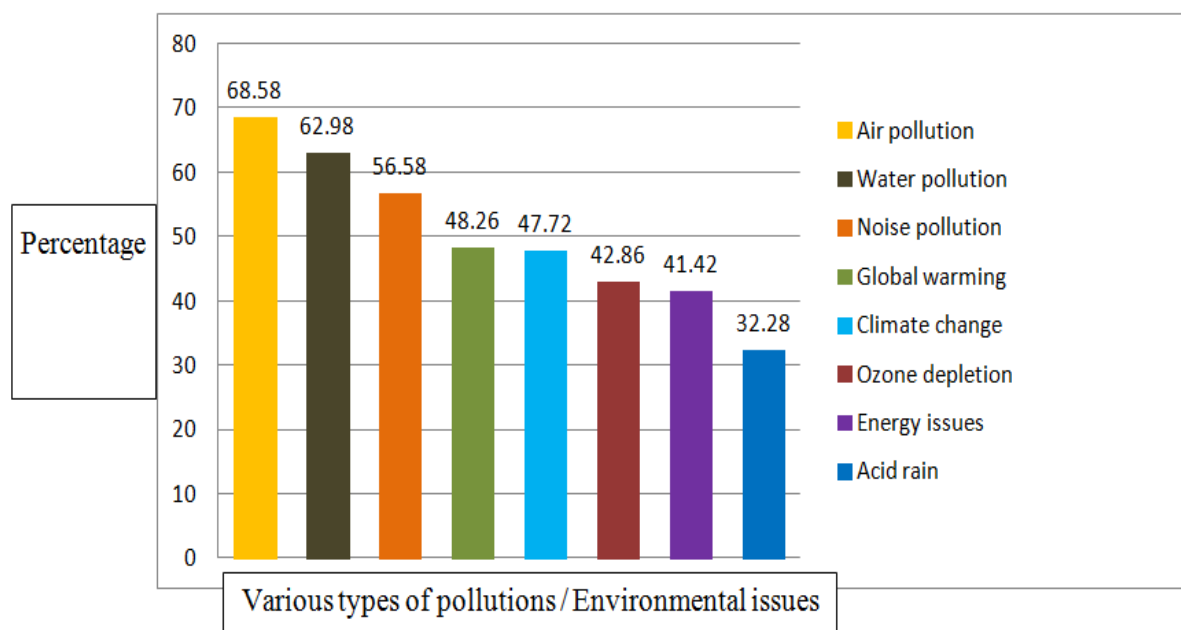


Fig. 1. Important environmental issues which is faced by students in daily

Table 1. Awareness and not awareness of the environmental issues

Sl. No.	Environmental issues	Aware	Not aware
1.	June 5 is the World Environmental day	34(68.00)	16(32.00)
2.	October 16 th is the World Food day	18(36.00)	32(64.00)
3.	Sun light is the primarily energy source of an ecosystem	6(12.00)	44(88.00)
4.	Producers are the process of photosynthesis is found in	30(60.00)	20(40.00)
5.	Oxygen is the component not released by burning of coal	17(34.00)	33(66.00)
6.	Leukaemia is cause because of the exposure of human body to radiation may cause	20(40.00)	30(60.00)
7.	Ozone layer is the protective shield & earth's umbrella	42(84.00)	8(16.00)

Note:-Numbers in the parenthesis indicate percentage

The Table 1 shows that out of 50 students 34 (68%) students were aware about June 5 is the Environmental day And 16 (32%) students were not aware of this. Followed by 18(36 %) students were aware about October 16th is the World food day out of 50 students 32(64%) students were not aware of this, 6(12%) students were aware about the sun light is the primarily energy source of an ecosystem 44 (88%) students were not aware of this and this is the least awareness of the students compared to the other environmental issues,30 (60%) students were aware about producers are the process of photosynthesis is found in plants 20(40%) students were not aware of this,17(34%)

students were aware about O₂ is the component not released by burning of coal 33(66%) students were not aware of this and twenty(40%) students were aware about leukemia is cause because of the exposure of human body to radiation, 30(60%)students were not aware of this and forty two (84%) students were aware about ozone layer is the Protective shield and earth's umbrella 8(16%) students were not aware of this and also this is the highest number of students were aware compared to the other environmental issues. The contradictory results shows that the level of environmental awareness of the secondary school students is low with a mean value of .40 which is not up to average level [5].

Table 2. Factors effecting to environment

SI No.	Environment Factors	N-50			
		Water	Forest	Land	Energy
1.	Natural source most affected by housing activities				
	Frequency	19(38.00)	17(34.00)	6(12.00)	8(16.00)
2.	Deforestation cause	Industries	Housing	Agriculture	All
	Frequency	11(22.00)	4(8.00)	17(34.00)	18(36.00)
4.	Main Cause of Population explosion in India	Good health	Biodiversity	Prosperity	Poverty
	Frequency	11(22.00)	30(60.00)	5(10.00)	4(8.00)

Note:-Numbers in the parenthesis indicate percentage

The Table 2 shows that 38 per cent of the students were considered the water is the Natural source most affected by housing activities followed by forest (34%), Energy(16%) and land(12%). Forty per cent of the students were considered population growth is the main factor for population explosion followed by Food (26%),Poverty(24%),and Over crowding. Thirty six per cent of the students were considered all the factors which are industries, housing, agriculture these cause for deforestation followed by Agriculture (34%), Industries (22%) and Housing (8%). Sixty per cent of the students were consider biodiversity is the main cause of population explosion followed by Good health (22%), Prosperity (10%) and poverty (8%). The study on par with industries, housing and agriculture will lead the deforestation and its directly effects on annual rain fall Muderrisoglu, H., Altanlar, A. (2005).

The Table 3 shows that 34 (68%) students were aware about plastic is the example of non biodegradable pollutant 16(32%) students were

not aware of this, followed by 21(42%) students were aware about automobiles are largest source of air pollution in cities 29(58%) students were not aware of this, sixteen (32%) students were aware about benzene is a known carcinogen emitted from automobiles vehicle and thirty four (68%) students were not aware of this, 13(26%) students were aware about fluorocarbons are released in the atmosphere by Jet airplanes 37(74%) students were not aware of this,28(56%) students were aware about fertilizers are main causing agents of water pollution 22(44%) students were not aware of this, 21(42%) students were aware about eutrofication in the water bodies is cause due to excess of phosphorus 29(58%) students were not aware of this,12 (24%)students were aware about Aquatic life is damaged by thermal pollution 38(76%)students were not aware of this,35(70%) students were aware about AIDS is not caused by water pollution 15(30%) students were not aware of this,19(38%) students were aware about SO₂ is the main cause of Acid rain 31(62%) students were not aware of

Table 3. Awareness about pollution

SI No.	Pollution	N-50	
		Aware	Not Aware
1.	Plastic is the example of non biodegradable pollutant	34(68.00)	16(32.00)
2.	Automobiles are largest source of air pollution in cities	21(42.00)	29(58.00)
3.	Benzene is a known carcinogen emitted from automobiles vehicles	16(32.00)	34(68.00)
4.	Fluorocarbons released in atmosphere by Jet airplanes	13(26.00)	37(74.00)
5.	Fertilizers are main causing agent of water pollution	28(56.00)	22(44.00)
6.	Eutrofication in water bodies is cause due to excess of phosphorus	21(42.00)	29(58.00)
7.	Aquatic life is damaged by thermal pollution	12(24.00)	38(76.00)
8.	AIDS is not caused by water pollution	35(70.00)	15(30.00)
9.	SO ₂ is the main cause of acid rain	19(38.00)	31(62.00)
10.	Ear muffs or cotton plugs are used to reduce the noise pollution	29(58.00)	21(42.00)
11.	Skin cancer will be caused by depletion of ozone layer	21(42.00)	29(58.00)
12.	Tajmahal is getting damaged because of Acid rain	24(48.00)	26(52.00)

Note:-Numbers in the parenthesis indicate percentage

Table 4. Causing agents of pollution

SI No.	Awareness about pollution				
1.	Major pollution causing agent Frequency	Human beings 13(26.00)	Animals 5(10.00)	Greenhouse gas 29(58.00)	UV rays 3(6.00)
2.	Ultimate sufferer of pollution is Frequency	Plants 6(12.00)	Terrestrial animals 13(26.00)	Aquatic animals 13(26.00)	Human beings 18(36.00)
3.	Most widely found pollutant in the air Frequency	CO ₂ 13(26.00)	CFC 21(42.00)	CO 10(20.00)	SO ₂ 6(12.00)
4.	Spraying of DDT to kill insects causes the pollution of Frequency	Air 7(14.00)	Water 13(26.00)	Soil 8(16.00)	All of these 22(44.00)
5.	Soil pollution is caused by Frequency	Industrial wastes 7(14.00)	Detergents 10(20.00)	Agrochemicals 13(26.00)	All of these 20(40.00)
6.	Thermal pollution is resulted mainly by Frequency	Sugar industries 3(6.00)	Thermal power pollution 37(74.00)	Steel industries 7(14.00)	Paper industries 3(6.00)
7.	Major green house gas is Frequency	CFC 3(6.00)	CO 37(74.00)	CO ₂ 7(14.00)	Freon 3(6.00)
8.	Bhopal gas tragedy occurred due to Frequency	Poisonous gas 31(62.00)	Air pollution 11(22.00)	Climate change 6(12.00)	Greenhouse gas 2(4.00)

Note:-Numbers in the parenthesis indicate percentage

this, 29(58%) students were aware of cotton plugs are used to reduce the noise pollution 21(42%) students were not aware of this,21(42%) students were aware of skin cancer will be caused by depletion of ozone layer 29 (58%) students were not aware of this,24(48%) students were aware of Tajmahal is getting damage because of Acid rain 26(52%) students were not aware of this. The results on par with too many polluting activities done by human being like usage of plastics, Vehicles, refrigerators, mobile phones etc these will directly affect to the climate and environment it will cause the pollution in environments [4].

The Table 4 shows that 58 per cent of the students were giving the Greenhouse gas is the major pollution causing agents followed by Human beings(26%) Animals(10%) and UV rays(6%), forty two per cent of the students were giving the CFC Most widely pollutant found in the air followed by CO₂(26%),CO(20%),SO₂(12%). Forty four per cent of the students were give the soil,water,air pollution will be caused by spraying by DDT which is used to kill the insects followed by (26%) of the students were give the water pollution, sixteen and forty per cent of students were gave all of these which is the soil pollution, (14%) of the students were give the air pollution. Forty per cent of the students were give the Agrochemicals, detergent, industrial wastes

caused to the soil pollution. Followed by (26%) of the students were give the Agrochemicals caused, (20%) of the students were give the detergent is caused,(14%) of the students were give the wastes caused to the soil pollution. Seventy six per cent of the students were give the thermal power plant caused to the thermal pollution followed by, (14%) of the students were give steel industries are the caused,(6%) of the students were give the paper industries caused, other (6%) of the students were give the sugar industries caused to the thermal pollution. Seventy four per cent of the students were give the CO is the major greenhouse gas in the environment followed by (14%) of the students were give the CO₂ is the major in the environment, (6%) of the students were give the CFC is major in the environment and (6%) of the students were give the Freon is the major greenhouse gas in the environment, (62%) of the students give the poisons gas was caused for Bhopal gas tragedy followed by (22%) of the students were give the air pollution was caused,(12%) of the students were give the climate change was the caused,(4%) of the students were give the greenhouse gas was the caused for the Bhopal gas tragedy. The results on par with many polluting agents cause like polluting chemicals, water, gases may harm the many buildings, water bodies and monuments [4].

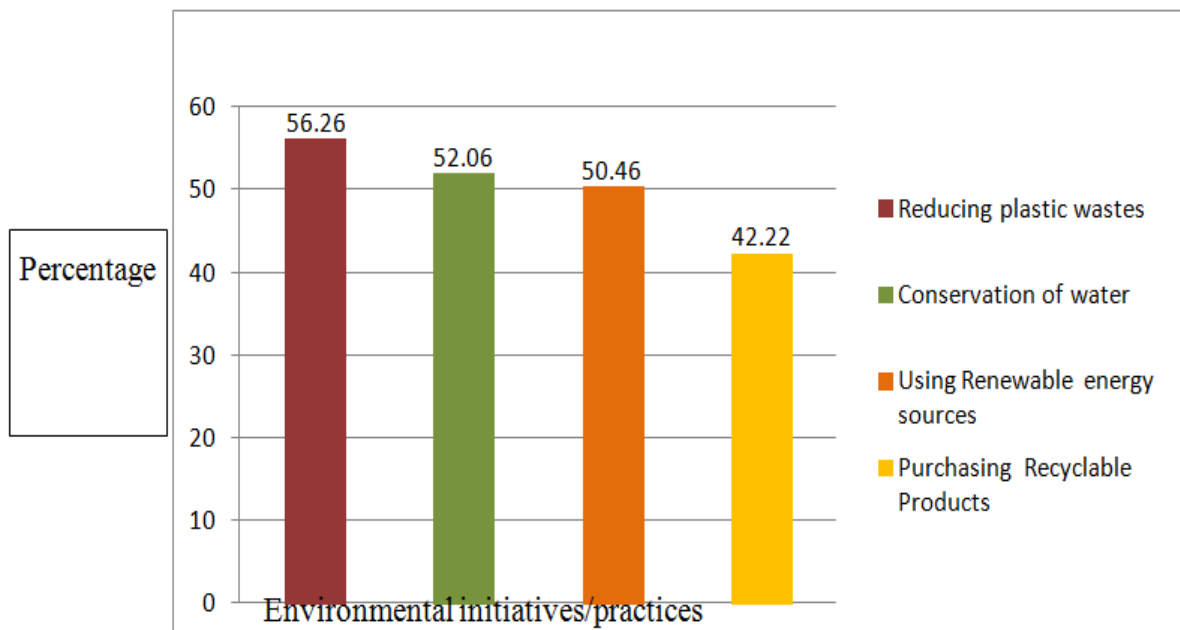


Fig. 2. Environmental initiatives or practices by the students

Table 5. Agreements of the students with following statements

SI.No	Statements	Usually	Frequently	Sometimes	Occasionally	Rarely	Never
1	Watch T.V programs about environmental issues	20(40.00)	9(18.00)	10(20.00)	3(6.00)	6(12.00)	2(4.00)
2	Use paper bags instead of polythene	5(10.00)	12(24.00)	13(26.00)	9(18.00)	5(10.00)	6(12.00)
3	Avoiding use of leaked pipes	16(32.00)	4(8.00)	11(22.00)	6(12.00)	5(10.00)	8(16.00)
4	Will travel using human powered bicycle if short distance	8(16.00)	9(18.00)	7(14.00)	9(18.00)	11(22.00)	6(12.00)
5	Read the labels on product to see if the contents were environmental safe	11(22.00)	8(16.00)	16(32.00)	3(6.00)	9(18.00)	3(6.00)
6	Practising swachha Bharat Abhiyana programme	8(16.00)	7(14.00)	9(18.00)	7(14.00)	9(18.00)	10(20.00)
7	Use the water from kitchen can be diverted to kitchen garden	5(10.00)	10(20.00)	13(26.00)	8(16.00)	5(10.00)	9(18.00)
8	Digging pits or repairing tanks for rain water storage	7(14.00)	4(8.00)	10(20.00)	12(24.00)	8(16.00)	9(18.00)
9	Read publication that focus on environmental issues	5(10.00)	10(20.00)	13(26.00)	2(4.00)	16(32.00)	4(8.00)
10	Tap should be tightened after using.	21(42.00)	10(20.00)	4(8.00)	6(12.00)	5(10.00)	4(8.00)

Note:-Numbers in the parenthesis indicate percentage

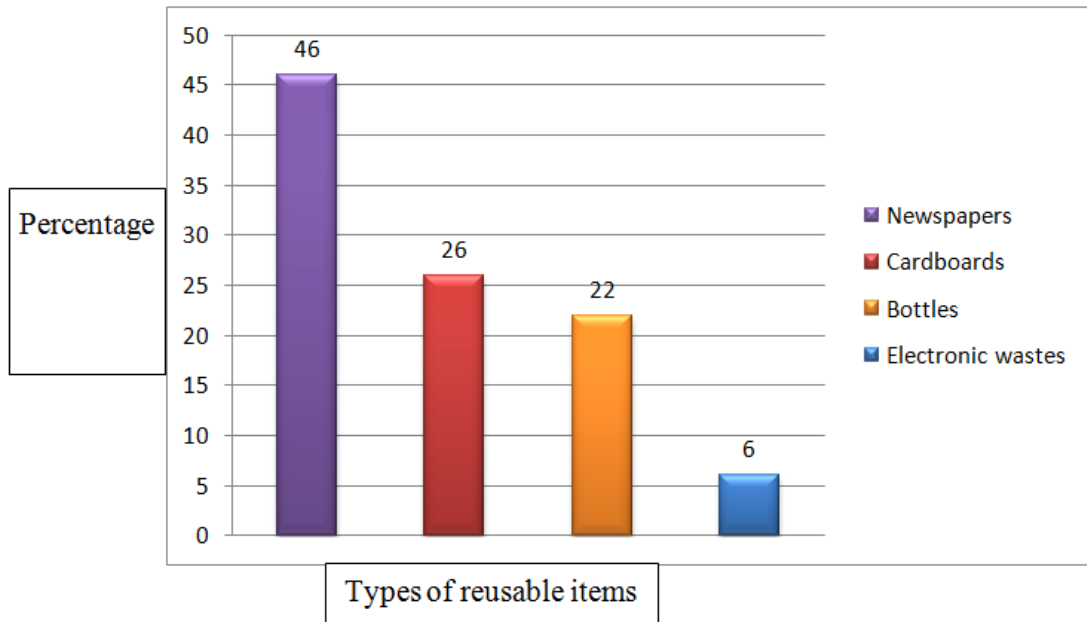


Fig. 3. Type of items reuse regularly by the students

Fig. 2 shows that environmental initiatives or practices by the students according to the Garrett test in the Environmental practices 1st rank for the reducing plastic wastes (56.26%) which they are practicing more, followed by 2nd rank to the conservation of water (52.06%), 3rd rank to the Using renewable energy sources (50.46%) and the last rank to the purchasing recyclable products (42.22%). The study on par with environmental friendly practices among respondents the r value i.e. ($r = 0.116$) is positive number as an indication that both variables, environmental awareness and friendly environmental practice are related in the same direction from each other [6].

Fig. 3 show that type of items reuse regularly by the students according to the Garrett test 1st rank to the News paper (46%) was the regularly reused by the students followed by 2nd rank to the cardboards (26%) was the regularly reusable item, 3rd rank to the Bottles (22%) was the regularly reusing items and lastly Electronic wastes (6%) are the regularly reusable items by the students. The study on par with female respondents have less extensive environmental knowledge regarding usage of reusable items than male respondents but show more concern [7].

The Table 5 shows that Agreements of the students with following statements. (40%) of the students were usually watching T.V programs

about environmental issues, followed by (26%) of the students were sometimes using the paper bags instead of polythene, (32%) of the students were usually avoiding the use of leaked pipes, (22%) of the students were rarely travel using human powered bicycle if short distance, (32%) of the students were sometimes read the labels on product to see if the contents were environmental safe, (20 %) of the students were never Practising swachha Bharat Abhiyana programme, (26%) of the students were sometimes using the water from kitchen can be diverted to kitchen garden, (24%) of the students were occasionally digging pits or repairing tanks for rain water storage, (32%) of the students rarely reading publication that focus on environmental issues, (42%) of the students were usually taping should be tightened after using. The study inline with the students stated that they highly participated in environmental issues. The least participation is found for the activism behaviors [8].

4. CONCLUSION

The results of the survey showed that majority of the students were reported that air pollution is the major problem faced in their daily life and wearing mask is the solution for this problem. More number of (42 among 50) students were aware about ozone layer is the Protective shield and earth's umbrella now it is damaging by increasing temperature of earth. Students were

aware about natural source of water is most affected or polluted by housing activities and agriculture is the main causes for deforestation. Most of them have aware about reducing usage of plastic, because it is non biodegradable and reusing news paper for bag making because it is eco friendly product. Students agreement with regularly watching TV programmes about environmental issues to know the protection of environment.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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