

perception of plastic pollution awareness, management and disposal of secondary level teacher trainees

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PERCEPTION OF PLASTIC POLLUTION AWARENESS, MANAGEMENT AND DISPOSAL OF SECONDARY LEVEL TEACHER TRAINEES

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ABSTRACT

The purpose of this study was to find out the perception of plastic pollution and its relationship between the dimensions viz awareness, management and disposal of secondary level teacher trainees. Environmental issues are the major threats for many consequences happening now a day. Plastic pollution become one the most important environmental issues in today's polluted world. In this study, normative survey method was adopted. The sample consists of 1774 B.Ed, teacher trainees from Tamilnadu, India. The findings obtained from the research shows that gender made any significant difference among the B.Ed, teacher trainees. There was a significant difference obtained from the trainee teachers who were studying environmental as a subject, being a member of eco-club and studying science as a stream of study. Based on the findings of this study, it is recommended that introducing environmental education as a major subject and encourages the trainees to get participated in awareness programmes related to environmental issue which enable them to understand the environmental issues.

Key words: Plastic pollution, awareness, management, disposal, Secondary level teacher trainees.

INTRODUCTION

We are living in plastic era, where every part of the earth is surrounded by plastic. Due to COVID-19 pandemic excessive usage of plastics especially the single-use plastics including personal protective kids like face mask and gloves and so on. The plastic pollutions is a global theart to our ecosystem. The term plastic was derived from Greek word 'plastikos' means fit for molding. In 1907 Leo Baekeland invented synthetic plastic without knowing the consequences in today era of plastic. Plastic material exists in our world by the mass production in 1950s and started its journey. By 1988 the plastic production had reaches 30 million per annum and reaches up to 265 million tons by 2010.

The usage of plastic seen in ever fields and everywhere because of its nature lightweight, durable, cheap, inexpensive qualities hence it is convenient material for the high demand in manufacturing. But the harmful effects are more when compare to the useful purposes in some fields. The waste plastic materials, improperly disposed and non usage of plastics are a real and serious threat to the environment.

The plastic products we use in our daily life contains harmful chemicals, for example plastic carry bags, milk and yogurt covers, refill packs of food substances, coffee cups etc., contains hazardous chemicals which have a serious health issues on plants, animals, human and environment. The plastic products are non-biodegradable and toxic to the plants, animals and the environmental components. The human are addicted to the usage of plastics, without plastics most of the human can't survive. Every field is mainly depending on plastic products but fails to understand the toxic chemicals behind these products. The biphenyl A is the dangerous toxic additives which affects mainly the endocrine system in human beings. An endocrine system produces hormones known as chemical messenger. The biphenyl A disturbs the endocrine system and creates imbalances in secretion of hormones in excessive or low level. Imbalance in hormone secretion creates effects to their targeted regions. This also affects the digestion, heart rate, reproductive systems and every interconnected system.

Plastic wastes disturbing the nature and affect the quality of environment by their harmful chemical compounds and chemical fumes by improper disposal. When the plastic products burnt in open environment the fumes combines with the air and causes air pollution. During incineration it emits the carbon, which increases level of carbon in air leads to global warming. While burning the plastic it emits the toxic substances like xylene, benzene and ethylene were inhaled by plants, animals and the human causing health hazardous. The plastic bags struck in to the sewage system results in blockage and create health issues to the peoples. Most of the plastic are thrown in the open land which causes soil pollution. The fertility of the soil, quality of the soil, and plant growth and micro organisms in soil also affected. The dumping of plastic in land results decrease in ground water level, hence plants may not get water for their growth and development. All the organisms are interlinked with each other hence it creates a disturbance in the food chain and affects the environment.

NEED AND SIGNIFICANCE OF THE STUDY

We are living in plastic era; all the human activities are mainly depending on the plastic products. During pandemic period human beings mainly depending on single time used plastic products like face mask, gloves and so on. Huge amount of plastic waste generated every years which are harmful to our environment and living things. We are the first generation experiencing more environmental related issues compare to past generations. Awareness, management and disposal were the primary source to overcome any sort of environmental issues. Most of the non-renewable resources were vanished by our generation; nothing was left out for our future generation. This is the crucial time for us to rectify our error by recycling, reusing our plastic wastes for our betterment environment. Hence the present study deals with the plastic pollution.

REVIEW OF RELATED LITERATURE

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Pranjit Patowary and Purabi Baishya (2020) explored the environmental awareness of school students. 300 secondary level school students from Coimbatore district were selected using simple random techniques. The results highlighted that gender has no difference in the level of environmental awareness but females showed higher mean scores than the counterpart. The correlation analysis showed a positive relationship between arts and science students and gender.

N. Srinivasan, et.al (2019) investigated the usage and practice of plastic among the medical students in Tamilnadu. The sample of the study was 573 medicinal university students and the results highlighted that there was a moderate knowledge about plastic was showed high followed by inadequate knowledge. Regarding gender, there was no significant difference between males and females, but females showed a higher mean score of male university students. Based on the branch of study the dentistry medicine students had shown higher mean scores compared to their counterparts.

Yakup Dogana and Ahmet Simsar (2019) did a study on primary teacher trainees' view on environmental related problems. 62 prospective teachers were selected from a public university on south-eastern Anatolia. The findings highlighted the need for environmental education. Most of the teacher trainees had not participated in any environmental-related activities, not a member of any environmental organization like eco-club and so on. 50% of the trainees had not studied environmental as a subject in their school education level. Global warming was the important environmental problem ranked by the teacher trainees followed by water, air and soil pollution. 64% of participants suggested the main reason for the pollution was due to the riotous behaviour of humans alone. 52% of the population accepted the lift up the awareness level and education may result in a decline in the level of environmental pollution.

Mohammad Bakri Alaa Hammami, et.al (2017) measured the level of plastic pollution awareness and attitude of grade 11 and 12 students in Sharjah city. More than 80% of the students' population were aware of plastic pollution. Females showed more plastic pollution awareness when compared to male students. The mother's educational qualification also played a significant role in the awareness level of students' plastic pollution awareness and attitude. Regression analysis showed that all the demographic variables were significant to the model. The researcher finally suggested that encouraging activity related class instead of theoretical input of knowledge to the school student. Through the play way method, the awareness about plastic pollution could be incorporated

OBJECTIVES OF THE STUDY

- ✚ To find out the differences in perception on plastic pollution of B.Ed teacher trainees
- ✚ To compare the relationship between the dimensions of plastic pollution.

HYPOTHESES OF THE STUDY

- ✚ There is no significance difference between the male and female B.Ed teacher trainees towards the perception on plastic pollution.
- ✚ There is no significance difference between the arts stream and science stream B.Ed teacher trainees towards the perception on plastic pollution.
- ✚ There is no significance difference between the eco-club member and non-member B.Ed teacher trainees towards the perception on plastic pollution.

- ✚ There is no significance difference between studying and studied environmental science as a subject B.Ed teacher trainees towards the perception on plastic pollution.
- ✚ There is no significance relationship between the dimensions of perception on plastic pollution.

RESEARCH METHODOLOGY

- ✚ **Research method:** For the present study normative survey method was chosen.
- ✚ **Sample:** The sample consists of 1774 secondary level teacher trainees who were studying two year B.Ed programme during the year 2017-2019. The trainees were selected from eighteen colleges from five districts namely Dharmapuri, Krishnagiri, Salem, Vellore and Thiruvannamalai in Tamilnadu, India.
- ✚ **Sampling technique:** Stratified random sampling technique was used for the present study.
- ✚ **Tool used:** Plastic pollution scale was developed by the researcher. It measures the awareness, management and disposal of pollution. Each dimension consists of eight questionnaires, totally twenty four items in the plastic pollution questionnaire.
- ✚ **Reliability of the tool:** Cronbach’s alpha method was used. The values were calculated as, 0.790, 0.864 and 0.730 for plastic pollution awareness, plastic pollution management, plastic pollution disposal respectively.
- ✚ **Scoring procedure for plastic pollution scale:** The tool plastic pollution consists of 24 items. Plastic pollution item were based on Likert scale of summated rating answer in terms of five alternatives, in the case of plastic pollution awareness, “Not at all aware, slightly aware, moderately aware, very aware, and extremely aware” weighing scores 1,2,3,4, and 5 respectively. All the items the tool was positive. Plastic management and disposal dimension items followed by five alternatives ranging from never (1), rarely (2), sometimes (3), often (4) and always (5) respectively. The maximum possible score for Plastic pollution scale is 120 and the minimum score is 24.

ANALYSIS AND INTERPRETATION OF DATA

The analysis of data for the present study was done on the basis of formulated hypothesis of the study. The resulting data were analyzed based on the hypothesis by using appropriate statistical techniques.

Hypothesis-1: There is no significance difference between the male and female B.Ed teacher trainees towards the perception on plastic pollution.

Table-1: showing the mean difference of male and female B.Ed, teacher trainees on plastic pollution

DIMENSIONS	GENDER	N	MEAN	STANDARD DEVIATION	‘t’ VALUE	S/NS LEVEL(0.5)
PPA	Male	473	24.05	6.44	5.30	S
	Female	1301	25.86	6.12		
PPM	Male	473	20.56	5.61	3.92	S
	Female	1301	21.74	5.58		

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PPD	Male	473	16.48	6.29	1.14	NS
	Female	1301	16.86	5.82		
PP	Male	473	61.10	16.18	3.95	S
	Female	1301	64.47	14.88		

From the above table 1, it is evident that the calculated value for plastic pollution 3.95 is greater than the critical value 1.96 which is significant at 0.05 levels. In dimensions wise PPA and PPM calculated 't' values were 5.30, 3.92. It indicates that the mean score of male and female do differ significantly with respect to plastic pollution and its dimensions PPA and PPM. In dimension PPD the calculated 't' value 1.14, which indicates that the mean score of male and female do not differ significantly with respect to PPD. Thus the null hypothesis that there is no significance difference between the male and female B.Ed teacher trainees towards the perception on plastic pollution is rejected in three cases and accepted in PPD dimension.. Further the mean score of PP of female 64.47 which is higher than the mean score of male 61.10 with corresponding standard deviation 14.88 and 16.18 respectively. It may therefore, said that female were found to have slightly higher in plastic pollution awareness, management and disposal as compared to their male counterpart. Thus it is concluded that "There is no significance difference between the male and female B.Ed teacher trainees towards the perception on plastic pollution" is rejected at 0.05 level of significance.

Hypothesis-2: There is no significance difference between the arts stream and science stream B.Ed teacher trainees towards the perception on plastic pollution

Table-2: showing the mean difference of Arts and Science stream B.Ed, teacher trainees on plastic pollution

DIMENSIONS	STREAM OF THE STUDY	N	MEAN	STANDARD DEVIATION	't' VALUE	S/NS LEVEL(0.5)
PPA	Arts	529	22.18	5.60	15.31	S(0.5)
	Science	1245	26.74	6.02		
PPM	Arts	529	19.08	4.97	12.49	S(0.5)
	Science	1245	22.42	5.57		
PPD	Arts	529	14.66	5.30	10.46	S(0.5)
	Science	1245	17.65	6.00		
PP	Arts	529	55.93	13.91	14.83	S(0.5)
	Science	1245	66.82	14.71		

From the above table 2, it is evident that the calculated value for plastic pollution 14.83 is greater than the critical value 1.96 which is significant at 0.05 levels. In dimensions wise PPA, PPM and PPD calculated' values were 15.31, 12.49 and 10.46 respectively. It indicates that the mean score of Arts and Science as a stream of study do differ significantly with respect to plastic pollution and its dimensions. Thus the null hypothesis that there is no significance difference between the Arts and Science as a stream of study B.Ed teacher trainees towards the perception on plastic pollution is rejected. Further the mean score of PP of science as a stream of study 66.82 which is higher than the mean score of arts 55.93 with corresponding standard deviation 14.71 and 13.91 respectively. It may therefore, said that science as a stream of study were found to have higher in plastic pollution awareness, management and disposal as compared to their art as a stream of the study counterpart. Thus it is concluded that "There is no significance difference between the Arts and Science as a stream of study B.Ed teacher trainees towards the perception on plastic pollution" is rejected at 0.05 level of significance.

Hypothesis-3: There is no significance difference between the eco-club member and non-member B.Ed teacher trainees towards the perception on plastic pollution

Table-3: showing the mean difference of eco-club member and non-member B.Ed, teacher trainees on plastic pollution

DIMENSIONS	ECO-CLUB	N	MEAN	STANDARD DEVIATION	't' VALUE	S/NS LEVEL(0.5)
PPA	Member	784	28.30	5.37	19.42	S(0.5)
	Non-member	990	23.07	5.93		
PPM	Member	784	23.20	5.52	12.25	S(0.5)
	Non-member	990	20.02	5.28		
PPD	Member	784	18.12	5.74	8.77	S(0.5)
	Non-member	990	15.68	5.89		
PP	Member	784	69.62	13.27	16.06	S(0.5)
	Non-member	990	58.85	15.12		

From the above table 3, it is evident that the calculated value for plastic pollution 16.06 is greater than the critical value 1.96 which is significant at 0.05 levels. In dimensions wise PPA, PPM and PPD calculated' values were 19.42, 12.25 and 8.77 respectively. It indicates that the mean score of

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eco-club member and non-member do differ significantly with respect to plastic pollution and its dimensions. Thus the null hypothesis that there is no significance difference between the eco-club member and non-member B.Ed teacher trainees towards the perception on plastic pollution is rejected. Further the mean score of PP of eco-club member 69.62 which is higher than the mean score of non-member 58.85 with corresponding standard deviation 13.27 and 15.12 respectively. It may therefore, said that eco-club member were found to have higher in plastic pollution awareness, management and disposal as compared to their non-member counterpart. Thus it is concluded that “There is no significance difference between the eco-club member and non-member B.Ed teacher trainees towards the perception on plastic pollution” is rejected at 0.05 level of significance.

Hypothesis-4: There is no significance difference between studying environmental science as a subject and studied B.Ed teacher trainees towards the perception on plastic pollution

Table-4: showing the mean difference of studying environmental science as a subject and studied B.Ed, teacher trainees on plastic pollution

DIMENSIONS	YEAR OF STUDY	N	MEAN	STANDARD DEVIATION	't' VALUE	S/NS LEVEL(0.5)
PPA	Studying	940	26.40	6.23	7.40	S(0.5)
	Studied	834	24.23	6.16		
PPM	Studying	940	21.72	5.81	2.34	S(0.5)
	Studied	834	21.10	5.36		
PPD	Studying	940	17.03	5.87	2.04	S(0.5)
	Studied	834	16.45	6.02		
PP	Studying	940	65.16	15.16	4.17	S(0.5)
	Studied	834	61.82	15.33		

From the above table 4, it is evident that the calculated value for plastic pollution 4.17 is greater than the critical value 1.96 which is significant at 0.05 levels. In dimensions wise PPA, PPM and PPD calculated' values were 7.40, 2.34 and 2.04 respectively. It indicates that the mean score of studying environmental science as a subject and studied environmental science as a subject do differ significantly with respect to plastic pollution and its dimensions. Thus the null hypothesis that there is no significance difference between the studying environmental science as a subject and studied environmental science as a subject B.Ed teacher trainees towards the perception on plastic pollution is rejected. Further the mean score of PP of studying environmental as a subject 65.16 which is higher than the mean score of studied 61.82 with corresponding standard deviation 15.16 and 15.33 respectively. It may therefore, said that environmental science as a subject of study were found to

have higher in plastic pollution awareness, management and disposal as compared to their studied environmental as a subject counterpart. Thus it is concluded that “There is no significance difference between the studying environmental science as a subject and studied B.Ed teacher trainees towards the perception on plastic pollution” is rejected at 0.05 level of significance.

Hypothesis-5: There is no significance relationship between the dimensions of perception on plastic pollution.

Table-5: showing the Relationship between the dimensions of plastic pollution of B.Ed, teacher trainees

PLASTIC POLLUTION	PPA	PPM	PPD
PPA	1	.637	.606
PPM		1	.572
PPD			1

The above table 5 shows the calculated ‘r’ values of plastic pollution between the dimensions. Significant relationship was found in all cases. Hence the formulated null hypothesis is rejected in all the cases. There is high positive significant relationship exists between the dimensions of PPA and PPM, PPA and PPD. There is moderate positive significant relationship exists between the dimensions of PPM and PPD.

DISCUSSION AND RECOMMENDATIONS

The findings of the above mentioned hypotheses indicate the perception of plastic pollutions and its dimensions based on demographic variables. Gender made a significance which confirms the result of Mohammad Bakri Alaa Hammami, et.al (2017) who showed 80 percentage od female studnts were aware of plastic pollution but which is contrast with the findings of N. Srinivasan, et.al (2019) who found gender does not made any significance difference and female had higher mean score regarding plastic pollution awareness.

Furthermore Patowary, P & Baishya, P (2020) result shows gender does not made any significance difference regarding environmental awareness. from the study it is evident that, there is high positive relationship exist between the dimensions of plastic pollution which is confirms with the findings of Patowary, P & Baishya, P (2020) who found positive relationship exists between the environmental issues.

Based on the findings, it is recommended that environmental education subject should be incorporated in all levels of education starting from primary level to university level. Awareness programmes and seminars regarding environmental issues should be conducted in every academic year. By increasing the number of environmental course will definitely raise the awareness level and also environmental literacy.

CONCLUSION

The present study aimed to find out the perception of plastic pollution awareness, management and disposal. The level of plastic pollution awareness, management and disposal and its consequences were influenced by multiple factors of gender, stream of the study, member of eco club and studying environmental course as a subject. There is a high positive significant relationship exists between the dimensions of plastic pollution. As the result obtained by the analysis of data it has been found that, gender made any significant difference in plastic pollution and its dimensions. The findings of the present study reveals that the B.Ed, teacher trainees who were studying environmental as a subject, being a member of eco-club and science as a stream of study has a significant difference in plastic pollution awareness, management and disposal compared with their counterparts. The reason may be they gaining theoretical as well as practical knowledge on plastic pollution and its consequences. The knowledge with relation to the basic environmental related concepts help the trainees to implement in to practices. From the result it is evident that importance of environmental education and also awareness programmes related to current environmental issues. The B.Ed teacher trainees are going to impart the environmental knowledge, basic concepts to their next generation to raise environmentally responsible citizen.

LIST OF ACRONYM

PP	-	Plastic Pollution
PPA	-	Plastic Pollution Awareness
PPM	-	Plastic Pollution Management
PPD	-	Plastic Pollution Disposal
B.Ed	-	Bachelor of Education

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