A comparative study to assess the knowledge regarding electronic waste management among college students of arts and science stream

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Abstract- The research project undertaken was "a comparative study to assess the knowledge regarding electronic waste management among college students of arts and science stream". The objectives of the study were to assess the knowledge regarding electronic waste management among college students of arts and science stream, and to find out the association between knowledge score with selected demographic variables such as age, gender, education at higher secondary level, current year of study. Non experimental survey design was adopted for this study. The study was conducted among 300 samples, 150 each from arts and science students. Samples were selected by Non probability convenient sampling technique. The tool used for the data collection consisted of demographic proforma and structured knowledge questionnaire. The analysis of the data was based on the objectives of the study using descriptive and inferential statistics. The findings of the present study revealed that students of science stream had more knowledge regarding electronic waste management as compared to students of arts stream. The study did not show any significant association between knowledge and selected socio-demographic variables. Based on the findings the investigators have drawn implications which are of vital concerns in the field of Technology.

Keywords: Assess, structured knowledge questionnaire, Electronic waste.

INTRODUCTION

The disposal of e-waste, which is the waste stream with the greatest rate of growth, is a significant environmental issue everywhere in the globe. Every year, more than 50 million tons of e-waste is produced, with a large portion ending up in landfills and dumps. Only 15 to 20 percent of all e-waste is recycled globally; the remainder is dumped in developing nations.

Technology has led to a rapid increase in the number of smart gadgets being launched to the market. Many electronic devices have a limited lifespan due to factors like technological innovation, appealing consumer designs, compatibility, and marketing methods. According to a recent survey, over 130 million electronic devices are abandoned in the US each year, creating E-waste, and the number is steadily rising. Mostly, it consists of monitors, computers, and televisions. With the introduction of management systems and stringent loss regulations, some of these nations are now tackling the issues related to e-waste and taking decisive action to deaden the problem. A few developing nations, notably India, China, and others, have recently amended their legislation to address the rising issue of managing and disposing of imported E-waste. Additionally, several makers of electronic equipment are creating strategies for the secure disposal of e-waste using cutting-edge technologies in both developed and developing nations.

OBJECTIVES

To assess the knowledge regarding electronic waste management among college students of science stream.

To assess the knowledge regarding electronic waste management among college students of arts stream.

To find the association between knowledge regarding electronic waste management among college students of science stream and selected socio-demographic variable.

To find the association between knowledge regarding electronic waste management among college students of arts stream and selected socio-demographic variable.

MATERIALS AND METHODS

Approach : Quantitative approach
Design : Descriptive comparative design
Population : College students of arts and science stream
Sample : College students of arts and science stream in kollam
Sampling technique : Non probability convenient sampling
Setting : Fatima Mata National College, kollam
Data collection method:

Inclusion criteria
College students who are using electronic devices
Students who are using electronic devices for their household purposes.

Exclusion criteria
Students who are not willing to participate in this study.
Students who are absent during the time of data collection.

Data collection process
Formal written permission was obtained from the head of the institution. Sample was collected by purposive sampling technique. The data for main study was collected from 300 college students of Fatima Mata national college. Data was collected through a structured knowledge questionnaire. The purpose of study was clearly explained, informed consent was obtained and confidentiality of data was assured to each sample. Demographic data was collected from college students using demographic proforma and the knowledge of students regarding electronic waste management was assessed using structured knowledge questionnaire.

Ethical approval and informed consent
Permission was obtained from Institutional ethics committee. Formal permission received from the college authority and consent letter from the participants.

Tool
SECTION A: DEMOGRAPHIC PROFORMA
Included information related to selected socio-demographic variables like age, sex, stream of education followed at higher secondary level and current or year of study.

SECTION B
Structured knowledge questionnaire: knowledge questionnaire consisted of 25 multiple choice questions to collect data. Each right answer was given a maximum score of 1 mark. The total mark was 25. No negative mark for wrong answers.
The knowledge score was categorized as:
Good: 20-25
Average: 15-19
Poor: < 15

RELIABILITY
Reliability was checked by using test retest method. The reliability coefficient was found to be 0.92, indicating that the tool was highly reliable.

ANALYSIS

DESCRIPTIVE ANALYSIS:

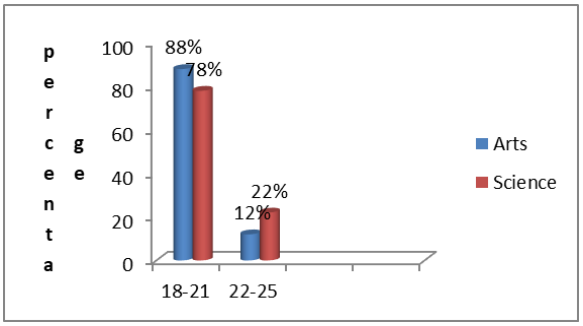
1. Frequency and percentages distribution of subjects as per demographic variables.
2. Knowledge regarding electronic waste management among college students of arts and science stream.

INFERENTIAL ANALYSIS

1. Association between knowledge regarding electronic waste management among college students of science stream and selected socio-demographic variable.
2. Association between knowledge regarding electronic waste management among college students of arts stream and selected socio-demographic variable.

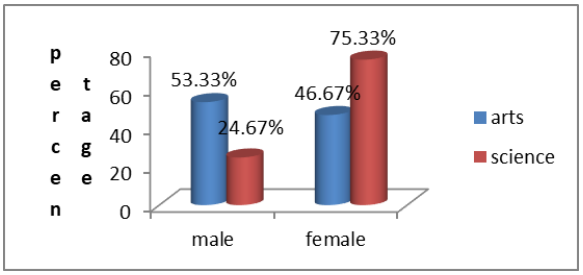
RESULTS

Percentage wise distribution among college students of arts and science stream according to their age.



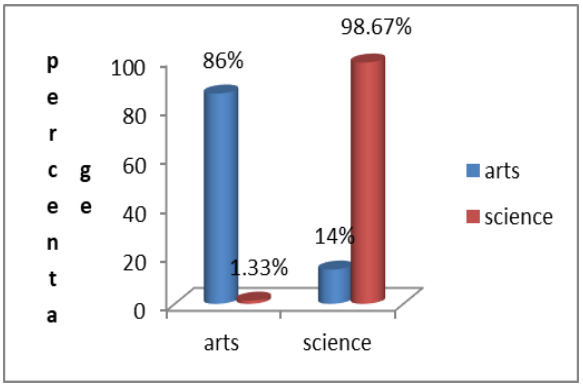
This figure shows that a remarkable percentage (88%) were in age group of 18-21 and 12% were in the age group of 22-25 among college students of arts stream. On the other hand a considerable percentage (78%) were in the age group of 18-21, 22%were in the age group of 22-25 among college students of science stream.

Percentage wise distribution among college students of arts and science stream according to their gender.



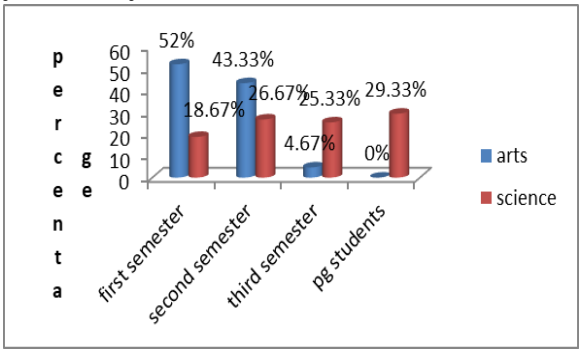
This figure shows that among college students of arts stream, 53.33% of the sample were males and 46.67% were females. On the other hand 24.67% were males and majority (75.33%) were females among college students of science stream.

Percentage wise distribution among college students of arts and science stream according to their choice of subject at higher secondary level.



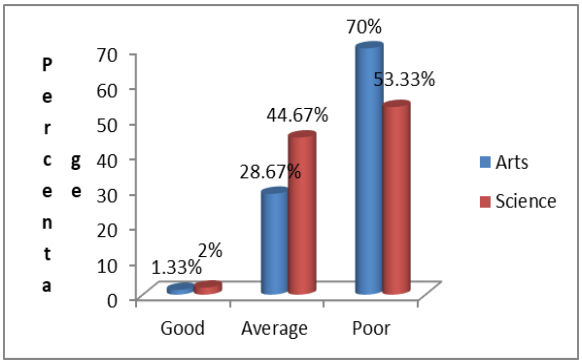
This figure shows that vast majority (86%) of sample were from arts stream at higher secondary level and 14%were from science stream at higher secondary level, among college students of arts stream. Whereas a very low percentage (1.33%) sample was from arts stream at higher secondary level and majority (98.67%) were from science stream at higher secondary level among college students of science stream

Percentage wise distribution among college students of arts and science stream according to their current year of study.



This figure shows that 52% students were from first semester, 43.33% students were from second semester and 4.67% were from third year in arts stream. On the other hand 18.67%were from first semester, 26.67% were from second semester, 25.33% were from third semester and 29.33% were post graduate students in science stream.

Percentage wise distribution among college students of arts and science stream according to their scores.



This figure shows that 1.33% students have adequate knowledge, 28.67% have moderate knowledge and majority (70%) have poor knowledge in arts stream. On the other hand 2% have adequate knowledge, 44.67% have average knowledge and 53.33% have poor knowledge in science stream regarding electronic waste management

Association between knowledge and selected socio-demographic variables among college students of arts stream.

N=300

Sl no	Variables	Knowledge Level			Df	Chi square value	Table value	Level of significance
		Good	Average	Poor				
1.	AGE							
	18-21	2	36	94	2	1.25	5.99	NS
	22-25	0	7	11				
2.	Gender							
	Male	1	19	60	2	2.09	5.99	NS
	Female	1	24	45				
3.	Choice of subject at higher secondary level							
	Arts	2	34	93	2	2.44	5.99	NS
	Science	0	9	12				
4.	Current year of study							
	First semester	2	22	54	6	5.22	12.59	NS
	Second semester	0	17	48				
	Third semester	0	4	3				
	PG students	0	0	0				

Among the students of arts stream, no association was found between knowledge and demographic variable such as age, gender, choice of subject at higher secondary level and current year of study.

Association between knowledge and selected socio-demographic variables among college students of science stream

N=300

Sl no	Variables	Knowledge Level			df	Chi Square value	Table value	Level of significance
		Good	Average	Poor				
1.	AGE							
	18-21	1	49	67	2	3.46	5.99	NS
	22-25	2	18	13				
2.	Gender							
	Male	1	14	22	2	0.594	5.99	NS
	Female	2	53	58				
3.	Choice of subject at higher secondary level							
	Arts	0	1	1	2	0	5.99	NS
	Science	3	66	79				
4.	Current year of study							
	First semester	1	5	22	6	12.289	12.592	NS
	Second semester	1	18	21				
	Third semester	0	18	20				
	PG students	1	26	17				

Among the students of science stream, no association was found between knowledge and demographic variable such as age, gender, choice of subject at higher secondary level and current year of study.

DISCUSSION

The present study was aimed to assess the knowledge regarding electronic waste management among college students of arts and science stream. A self–structured knowledge questionnaire was used to collect data . The present study revealed that among students of arts stream 1.33% had good knowledge 28.67% had moderate knowledge and 70% had good knowledge regarding electronic waste management. Among students of science stream 2% had good knowledge 44.67% had average knowledge and 53.33% of sample had poor knowledge regarding electronic waste management. The association between the knowledge regarding electronic waste management among college students and selected socio-demographic variables was computed by chi-square test. The present study showed there was no significant association between knowledge of college students regarding electronic waste management.

CONCLUSION

Due to its extensive use in our daily lives, the electronics industry has been at the forefront of a revolution for the past several years. These electrical

products are either discarded or reused after being used. They now fall into the Electronic Waste (E-waste) category. E-waste management is more difficult and complex than managing other types of waste. Electronic waste is primarily created by home appliances and electronic equipment. E-waste, unlike other types of waste like plastic and chemical waste, can have an influence on the environment and people's health if it is not properly managed. It needs to be disposed of properly immediately. E-waste is now a commercial potential due to the precious materials they contain. It consists of priceless metals like gold, copper, aluminium, iron, and so forth. Therefore, recycling and reuse of this trash is essential for both waste management and the reuse of these important metals.

ACKNOWLEDGMENT

We are thankful to the Principals of the colleges for the support to conduct the study. We would like to thank the ethic committee considering this topic. Specially thanks to Dr. Sindha Mentaz who helped in literature review and finalized the publication process.

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