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# A Study on Knowledge, Attitude and Practice regarding Electronic Waste Management among Medical Students.

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**ABSTRACT**

New environmental challenge - "Electronics Waste" or "e waste" that consists of electronic devices whatever we use in our daily life.Young adults should aware of this e waste management which will reduce the burden of this e waste management. Currently, most of the domestic used electronics were end up in landfill sites without proper treatment because there is no segregation mechanism To assess the knowledge, attitude, and practices regarding Electronic waste management among medical students. Among 300 medical students of first to third year students was involved in the study a cross sectional study to assess the knowledge attitude and practice about the e-waste. Predesigned semi structured questionnaire given and data was collected after taking informed consent. The data collected was coded and entered in Microsoft office excel worksheet and analysis done using trial version SPSS. Descriptive statistics was done. Result: Among the 300 students 289(96.4%) students had the knowledge of the e waste hazardous to the environment. This study can throw light on E -waste management and the necessity of educating youngsters about appropriate methods of Electronic waste disposal. New Regulations have to be in place to control the flow of e-waste. Awareness about the proper disposal of waste and its proper treatment will bring down this great threat.

**Keywords:** E-waste, Knowledge, Practice, Students, Recycle

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## BACKGROUND

Electronic and Electrical waste, popularly known as e- waste products, do not decompose or rot away [1].Daily our life depends on this electronic devices which provide us with more comfortable life. But the same technology is the most upcoming treat for our society.Young adults should be aware of this e -waste management which will reduce the burden to the environment. Since the is no proper segregation and proper disposal of the domestic used electronics. India has only recently implemented regulations that directly address this issue through the Ministry of Environment and Forests (MoEF) [2].Youngsters generation those who are at the public health department should smartly handle this upcoming threat. "E-waste includes discardedelectronic devices such as computers, monitors, TVs & display devices, telecommunication devices such as cellular calculators , phones andprinters, scanners,audio and video devices,washing machines,microwave ovens, refrigerators,air conditioners, e-waste also covers recording devices such asCDs, DVDs electronic components such as chips, floppy, mother boards [3].

E-wastebeing the cause of major health and environmental concern due to its hazardous nature when compared to municipal waste [4]. Electronic gadgets contain components made of toxic chemicals and metals such as lead, cadmium, chromium, mercury, beryllium, antimony, polyvinyl chlorides [(5)]. Frequent exposure will damage these Nervous systems, reproductive and endocrine systems hence we need to avoid such cases in future . Proper disposal of e waste management is the only key.

**Introduction:**Waste contains both valuable materials as well as hazardous materials that require special handling andrecycling methods. Environmental damage done by the e-waste is irreversible hence it needs the immediate regulations. The e-waste management is the new challenge as compared to municipal or biomedical wastes**.** E-waste recycling involves the destruction of the equipment such that it reduces the toxic effects. Public awareness of this government policy and e-waste hazards is the most important measurements for active participation in management systems.

**Objectives:**To assess the knowledge, attitude, and practices regarding Electronic waste management among medical students.

**Methodology:** A Cross sectional study-KAP, among 300 medical students of first to third year students was involved in the study. Inclusion criteria: Students who are willing to participate was included in the study. Exclusion criteria: Those students who are not willing will be excluded from the study.Study tool: Predesigned semi structured questionnaire. Data was collected by self-administered questionnaire after taking informed consent.Brief procedure:After research and ethics committee approval from the college, the study was carried out among the students. The questionnaire with data related to demographic variables, knowledge, attitude and practice regarding electronic waste management.

**Statistical analysis:**The data collected was coded and entered in Microsoft office excel worksheetand analysis done using trial version SPSS.Descriptive statistics was done. Implications:The study will help in understanding the practices of E -waste management among students.It can throw light on the necessity of educating youngsters about appropriate methods of Electronic waste disposal.

## RESULTS

Among 300 students, 159 wereMale students and 141 were female students and age group distribution was between 17 to 23 years and their mean age was 19.02 and 19.21 for male and female students respectively.

Table 1 shows the knowledge component of the students, 289( 96.4%) students had the knowledge of the e waste hazardous to the environment but only 4 % knew about the policies. Source of information was from social media which was 48.3 %.and about the dealers 253 students doesn't know the person to recycle it.

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**Table 1: The knowledge about the e-waste**

| S.no | Knowledge | | N (%) |
|---|---|---|---|
| 1. | e-waste is hazardous to health and environment | Yes | 289( 96.4 ) |
| | | No | 11( 3.6) |
| 2. | Any environment policies regarding e-waste management? | Yes | 12( 4 ) |
| | | No | 288( 96 ) |
| 3 | Source of information? | Through family members | 26( 8.7 ) |
| | | Friends | 34( 11.3) |
| | | Social media | 145( 48.3 ) |
| | | Internet | 95( 31.7 ) |
| 4 | Do you know someone who can collect used old gadgets for recycle/reuse/dismantling? | Yes | 47( 15.7) |
| | | No | 253(84.3 ) |
| 5 | Are you aware of the chemicals present in electronic products? | Yes | 161( 53.6 ) |
| | | No | 139( 46.4 ) |

**Table 2: The Attitude about the e-waste**

| S.no | Attitude | | N (%) |
|---|---|---|---|
| 1 | Do you consider your unused electronic device to be waste or have other purpose | Yes | 145 ( 48.4 ) |
| | | No | 155( 51.6 ) |
| 2 | What do you think is the best way to dispose your e-waste | Take to recycling centre | 1212<br>154( 51.4 ) |
| | | Take to landfill | 42( 14 ) |
| | | Put in household trash bin | 02 ( 0.6 ) |
| | | Give to friend or charity | 76( 25.4 ) |
| | | Store it | 26( 8.6 ) |
| 3 | What is your opinion about the reason for generation of more electronic wastes? | Buying more electronic gadgets | 129( 43 ) |
| | | Dumping the used electronic gadgets in home | 44( 14.7 ) |
| | | Not following proper disposal methods | 127( 42.3 ) |
| 4 | Before disposing your used gadgets will you delete your saved data | Yes | 66( 22 ) |
| | | No | 234( 78 ) |

Table 2 shows the attitude towards the e waste management the best way for e-waste management is to give the waste it to recycling centre 51.4 %. Before giving to the reseller the personal information and data should be deleted. 127 (42.3%) students had the opinion not following the proper disposal methods.

**Table 3: The Practice about the e-waste**

| S.no | Practice | | N (%) |
|---|---|---|---|
| 1 | How many years did you replace the gadget | Less than 5 years | 233( 77.6) |
| | | More than 5 yrs | 67( 22.4 ) |
| 2 | Reasons for your purchase | Broken | 63( 21 ) |
| | | Not working properly | 114(38) |
| | | Working but need new features | 123(41) |
| 3 | How do you dispose your gadgets? | Sell to scrap dealer | 09( 03) |
| | | Return to manufacturer | 04( 1.4 ) |
| | | Dispose along with household | 234( 78 ) |
| | | Put on street | 53( 17.6 ) |

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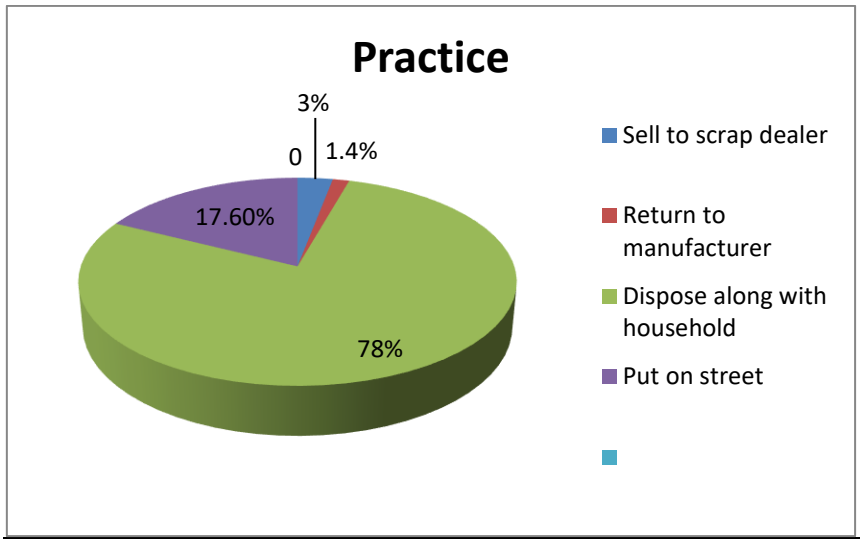
Table 3 shows the practice of the e waste treatment and most of the electronic gadget bought and not frequently used




**Graph 1: The disposal of gadgets**

## CONCLUSION

Electronic products now became the most essential part in our daily lifeand we depend on electronic products. Currently, every village uses electronic products such as mobile phone, computer, refrigerator, television; and so on for the convenience of their daily activities. Consequently, voluminous electronic wastes are being created by the consumers. However, they are not much aware about the management of electronic wastes. According to this study, knowledge is present but there is no correct practice followed.

E-Parisaraa [6]: Is the first government-authorized eco-friendly recycling unit at Karnataka. This plant is the first scientific e-waste recycling unit which aims to reduce pollution in land. Personal data theft will be the next arsing issues in this disposal of the electronic waste hence this plant protects data from discarded computers and guarantees customer's confidentiality. India's first Government approved Electronic Waste recycling company approved by both Central Pollution Control Board and Karnataka State Pollution Control Board [7].

New threat of the near future are e-waste and become a great challenge for public health department as higher rate of disposed, reused or recycled. Electronic products substances can pollute soil, water, air, dust, and food sources[8, 9].According to Ram[10] et al India is among the top five e-waste producing countries in the world with estimated annual production of two million tons. Awareness among the young generation who will be the next society will eventually reduce the factors affecting the environmental damage. Urgent need for improvement in e-waste management and educating this youngster will eventually improve this emerging issue.

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