

A Study To Assess The Knowledge Regarding Hazards Of E-Waste Among E-Waste Handlers In Selected Area Of Pune City.’’

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ABSTRACT

Introduction: India is a developing country from the last decades increase in population and change of lifestyle. The demand of using electronic products is increased. In India e-waste generation is growing at 15% and is expected to cross 8000000 tones’ per year in 2012.A central pollution control board (cpcb) report said that 65 cities in India generate more than 60-70%of the total e -waste which comes from 10 states that are followed by Maharashtra, Tamilnadu, Andhra Pradesh, Uttar Pradesh, West Bengal, Delhi, Gujarat, Madhya Pradesh and Punjab. In the list of e-waste generating states in India. “Electronic waste or e -waste “consists of obsolete electronic devices E-waste affects environment through landfills, when we throw out our computers they wind up in landfills causing the possibility of toxic chemical are released in air damaging the atmosphere. Children are particularly vulnerable to the health risks that might result from e -waste exposure and need more specific protection while they are still growing children’s intake of water air and food in proportion to their weight is significantly increased when compared with adults. The risk of hazardous chemical absorption is increased for children’s as well .In addition children’s bodies’ functional systems such as the Immune system, digestive system, reproductive system, and central nervous system are affected. The toxic materials which are used in manufacturing of electronic good can damage to the environment. It contains cathode ray tubes, printed board assemblies, capacitation, mercury switches and relays, batteries, liquid crystal displays, cartridges from photocopying machines, selenium drums and electrolytes. There are different types of e-waste which has various routes of exposure in human body, therefore has the ability to affect health. This becomes important to conduct research studies on aspects such as e-waste. **The present study title:** “A study to assess the knowledge regarding hazards of e-waste among e-waste handlers in selected areas of Pune city. “The objectives are 1) To assess the knowledge of e-waste handlers regarding e-waste, to associate the knowledge score with selected demographic variables. **Material and Methods:** In present study, researcher adopted non- experimental design. The study carried out 200 samples. Ethical clearance was taken. A Non-probability Convenient Sampling Technique was used. The significance was calculated by using mean, standard deviation, and calculated ‘t’ value, and association was done by Fisher’s exact test with demographic variable. **Result** Most of the samples 68% were having average knowledge regarding hazards of E-waste, 22% handlers having good knowledge and 10% E-waste handlers were having poor knowledge. **Conclusion:** Study concludes that knowledge about e-waste and its hazards on health is very little known among the general public. There is a need to create awareness among the people in order to prevent risk related e-waste. **Recommendations:** The study may be conducted to evaluate the effectiveness of planned teaching or any other methods of health teaching on similar problem, a study can be done on association between various demographic variable, which were significant on larger sample.

Keywords: (Hazards, E-waste, E-waste Handlers)

INTRODUCTION

India is a developing country from the last decades increase in population and change of lifestyle. The demand of using electronic products is increased. In India e-waste generation is growing at 15% and is expected to cross 8000000 tonnes per year in 2012.A central pollution control board (cpcb) report said that 65 cities in India generate more than 60-70%of the total e -waste which comes from 10 states that are followed by Maharashtra, Tamilnadu, Andhra Pradesh, Uttar Pradesh, West Bengal, Delhi, Gujarat, Madhya Pradesh and Punjab. In the list of e-waste generating states in India. “Electronic waste or e -waste “consists of obsolete electronic devices E-waste affects environment through landfills, when we throw out our computers they wind up in landfills causing the possibility of toxic chemical are released in air damaging the atmosphere. Children are particularly vulnerable to the health risks

that might result from e-waste exposure and need more specific protection while they are still growing children's intake of water air and food in proportion to their weight is significantly increased when compared with adults. The risk of hazardous chemical absorption is increased for children's as well .In addition children's bodies' functional systems such as the Immune system, digestive system, reproductive system, and central nervous system are affected. The toxic materials which are used in manufacturing of electronic good can damage to the environment. It contains cathode ray tubes,

printed board assemblies, capacitation, mercury switches and relays, batteries, liquid crystal displays, cartridges from photocopying machines, selenium drums and electrolytes. There are different types of e-waste which has various routes of exposure in human body, therefore has the ability to affect health. This becomes important to conduct research studies on

aspects such as e-waste. E-waste contains toxic substance like lead, mercury, cadmium and polycyclic aromatic hydrocarbons (PAH) it has an bad effect on health of the people and environment if not take care properly. The global volume of e-waste generated is expected to reach 52.2 million tonnes or 6.8 kg/ inhabitant by 2021 from 44.7 million tonnes in 2016 at a compound annual growth rate of 20 percent, according to a joint study on 'Electricals & Electronics Manufacturing in India,' conducted by the ASSOCHAM-NEC. Jun 4, 2018

NEED FOR THE STUDY

Electronic waste is emerging as a serious public health and environmental issue in India. India is the “fifth largest electronic waste producer in the world”; approximately 2 million tons of e-waste are generated annually and an undisclosed amount of e-waste is imported from other countries around the world.

E-waste has tremendous effect on health. Women and children are particularly vulnerable to the health effects of toxic e-waste exposure e-waste contains many hazardous substances which have been found to be extremely dangerous to human health and the environment; e-waste is often disposed of under less than ideal safety conditions. Since most e-waste is illegally processed by workers operating outside of formally-organized systems, these informal workers commonly practice unregulated and often dangerous recycling techniques that can have serious health consequences. Unfortunately the recycling labor force has a low literacy rate and very little awareness of the hazards of e-waste which means that many of these workers are unknowingly engaging in activities that are harmful to their health. In Delhi alone, an estimated 25,000 workers including children are involved in crude e-waste dismantling units—annually these units dismantle 10,000–20,000 tons of e-waste with bare hands. They lack proper personal protective equipment and are exposed to toxins though the e-waste. The materials that are not recycled by waste pickers are often left in landfills or burned. Both methods can lead to toxic chemicals leaking into the air, water and soil. Workers in these facilities often do not have adequate safety gear and exposure to e-waste can lead to many health issues. Exposure can happen directly or indirectly through skin contact, inhalation of fine particles and ingestion of contaminated dust. Potential health outcomes from e-waste exposure include changes in thyroid functions, poor neonatal outcomes, including spontaneous abortions, stillbirths and premature births.[10] Side effects also included changes in behaviours and decreased lung function. There is also evidence of significant DNA damage.

OBJECTIVES OF THIS STUDY

- To assess the knowledge of e-waste handlers regarding e-waste.
- To associate the knowledge score with selected demographic variables.

REVIEW OF LITERATURE

A literature review helps to lay the foundation for the study and also inspire new research ideas.

A study done by Sapna Mishra and B.R Shamanna in Musheerabad in Hyderabad in the year 2010 on 104 handlers. A study done on level of understanding about electronic waste and its harmful effect on e-waste handlers in Hyderabad. In India about 72% e-waste handlers having No knowledge regarding hazards of e-waste and 71% were Not aware about harmful effect on health 85% were not using any of the protective equipment while 16% e-waste handlers having knowledge regarding e-waste affect on health if it is not handled properly. The research done by Anthony Okoye and Chijioke Odoh in Nigeria in the year 2014 on 247 people. To Study the level of awareness of the regulation their mode of disposal of the E-Waste. The result revealed that awareness is critically low. Though the respondents have concern for their environment in various degrees majority dispose their E-waste alongside municipal wastes without knowing the implications.

A study done by Cynthia S. Subhprada and Kalyani P in the year 2016 in the Kumoll Medical College Kumoll Andhra Pradesh on 100 medical students. The study on understanding of e-waste management in the medical students. In this study 100 samples have choosen but four were not participate so the total was 96 sample were considered for the analysis in the post test. In that 56.25% were male and 43.75% were females the resources for the information regarding management of e-waste was internet 30.2% and family and friends 16.6%.

A study done by Jayapradha Annamalai in the department of chemical engineering Satyabhama University Tamilnadu in India in the year 2015. Health problems due to occupation in informal reprocess of e-waste .due to change in the lifestyle of the human being there is change in the living standard of and individual .now the India is in the process of

digital country so that there is the more production of electronic waste and equipments. In our country e-waste is processed in urban areas 95% in the trained workers while in untrained workers personal protective equipment were not use while reprocessing the e-waste which is dangerous for their health this was shown in the study.

Material and method:

In present study, researcher adopted non- experimental design. The study carried out 200 samples. Ethical clearance was taken. A Non-probability Convenient Sampling Technique was used. The significance was calculated by using mean, standard deviation, and calculated 't' value, and association was done by Fisher's exact test with demographic variable. Description of Tool: The tool includes two sections:

Section I: : Demographic data on 4 different items such as age, gender, working experience, Daily working hours per day etc.
Section II: It consists of 15 items regarding knowledge on e-waste each item have 4 choices

Plan for Data Analysis:

The analysis was done by using the data of section-I and section-II and presents them in tables, graphs and figures.

For the analysis of demographic data frequencies and percentage was calculated. The significance was calculated by using mean, standard deviation, and calculated 't' value, and association was done by Fisher's exact test with demographic variable.

RESULT AND DISCUSSION

Analysis and interpretation of the data are based on data collected from 200 samples.

SECTION I

FIG: 1 AGE OF E-WASTE HANDLE

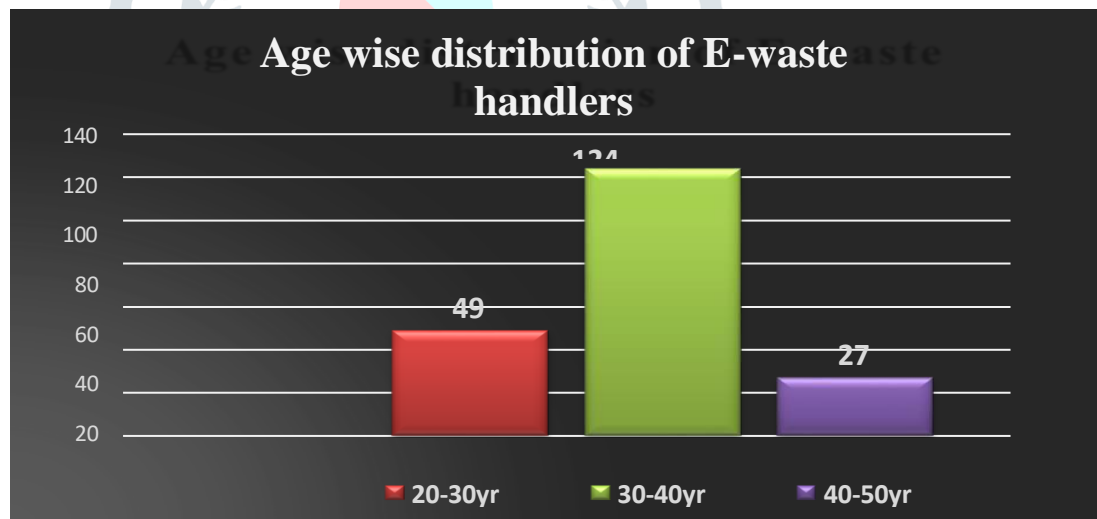


Fig. 1 Bar diagram showing age wise distribution of e-waste handlers

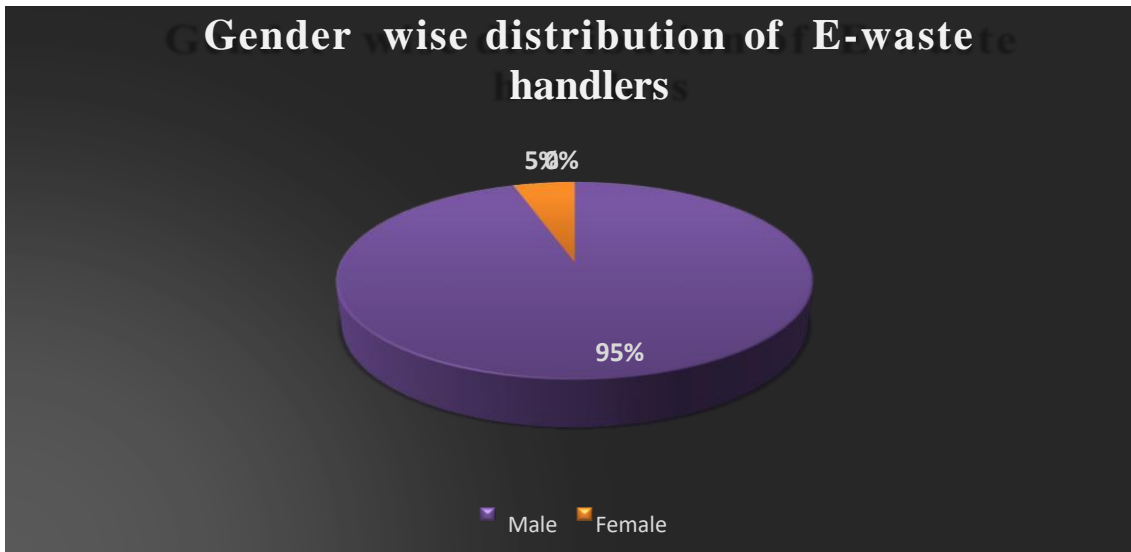


Fig 2:Pie diagram showing gender wise distribution of E-waste handlers.

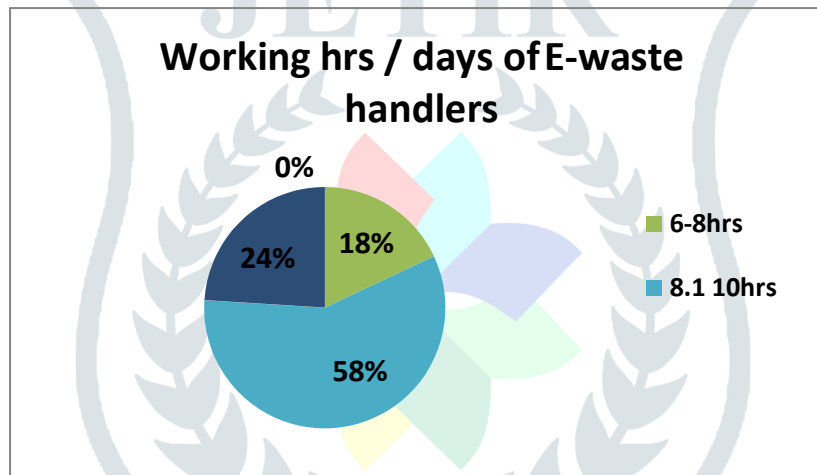


Fig 3: Shows the daily working hours/day of E-waste handlers. In Daily working hours 24% E- waste handlers were working for 10-12 hours /day, 18% were working for 6-8 hours and 58% E-waste handlers were working for 8- 10hrs.



Fig 4: Bar diagram showing work experience of e –waste handlers.

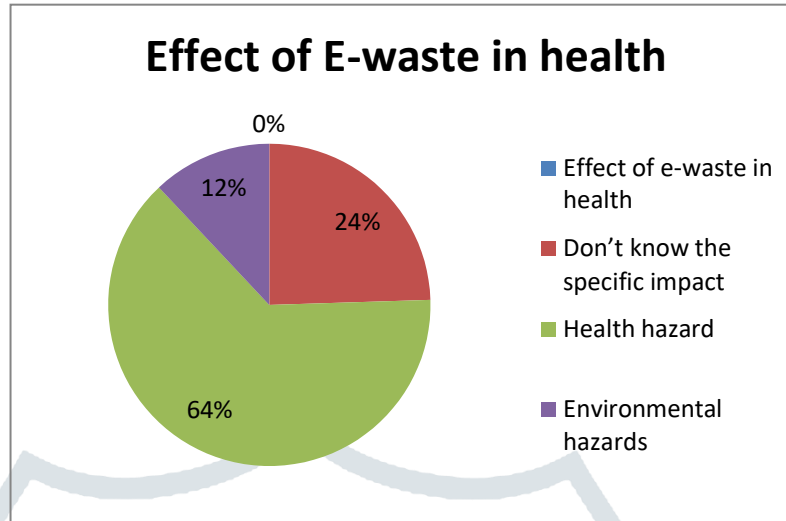


Fig 5:Shows the effect of E-waste in health 64% are health hazards, 20% E-waste handlers don't know the specific impact of health hazard 12% E-waste handlers knows environmental hazards,0% e-waste handlers don't know the effect of e-waste in health.

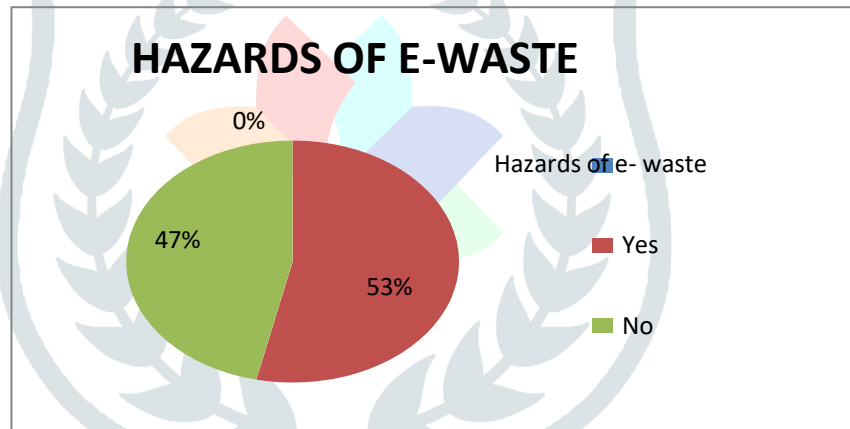


Fig 6 :pie diagram shows hazards of e-waste 53 % e-waste handlers say's yes and 47 % say's No.

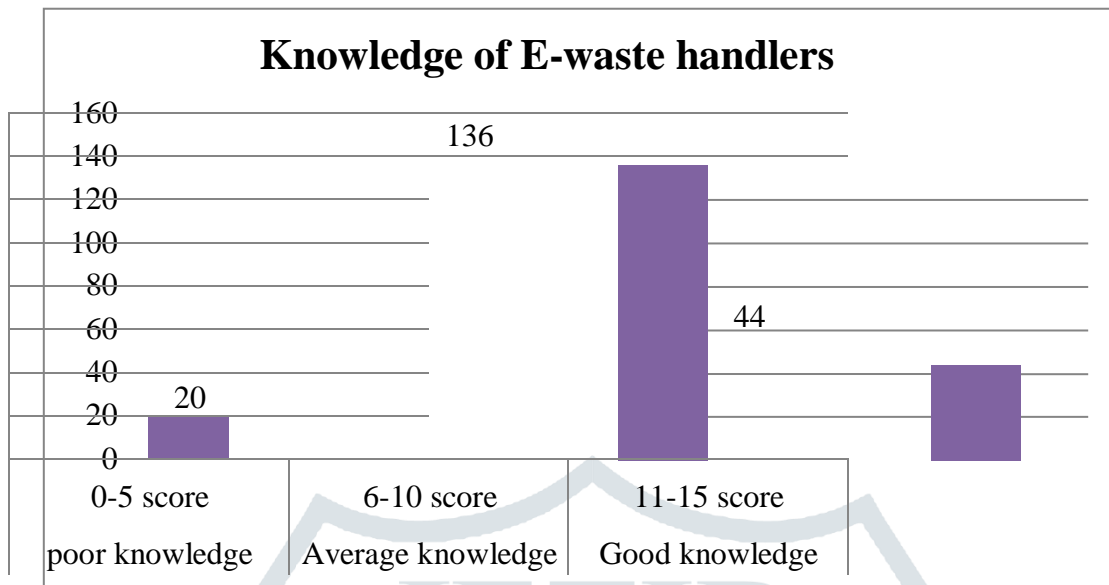


Fig 4: Shows the level of knowledge of e- waste handlers. 68%. E-waste handlers having Average knowledge regarding hazards of E-waste, 22% handlers having good Knowledge and 10% E-waste handlers having poor knowledge.

SECTION II

n = 200

| Sr.no | Demographic variable | Df | cal value | Table value | P value | Association/ No Association | |
|-------|-----------------------|-----------------|-----------|-------------|---------|-----------------------------|----------------|
| 1. | AGE | 20-30 yrs | 4 | 197.52 | 9.49 | < 0.00 | No association |
| | | 31 -40 yrs | | | | | |
| | | 41-50 yrs | | | | | |
| 3. | WORK EXPERIENCE | 6months- 2 year | 4 | 7.749382 | 9.49 | <0.00 | No association |
| | | 2.1-5 years | | | | | |
| | | 5.1-10 years | | | | | |
| 2. | WORKING HOURS PER DAY | 6-8 Hours | 4 | 20.27 | 9.49 | <0.00 | No association |
| | | 8.1-10 Hours | | | | | |
| | | 10.1-12 Hours | | | | | |

The above table shows the association of knowledge score of e-waste handlers regarding e-waste management with selected demographic variables using chi square test. Since p- value of age, work experience and working hours of e-waste handlers is less than 0.0 we can say that there is no association of knowledge of e- waste with age of e-waste handlers, work experience and working hours of e-waste handlers.

Discussion

The present study done on 200 e-waste handlers also states that there 68% were having average knowledge regarding hazards of E-waste, 22% handlers having good knowledge and 10% E-waste handlers were having poor knowledge.

A study done by Department of Community Medicine, Dr. D.Y. Patil Medical College and Hospital, Nerul, Navi Mumbai, in August 2008. "E-waste hazards is the rapidly increasing problem in India E-waste contains toxic material it have hazards on health and environment . In India e-waste management has greater importance Therefore it becomes very important to create awareness among the public on reuse, recycle in order to prevent environmental and health hazards.

Conclusion

The researches feel that this is best method to assess the knowledge of hazards of e-waste handlers by doing a survey of all people handling e-waste. Most of the samples 68% were having average knowledge regarding hazards of E-waste, 22% handlers having good knowledge and 10% E-waste handlers were having poor knowledge. So study conclude that knowledge about e-waste and its hazards on health is very little known among the general public. There is a need to create awareness among the people in order to prevent risk related e-waste.

IMPLICATIONS

The finding of this study is implicated in following headings-

Nursing education

Nursing education is developing rapidly in India and nurses from our country can be found all over the world providing care and education. There is an increasing use of technology in the health sector. Nurses need to be aware about hazards of e-waste and the disease condition arising out of it. The education curriculum includes alternative treatment and methods in the syllabus which will expose the student to the various alternatives to help the patient to cure his disease or disorder. Now a day much importance given to awareness and promotion of health than the causative aspects as the need of society are continuously changing newer components must incorporate in the nursing curriculum nursing education must emphasize on preventive aspects. The nursing teacher can use the result of the study as an informative illustration for the student in nursing education to help in inculcating values and sense of responsibility in the student.

Nursing Administration

As a part of administration nurse administrator play a vital role in the education of staff nurses through in service education and seminars as to the newer diseases likely to develop with the hazards of e-waste. Education and skill based learning on how to care for a person with such disease condition.

Nursing Research

Nursing research is an important feature of nursing profession and it develop nursing . a body of nursing knowledge there is need for extended and intensive nursing research in the selected hospital in Pune city for staff nurses to improving their knowledge regarding Hazards of e-waste, how to prevent the hazards and create awareness among the general public on impact of e-waste on health conditions.

Limitations

The following points were beyond the control of the investigator.

1. The study is limited to population who can speak English /Hindi/Marathi.
2. The study is limited to selected electronic shops workers in Pune city.

Recommendation

The study may be conducted to evaluate the effectiveness of planned teaching or any other methods of health teaching on similar problem.

A study can be done on association between various demographic variable, which were significant on larger sample.

A similar study can be replicated in different setting to strengthen the findings.

A study could be undertaken to assess the knowledge of nurses on hazards of e-waste.

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