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Research Article

Awareness of Higher Secondary School Students on Emergency Management of Electric Shock -A Cross-Sectional Study

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Abstract

Aim

A descriptive study was conducted to assess the awareness of higher secondary school students on emergency management of electric shock in a selected school at Kolenchery, Ernakulam District, Kerala in a view to develop an informational pamphlet.

Background

Electricity is very useful to mankind, and it can be dangerous if not carefully used. Electric burns can be caused by low-voltage or high-voltage currents. Electrical current exposes people to a serious, widespread hazard; practically all members of society are exposed to electrical energy during the performance of their daily duties, and electrocutions occur to workers in various job categories. Many people especially children are unaware of the potential electrical hazards present in their living environment, which makes them more vulnerable to the danger of electrocution. The present study was aimed at assessing the awareness of higher secondary school students regarding emergency management of electric shock.

Objectives

The objectives of the study were

- To assess the awareness of higher secondary school students on emergency management of electric shock in a view to develop an informational pamphlet
- To find the association of awareness of higher secondary school students with selected demographic variables.

Methods

Descriptive analytical approach was used for the study among 120 samples by using convenience sampling technique. Data was collected using structured knowledge questionnaire. A pamphlet on emergency management of electric shock was distributed to the students at the end of the study to enhance their knowledge. Data was analyzed using descriptive and inferential statistics.

Results

The result of the study showed that none of the students had good knowledge, 53.7% of the students had average knowledge and 46.3% had poor knowledge regarding emergency management of electric shock. The study also concluded that there is a significant association between the group of study (science stream) of students and knowledge.

Conclusion

The study conducted among 120 school students concluded that most of the students had poor knowledge about emergency management of electric shock. The study also witnessed that there is a significant association between the group of study (science stream) of students and knowledge level.

Introduction

Electricity is a ubiquitous energy agent and an integral part of modern life [1]. An electric shock occurs when a person comes into contact with an electrical energy source. Electrical energy flows through a portion of the body causing a shock. Practically all members of society are exposed to electrical energy during the performance of their daily duties and electrocutions occur to workers in various job categories. Exposure to electrical energy may result in no injury at all to devastating damage or death. Children account for approximately 20 percent of all electrical injuries. The incidences are highest among toddlers and adolescents. There are more than 30,000 nonfatal shock incidents a year in the US and electrical burns account for about 5% of admissions to burn units in the US. Electric shocks are responsible for approximately 1,000 deaths or 1 percent of all deaths in the United States [2]. The burden of burns falls disproportionately on low-income and middle-income countries. The situation in India is particularly worrying. In 2019, more than 23 000 fire-related deaths were estimated in India, which is about 20% of the global mortality burden. Additionally, 1.5 million disability adjusted life years were attributed to burns [3]. Adolescents and adults are prone to high voltage shock caused by mischievous exploration and exposure at work. Electrical burns are associated with significant morbidity and mortality, which are usually preventable with simple safety measures.

Purpose of the study

A retrospective study was conducted in Tehran, Iran, to assess the mortality associated with electrocution between 2002 and 2006. The study highlighted that out of 295 deaths, 95 deaths (32.2%) occurred due to electrocution by touching an electrical cable. The study concluded that education should be provided to avoid such accidents with safety measures



[4]. A retrospective study has been conducted in Varanasi, India for the period of 5 consecutive years from 2009 to 2013 based on autopsy record of the unnatural death cases resulting from electrocution deaths. The study emphasized that male electrocution deaths dominated over female in the ratio of 10.3:1 and the predominant age group were found to be 31-40 years (34%) followed by age group 21-30 years (29%) and 11-20 years showing (15%) reflecting that young adult were more involved in such type of deaths. The study concluded that electrocution death was 7th most common cause of death after road traffic accident, burn, poisoning, Violent asphyxia death, railway accident, firearm injury, in Varanasi region [5]. A descriptive study was carried out in Nagpur to find out the incidence of deaths due to electrocution with special emphasis on finding out the circumstances along with pattern of injuries sustained by the victims. A total of 74 deaths due to electrocution were studied in which male's outnumbered females. Approximately half of cases was observed in the age group of 21-30 years (36 cases i.e., 48.64%) which included 05 females. 56 victims (71.6%) were electrocuted by low tension domestic supply, out of which 38 were electrocuted at home. The study concluded that adoption of proper insulation safety measures are important factors required for prevention of fatal electrocution [1].

Even though the incidence of burns is shooting up acutely in the country, there is no actions undertaken by the authorities to avert such situation. Since children are a vulnerable group and more prone for such burn incidences, an education program intended to prevent the occurrence of such cases and emphasize the importance and execution of first-aid measures to patients with burns can have a positive change in this aspect. Hence the researcher took over the study to assess the awareness of higher secondary school students on emergency management of electric shock in a view to develop an informational pamphlet.

Statement of the problem

Awareness of higher secondary school students on emergency management of electric shock -A cross-sectional study.

Objectives

- To assess the awareness of higher secondary school students on emergency management of electric shock in a view to develop a pamphlet.
- To find the association between awareness of higher secondary school students with selected demographic variables.

Hypothesis [Level of significance at 0.05 level]

- H₁- There is a significant association between awareness of higher secondary school students with selected demographic variables.
- H₀- There is no significant association between awareness of higher secondary school students with selected demographic variables.

Materials and Methods

- Setting of the study:** St. Peters Vocational and Higher Secondary Education, Kolenchery.
- Research approach:** Quantitative approach
- Research design:** The design used in this study was descriptive survey design.
- Sample size:** Based on the results of pilot study the sample size was calculated using My sample size calculation software developed by department of Biostatistics. The sampling technique used was convenience sampling technique. The following formula was used to calculate sample size.

$$n = \frac{Z^2 1-\alpha/2 \sigma^2}{(\mu d)^2}$$

Where,

σ = Anticipated standard deviation (7.02)

Z²1-α/2 = 1.96 (at 5% α)

μ = Anticipated mean (87.9)

d = Precision (2%)

The required sample size at precision 2 % was 61 subjects. 120 subjects were selected for the study.

- Sample:** The sample size was 120 students studying in higher secondary classes
- Sampling Technique:** Non-probability Convenient sampling technique
- Inclusion criteria:** Students who were between age of 14 -20 years and available during data collection studying in selected school of Kolenchery, Ernakulam district.
- Exclusion criteria:** Students with sensory-perceptual impairment.
- Data collection instruments:**

Tool 1: Demographic proforma.

It consists of 6 questions for collecting demographic data such as age, gender, year of study, stream of study, area of living, previous knowledge on emergency management of electric shock.

Tool 2: Structured knowledge questionnaire on emergency management of electric shock.

To assess the knowledge on emergency management of electric shock. Items on questionnaire covered various aspects of emergency management of electric shock including first aid, breaking contact with electrical source, turning off the source or moving the source away and performing primary survey.

Scoring: Structured multiple-choice questionnaire consisted of 20 items. A score of 0- 35% indicated poor knowledge 36-70% indicated average knowledge and 71-100% indicated good knowledge.

Content Validity

To ensure the content validity, the tool was submitted to three experts in the field of emergency management, Pediatric and Medical Surgical Nursing. They were requested to judge the items for its relevance, appropriateness and the degree of agreement for the study. Content validity index was calculated. Items with a content validity index more than 90% were included in the tool.

Reliability of the tool

Reliability of the questionnaire was assessed by Split half method and the tool was found to be highly reliable (r = 0.83).

Ethical Clearance

Initially the researcher obtained ethical clearance from Institutional Ethics Committee and permission from administrative authorities of St Peters Vocational Higher Secondary Education, Kolenchery. Researchers introduced themselves and the purpose and details of the study were explained to the students. An informed consent was obtained from the subjects after assuring anonymity and confidentiality.

Data collection procedure

The investigators met the school authorities and explained about the present study. The higher secondary school students studying in science and commerce stream were met by the investigators. Study information sheet and informed consent form were given to the subjects. 120 subjects who have given consent and shown willingness to participate were enrolled for the study.

Results

Data were analyzed by descriptive and inferential statistics using Microsoft excel and R software.

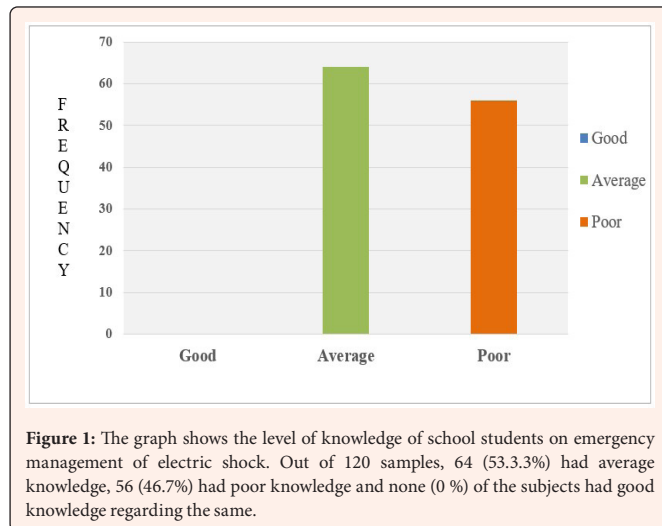
Section 1: Data on level of knowledge of higher secondary school students on emergency management of electric shock.



n=120

| Level of knowledge | Frequency | Percentage % |
|--------------------|-----------|--------------|
| Good | 0 | 0 |
| Average | 64 | 53.3 |
| Poor | 56 | 46.7 |

Table 1: Frequency and percentage distribution of level of knowledge of higher secondary school students on emergency management of electric shock.



Section 2: Chi-Square test was done to find the association between awareness of higher secondary school students with selected demographic variables.

n=120

| Demographic variables | Knowledge | | Chi-square | p - value | |
|---|------------|------|------------|-----------|---------|
| | Average | Poor | | | |
| Age | 14-16 | 8 | 6 | 1.17 | 0.67 |
| | 17-18 | 50 | 44 | | |
| | 19-20 | 4 | 8 | | |
| Gender | Female | 27 | 28 | 0.734 | 0.392 |
| | Male | 37 | 28 | | |
| Year of study | Plus 1 | 35 | 25 | 1.205 | 0.272 |
| | Plus 2 | 29 | 31 | | |
| Stream of study | Science | 26 | 14 | 6.43 | <0.001* |
| | Commerce | 23 | 17 | | |
| | Humanities | 15 | 25 | | |
| Previous knowledge on emergency management of electric shock. | Yes | 35 | 21 | 2.49 | 0.478 |
| | No | 29 | 35 | | |
| Area of living | Rural | 30 | 29 | 0.734 | 0.392 |
| | Urban | 34 | 27 | | |

*Significant (p value < 0.001)

Table 2: Frequency, Percentage and Chi-Square distribution on awareness of higher secondary school students on emergency management of electric shock.

Discussion

The subject's knowledge regarding emergency management of electric shock was found to be average (53.3%) among the majority. Around half of the samples had poor knowledge and nobody had good knowledge about emergency management of electric shock.

Conclusion

Electric shock triggers a plethora of bodily changes associated with detrimental outcomes. Hence prevention and early management is more desirable than secondary prevention.

Acknowledgement

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Conflicts of Interest: None

Financial Support: None

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