

Effectiveness of an awareness programme on burn prevention and first aid among grade 10 students of type 1 and 2 schools in Kesbewa Divisional area, Piliyandala educational zone, Colombo District, Sri Lanka

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Abstract - Burns are one of the most common household injuries, especially among children. Burn education is a must for reduce the levels of morbidity and mortality rate due to burns. This study was based on one group pretest posttest design and it was carried out to determine the effectiveness of an awareness programme on burn prevention and first aid among grade 10 students of type 1 and 2 schools in Kesbewa area. Stratified random sampling and cluster sampling were used to select schools and participants of the study. A self-administered pretested questionnaire was administered to 321 school children of grade 10, in order to obtain the socio-demographic data and to assess the previous knowledge on burn prevention and first aid. An awareness programme was developed and conducted to all the participants of the study on key factors regarding burn prevention and first aid for burns. Students answered the same self-administered questionnaire after seven days of awareness programme. There were 188 (59%) males and 133 (41%) females. According to the paired sample t test results, the average knowledge score of burn prevention before the awareness programme was 79.25 and after the awareness programme it was 91.43. Mean difference of marks was 12.18. Similarly, the mean difference between pre and post-test scores on first aid was 23.09. The average mark of the students after the

awareness programme is significantly different from the average mark before the awareness programme ($p < 0.05$). This study demonstrated that the awareness programme on burn prevention and first aid was effective for improving knowledge of grade 10 students in Kesbewa area. It is suggested to use this awareness programme further as an effective strategy to increase the awareness of school children on burn prevention and first aid for burns.

Key words - Burns, Prevention of burns, First aid, Awareness programme

Introduction

A burn is defined as an injury to the skin or other organic tissue caused by thermal trauma. It occurs when some or all the cells in the skin or other tissues are destroyed by hot liquids, hot solids or flames. Injuries to the skin or other organic tissues due to radiation, radioactivity, electricity, friction or contact with chemicals are also considered as burns (WHO, 2018). Children are naturally curious. They encounter objects that can cause severe injuries. Playing with fire or touching hot objects can result in burns. This is a debilitating condition accompanied by intense pain and often by long term illness that creates suffering not only for the child but for the wider family and community. The rate of child deaths from burns is currently over

seven times higher in low and middle-income countries than in high-income countries (WHO, 2018). Children are at high risk for death from burns, with a global rate of 3.9 deaths per 100,000 populations (WHO, 2008). Majority of burns occur in low and middle-income countries due to lack of knowledge regarding prevention strategies and lack of improvements in the care of people affected by burns. Sri Lanka has a high incidence of burn-related injuries annually due to a combination of adverse social, economic and cultural factors. The management of burn injuries remains a formidable public health problem (Lau, 2006). Burns are the fifth most common cause of non-fatal childhood injuries in Sri Lanka (Kumarapeli, 2010). Burn education is a must to reduce the levels of morbidity and mortality rate due to burns. The aim of the study was to determine the effectiveness of an awareness programme on burn prevention and first aid for burns among grade 10 students of type 1 and 2 schools in Kesbewa area.

Methodology

The study was based on one group pretest posttest design and it was conducted in six selected schools. The sample size was 321, assuming a prevalence knowledge regarding burn prevention and first aid for burns of 50% among participants, for a precision of 0.05 and a confidence level of 95%. Stratified random sampling and cluster sampling methods used to select schools and participants of the study. The previous knowledge on burn prevention and first aid methods were assessed initially using a pre-tested self-administered questionnaire which consisted of 4 parts. Part I was about the socio-demographic details of students, Part II comprised of past personal burn injuries and sources of getting knowledge, Part III consisted of 26 knowledge questions on burn prevention and Part IV consisted of 13 questions on burn first aid methods. The

awareness programme, which was a PowerPoint presentation regarding the burns, burn causes, burn types according to depth, knowledge on burn prevention and first aid was conducted by the investigators on the same day of pre- test. Following a week of awareness programme, the post-test was conducted. Descriptive frequencies were used to describe the student's knowledge of burn prevention and first aid treatment. Paired sample t tests were conducted to determine the effectiveness of the programme. Ethical clearance was obtained from the Ethical Review Committee of the Faculty of Medicine, General Sir John Kotelawala Defence University, Rathmalana. Parents of the participant were given an information sheet and a consent form to ensure voluntary participation of their child. Assent forms were administered to the students to ensure voluntary participation.

Results and Discussion

A total of 321 grade 10 students were participated in this study. There were 188 (58.6%) boys and 133 (41.4%) girls. Out of 321 students, 197 (61%) have faced burn injury previously and 19 (6%) of them were admitted to the hospital for further treatments. Furthermore, 114 (36%) participants were in the opinion of "washing the burn area under clean running water" is the first action taken after the burn injury. 86 (27%) participants were applied various applicants like butter, toothpaste, aloe vera and egg etc to the burn area. Considering the causes associated with the reported burn injuries, more than 75% of burns were due to the contact of hot liquid and hot objects whereas, chemical and corrosive agents were the least common cause of burns. (Figure 1).

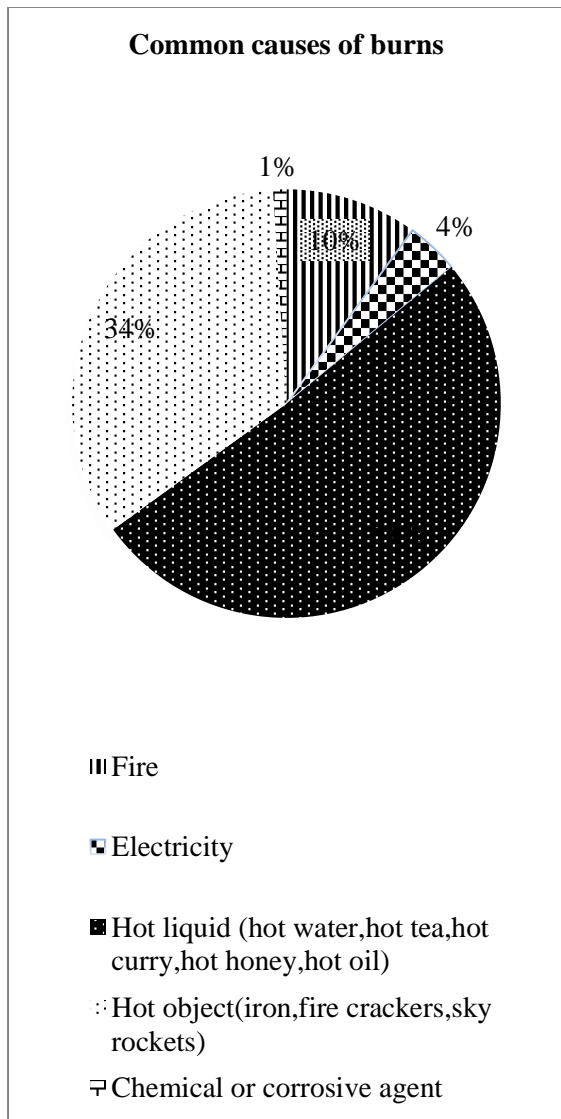


Figure 1 - Common causes of burns

The knowledge on burn prevention was assessed by Part III of the questionnaire and it revealed that more than 80% of the students knew that they should not touch the iron, kettles and heaters just after use, handle hot liquid after ensuring the little siblings are not around before the awareness programme and even after the awareness programme it was further increased. Regarding the first aid on burns, 237 (73.8%) students had knowledge regarding stop, drop and roll when their clothes catch fire before the awareness programme, and it was increased up to 293 (91.3%) students after the awareness programme in our study. More than 50%

students did not know to apply clean running water if burn was happened before the awareness programme and 92% students were accepted it after the awareness programme. This finding is in keeping with data from a burn prevention programme carried out in Jamshedpur, India, where a sustained education programme found an increase in the use of water to cool burns from 37.8% of the study population in 1993 to 75% in 1996. The students were more likely to use raw eggs, toothpaste or herbs to burn wounds before awareness programme, but it was reduced less than 5% after the awareness programme. Sunder and Bharat, 1998 have shown that 122 (38.01%) students were more frequent to accept toothpaste as an applicant to burn wounds before the awareness programme and it was reduced 16 (4.98%) students after the awareness programme. A study done in Zaria regarding burn prevention and first aid knowledge among adolescents found that 22% of the participants had previous knowledge on burn prevention and first aid and the sources of knowledge in those who had previous information were school (43.2%), family members (20%), television (7.46%) and radio (6.57%) (Ibrahim, Asuku and Dahiru, 2014) whereas in the current study, 209 (65%) students have heard about burn prevention and first aid and the sources of getting knowledge were family members 36.8%, school 29.3%, mass media 6.9% and friends 3.7%.

As per the study design students' knowledge was tested by 26 questions on burn prevention and 13 questions on first aid before the awareness programme as the pre-test. The post test conducted seven days after the awareness programme. The total knowledge score calculated by adding burn prevention score and first aid score together. The results are shown in Table 1.

Table 1 - Knowledge scores on burn prevention and first aid before and after the awareness programme

Variable	N	Pre-test		Post-test		t	Sig.(2-tailed)
		Mean	Standard Deviation	Mean	Standard Deviation		
Burn Prevention Knowledge	32	79.25	16.42	91.43	10.43	-15.421	0.001
First Aid Knowledge	32	56.94	19.88	80.02	15.89	-22.214	0.001
Total Knowledge Score	32	72.02	15.32	87.67	10.98	-21.570	0.001

According to the results the average knowledge score of burn prevention before the awareness programme was 79.25 and after the awareness programme it was 91.43. Mean difference of marks was 12.18. Similarly, the mean difference between pre and post-test scores on first aid was 23.09, which is again showing that the knowledge has improved. Since, all the dependent variables were in ratio scale and according to the normality tests, they were normally distributed, several paired sample t-tests conducted to examine the differences between the pre and post measured variables.

The study, due to the means of the pretest and posttest, and the direction of the t-value, we concluded that there was a statistically significant improvement in total marks regarding burn prevention and first aid following the awareness programme from 72.02+15.32 to 87.67+10.98 ($p < 0.05$), an improvement of 15.65+13.00 with positive correlation.

A similar study shows that, culturally sensitive burn prevention teaching tool, consisting of a magnetic storyboard, was used to teach burn safety to Amish children. The teacher told stories and arranged the

magnets on the storyboard to show burn hazards and the children were challenged to rearrange the pieces for a safer situation. The mean pretest score was 62 and the mean posttest score was 83. This pilot study evaluated that the burn prevention teaching tool was effective for improving knowledge among Amish children (Rieman and Kagan, 2012). Another study in a two-county community among school children was developed two burn and fire prevention games. Before playing each game, the participants completed a multiple choice pretest and a similar posttest was administered after gaming to determine mastery and retention of knowledge. 67% of the surveys rated the child's interest in the games as excellent, whereas 33% rated it as good and results concluded that burn and fire prevention games were a successful strategy for burn and fire education among school children (Mondozzi and Harper, 2001).

Conclusion

This study demonstrates that knowledge deficits exist in burn prevention and first aid knowledge among grade 10 students in Kesbewa educational zone. The use of visual media is suggested as an effective maneuver to increase awareness. By using visual media we can intervene to change and teach life saving strategies regarding burn prevention and first aid. By assessing the development of interactive burn safety awareness programme, the students can help reduce injuries themselves and their siblings. Considering the current study, there is significant room for improvement of burn prevention and first aid knowledge among grade 10 school children.

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