

A study of the knowledge of choking, burns, acute poisoning and their first aid practices among mothers of children below 14 years of age attending the District General Hospital, Kalutara

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Abstract

Introduction: Choking, burns and acute poisoning are common presentations in paediatric practice. A significant proportion of the damage caused by them is due to faulty or delayed first aid management by the caregivers. Mothers need to be vigilant and smart to identify them and provide first-contact care in a timely manner.

Objectives: Primary aim was to assess knowledge of mothers regarding paediatric emergencies of choking, burns, acute poisoning, and their first aid practices. Secondary aim was to assess sources of knowledge and factors influencing knowledge.

Method: A descriptive cross-sectional study was done including 103 participants. An interviewer-administered questionnaire, prepared according to standard guidelines, was used for data collection. The knowledge was categorized as good/poor using a 50% cut-off value.

Results: The mean knowledge scores for first aid of choking, burns, and acute poisoning were 32.03±15.81, 66.34±15.82, and 68.60±20.25 respectively. Of the total, 11.7%, 88.3%, and 61.2% showed good knowledge for choking, burns, and acute poisoning respectively. A majority (45.6%) gained their knowledge through family and friends and 98.1% of mothers were interested in learning further.

Conclusions: Mothers had better knowledge regarding poisoning, burns, and their first aid

practices for children compared to choking and its first aid practice. Of the four factors assessed, mothers' age and working status statistically significantly influenced mothers' knowledge but not education or prior experience

(Keywords: Choking, Burns, Acute poisoning, First aid, Paediatric emergencies)

Introduction

Child injuries were recognized as a neglected public health problem by the 64th World Health Assembly¹. Younger children are more prone to accidental injuries because they are limited by their physical, cognitive, and social development². In 2017, the Ministry of Health recorded 60,548 cases and 12,931 admissions to public hospitals due to accidental injuries, consuming an average of 1.6 days of in-patient care and costing between 5000–9000 rupees per day per patient³. In addition, children with accidental injuries are admitted and treated at private sector hospitals. They not only contribute to morbidity and mortality but also have a significant impact on the healthcare facilities and the economy of the country. The total harm caused by an injury is not entirely due to the primary insult, a significant proportion being due to secondary damage caused by delayed or faulty management before reaching a healthcare facility⁴. Preventing this secondary damage can significantly reduce the morbidity and mortality of home accidents. As most secondary injuries occur during the golden hour before reaching a healthcare facility, management during this period decides the course of the illness. A previous study reported 54% of accidental paediatric deaths to have occurred at or around their houses⁵. Therefore, it is of utmost importance for caregivers to be aware of the first aid for common paediatric emergencies.

In a study on kerosene oil poisoning among children, the single cause of mortality had been severe aspiration pneumonia following intoxication and administration of coconut milk as a first-aid measure⁶. This depicts the gravity of the practice of inappropriate first aid measures due to a lack of knowledge. Such harmful first aid measures were practised in 25 (30.1%) children. The lack of knowledge also leads to delayed presentation of the child to a healthcare facility. A previous study

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showed that 32.5% of children with plant poisoning reached a primary care hospital at least two hours after poison ingestion⁷. The commonest reason for the delayed presentation was the lack of concern regarding the urgency of the situation. "Harmful first aid measures and delayed presentation at the primary care unit had a negative impact on poisoning-related outcomes," states Dayasiri KC, *et al*⁸ in their research on acute poisoning related emergencies in the paediatric age group.

Burns and choking are also an important source of paediatric emergencies but there is a significant gap in the literature of this area of study in Sri Lanka. However, a recent case-control study done in Bangladesh depicted that about sixty percent of parents seek healthcare from unqualified service providers for their children during a childhood burn injury⁹. In a study done among Saudi parents, only 6% were reported to have an acceptable level of understanding regarding the first aid management of burns and choking¹⁰.

Most existing literature discusses the importance of introducing community empowerment through educating the general public, especially the parents, through awareness programmes. Effectiveness of such programmes was observed in a Sri Lankan study by Senerath U, *et al*¹¹ on the effect of a hospital-based intervention on newborn care practices at home. The intervention was a 4-day training programme primarily aimed at increasing the knowledge and skills of essential newborn care among healthcare providers. Another study in Turkey evaluated the outcome of such training as a variable in their study on parents' knowledge in paediatric emergencies¹². This study also revealed that those who had taken a course in first aid at least once within five years achieved significantly better results in the assessment of knowledge.

In the light of this background, it is undeniable that emergencies such as choking, burns, and acute poisoning need to be addressed timely and appropriately. Mothers need to be vigilant and smart to identify them and provide first-contact care. For this purpose, it is of great importance that they possess a basic understanding of the common clinical presentations of these emergencies and their appropriate first aid management. Therefore, the research problem of the study was based on the question; Are mothers knowledgeable enough to be able to correctly tackle paediatric emergencies?

Objectives

The primary aim was to assess the knowledge of mothers regarding paediatric emergencies of choking, burns, acute poisoning, and their first aid practices. The secondary aim was to assess the

sources of knowledge and the factors influencing their knowledge.

Method

Design, period of study and setting: A descriptive cross-sectional study was carried out from 1st August to 1st September 2020 in the outpatient department, paediatric clinics, paediatric wards, and surgical wards of the District General Hospital Kalutara.

Inclusion criteria: Mothers of children below 14 years of age, treated at the General Hospital, Kalutara were deemed as eligible participants.

Exclusion criteria: Those who refused to answer the questionnaire, mothers outside Kalutara district, mothers of children in the intensive care unit and those treated for critical care as well as children with special needs were excluded

Sampling frame: Due to the convenience of the investigators, a sample of 103 mothers was chosen using the systematic sampling method.

Study instrument: Interviewer-administered questionnaire. Questionnaire was prepared by the investigators as per the Advanced Paediatric Life Support and Burns Guidelines. It was assessed by a paediatrician and was pre-tested at the General Sir John Kotelawala Defense University Hospital. It was designed to collect data on the relevant socio-demographic details, symptom identification and first aid of choking, burns and acute poisoning, and sources of knowledge. The questionnaire assessed the knowledge among mothers regarding choking, burns, and acute poisoning separately with respect to their symptom identification and first aid methods.

Ethical issues: Approval for the study was obtained from the Ethical Review Committee of the Faculty of Medicine, General Sir John Kotelawala Defense University, Ratmalana (RP/MS/2020/22). Consent to carry out the study was taken from the Director of the District General Hospital, Kalutara and the consultants in charge of the respective hospital units. Informed written consent was obtained from the participants prior to the survey.

Data measurement: A descriptive statistical analysis of the data was done using the Statistical Packages for Social Sciences. A scoring system was implemented to identify the level of knowledge. Knowledge scores were obtained separately for first aid of choking, burns and acute poisoning. All questions pertaining to each of the above aptitudes carried one mark for each correct answer. A percentage of the score was generated based on the total number of correct responses

against the number of total responses per each aptitude. On assessing the level of knowledge, a cut off value of 50% was taken as the reciprocal standard and those scoring more than 50% were categorized as having good knowledge and the others as having poor knowledge. The level of knowledge was then analysed against four variables viz. mother's age, educational level, working status and prior experience to similar situations.

Results

A total of 103 mothers of children less than 14 years attending the outpatient department (OPD), paediatric wards, and clinics were interviewed. Of the mothers 68% were above the age of 28 years, 76.7% were below the age of 28 years when their first child was born and 99% were married. Sixty four percent of the mothers had only studied up to GCE Ordinary Level or below and 74.8% were non-working mothers. The responses of mothers for symptom identification and first aid methods are given in Table 1. The outcomes are given in Table 2.

Table 1: Responses of mothers for symptom identification and first aid methods

Questions	Agree (%)	Disagree (%)
<i>Choking</i>		
During choking, the object gets stuck in the windpipe	72.8	26.2
<i>Symptom identification</i>		
Clutching the throat	31.3	68.9
Difficulty in breathing	41.8	58.2
Coughing	68.9	31.1
Wheeze	07.8	92.2
<i>Regarding first aid for choking</i>		
If the child is choking and coughing effectively, let cough	20.4	79.6
If the child is choking and not coughing, give back blows and chest thrust	38.8	61.2
If the child is choking and not coughing, immediately take to a hospital	35.9	64.1
If the child is unconscious, call for help and start cardiopulmonary resuscitation	01.9	98.1
Blindly finger sweep to get the object out	45.7	54.3
Do you know the correct technique for giving back blows?	77.7	22.3
Do you know the correct technique for giving chest thrusts?	48.5	51.5
Do you know the correct technique for cardiopulmonary resuscitation?	01.0	99.0
<i>Burns</i>		
Can burns be fatal?	87.4	12.6
<i>Symptoms of mild burn – Pain</i>		
Redness	90.3	09.7
Swelling	84.5	15.5
Blisters	47.6	52.4
50.5	49.5	
<i>Symptoms of a severe burn - Leathery appearance</i>		
Black/brown/whitish appearance	28.2	71.8
Numbness	30.1	69.9
23.3	76.7	
<i>Scarring from a burn causes - Movement restriction</i>		
Breathing problems	36.9	63.1
64.1	68.9	
Should you be concerned if the child develops a fever after a burn?	95.1	04.9
<i>Regarding first aid for burns</i>		
Keep the burn under cool water	65.0	35.0
Use running water	90.3	09.7
Duration: 20 minutes	21.4	78.6
Keep the burnt area warm	30.1	69.9
If burnt area is large, keep child warm with blanket when bringing to hospital	40.8	59.2
Give paracetamol to reduce pain	88.3	11.7
Cover the burn with a clean dressing	50.5	49.5
If eyes are involved, do eye irrigation	97.1	02.9
<i>Poisoning: Symptom identification</i>		
Vomiting	91.3	08.7
Diarrhoea	39.8	60.2
Loss of consciousness	36.9	63.1
Dizziness	31.3	68.9
<i>First aid for poisoning</i>		
If poison is ingested, bring the child immediately to a hospital	41.7	58.3
Forcefully make the child vomit	26.7	73.3
Is making the child vomit forcefully harmful?	55.3	44.7
Can taking poison sample to hospital be useful in management of the child?	95.1	04.9

Table 2: Level of knowledge

	Mean score of sample ± SD	% of good knowledge	% of poor knowledge
First aid for choking	32.03±15.81	11.7	88.3
First aid for burns	66.34±15.82	88.3	11.7
First aid for poisoning	68.60±20.25	61.2	38.8

Of the study sample 33%, 21.4% and 10.7% had experienced a previous episode of choking, burns, and acute poisoning in their child. Pearson Chi-square test was used to identify significant

associations of the level of knowledge with four variables; mother's age, educational level, occupation, and experience. All associations with p-value less than 0.05 are shown in Table 3.

Table 3: Significant associations of knowledge with variables

Variables	First aid for choking		p-value
	Percentage of good knowledge	Percentage of poor knowledge	
<i>Working status</i>			0.014
Working	15.6	84.4	
Non-working	38.5	61.5	
<i>Educational level</i>			0.040
G.C.E O/L or below	15.2	84.8	
Above G.C.E O/L	32.4	67.6	

O/L: Ordinary level

The common sources of knowledge among the mothers were family/friends (45.6%), media (30.1%), and school (13.6%). Only 5.8% had gained knowledge from a healthcare professional. However, 98.1% of mothers reported being interested in learning further about the first aid for common paediatric emergencies and their commonly preferred modes of learning were television programmes (30.1%), first aid course (27.2%), and healthcare professionals (26.2%).

Discussion

The study aimed to describe the knowledge on symptom identification, first aid, and thereby their immediate response on first aid practices for children, during choking, burns, and acute poisoning among a group of mothers attending the District General Hospital, Kalutara. Results showed that none of the participants had correctly responded to all the questions. While the knowledge regarding, burns, acute poisoning, and their first aid was satisfactory, there was a striking deficit in the knowledge of choking and its first aid. Only 11.7% of participants scored above 50% in their knowledge score for choking first aid. Moreover, 45.7% had agreed to harmful methods like 'blindly finger sweeping for the object'. A similar outcome was obtained in a study done among Saudi parents in which 64.6% of the participants said that they would hang a choking child upside down by the feet trying to expel the foreign object from the child's mouth and 55.1% said that they would give water to drink to a choking child¹⁰. These incorrect measures taken by caregivers will delay proper management as well as cause additional harm to the child. Only 7.8% identified wheezing as a symptom of choking.

While the majority claimed that they knew the proper technique of back blows, less than half knew the correct technique of chest thrusts. Only one participant claimed to know the correct technique of cardiopulmonary resuscitation.

Of the participants, 88.3% had scores above 50% for their knowledge on first aid for burns, the average score being 66.34 ± 15.82. Although the majority knew to keep the burnt area under running water, a significantly less percentage (21.4) knew to keep it for a duration of 20 minutes. In the case of a severe burn, the patient should be covered with a blanket during transportation to a healthcare facility to prevent hypothermia and related consequences¹³. In the present study less than half of the participants were aware of this. A significant proportion of them could not identify symptoms of severe burns and were not aware that burn scars could lead to movement restriction and breathing problems.

Our study revealed that vomiting was the commonly identified symptom of acute poisoning. A significant majority of the participants did not recognize diarrhoea, loss of consciousness, and dizziness as symptoms. While the most common response for poisoning first aid was 'bring the child immediately to a hospital', 26.7% responded with 'make the child vomit forcefully'. This figure is slightly less than that shown in a previous study where it was reported that 30.1% of the participants practised harmful first aid measures such as administration of coconut milk to induce vomiting⁶. In the present study almost half the participants believed it was harmful to induce vomiting in acute poisoning.

We hypothesised that four factors would influence mothers' knowledge viz. age, educational level, working status, and prior experience of a similar situation. However, only two statistically significant associations were seen; mothers' age ($p=0.04$) and working status ($p=0.014$). Comparatively older and non-working mothers scored slightly better in their level of knowledge for choking alone. It was observed that the majority of the mothers had gained their knowledge from non-professional sources like family/friends and media. None of the participants in the present study had followed a course on first aid but in a study done at the Lady Ridgeway Hospital, 15.7% of participants ($n=362$) had prior training¹⁴. However, 98.1% of the participants said that they were interested in learning further and this may be considered as a base to initiate an educational programme.

The present study was limited in the assessment of first aid techniques, as only an interviewer-administered questionnaire was used. A further study including demonstration of skills in first aid practices, in given scenarios by participants would help identify significant gaps in knowledge and practices. Educational programmes targeting first aid on common paediatric emergencies can significantly bridge the gap seen in the knowledge and first aid. These could be conducted via television programmes, educational sessions at paediatric clinics, child welfare, and antenatal clinics. Incorporating first aid education in the school syllabus could also remarkably improve the existing level of knowledge.

Conclusions

This study showed that mothers had better knowledge regarding poisoning, burns, and their first aid practices for children, compared to choking and its first aid. Of the four factors influencing mothers' knowledge assessed, only mothers' age and working status were statistically significant. Education, and prior experience were not statistically significant.

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