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Article

First Aid Practices and Health Seeking Of Caregivers for Unintentional Childhood Injuries in Ujjain, India: A Community Based Cross-Sectional Study

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Abstract: Background: There is lack of data on types of community first aids use and treatment given post injuries from many low-middle income countries, including India. Materials and Methods: A cross-sectional study was conducted among children up-to 18 years of age, in Ujjain district, India to understand types of first aid given and health seeking post injury. Results: A total of 1087 injuries, in 1049 children were identified in last one year, 729 (67%) received, first aid and 758 (72%) sought some healthcare. Children with burns received most (86%) first aid, while most children (84%) with road traffic accidents (RTA) sought health care. Most children (52%) sought healthcare from a private health set-up; most (65%) being transported within the golden hour; motorbikes being the most preferred (50%) mode of transport. Only 1% injured used ambulance services. Commonly reported first aid included: use of coconut oil on wounds from falls (38%) and burns (44%); antiseptic cream on wounds from RTA (31%), turmeric in falls (16%), and rubbing of metal on a bitten site (47%). Potentially harmful substances applied included lime, toothpaste, clay and mud. Conclusion: In most injuries, appropriate locally available substances, were used by the community. Our findings will help design community interventions to increase appropriate first aid in childhood injuries.

Keywords: unintentional childhood injuries; first aid; health seeking, community survey injuries; India

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1. Introduction

Unintentional childhood injuries are a leading cause of childhood mortality and morbidity [1,2]. According to the World Health Organization (WHO)'s Global Burden of Disease Study estimates, unintentional injuries account for 3.9 million deaths in 2004 [3]. In the young age group of 15-29 years, five of the 15 leading causes of death are unintentional injury related [1]. Deaths due to injuries represent a tip of the iceberg as most injuries especially among children lead to significant morbidity and cost to individuals and society especially in low-middle income countries [4].

The burden of injuries is highest in low-middle income countries, where health systems priorities are skewed towards treatment and prevention of communicable diseases and injuries as a public health problem are often neglected [5,6]. In many Low and Middle Income Countries (LMICs) injuries are viewed as "accidents" being outside the control by the parents [7]. Therefore, injuries are not analyzed and no action is taken for their prevention [7]. It is well known that timely and appropriate treatment of injuries can help reduce mortality and morbidity [8,9]. However, there is paucity of data on childhood injuries and response to injuries by caregivers of children from low and middle income countries especially from South Asia and India [5,9-18]. Worldwide studies evaluating the first-aid knowledge and practices are commonly done on burn and trauma patients and are hospital based [19-25]. Therefore, there is need for community based study looking at first-aid and health seeking for all injuries comprehensively. The present study was undertaken with an objective to understand the first-aid practices and the health seeking for common childhood injuries like, falls, road traffic injuries, burns, non-fatal drowning, poisoning, and suffocation. Since, educational interventions are known to improve parental knowledge on safety both at home and out of home environment [7,26], a secondary objective of the study was to identify gaps in caregivers practices and care seeking for designing effective interventions.

2. Materials and Methods

2.1. Study Site, Study Population, Sampling

This descriptive cross-sectional study was done from January 2017 to October 2017. The details of study area, study population, sampling and sample size calculation are provided in a prior publication [27]. In brief, the study was conducted by Department of Pediatrics, R.D. Gardi Medical College (RDGMC) in both urban and rural area of Ujjain, a semi-rural district in the western Madhya Pradesh, India. Ujjain district has a population of 1.9 million within an area of 6,091 sq. km [28]. Population below age 15 years in urban and rural area is 26% and 30%, respectively [29]. For rural site seven villages were randomly selected from Demographic Surveillance Site (DSS) of RDGMC [30]. The urban sites were ten geographically contiguous slums in Ujjain city having 2,000 households with 10,000 individuals around Urban Health Center of RDGMC. The WHO guidelines for sample size calculation for community survey of injuries was used to calculated the minimum sample size of 1173 children each for the rural and urban site [31]. The survey included 2907 children from urban and 3401 from rural areas with a response rate of 98% [27].

2.2. Data Collection Tools and Methods

All the households in the sampling frame were visited and household having children up-to 18 years of age were approached to participate in the study. Written informed consent was obtained after explaining the purpose of the study. Three trained study assistants interviewed the female head of the households, along-with two team leaders who supervised the data collection. A semi-structured questionnaire was used to interview caregivers to understand the first-aid practices and health care-seeking behavior of the caregivers.

The semi-questionnaire on first-aid practices and health-care seeking behavior survey was originally developed in English and then translated into Hindi by two experts in Hindi language [32]. Any discrepancy in the translation was resolved by consensus by an expert panel [32]. Then the questionnaire was back translated to English to ensure the original meaning of the questions had not

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changed. The questionnaire included information on if the first-aid was provided or not at the time of injury, details of the person providing the first-aid, and the details of the first-aid applied. The questions related to health seeking included details of type of settings of health seeking, mode of transport used, transport time and whether the child was hospitalized or not for the injury. The applicability, context and face validity of the questions were tested was pilot tested on 50 randomly selected caregivers [32]. The results of the pilot were not included in the final analysis.

2.3. Definitions

For the survey injury was defined as (a) if the child was injured and treated with simple medical therapies by parents or another authorized adult; (b) if in a clinical setting the injury was diagnosed by a health care provider. The study assistants explained the WHO definition of an injury briefly and examples of external causes of injuries [33]. Any injury, as defined above, in the preceding twelve months of the survey was included. Data was collected on falls, road traffic injuries, burns, non-fatal drowning, poisoning, and suffocation and is published in detail elsewhere [27]. Other field definitions used in the study were: first-aid was defined as an emergency care or treatment given before regular medical aid can be obtained. Care seeking was defined as any care sought outside of home for a child after sustaining an injury [13].

2.5. Data Management and Analysis

To collect missing data, if any, a revisit to household was done within one month and if on subsequent visits no one was at home the household was considered to be a non-response [33]. In the field data was collected in paper form. All the questionnaires in paper form were reviewed daily for consistency and completion by the principal and co-investigators. The data was coded, entered in EPI INFO (version 7). The analysis was performed using Stata (Version 13.0, Statacorp. Texas, USA). Data was analyzed to determine the frequency of first-aid practices and health care-seeking behavior of the caregivers. The differences between proportions were assessed using the *p*-value for heterogeneity. Chi square and Fisher's exact tests were used to estimate differences in variables. A p-value <0.05 was considered statistically significant. The crude odds ratio (OR) and corresponding 95% confidence intervals (CI) and *p* values were calculated from two-by-two tables. The Institutional Ethics committee of R.D. Gardi Medical College, Ujjain approved the study (approval number-354/2014).

3. Results

In the survey 2846 households were visited to identify 2518 households having 6308 children up to 18 years of age. A total of 2907 and 3401 children lived in 1304 urban and 1214 rural households, respectively. The overall response rate was 98%. The remaining two percent households could not be included in the study as they were locked even after follow-up visit. Out of 6308 children, 1049 children with unintentional injuries have a total of 1087 injuries were identified in the survey. Table 1 shows the age, sex and urban and rural location of 1049 children with unintentional injuries and the distribution of children that received first aid. Significantly more girl child received first aid compared to boys (OR 1.48, CI 1.216-1.952; p=0.005). There was no statistically significant difference in receiving first aid according to age and urban or rural location of the household.

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Table 1. Distribution of age, sex and urban and rural location of 1049 children identified with unintentional injuries and those that received first aid.

Variable	Children having an unintentional injury *n*=1049 (17%*)	Not received first aid *n*=320 (31%)	Received first aid *n*=729 (69%)	OR	95 CI	*p* value
Sex						
Boys	658 (20)	219(33)	439(67)	1.48	1.216-1.952	0.005
Girls	391 (13)	101(26)	290(73)			
Age group						
1 month–1year	36 (8)	8(22)	28(78)	R	R	R
>1-5years	276 (19)	95(34)	181 (66)	0.73	0.322-1.691	0.473
>5-10 years	319 (19)	93(29)	226 (71)	0.59	0.263-1.360	0.221
>10-18 years	418 (15)	124(30)	294(70)	0.51	0.229-1.160	0.110
Location						
Rural	540 (16)	154(28)	386(72)	0.92	0.713-1.198	0.553
Urban	509 (18)	166(33)	343(67)			

% Row percentage, OR-Odds Ratios, CI-Confidence intervals

Out of 1087 injuries a total 729 (67%) injuries received some form of first aid. The proportion of injuries that received first aid in according to different injuries is shown in Table 2. Most (86%) burns injuries received some first aid. But, only 8 out of 25, (32%) children with non-fatal drowning received some first aid.

Table 2. The distribution of proportion of injuries (*n*=1087) receiving first aid according to the injury type in 1049 injured children .

Injury type	**Total *n*=1087**	**First aid given *n*=729 (%#)**
Road traffic accidents	229	144 (63)
Falls	491	338 (69)
Burns	170	146 (86)
Poisoning and bites	126	65 (52)
Agriculture related injury	25	19 (76)
Non fatal drowning	25	8 (32)
Suffocation	21	9 (43)

Row percentage

The first aid was commonly provided by the family members in most injuries, but was also provided by teaches and bystanders in some cases. Figure 1 provides details of first aid care providers in different types of injuries.

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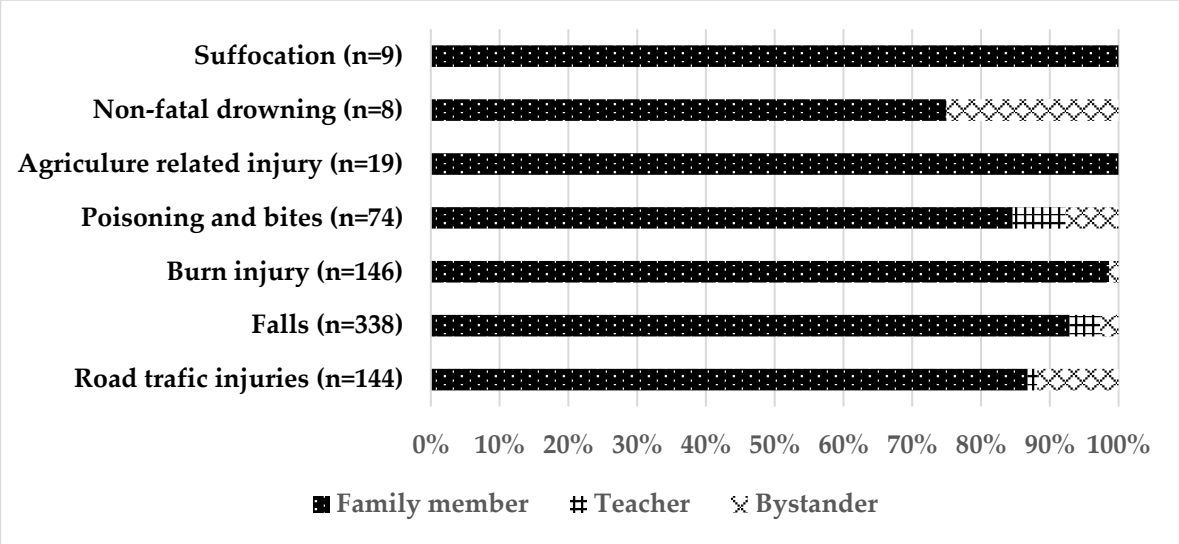

Figure 1. Details of first aid care providers in different types of injuries.

Information on type of health care facility for seeking health was available for 758 (70%) of injuries. Road traffic injuries and patients with poisonings and bites were most often taken for health care (Table 3). Overall, parents of more than half of injured children went to a private setting for health care post injury. Children with road traffic injuries were more likely to be taken to a health care facility. Many (30%) children with falls were taken to an informal health care provider (Table 3). In the rural areas the untrained informal health care providers had more presence compared to trained doctors and were the preferred option for health seeking.

Table 3. Distribution of health seeking and the place of health seeking for 758 injuries.

Type of injury	Total injuries *n*=1087	Health care		Place of health care seeking (*n*=758)		
		Not sought *n*=329	Sought *n*=758 (%#)	Private setting *n*=393(52)	Government setting *n*=194 %*(26)	Informal health care providers *n*=171(22%)
Road traffic injuries	229(21)	36(16)	193(84)	103(53)	55 (28)	35(18)
Falls	491(47)	164(33)	327(67)	160(49)	69 (21)	98(30)
Burns	170(16)	77(45)	93(55)	53(57)	23 (25)	17(18)
Poisoning and bites	126(12)	24(19)	102(81)	54 (53)	32 (31)	16(16)
Agriculture related injury	25(2)	10(40)	15(60)	7 (46)	6 (40)	2(13)
Non-fatal drowning	25(2)	11(44)	14(56)	7 (50)	6 (43)	1(7)
Suffocation	21(2)	7(33)	14(67)	9 (64)	3 (21)	2(14)

Column percentage, %* Row percentage

The mode of transport for 758 injured children is shown in Table 4. Most children (47%) were transported by motorbike from the site of injuries to health care facility. Children living in rural areas were transported by public transport even if they had burns or poisonous bites. Twenty percent children walked to the health care facility or to the private provider for seeking first aid. Only one percent of injured availed ambulance services.

However, a majority (65%) of children were transported within one-hour viz. the golden hour after injury to a health care facility. The details of health care seeking within the golden hour for different types of injuries are shown in Figure 2.

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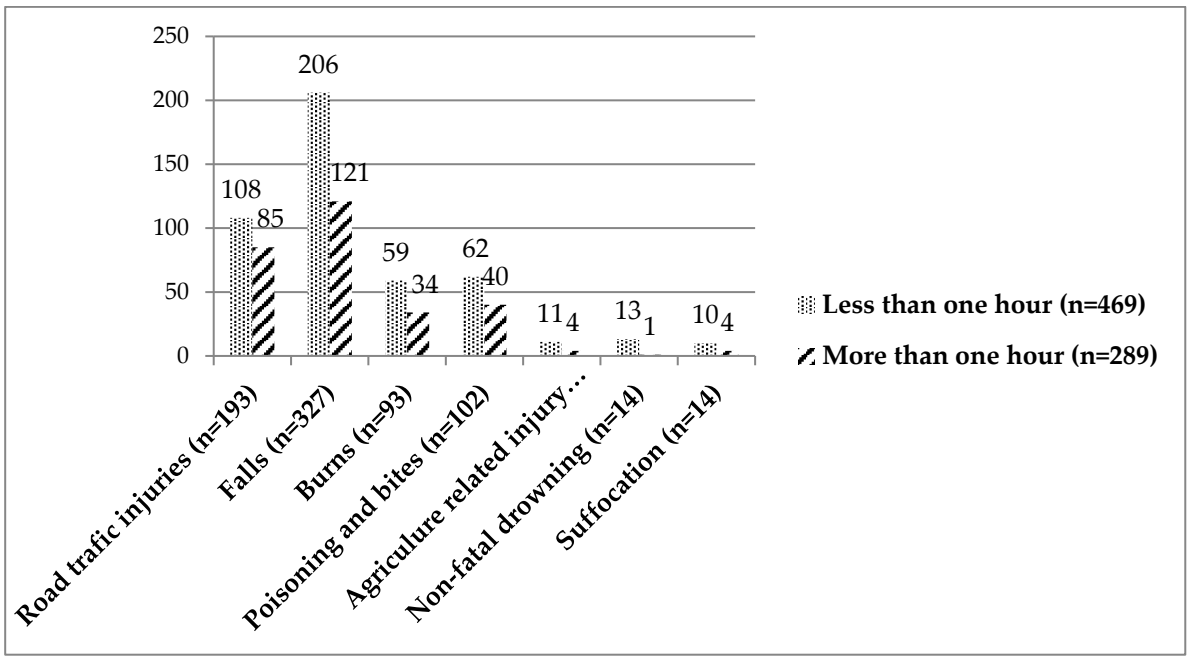

Figure 2. Health care seeking with the golden hour in different types of injuries.

Table 4. Mode of transport for injured children (*n*=758) in different types of injuries.

Type of injury	Total *n*=758 (%#)	Two wheeler @ *n*=360 (47)%*	Public transport *n*=212 (28)%*	Walking *n*=144 (19)%*	Others *n*=36 (5)%*	Ambulance *n*=6 (1)%*
Road traffic injuries	193 (25)	120 (62)	40 (21)	24 (12)	5 (3)	4 (2)
Falls	327 (43)	202 (62)	46 (14)	71 (22)	7 (2)	1 (0)
Burns	93 (12)	14 (15)	44 (47)	22 (24)	12 (13)	1 (1)
Poisoning and bites	102 (13)	18 (18)	56 (55)	19 (19)	9 (9)	0
Agriculture related injury	15 (2)	0	13 (86)	1 (7)	1 (7)	0
Non-fatal drowning	14 (2)	2 (14)	5 (36)	6 (43)	1 (7)	0
Suffocation	14 (2)	4 (29)	8 (57)	1 (7)	1 (7)	0

%* Row percentage # Column percentage @ Most commonly motor bike

The details of first aid provided in different type of injuries are shown in Table 5.

Table 5. Details of first aid provided in different type of injuries.

First-Aid used in different types of injuries	*n*	%*
Road traffic injury (*n*=144)		
Antiseptic cream	45	31
Coconut oil	37	26
Bandage	31	22
Turmeric powder	22	15
Lime	14	10
Turmeric powder and quick lime	14	10
Falls (*n*=338)		
Coconut oil	130	38
Antiseptic cream	119	35
Turmeric powder	64	19
Oil massage	32	9
Lime	38	11
Bandage	48	14
Turmeric powder and coconut oil	30	9
Turmeric powder and quick lime	38	11

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Burns (*n*=146)		
Coconut oil	64	44
Antiseptic cream	36	25
Toothpaste	32	22
Irrigation with water for 10-20 minutes over burn area	19	13
Poisoning due to ingestion-inhalation (*n*=16)		
Washed with water and soap	9	56
Washed with water	6	38
Poisoning and bites (*n*=49)		
Rubbed with metal on bitten area	15	31
Turmeric powder	10	20
Spiritual activities	22	45
Agriculture injury (*n*=19)		
Coconut oil	6	32
Tourniquet	5	26
Bandage	4	21
Antiseptic cream	3	16
Washed with water	2	11
Non-fatal drowning (n=8)		
Prone position	4	50
Mouth to mouth breathing	3	37
Pressed chest to remove water	1	13
Suffocation (n=9)		
Hilted back to remove the airway obstruction	5	56
Used fingers to remove the airway obstruction	4	44

%* Only first aid used in at least 10% of children in each injury type are shown in the table

Some other substances applied over wounds were: alovera (5%), mud (3%), toothpaste (4%), saliva (4%) and self-urine (3%). Use of butter (6%) and ice (5%) was reported as first aid to treat burn injuries. In poisoning injuries due to animal bites, a few (4%) children reported use of tourniquet, however spiritual activities (3%) were reported for snakebites (*n*=20).

4. Discussion

To our knowledge, this is the first community-based survey to identify nature of first aid given and health seeking following unintentional childhood injuries in Central India. It is well know that emergency medical health care system is fragmented and inaccessible in many LMIC including India [34]. There is also poor awareness of importance of correct pre-hospital care in India [34]. This study is an elaboration of a previously published study, which shed light on prevalence of unintentional injuries in the study area [27]. About 17% of the surveyed population had at least one injury in the twelve months preceding the date of the interview. In 1049 children with injuries 1087 injuries were identified, 729 (67%) received some type of first aid. Most (86%) children with burns received some first aid. In majority of cases family members provided the first aid. For 72% (*n*=758) of injuries healthcare was sought. A majority (65%) of children were transported within the golden hour after injury to a health care facility. About 50% of the patient used a two-wheeler for transport of injured children. Children involved in road traffic accidents were most often (84%) taken to a health care provider. Nearly one-third cases of falls (30%) sought care from informal health care providers.

First aid is the care provided at the sight of injury (at home, school, work, or recreation area) or even during transportation until the patient arrives at a formal health-care facility. However, few other studies have reported proportion of injured children that received first aid. A study from Bangladesh reported that 82% of injured received some form of first aid [9]. In our study the maximum 86% of children with burns received some first aid. This proportion is comparable to studies from Zimbabwe and Bangladesh [9,18]. The lowest proportion of children that received first aid was of non-fatal drowning and suffocation (Table 2) in our study. The possible reason for lower

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proportion of drowning and suffocation injuries receiving first aid could be due to considering these type of cases as medical emergencies and neither family members nor bystanders were found to be skilled and experienced enough to provide first aid treatment for such injuries.

First aid providers can play a crucial role in timely management of the in injuries. In our study majority of first aid providers were family members. There are very few studies identifying first aid providers for injuries. However, a systematic review of first aid providers of trauma victims shows that bystanders providing first aid in 11% to 65% of the situations in various studies [35].

Most injured were taken to private health care providers in both urban and rural areas. In the rural areas they were taken to untrained or informal health care providers. The reported reasons for its preference are close proximity with the community, availability, and flexible opening time, options of in-kind payments, perceived accountability, trustworthiness and most importantly affordability [36]. Informal health care providers are active in India, Bangladesh, Nepal, Laos, Kenya, Nigeria, Tanzania, but services provided by them in the field of injuries have not been reported often. A study done in rural Bangladesh reported findings similar to our study for health seeking with informal health care providers [9].

In our study almost fifty percent of patients were transported using motorbikes. The use of motorbikes in emergency medical services is underutilized, but has been found to be useful in heavy traffic situations and in resource constrained country like Taiwan [37]. Use of ambulance services for transporting the injured to a health facility was only about 1% in our study. In India the Emergency Medical Services (EMS) has been fragmented. Recent efforts by the Government of India and state governments have tried to make the ambulance services more accessible, like the “dial 108” services, which are available round the clock, free of cost [34]. Most efforts have been concentrated in emergency obstetric services, where also the utilization rate varies from 9 to 21% in different states across India [38]. There is need for optimization of EMS services for better prehospital emergency care system especially for RTA, which were the most common injury in our study [34]. Recommendations to improve EMS include administration of EMS at more local level, providing improved training opportunities, optimizing the role of private sector in prehospital care, and improving public awareness on how to avail ambulance services [34].

In our study 35-45% of cases were not transported to a healthcare facility within golden hour. Transporting the injured to a healthcare facility with one hour commonly known as “Golden hour” can be beneficial for effective management of unintentional injuries and improves outcome of injuries, especially in penetrating trauma, traumatic brain injury and hypotensive trauma patients [8].

In our study in the management of burn injuries the recommended practice of 10 to 20 minute irrigation of burn area with water was practiced in only 13% of burn victims. Similar, lack of use of standard recommended first aid in burns has been reported in multiple studies [6,10,13,19,22,23,39,40].

In present study, household and well-known first aid items were identified as commonly used alternatives therapies for first aid in various types of injuries. Commonly used household antiseptic cream was mostly frequently used first aid for management of cut, wounds and abrasions resulted from RTI, fall, and stuck and burn scalds in burn injuries. Coconut oil was used in majority of cases to treat abrasions, wounds, cuts caused due to with RTI, fall, and stuck and burn scalds in burn injuries. Use of coconut oil is also seen in another south east Asian nation-Indonesia for wound management [41]. Coconut oil is an example of an ancient compound that is now backed by modern science for skin barrier repair [42]. Coconut oil originates from the *C. nucifera* tree from the Indian-Indonesian region [42]. Coconut oil is commonly used as topical therapy worldwide for xerotic and inflammatory dermatoses associated with skin-barrier disruption. However, there use for wound care and burns has not been reported from other parts of the world except India and Indonesia. However, it is quite commonly used in multiple injuries and burns, in the present study (Table 5). Reasons for widespread use in our community could be due to easily accessibility and being relatively inexpensive. Coconut oil possess antimicrobial activity as it contains monolaurin, a monoglyceride formed from lauric acid, a short-chain fatty acid with antibacterial activity against

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Propionibacterium acnes, *Staphylococcus aureus*, and *S. epidermidis* and also has skin-barrier repairing properties in various skin conditions [42]. Although there is not enough clinical data of effectiveness of coconut oil in burns, one Indian study has proved usefulness of coconut oil in treating burn scalds [43]. Thus, the use of coconut oil in mild burns by the community can considered appropriate first aid.

Another commonly used Indian herb known in India as "*halidi*" was also used as first aid for common cuts, wounds and abrasion caused due to RTI, fall, and child being accidentally stuck in our study. Turmeric (*Curcuma longa*) is a popular ancient Indian herb that has been used for centuries in herbal medicines. Main alkaloid of turmeric is curcumin (diferuloylmethane) has been shown to possess significant anti-inflammatory, anti-oxidant, anti-carcinogenic, anti-mutagenic, anti-coagulant and anti-infective effects [44]. Curcumin has also been shown to have significant wound healing properties as it acts on various stages of the natural wound healing process to hasten healing [44].

Our results also showed use of some inappropriate methods, especially use of toothpaste in burn injuries, oil massage in physical injuries due to RTI, and fall, and use of spiritual activities as first aid in case of animal bite poisoning. Some of the methods used by the caregivers can cause harm by delaying health seeking. Also, some of the methods like use of toothpaste can result in wound infection in burns and can cause more harm. Similar alternative therapies have been reported as common practice after a burn injury in other African countries like Ghana, South Africa and Nigeria [10,13,18]. Some substances commonly used for first aid for burns reported from other studies are included raw egg whites, butter, milk, cooking oil, potato slices, yoghurt, toothpaste, tomato paste, ice, and chalk papaya, chalk, and salt, from countries like Ghana, South Africa, Nigeria, South Africa, Turkey and United Kingdom [10,13,18,19,23,40,45], many of these were not reported in our study, reflecting the need for context specific studies to improve pre hospital management of injuries.

In majority of bites the bitten area was rubbed with a metal piece as first aid measure. This practice was more common in rural areas. However, in some cases spiritual activities were used as treatment. Snakes have a huge connect with Indian mythology [46]. Rather than considering snakebite as an emergency public health threat, snakes are worshiped in India and snakebites are considered a result of past sins [46]. A study from Pakistan reported 75% of patients treated snakebites by themselves or sought advice from traditional healers in Sindh province [47]. Similarly, studies from South Africa and Kenya showed that 80% and 70% of snakebite victims, respectively, were taken for traditional treatment [48,49]. A study from Sri Lanka reported one-fifth of the snakebite victims were initially taken for traditional treatment [50]. The situation in Nepal is also similar [51].

Recommendations

More translational and implementation research is needed to establish to what extent first aid is given in relation to the presence of first aid provider, what is used as first aid and how accurately recommended guidelines are applied, what specific measures are in needed to improve emergency medical care in pre-hospital settings. There is need to identify and implement context specific interventions to introduce and scale-up laymen training in first aid for injuries and basic life support (BLS) to improve pre-hospital services. The Indian Academy of Pediatrics-BLS initiative is one such step, which needs to be scaled up [52].

5. Conclusions

In most injuries the community used appropriate locally available substances like coconut oil, antiseptic creams and turmeric powder. However, some potentially harmful substances like toothpaste, lime, clay and mud were also applied over wounds. Most children were taken to a private health care provider post injury. Low utilization of government health care facilities and ambulances for transport post injuries is a cause of concern. Reliance of rural population on unqualified informal health care providers is also a cause of concern. Our findings will help design community interventions to increase appropriate first aid in childhood injuries.

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References

1. GBD 2016 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980-2015: A systematic analysis for the global burden of disease study 2015. Lancet 2016, 388, 1459-1544.
2. Global Burden of Disease Child and Adolescent Health Collaboration. Adolescent Health, C.; Kassebaum, N.; Kyu, H.H.; Zoeckler, L.; Olsen, H.E.; Thomas, K.; Pinho, C.; Bhutta, Z.A.; Dandona, L., et al. Child and adolescent health from 1990 to 2015: Findings from the global burden of diseases, injuries, and risk factors 2015 study. JAMA Pediatr 2017, 171, 573-592.
3. WHO World Report on Child Injury Prevention 2008. [(accessed on 28 July 2018)]; Available online: http://www.Who.Int/violence_injury_prevention/child/injury/world_report/en/
4. Wesson, H.K.; Boikhutso, N.; Bachani, A.M.; Hofman, K.J.; Hyder, A.A. The cost of injury and trauma care in low- and middle-income countries: A review of economic evidence. Health Policy Plan 2014, 29, 795-808.
5. Bartlett, S.N. The problem of children's injuries in low-income countries: A review. Health Policy Plan 2002, 17, 1-13.
6. Alonge, O.; Hyder, A.A. Reducing the global burden of childhood unintentional injuries. Arch Dis Child 2014, 99, 62-69.
7. Bonilla-Escobar, F.J.; Gutierrez, M.I. Injuries are not accidents: Towards a culture of prevention. Colomb Med (Cali) 2014, 45, 132-135.
8. Harmsen, A.M.; Giannakopoulos, G.F.; Moerbeek, P.R.; Jansma, E.P.; Bonjer, H.J.; Bloemers, F.W. The influence of prehospital time on trauma patients outcome: A systematic review. Injury 2015, 46, 602-609.
9. Hoque, D.M.E.; Islam, M.I.; Sharmin Salam, S.; Rahman, Q.S.; Agrawal, P.; Rahman, A.; Rahman, F.; El-Arifeen, S.; Hyder, A.A.; Alonge, O. Impact of first aid on treatment outcomes for non-fatal injuries in rural bangladesh: Findings from an injury and demographic census. Int J Environ Res Public Health 2017, 14.
10. Fadeyibi, I.O.; Ibrahim, N.A.; Mustafa, I.A.; Ugburo, A.O.; Adejumo, A.O.; Buari, A. Practice of first aid in burn related injuries in a developing country. Burns 2015, 41, 1322-1332.
11. Geldsetzer, P.; Williams, T.C.; Kirolos, A.; Mitchell, S.; Ratcliffe, L.A.; Kohli-Lynch, M.K.; Bischoff, E.J.; Cameron, S.; Campbell, H. The recognition of and care seeking behaviour for childhood illness in developing countries: A systematic review. PLoS One 2014, 9, e93427.
12. Gupta, S.; Gupta, S.K.; Devkota, S.; Ranjit, A.; Swaroop, M.; Kushner, A.L.; Nwomeh, B.C.; Victorino, G.P. Fall injuries in nepal: A countrywide population-based survey. Ann Glob Health 2015, 81, 487-494.
13. Gyedu, A.; Mock, C.; Nakua, E.; Otupiri, E.; Donkor, P.; Ebel, B.E. Pediatric first aid practices in ghana: A population-based survey. World J Surg 2015, 39, 1859-1866.
14. Jonkheijm, A.; Zuidgeest, J.J.; van Dijk, M.; van As, A.B. Childhood unintentional injuries: Supervision and first aid provided. Afr J Paediatr Surg 2013, 10, 339-344.
15. Mashreky, S.R.; Rahman, A.; Chowdhury, S.M.; Svanstrom, L.; Linnan, M.; Shafinaz, S.; Khan, T.F.; Rahman, F. Perceptions of rural people about childhood burns and their prevention: A basis for developing a childhood burn prevention programme in bangladesh. Public Health 2009, 123, 568-572.
16. Ramdzan, S.N.; Liew, S.M.; Khoo, E.M. Unintentional injury and its prevention in infant: Knowledge and self-reported practices of main caregivers. BMC Pediatr 2014, 14, 132.

17. Abuosi, A.A.; Adzei, F.A.; Anarfi, J.; Badasu, D.M.; Atobrah, D.; Yawson, A. Investigating parents/caregivers financial burden of care for children with non-communicable diseases in ghana. BMC Pediatr 2015, 15, 185.
18. Chirongoma, F.; Chengetanai, S.; Tadyanemhandu, C. First aid practices, beliefs, and sources of information among caregivers regarding paediatric burn injuries in harare, zimbabwe: A cross-sectional study. Malawi Med J 2017, 29, 151-154.
19. Alomar, M.; Rouqi, F.A.; Eldali, A. Knowledge, attitude, and belief regarding burn first aid among caregivers attending pediatric emergency medicine departments. Burns 2016, 42, 938-943.
20. Cox, S.G.; Burahee, A.; Albertyn, R.; Makahabane, J.; Rode, H. Parent knowledge on paediatric burn prevention related to the home environment. Burns 2016, 42, 1854-1860.
21. Ehrlich, P.F.; Helmkamp, J.C.; Williams, J.M.; Haque, A.; Furbee, P.M. Matched analysis of parent's and children's attitudes and practices towards motor vehicle and bicycle safety: An important information gap. Inj Control Saf Promot 2004, 11, 23-28.
22. Graham, H.E.; Bache, S.E.; Muthayya, P.; Baker, J.; Ralston, D.R. Are parents in the uk equipped to provide adequate burns first aid? Burns 2012, 38, 438-443.
23. Harvey, L.A.; Barr, M.L.; Poulos, R.G.; Finch, C.F.; Sherker, S.; Harvey, J.G. A population-based survey of knowledge of first aid for burns in new south wales. Med J Aust 2011, 195, 465-468.
24. Li, F.; Jiang, F.; Jin, X.; Qiu, Y.; Shen, X. Pediatric first aid knowledge and attitudes among staff in the preschools of shanghai, china. BMC Pediatr 2012, 12, 121.
25. Singer, A.J.; Gulla, J.; Thode, H.C., Jr.; Cronin, K.A. Pediatric first aid knowledge among parents. Pediatr Emerg Care 2004, 20, 808-811.
26. Silva, E.C.; Fernandes, M.N.; Sa, M.C.; Mota de Souza, L.; Gordon, A.S.; Costa, A.C.; Silva de Araujo, T.; Carvalho, Q.G.; Maia, C.C.; Machado, A.L., et al. The effect of educational intervention regarding the knowledge of mothers on prevention of accidents in childhood. Open Nurs J 2016, 10, 113-121.
27. Mathur, A.; Mehra, L.; Diwan, V.; Pathak, A. Unintentional childhood injuries in urban and rural ujjain, india: A community-based survey. Children (Basel) 2018, 5.
28. The Census of India, District profile-Ujjain 2011. [(accessed on 28 July 2018)]; Available online: http://www.census2011.co.in/census/district/302-ujjain.html
29. International Institute for Population Sciences, National Family Health Survey-4, 2015-16 District fact sheet Ujjain, Madya Pradesh. Mumbai, 2016; p 6 [(accessed on 28 July 2018)];
Available online: http://rchiips.org/NFHS/FCTS/MP/MP_FactSheet_435_Ujjain.pdf.
30. Fochsen, G.; Deshpande, K.; Diwan, V.; Mishra, A.; Diwan, V.K.; Thorson, A. Health care seeking among individuals with cough and tuberculosis: A population-based study from rural india. Int J Tuberc Lung Dis 2006, 10, 995-1000.
31. WHO Guidelines for Conducting Community Surveys on Injuries and Violence. 2004 [(accessed on 28 July 2018)]; Available online: http://apps.who.int/iris/bitstream/10665/42975/1/9241546484.pdf.
32. Maneesriwongul, W.; Dixon, J.K. Instrument translation process: A methods review. J Adv Nurs 2004, 48, 175-186.
33. WHO . Training Educating and Advancing Collaboration in Health on Violence and Injury Prevention Users' Manual. World Health Organization; Geneva, Switzerland: 2012. [(accessed on 28 July 2018)]. Available online: Whqlibdoc.Who.Int/publications/2012/9789241503464_eng.Pdf?Ua=1.
34. Sharma, M.; Brandler, E.S. Emergency medical services in india: The present and future. Prehosp Disaster Med 2014, 29, 307-310.
35. Tannvik, T.D.; Bakke, H.K.; Wisborg, T. A systematic literature review on first aid provided by laypeople to trauma victims. Acta Anaesthesiol Scand 2012, 56, 1222-1227.
36. Sudhinaraset, M.; Ingram, M.; Lofthouse, H.K.; Montagu, D. What is the role of informal healthcare providers in developing countries? A systematic review. PLoS One 2013, 8, e54978.
37. Lin, C.S.; Chang, H.; Shyu, K.G.; Liu, C.Y.; Lin, C.C.; Hung, C.R.; Chen, P.H. A method to reduce response times in prehospital care: The motorcycle experience. Am J Emerg Med 1998, 16, 711-713.
38. Singh, S.; Doyle, P.; Campbell, O.M.; Rao, G.V.; Murthy, G.V. Transport of pregnant women and obstetric emergencies in india: An analysis of the '108' ambulance service system data. BMC Pregnancy Childbirth 2016, 16, 318.

39. Gyedu, A.; Stewart, B.; Mock, C.; Otupiri, E.; Nakua, E.; Donkor, P.; Ebel, B.E. Prevalence of preventable household risk factors for childhood burn injury in semi-urban ghana: A population-based survey. Burns 2016, 42, 633-638.
40. Karaoz, B. First-aid home treatment of burns among children and some implications at milas, turkey. J Emerg Nurs 2010, 36, 111-114.
41. Sachs, M.; von Eichel, J.; Asskali, F. [wound management with coconut oil in indonesian folk medicine]. Chirurg 2002, 73, 387-392.
42. Vaughn, A.R.; Clark, A.K.; Sivamani, R.K.; Shi, V.Y. Natural oils for skin-barrier repair: Ancient compounds now backed by modern science. Am J Clin Dermatol 2018, 19, 103-117.
43. Srivastava, P.; Durgaprasad, S. Burn wound healing property of cocos nucifera: An appraisal. Indian J Pharmacol 2008, 40, 144-146.
44. Akbik, D.; Ghadiri, M.; Chrzanowski, W.; Rohanizadeh, R. Curcumin as a wound healing agent. Life Sci 2014, 116, 1-7.
45. Eldosoky, R.S. Home-related injuries among children: Knowledge, attitudes and practice about first aid among rural mothers. East Mediterr Health J 2012, 18, 1021-1027.
46. Nair, G.R. Snake worship in india . Publications Division Ministry of Information & Broadcasting, Government of India: Soocha Bhawan, C.G.O Complex, Lodhi Road, New Delhi - 110 003, India, 2017.
47. Anwar, M.; Green, J.; Norris, P. Health-seeking behaviour in pakistan: A narrative review of the existing literature. Public Health 2012, 126, 507-517.
48. Sloan, D.J.; Dedicoat, M.J.; Lalloo, D.G. Healthcare-seeking behaviour and use of traditional healers after snakebite in hlabisa sub-district, kwazulu natal. Trop Med Int Health 2007, 12, 1386-1390.
49. Snow, R.W.; Bronzan, R.; Roques, T.; Nyamawi, C.; Murphy, S.; Marsh, K. The prevalence and morbidity of snake bite and treatment-seeking behaviour among a rural kenyan population. Ann Trop Med Parasitol 1994, 88, 665-671.
50. Ediriweera, D.S.; Kasturiratne, A.; Pathmeswaran, A.; Gunawardena, N.K.; Jayamanne, S.F.; Lalloo, D.G.; de Silva, H.J. Health seeking behavior following snakebites in sri lanka: Results of an island wide community based survey. PLoS Negl Trop Dis 2017, 11, e0006073.
51. Karki, K.B. Snakebite in nepal: Neglected public health challenge. J Nepal Health Res Counc 2016, 14, I-II.
52. Bansal, C.P. IAP-BLS: The golden jubilee year initiative. Indian Pediatr 2013, 50, 731-732.