International Journal of Contemporary Pediatrics
Gupta RK et al. Int J Contemp Pediatr. 2021 Sep;8(9):1581-1585
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20213322

Original Research Article

Domestic injuries among infancy: a prospective descriptive study

Ravinder K. Gupta[1]*, Ritu Gupta[2], Abhai S. Bhadwal[1], Vikas Sharma[1]

[1]Department of Pediatrics, ASCOMS, Jammu, Jammu and Kashmir, India
[2]Department of Physiology, Government Medical College, Jammu, Jammu and Kashmir, India

Received: 17 July 2021
Revised: 16 August 2021
Accepted: 17 August 2021

***Correspondence:**
Dr. Ravinder K. Gupta,
E-mail: urvigupta00@gmail.com

ABSTRACT

Background: Injuries in the form of accidents are a major cause of morbidity and mortality in children. The objective of this study was to determine the prevalence of different types and modes injuries among the infants.
Methods: A prospective study data from two hundred infants who visited the pediatric OPD in a private pediatric clinic following injury was recorded. A pre-structured questionnaire was provided to the parents. Health education was imparted to the parents regarding prevention of such injuries.
Results: Among 200 infants under study, most of the infants were between 8-12 months. Fall being the most common type of injury and it was mostly due to walkers. The most common site of injury was the forehead.
Conclusions: Structural modifications are required to be made in the home along with parent education by pediatrician, by doing this most of the injuries can be prevented.

Keywords: Injury, Walker, Fall, Infant

INTRODUCTION

Injury is break or breach of natural continuity of skin or mucous membrane and in medico-legal practice injury and wound are synonymous. Injuries in form of accidents are a major cause of mortality and morbidity. An accident can be defined as an unexpected, unplanned occurrence of an event which usually produce unintended injury, death or property damage, it implies an event occurrence by chance, without pattern or predictability. Worldwide, nearly 1 million children and adolescents die from injuries and violence each year, and more than 90% of these deaths are in low- and middle-income countries.[1-4] Injuries resulting from accidents represent a major epidemic of non-communicable disease throughout the world.

With industrialization, advancement in technology, better health care and preventive measures like immunization, accidents are becoming important cause of death in children world over. Most of the studies regarding the injuries are focused more on the adolescents and the adult age group.[5-8] Hence, this study focused mainly on the different modes of domestic injuries during infancy and the factors which have an impact on such injuries like type of family, age of mother and so on.

METHODS

A prospective descriptive study was conducted at pediatric OPD, ASCOMS from June 2020 to May 2021. Two hundred infants who had sustained different types of injuries at home were considered for the study. Age was kept as the sole criterion for inclusion and any infant presenting with injury was included for study after taking consent from the parents. The mothers were interviewed thoroughly regarding age, sex, family size, educational status of mother etc. A detailed data regarding the circumstances, time, place, activity of the infant at the time of injury, nature of injury, and its immediate consequences were obtained and after all this health education regarding

the preventive aspect was imparted. All the data was entered into MS excel sheet and data was analyzed using MS excel.

RESULTS

The infants which were considered in the study were divided based on their age and sex and the data regarding this is shown in the Table 1.

There were only 10 neonates in study group while 86.5% of the injured infants were more than 4 months of age. The male female ratio was 1.5:1.

Table 1: Age and sex wise distribution of infants.

Age (in months)	Male	Female	Total
<1	6	4	10
1-4	11	6	17
4-8	37	30	67
8-12	66	40	106
Total	120	80	200

As depicted in the Table 2 and it was found that 68% of the injured infants belong to the nuclear family (family consisting of the married couple and their children while they are still regarded as dependents) while the 32% were from the joint family (family consisting of married couples and their children who live together in the same household, share common property, all authority vested in senior male member and share a common kitchen).[9-10]

Table 2: Types of family.

Types of family	Number
Nuclear	136
Joint	64
Total	200

The age of mothers was enquired, and it was found that 46 were less than 20 years, while majority i.e.; 120 were between 20-25 years age, whereas 14 and 20 were between 25-30 years and more than 30 years respectively. The age of the mothers whose infants were injured is shown in the Figure 1. The educational status of 110 mothers was upto higher secondary while 70 were graduate or above and only 20 were upto matric.

A detailed investigation into the nature and distribution of injury was carried out and it was found that the number of injuries were due to fall (120), sharp instruments (58) and burns/scalds (22) as shown in Table 3. Majority of injuries occurred between 9 am to 9 pm.

Out of 10 neonates 3 babies had scalds because of steam inhalation, 3 had fallen from the lap of attendant, in 2 neonate hot oil was instilled in the ears and rest 2 had eye injury because of application of kajal.

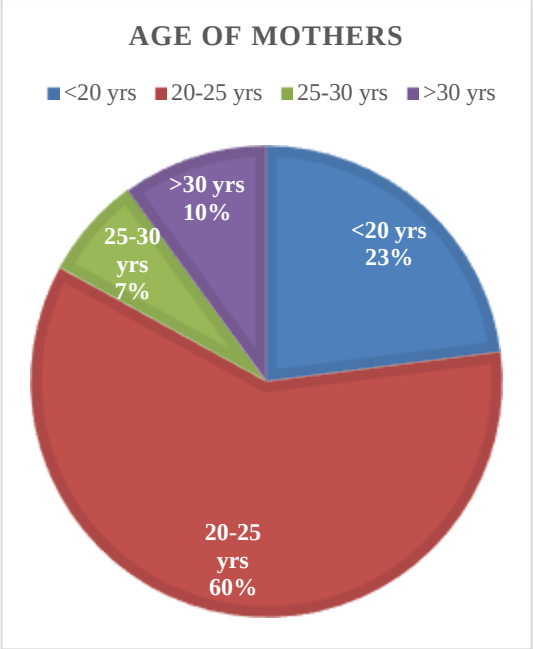

Figure 1: Age of mothers.

Table 3: Type of injury.

Types of injuries	Number
Fall	120
Sharp instruments	58
Burns/scalds	22

As shown in Table 4 the cause of fall was due to the walker i.e.; 45 while 31 and 24 cases had fall from furniture/bed and stairs/terrace respectively. Fall from tricycle, attendant's lap was also reported.

Table 4: Cause of fall (N=120).

Injury due to	Male	Female	Total
Walker	26	19	45
Furniture/bed	18	13	31
Stairs/terrace	14	10	24
Tricycle	5	4	9
Attendant's lap	5	4	9
Others	1	1	2
Total	69	51	120

Multiple body parts were injured due to fall. Injury was noticed in forehead most commonly (53%). Scalp (25%), face (20%), limbs (17.5%) and trunk (15%) were other parts of the body which were injured due to fall.

Most of the injuries were seen on the upper half of the body that too focused near the face as in shown in Table 5. Sharp instruments resulted injuries in 58 infants. The sharp instruments causing injuries included knife, scissors, sharp-edged toys, safety pins and pen/pencils as depicted in Table 6.

Table 5: Body part injured due to fall.

Body parts	Number	Percentage (%)
Forehead	64	53
Scalp	30	25
Face	24	20
Limbs	21	17.5
Trunk	18	15

Table 6: Mode of injury due to sharp instruments (N=58).

Injury due to	Male	Female	Total
Knife	9	6	15
Scissors	7	4	11
Sharp edged toys	7	4	11
Safety pins	5	3	8
Pen/pencils	5	3	8
Others	3	2	5
Total	36	22	58

As shown in Table 7 the type of injury with sharp objects was also identified and majority (80%) had incised wound (defined as clean cut wound through the tissues which is more long than deep, and caused by a sharp edged instrument) or lacerated wounds (defined as tearing or splitting of skin, mucous membranes, muscles, or internal organs caused by either a shearing or a crushing force, and produced by application of a blunt force to a broad area) on various sites, while rest had puncturing wound (defined as wound produced from penetration with long narrow instruments having pointed (sometimes blunt) ends into the depths of the body, which are deeper than its length and width) or hematoma (5%).[11-15]

Table 7: Type of injury due to sharp edged instruments.

Type of injuries	Number	Percentage (%)
Lacerated wound	24	41
Incised wound	22	39
Puncturing wound	9	15
Hematoma	3	5

In our study the reported injuries due to burns (defined as injury caused by heat, or by a chemical or physical agent having an effect similar to heat)/scalds (defined as form of thermal injury which results from application of liquid >60˚C or from steam and involves only the superficial layers of skin) due to fall of boiling water/dal/milk was the cause for injuries in 10 infants.

Injuries due to touching of live electric wire/socket and touching of burning wood/coal was seen in 7 and 5 infants respectively.[16] The data is shown in Table 8. About 34% parents consulted the treating doctor within first hour, while 44% took about 3 to 12 hours and rest took their babies for treatment after 12 hours.

Local wound treatment included washing the wound with water, application of ice/ warm object, application of turmeric, mustard oil and facial creams.

Table 8: Cause of burns/scalds (N=22).

Injury due to	Male	Female	Total
Fall of boiling water/dal/milk	6	4	10
Touched live electric wire/socket	4	3	7
Touched burning coal/wood	3	2	5
Total	13	9	22

Table 9: Summary of different types of injury with respect to age and sex.

Age (in months)	Types of injuries								
	Fall (N=120)			**Puncturing wound (N=58)**			**Burns/scalds (N=22)**		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<1	4	2	6	2	1	3	-	1	1
1-4	7	3	10	2	2	4	2	1	3
4-8	20	16	36	11	7	18	6	7	13
8-12	39	29	68	22	11	33	5	2	7

DISCUSSION

Injuries are a major cause of morbidity and mortality in children. Child deaths due to injuries portrays a grave public health problem around the globe. Injuries take an excessive toll of children in the form of death, disability and suffering. It is true that the injury risk per hour for a child is much greater than for an adult and depends on the developmental stages of the child and his surrounding environment. In this prospective descriptive study, we noted that domestic injuries during infancy are quite common. There were only 10 neonates in study group while 86.5% of the injured infants were more than 4 months of age. and this increase can be due to the increased mobility of the infants in this age group.

The male female ratio was 1.5: 1. which shows that male infants are more likely to be injured when compared to the

female infants. The infants who were injured belonged to nuclear families (68%) which clearly shows that the care takers in nuclear families are less.

We observed in our study that with increase in the age of the mother the chances of injury among the infants decreased as shown in Figure 1.

Inference from the data can be drawn that with the increasing level of education the chance of injury is decreased which can be said in a manner that the level of care of infant is more when the mother is educated more.

Among the type of injuries, fall is a very common injury this was also studied by Cooray et al in his studies using online discussion forums.[17] Falls are common between the ages of 4-12 months, mainly because of the increasing ability of infants to roll, creep, stand and climb. Falls were the most common type of accident. The incidence varied from 44.4% to 71.1% in many studies though in varying age groups. The fall was either from walker, furniture/bed, stairs, roof and from attendant's lap as reported by other workers. Walkers are not known to promote early walking but have a faulty design and can easily trip over and lead to injury. Besides they give the child mobility at an age, when they cannot recognize danger and sustain falls.[18] Toys too are dangerous and can cause injuries if not supervised was noted, as also seen reported by some similar studies in different surroundings.[18-21]

Burns, scalds featured as prevalent type of injuries in different studies.[18] We observed 11% accidents because of burns and scalds. Burns because of burning wood, coal, fall of boiling water, milk, dal and electric burns because of touching live wires and electric sockets were seen in our study. Burns in infants are different from adults in that for a given body weight they have a large surface area. The skin is much thinner and injury is more severe. The water loss due to normal metabolism and burns is more in children, needing larger amount of fluid for resuscitation.

The most common localization in form of injury due to accidents was see in upper extremities. Head contributed a larger portion of the body than in older subjects. In our study about majority of infants sustained trauma due to fall on forehead, while face, limbs and trunk were also involved. The child's environment has also an important part to play in injury causation. Social stress factors like single parent, younger mother unemployment of parent, step families, poor education status and size of family contribute to injury causation.

So, we came to an understanding that injuries can be prevented to certain extent provided modifications are made in the home like protection of staircase by gates, smooth flooring, avoidance of walkers, properly securing the electrical outlets with circuit breakers, keeping hot appliances/burning materials away from the reach of children similar studies have been done which support these recommendations.[19-20] Toys should be appropriate to child's age, they should be without sharp edges, rust proof, battery operated and unbreakable. Infants at any time should not be left alone on high beds, cribs, and stroller. In spite of awesome health, social and economic impact, injury prevention strategies have hardly received any attention in India. It is simple to understand that as the child develops increasing his abilities and skill the risk of mishaps also increases. Health education is an important medium as far as prevention of injury is considered in children. Health education regarding first aid to be given to parents. Injuries in infants is a vast topic with an enormous data that needs to be collected some of the studies have endeavored to look forward into this area and are promising in their own unique way.[18-25] Also, not all the minor injuries as well as those injuries which are result of abuse by care giver are reported and hence, data may lack to show the representation of such injuries.

CONCLUSION

Domestic injuries among infants are quite common. Health education by a pediatrician can play an important role in preventing injuries in the infants. Infants should be under supervision at all the times this would decrease the number of such incidences to a great extent. The education and understanding of the mother are the single key factor which can mitigate such injuries.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Gautam B. Injuries. Review of Forensic Medicine and Toxicology. 4th ed. New Delhi: Jaypee Brothers Medical Publishers; 2018: 194-196.
2. Alonge O, Hyder AA. Reducing the global burden of childhood unintentional injuries. Arch Dis Child. 2014;99(1):62-9.
3. Krug EG, Sharma GK, Lozano R. The global burden of injuries. Am J Public Health. 2000;90(4):523-6.
4. Balushi H, Kalbani A, Khwaldi T, Suqri S, Maniri A, Alazri M, et al. Injuries presented at a primary care setting in oman. Oman Med J. 2012;27(6):486-90.
5. Rivara FP, Grossman D. Injury control. In: Behrman RE, Kilegmann RM, Jenson HB, eds. Nelson Textbook of Pediatrics. 21st ed. Philadelphia, PA: WB Saunders company; 2019: 1331-1335.
6. Mehmood A, Agrawal P, Allen KA, Kashmiri A, Busaidi A, Hyder AA. Childhood injuries in Oman: retrospective review of a multicentre trauma registry data. BMJ Paediatr Open. 2018;2(1):310.
7. Gad A, Eid R, Ansary S, Saeed A, Kabbash A. Pattern of injuries among children and adolescents in Riyadh, Saudi Arabia: a household survey. J Trop Pediatr. 2011;57(3):179-84.
8. Park K. Demography and Family planning. Textbook of Preventive and Social Medicine. 25th ed. India: Banarsidas Bhanot Publishers; 2019; 739-741.

9. Ang BH, Chen WS, Lee SWH. Global burden of road traffic accidents in older adults: A systematic review and meta-regression analysis. Arch Gerontol Geriatr. 2017;72:32-8.
10. Nanjunda DC. Impact of socio-economic profiles on public health crisis of road traffic accidents: A qualitative study from South India. Clinical Epidemiol Global Health. 2021;9:7-11.
11. Gautam B. Injuries. Review of Forensic Medicine and Toxicology. 4th ed. New Delhi: Jaypee Brothers Medical Publishers; 2018: 201-207.
12. Harris VA, Rochette LM, Smith GA. Pediatric injuries attributable to falls from windows in the United States in 1990-2008. Pediatrics. 2011;128(3):455-62.
13. Bhuvaneswari N, Prasuna JG, Goel MK, Rasania SK. An epidemiological study on home injuries among children of 0-14 years in South Delhi. Indian J Public Health. 2018;62(1):4-9.
14. Rumhi A, Awaisi H, Jeyaseeln L. Home accidents among children in Oman. Eur J Pediatr. 2016; 175:1393-880.
15. Eldosoky RS. Home-related injuries among children: knowledge, attitudes and practice about first aid among rural mothers. East Mediterr Health J. 2012;18(10):1021-7.
16. Gautam B. Injuries. Review of Forensic Medicine and Toxicology. 4th ed. New Delhi: Jaypee Brothers Medical Publishers; 2018: 272-80.
17. Cooray N, Sun S, Adams S, Keay L, Nassar, Brown J. Exploring Infant Fall Events Using Online Parenting Discussion Forums. BMC Public Health. 2020.
18. Gupta RK, Gupta R. Home Related accidents during Infancy. J K Sci. 2004:6(2);67-9.
19. Banerjee S, Paul B, Bandyopadhyay K, Dasgupta A. Domestic unintentional injury of 1 to 5- year-old children in a rural area of West Bengal, India: A community-based study. Tanzan J Health Res. 2016;18:3.
20. Carnemolla, P, Bridge C. A scoping review of home modification interventions–Mapping the evidence base. Indoor Built Env. 2020;29(3):299-310.
21. Jones S, Tyson S, Young M, Gittins M, Davis N. Patterns of moderate and severe injury in children after the introduction of major trauma networks. Arch Dis Child. 2019;104(4):366-71.
22. Peden M, Oyegbite K, Smith J, Hyder AA, Branche C, Rahman AKMF, et al. World Report on Child Injury Prevention. Geneva: WHO; 2008.
23. Tse T, Poon CH, Tse KH, Tsui TK, Ayyappan T, Burd A. Paediatric burn prevention: an epidemiological approach. Burns. 2006;32(2):229-34.
24. Bhatia J, Singh MM, Marimuthu Y, Garg S, Sharma P, Rajeshwari K. Unintentional Injuries Among Under-five Children in a Rural Area in Delhi. Indian Pediatr. 2021;58(6):560-3.
25. Indian Academy of Paediatrics. Prevention of accidents and Injuries, 2021. Available at: https://iapindia.org/index.php. Accessed on 10 July 2021.

Cite this article as: Gupta RK, Gupta R, Bhadwal AS, Sharma V. Domestic injuries among infancy: a prospective descriptive study. Int J Contemp Pediatr 2021;8:1581-5.