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# Perception and Practice among Community People and Health Service Providers on Care and Management of Burn Injuries in Nepal: A Qualitative Study

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## ABSTRACT

**Background:** According to WHO, burns are a serious public health problem and the second most common cause for injury in rural Nepal, accounting for 5% of disabilities. The overall objective of the study is to assess the prevailing perception and practice among community people and health service providers on care and management of burn injuries in Nepal.

**Methods:** This was a qualitative study conducted in 2016 representing all eco-development regions. A total of 40 key informants interviews with health personnel and 18 focus group discussions with the community people were conducted.

**Results:** There are very limited dedicated burn care facilities in Nepal. During discussion, the service providers and community people mentioned that a burn injury can affect any one irrespective of their age and socioeconomic status. The study showed that females are at higher risk for burn injury which is associated mostly with wood fire cooking. The burn cases in the hospitals were more during winter than in summer season. Among all the ethnic groups, Dalit and indigenous population were found more vulnerable towards burn injuries. Intentional burn injuries such as self-inflicted burns/suicidal attempts were found to occur more in females. The community people had a good practice of taking the majority of patients having burn injury immediately to the hospital, if not, they at least provided them with a first aid treatment.

**Conclusions:** Majority of burn injured cases are getting first aid treatment at the incident places and taking hospital immediately. Main reasons, who reached late, are unaware about seeking services and financial constraint. Overall, the community people are partially aware about the burn injury.

**Keywords:** Burn injuries; community practice; hospitals; incident and types.

## INTRODUCTION

Burn injuries is a global public health problem and accounting for 180,000 deaths annually.<sup>1</sup> In addition to that the prevalence of burn is higher in developing country than developed.<sup>2</sup> However, burden of disease is not equally distributed throughout the world as larger portion nearly 95% of these burns occurs in low-middle-incomes.<sup>3</sup>

Burns are the second most common injury in rural Nepal, accounting for 5% of disabilities<sup>1</sup> and 55,902 sustain moderate to severe burn injuries every year.<sup>4</sup> According to WHO estimation, 2100 people die and DALYs of 84,000 per year as a consequence of burn injuries.<sup>5</sup> Nepal

Health Research Council's survey (2009) estimates that 2.3% of all injuries are unintentional and caused by fire. Another hospital-based study shows that there were 819 unintentional burn admissions during the period 2002-2013.<sup>6</sup>

Current medical facilities to treat the deformities caused by burns are rare and usually both inaccessible to and unaffordable for majority of people.

## METHODS

The study was a descriptive cross-sectional study, based on primary information. Qualitative approach was adopted using key informant interviews (KII) and focus group discussions (FGDs).

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Ten referral hospitals of 8 districts & its catchment area's community across the country were selected which cover large number of populations from all geographic regions, and cross-sections such as ethnicity, socio-demography and culture. The sites are 1. Koshi Hospital, Biratnagar, Morang; 2. BP Koirala Institute of Health sciences, Dharan, Sunsri; 3. Narayani Sub-Regional Hospital, Birgunj, Parsa; 4. Bharatpur Hospital, Chitwan; 5. Tribhuvan University Teaching Hospital (TUTH), Maharajgunj, Kathmandu; 6. Bir Hospital, Kathmandu; 7. Sushma Koirala Memorial Hospital, Sankhu, Kathmandu; 8. Gandaki Sub-Regional Hospital, Pokhara, Kaski; 9. Bheri Hospital, Nepalgunj, Banke and 10. Seti Hospital, Dhangadhi, Kailali.

These hospitals are supposed to have high case load of burn patients. Medical Superintendents, Burn Unit In-charge (Doctors) and Nursing Staffs, Medical Recorders, Male & Female groups were study Population. The

qualitative data were collected from May to June 2016.

Health service providers (both management & service aspect) from each of the selected hospitals who were involved in burn injury care & management were purposively selected for key informant interviews (KIIs). Similarly, catchment areas of these selected hospital's community people (both male and female) were included for Focus Group Discussions (FGDs).

The design maintains equal sample size for all hospitals irrespective of their catchment population size since population size is not an important determinant of sample size.<sup>7</sup>

Summary of tools and techniques used for qualitative data collection: Researchers approached different groups of people to explore and validate the content of qualitative information as follows:

Methods	Participants	Purpose	Number
KII	Medical Superintendents (MS)	To find out the availability of burn related services and care and identify gaps at policy and management level	10
KII	Burn Unit In-charge (Doctors) and Nursing Chief and Staff Nurses	To find out the management of burn injuries/ deformities by service providers	20
KII	Medical Recorder	To find out the existing recording and reporting system at hospital level related to burn	10
FGD	Community people (Male and Female groups) including FCHVs	To explore the knowledge, attitude and practice (KAP) of the general population	18 groups (146 participants)

Sample Size: Altogether 40 KIIs (100% response rate) and 18 FGDs (90% response rate) were conducted in the selected 10 hospitals. FGDs were conducted at the community level including people from both the genders and, different ethnic groups and occupation. In each FGD an average of 8 participants along with 2 enumerators (as a note taker and a facilitator) were involved. A total of 18 FGDs (9 from Male groups and 9 from Female groups) were conducted with a total of 146 participants (71 males and 75 females).

For validation of tools, pre-testing and practice was done in the similar settings i.e., Kirtipur Burn Hospital in Kirtipur and revised based on feedbacks & expert's opinion.

Key Informant Interview (KII): Primary data were collected through face to face interview with the health care providers (HCPs) such as doctor, nurse, MS and MR from the selected hospitals who are directly involved in the treatment, care and management of burn injuries

Focus group discussions (FGD): To understand the risk factors associated with knowledge, treatment, and

management of burn injuries including health seeking behaviour of community people. Two FGDs were conducted in the sites near the periphery of each hospital.

Data Management and Analysis: For the qualitative method, a content analysis was carried out (transcription and the notes takers' note were matched). Qualitative data obtained from KIIs and FGDs were analyzed using Atlas.ti Software. The findings were presented in a narrative form supported by comparative charts and quotations.

Ethical Consideration: After obtaining an approval from NHRC, activities at field level were started and informed consent was taken from each participant before KIIs and FGDs.

## RESULTS

The data received from all the KIIs and FGDs were analyzed using triangulation method. Following are the findings for each thematic area:

It was reported that around 100 to 500 burn cases are

admitted in the selected hospitals each month. Case load was found to be the highest in Tribhuvan University Teaching Hospital (TUTH) and Sushma Koirala Memorial Hospital (SKMH) and the lowest in Koshi Zonal Hospital. The Medical Director of SKMH reported that out of the total cases registered each day in the OPD, 2-3 are usually cases related to burn. Record of SKMH shows that the client flow at their hospital ranges between 90,000 to 1,00,000 annually.

Participants of FGD highlighted that people from low socio-economic background are the most vulnerable to burn injuries as they don't have sufficient knowledge and information regarding primary treatment which delays the treatment. According to the medical superintendents, the client flow was the highest during winter season which was associated with the usage of firewood for cooking and to keep themselves warm leading to accidental burn.

Similarly, 15.5% male and 22.7% female participants of FGD from Bheri Zonal Hospital, Bharatpur Hospital and TUTH reported burn injuries as a result of carelessness mostly during cooking (holding hot vessels). One of the participants said, *"The houses in Magar community are built with straw and are built very close to each other so if one of houses is on fire, there are chances that fire might spread to the other house as well"*.

Medical doctors, nursing chief, and staff listed age, gender, occupation, education and income as factors influencing burn injuries. Majority (8 out of 10 hospitals) of the doctors and nursing chiefs reported children (toddlers), elderly people and young women (engaged in household activities) are mostly at risk to burn injuries. Likewise, 22.5% male and 29.3% female of FGD participants from seven out of 10 study sites reported that uneducated people, women and children are the most vulnerable. Homicidal and suicidal cases are reported in the hospital, mostly from the Terai region, where females are the victims (burnt by the family members for dowry). Women less than 30 years are mostly reported under homicidal and suicidal burn cases.

Medical Doctors, Nursing Chief and staff from 9 out of 10 hospitals listed use of fire-woods (open fire) in the kitchen, open electrical wires, improper handling of chemicals (Chlorine) and petroleum products, superstitious belief (walking on fire) as the major causative factors of burn injuries. Injuries caused upon exposure to industrial fire, chemical burn and acid attacks are seen rarely. Similarly, 23.9% male and 33.3% female FGD participants from 7 out of 10 study sites listed carelessness while cooking (such as leaving the stove

on after cooking), keeping match boxes and fire lighter within the reach of children and throwing cigarettes after smoking without properly putting that off as the causative factors of burn in their community.

One of the participants said, *"During spring season (mainly in June, July and August,), people leave the fire burning overnight to keep the mosquitos away from their livestock."*

According to 1.4% males and 2.7% females FGD participants from Narayani Sub-Regional Hospital, Birgunj, an intentional burn injury usually occurs due to conflicts among people, whereas unintentional burn might occur due to various other reasons.

*An incident related to unintentional burn was shared by participants of FGD, Chitwan, about a two grader who was studying under the light of a kerosene lamp and accidentally left it on bed which led the entire village to fire.*

The doctors, nursing Chief and other staff of all the 10 study hospitals reported that in many instances, burn patients are brought late to the hospital, when the wounds have already started to smell. This is mostly because of not having enough knowledge on burn injury management at community level.

According to 18.3% male and 28.0% female FGD participants, the main sources of information on burn injuries were via local FM/radio, television and documentaries on web. The FGD participants from Bharatpur Hospital reported that FCHVs and health workers would be the best medium to disseminate information on burn injuries at the community level.

The hospital staff mentioned that awareness program on preventive measures of burn through mass media, counseling services must be conducted by the Government in order to prevent burn injuries at the community level.

## DISCUSSION

Data for this study were collected from the hospitals and the community level to reflect the perception of both the Health Service Providers and community people towards burn injury and deformities. According to WHO and Ministry of Health and Population (MoHP), it is estimated that burns are the second most common injury in rural Nepal, accounting for 5% of disabilities and 55,902 sustain moderate to severe burns and 2100 people die every year due to burn injuries in Nepal.

Thus, an accurate estimation of burn injury is difficult to obtain as reporting of burn cases is influenced by number of factors.

There is a paucity of large-scale epidemiological studies on burns in Nepal. Epidemiological studies need to be conducted at different region to analyze the burden, distribution, and causes of burns.

The value of this study increases as there are very limited dedicated burn care facilities other than SKMH and Kirtipur Hospital. In this study, though it was not possible to estimate the population-based estimates of burns, both the service providers and community people opinioned that a slight female predominance on burn injuries.

This was in accordance with some recent studies<sup>8-10</sup> where female burn patients dominance in contrast to other studies where more males were affected from burn injuries.<sup>11,12</sup> However, females and males have broadly similar rates of burn injuries according to the most recent data.<sup>13,14</sup> A female predominance can be explained as females in the younger age group are mostly engaged in cooking and wear loose-fitting clothes such as saree, dupatta, etc., which inadvertently catch fire easily.<sup>15</sup>

Majority of studies have reported that maximum incidence of burn injuries between the age of 21 to 40 years.<sup>8-10,14,16</sup> However, the studies carried out in Ghana, Malaysia, and western countries showed extremes of ages (children and old peoples) of the burn patients.<sup>11,13,17-21</sup> which is in accordance with this study where majority of participants viewed that mostly burn injuries occurred in children and old age people.

In this study, those, who have lower educational and economic status, had higher proportion of burn injuries. Occupation of a person makes him or her susceptible for burn. Burn injuries occurred more in agricultural and household workers who are engaged in cooking followed by unskilled workers. This was consistent with the findings of other studies.<sup>8,9,12-14,16,21,22</sup> The housewives were frequently exposed to cooking, had inadequate knowledge of handling high pressure stoves, high demand of work leading to haste in doing work and social burden made them susceptible to suicidal or homicidal burn.

More burn cases were seen during winter than in summer season which was similar to the findings of Jagannath et al (2011).<sup>8,9</sup> Flame/fire was found as the most common cause of burn injury in both seasons. Of those burn injured patients admitted in 10 hospitals, majority of

the injuries was unintentional which was consistent with the other findings.<sup>8-10,13,16,21,23,24</sup>

The finding of this study also show that burn injuries are the burn injuries management and care unit are the most neglected at the hospitals and without trained Human Resources (HR). Also burn management in the hospitals outside of the Kathmandu valley are very limited. Data management system in the hospitals related to burn was also found to be weak and varied from hospital to hospital.

## CONCLUSIONS

A burn injury can affect people irrespective of their age and socioeconomic groups. Females are at higher risk from burn injuries which is associated more with woodfire (open fire) cooking and conflict within the family led to intentional burn. Cases of burn in the hospital are more during winter than summer season. Community can play a vital role in reducing the burn injuries and its management if they are properly oriented on it.

The treatment of burn is emergency and comparatively costly among other injuries and very less percentage visit the hospital for follow-up after discharge. Furthermore, there should be a separate burn unit with essential commodities in each major hospital and more investment in prevention, treatment and care of burn injuries from both government and non-government sectors.

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## REFERENCES

1. World Health Organization. WHO | Burns Fact Sheet [Internet]. Who 2018. Available from: <http://www.who.int/mediacentre/factsheets/fs365/en/>
2. Li H, Yao Z, Tan J, Zhou J, Li Y, Wu J, et al. Epidemiology

- and outcome analysis of 6325 burn patients: A five-year retrospective study in a major burn center in Southwest China. *Sci Rep.* 2017;7(September 2016):1-9. [\[FullText\]](#)
3. Peck M, Pressman MA. The correlation between burn mortality rates from fire and flame and economic status of countries. *Burns* [Internet]. 2013;39(6):1054-9. [\[DOI\]](#) [\[ScienceDirect\]](#)
  4. Annual Report 2008-9. Ministry of Health and Population, Department of Health Services, Government of Nepal.
  5. World Health Organization (WHO). The Global Burden of Disease: 2004 Update. World Health Organization, Geneva 2008. Available from: [www.who.int/healthinfo/global\\_burden\\_disease/GBD\\_report\\_2004update\\_full.pdf](http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf) (Accessed on April 02, 2010).
  6. Sharma NP, Duke JM, Lama BB, Thapa B, Dahal P, Bariya ND, et al. Descriptive epidemiology of unintentional burn injuries admitted to a tertiary-level government hospital in Nepal: gender-specific patterns. *Asia Pacific Journal of Public Health.* 2015 Jul;27(5):551-60. [\[DOI\]](#)
  7. Cochran, W.G. (1977). *Sampling Techniques*. Third Edition. New York: Wiley.).
  8. Jagannath HS, Tapare VS, Rayate MV. Study of Socio-Demographic Profile of Burn Cases Admitted in Shri Chhatrapati Shivaji Maharaj General Hospital, Solapur, India. *National journal of community medicine* 2011 Volume 2 Issue 1. ISSN: 0976 3325. [\[FullText\]](#)
  9. Maske AN, Deshmukh SN. Clinico-epidemiological study of burns: our experience with 500 patients. *Int Surg J.* 2016 Aug;3(3):1234-1239. Available from: <http://www.ijsurgery.com>
  10. Mazumder A, Patowary A. A Study of Pattern of Burn Injury Cases in Guwahati, India. *J Indian Acad Forensic Med.* Jan-March 2013, Vol. 35, No. 1. [\[FullText\]](#)
  11. Agbenorku P, Aboah K, Akpaloo J, Amankwa R, Farhat B, Turkson E, et al. Epidemiological studies of burn patients in a burn center in Ghana: any clues for prevention?. *Burns & trauma.* 2016 Dec;4(1):21. [\[FullText\]](#)
  12. Abrol RK, Mahajan S, Mahajan SR, Chauhan M, Singh M, Sharma MP, Abrol S. Epidemiology and outcome of Burn Injuries in tertiary Care Hospital of Northern India. *Int J Res Med Sci* 2015; 3:2711-3. [\[FullText\]](#)
  13. World Health Organization. WHO | Burns Fact Sheet [Internet]. (Updated in September 2016). Available from: <http://www.who.int/mediacentre/factsheets/fs365/en/>
  14. Alavi CE, Salehi SH, Tolouei M, Paydary K, Samidoust P, Mobayen M. Epidemiology of Burn Injuries at a Newly Established Burn Care Center in Rasht, Iran. *Trauma Mon.* 2012;17(3):341-6. [\[PubMed\]](#)
  15. Barradas R. Use of hospital statistics to plan preventive strategies for burns in a developing country. *Burns.* 1995; 21:191-3. [\[DOI\]](#) [\[ScienceDirect\]](#)
  16. Gadge SJ, Meshram RD, Shrigiriwar MB and Kuchewar SV. Epidemiological Study of Fatal Burn Cases in SVN Government Medical College, Maharashtra, India. *Journal of Academia and Industrial Research (JAIR).* Volume 2, Issue 10 March 2014. ISSN: 2278-5213. [\[FullText\]](#)
  17. Goodwin C W, Finkelstein J L, Maddern M R. *Burn. In: Swartz S I, Shirs G T, Spencer F C, EDITORS. Principles of Surgery.* 6th edition. McGRAWHILL, INC. Health Professions Division; 1994, pp225.
  18. Colebrook L and Colebrook V. The prevention of burns and scalds – review of 1000 cases. *The Lancet.* 1949; 2:181-188. *Lancet* 1949 pp.181-8. [\[Link\]](#)
  19. Clarkson P. Burns – critical review. *British Jr Surg.* 1963; 223:457-469. [\[Link\]](#)
  20. Wasserman et al. Survival rates of patients hospitalized in the French burn units during 1985. *Burns.* 1989;15(4):261-264. [\[DOI\]](#) [\[ScienceDirect\]](#)
  21. Ghani AN, Ibrahim HJ. Burns in the Malaysian population: two years of burns admissions for burns at the general hospital, Kuala Lumpur. *Med J Malaysia.* 1987 Dec;42(4). [\[FullText\]](#)
  22. Lama BB, Duke JM, Sharma NP, Thapa B, Dahal P, Bariya ND, et al. Intentional burns in Nepal: a comparative study. *Burns.* 2015 Sep 1;41(6):1306-14. [\[DOI\]](#) [\[ScienceDirect\]](#)
  23. Shrivastava PS, Shrivastava SR. An epidemiological study of adult female burns patients admitted in a tertiary care hospital. *Prog Health Sci.* 2012 Dec 1;2(2). [\[Link\]](#)
  24. Abdul Aziz UB, Aslami AN. Pattern of Thermal Burn Case Incidences Studied at a tertiary care hospital in Sasaram, Bihar. *Indian Journal of Forensic and Community Medicine, July - September 2015;*2(3):130-134. [\[FullText\]](#)