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OUT OF POCKET EXPENSES IN INPATIENT BURN CARE IN A TERTIARY HOSPITAL OF NEPAL

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ABSTRACT

Introduction: Burn injuries represent a significant global health burden causing significant economic burden to patient and health care system of country. In Nepal, limited data exist on the out of pocket expenses borne by burn inpatients, hindering effective resource allocation and policy planning. **Methods:** This is cross-sectional study conducted in K.D Joshi Burn Centre after receiving ethical approval from Institutional Review Board (IRB) of NAMS, Kathmandu. The study population included 33 patients more than 18 yrs of age receiving burn service from the centre. Patients were categorized into superficial partial-thickness burns (SPT), mixed depth partial-thickness burns (MDPT), and full-thickness burns (FT) with 11 patients in each group. Cost components like dressing, surgery, bed charge, investigations and drug treatment analysed average of each excluding the insurance and social security funds. Data were collected using structured proformas and analyzed descriptively. **Results:** Inpatients were categorized as superficial partial-thickness burns (SPT), mixed depth partial-thickness burns (MDPT) and full thickness burns (FT). The average cost of treating a patient with mostly SPT undergoing admission was estimated at NRs 22,000 (US$ 151.78), that of MDPT was NRs 1,58,000 (US$ 1090.06) and that of FT was NRs 2,47,000 (US$ 4,227.6). The largest cost contributors are drug treatment and dressings. **Conclusion:** Inpatient burn management in Nepal holds considerable financial burden on patients despite government subsidies. Drug therapy and dressing materials are the principal drivers of out-of-pocket expenditure. These findings focuses the need for better financial protection mechanisms, cost-effective burn care strategies, and adoption of standardized burn registries to inform national health policy and resource planning.

KEYWORDS: Hospital length of stay (HLos), Superficial Thickness Burn (SPT), Mixed depth partial-thickness burns (MDPT), Full thickness burn (FT).

INTRODUCTION

Burn injuries represent a significant global health burden, particularly in low- and middle-income countries, due to their complex treatment requirements.[1] This often translates into substantial financial strain for both healthcare systems and individual patients, especially considering the extensive resources needed for comprehensive burn care.[2] In tertiary care hospitals, staff salaries and pharmaceutical costs are often the largest contributors to overall expenditures.[3] The economic impact extends beyond direct medical costs, encompassing indirect losses from productivity and long-term disability.[4] In Nepal, where a significant portion of the population belongs to lower socioeconomic strata, the out-of-pocket expenses for burn treatment can be particularly devastating, exacerbating existing financial vulnerabilities Consequently, understanding the specific out-of-pocket expenses incurred by burn inpatients in Nepalese tertiary care facilities is crucial for developing targeted interventions and advocating for improved financial support mechanisms.

Our country is developing country. Estimating burn injury costs is crucial in developing countries because it helps to prioritize funding for treatment and prevention. It informs resource allocation, and provides data for planning future public health programs. Without cost data, it is difficult effectively to allocate resources and address the high burden of burns in developing nations. On searching in search engines like Google Scholar and PubMed, limited studies has been done on cost of burn patients. This study aims to quantify these out-of-pocket costs, offering a detailed analysis of the financial impact on households and contributing to the sparse literature on burn care financing in the region.

METHODS

This is cross-sectional study conducted in K.D Joshi Burn Centre after receiving ethical approval from Institutional Review Board (IRB) of NAMS, Kathmandu. The study population included 33 patients more than 18 yrs of age receiving burn service from the centre over 6 months period of 2025 A.D. Data were gathered using structured proforma to collect details on demographics, type of burn and cost components. Cost till discharge was calculated. Financial files on the patient was kept to calculate the cost of burn care. For analysis, these data were entered in Microsoft Excel and processed.

Data collection

Questionnaires were filled as per percentage burn, type of burn, length of hospital stay(HLos) and cost items. Patients burn percentage was calculated and also those patients were divided into groups of superficial partial thickness burns, deep partial thickness burns and Full thickness burns 11 patients in each group. Average total burn surface area (TBSA) of hospitalised burn patients was defined by consensus as 20% TBSA for each. Costs were calculated in local currency (Nepalese Rupees, NRs) and converted to US dollars (US$) in order to facilitate comparison to other studies.

Cost items

Drug Treatment- Antibiotics, iv fluids, pain management
Dressings- Topical creams, Parrafin gauze, collagen
Investigations- Hemogram, Biochemistry, Microbiology
Surgeries- Minor, Moderate, Major
Therapies- Blood transfusion, Ventilation, Nutrition
Bed Charges- ICU

Bed charge of ICU was only included which was also supported by hospital almost~ 80% and bed charge of ward was not included as it was fully supported by hospital itself.

RESULTS

The average cost of treating a patient with mostly superficial partial-thickness burn (SPT) undergoing admission was estimated at NRs 22,000 (US$ 151.78) based on an estimated hospital length of stay (HLoS) of 12 days and average number of five operative procedures (an ‘operative procedure’ in this study is defined as any procedure that underwent a visit to operating theatre and an anaesthetic) (with 1 major operative procedure, 2 moderate and 2 minor operative procedure). Although these cases were mostly superficial partial thickness, some deepened as a result of infection or inappropriate initial care. Highest cost drivers was found to be drug treatment (NRs 6000, US$ 41.39) and dressing costs (NRs 8000, US$ 55.19) (Table 1).

The average cost of treating a mixed depth partial-thickness burn (MDPT) patient was estimated at NRs 1,58,000 (US$ 1090.06). Average hospital length of stay for mixed depth partial-thickness burn patients was 25 days and average number of operative procedures were eight (with 2 major, 3 moderate and 3 minor operative procedures). Highest cost drivers was found to be drug treatment NRs 100000 (US$ 689.91) and dressing was NRs 25,000 (US$ 172.48) (Table 1).

Average cost of treating full thickness burns (FT) patient was estimated at NRs 2,47,000 (US$ 4,227.6). Average hospital length of stay for full thickness burn patients was 60 days and the average number of operative procedures were estimated to be 14 (with 3 major, 6 moderate and 5 minor operative procedures). Highest Cost drivers was found to be drug treatment NRs 1,57000 (US$ 1083.16) and dressing was NRs 33000 (US$ 227.67) (Table 1)

Average cost of treating hospitalised burns (average costs of all three types- superficial partial-thickness burns, mixed depth partial-thickness burns and full thickness burns) was NRs 142333.333 (US$ 981.98). Average hospital length of stay for hospitalised burn patients was 32.333 days and average number of operative procedures were nine (with 2 major, 4 moderate and 3 minor operative procedures). The highest cost drivers were drug treatment NRs 87666.667 (US$ 604.82) and dressings was NRs 22,000(US$ 151.78).

Table 1: Average cost of different types of burn in tertiary hospital of Nepal.

Cost components	Superficial partial thickness burn cost (NRs)	Cost percentage	Deep partial thickness burn cost (NRs)	Cost percentage	Full thickness burn cost (NRs)	Cost percentage	Average severe burns (NRs)
Bed Charge	0	0	6000	3.797	9000	3.644	5000
Drug treatment	6000	27.27	100000	63.291	157000	63.563	87666.667
Dressing	8000	36.36	25000	15.822	33000	13.36	22000
Investigation	3000	13.64	15000	9.494	23000	9.312	13666.667

Surgeries	5000	22.73	12000	7.596	22000	8.907	13000
Average cost	22000	100	158000	100	247000	100	142333.333

1 NRs = 0.0069 US$

DISCUSSION

This is the study to estimate the cost of in-patient burn treatment in a Nepalese setting. Average costs of treating superficial partial-thickness burns (SPT), mostly deep partial-thickness burns (MDPT) and full thickness burns (FT) were estimated at NRs 22,000(US$ 151.78), NRs 158000 (US$ 1,090.06) and NRs 2,47,000 (US$ 4,227.6) respectively. Average cost of treating in-patient burns whether superficial partial-thickness burns, mixed depth partial-thickness burns or full thickness burns was NRs 142333.333 (US$ 981.98) in the study hospitals. The major cost components of burn treatment were drug treatment (61.592%) and dressings (15.457%)

Bed charges for normal bed was made free. ICU bed charges and surgery charges were also freed to higher percentages in almost all cases as study is conducted in government hospital. Food was made free. The main objective of the study was to know the financial burden and disability time.

The major cost components of burn treatment were operative procedure, dressings and bed charges in the study done in nepal.[5]

In this study, the average direct cost of burn care was high due to the extended length of hospital stay, the large number of surgical operations, and the high cost of dressings.

Drug treatments were the biggest cost component in government hospital in Nepal similar to the study by N.N Lam.[6] but in contrast to operative procedures as major cost burden in specialist hospital of Nepal in study done previously and other studies in Bangladesh[7] and investigations were major cost contributers in india.[8] Patients who contracted infections endured longer hospital stays, meaning increased costs.[9]

The cost of burn care estimated in this study is considerably higher than treatment of other injuries or diseases in Nepal.[10]

GDP per Capita in Nepal was $1,535 in 2025 wherease average cost of severe burn was found to be $ 4227.6 showing major financial burden despite the government schemes.

Similar to the study done previously in Nepal, there were no electronic bases and study was fully dependant on paper based, we recommend that facilities adopt the World Health Organisation (WHO) Global Burn Registry to support low middle income countries like Nepal, to build a comprehensive evidence based of cases and associated costs that can inform policy development.

CONCLUSION

Understanding the cost of burn treatment is of utmost importance for patients, their families, and governmental authorities. Finding out the out of pocket expenses and causes for the total cost of burn, can provide a framework for better use of resources, and also facilitates better performance between burn centers. Hospital burn costs can provide a basis for authorities to budget for acute burn treatment, for further management of chronic complications, and for planning prevention and public educational programs.

NOTE: Data collection and calculation done in round figures.

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Limitations
Short duration
Single centre

Conflict of interest
None.

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