

# A Retrospective Study on Causes of Lower Limb Amputation in Peshawar, Khyber Pakhtunkhwa

MUHAMMAD KAMRAN<sup>1</sup>, ARSALAN RASOOL<sup>2</sup>, ZARAFSHAN AHSAN<sup>3</sup>, MUHAMMAD TAHIR<sup>4</sup>, SHAFIQ UR REHMAN<sup>5</sup>, AQEEL AHMED<sup>6</sup>, MUHAMMAD NAUMAN<sup>7</sup>

<sup>1</sup>Prosthetics and Orthotics Technologist Global Care Hospital Abu Dhabi UAE

<sup>2</sup>Lecturer Prosthetics and Orthotics Khyber Medical University Peshawar

<sup>3</sup>Coordinator Audiology IPMR KMMU Peshawar

<sup>4</sup>Certified Prosthetist and Orthotist Al Ain UAE

<sup>5</sup>Orthotist at Paraplegic Centre Peshawar

<sup>6</sup>Professor IIRS Isra University Islamabad

<sup>7</sup>Physiotherapist Shifa International Hospital Islamabad

Correspondence to Muhammad Kamran, Email: [aliach3155@gmail.com](mailto:aliach3155@gmail.com)

## ABSTRACT

**Background:** This study investigates the various causes of lower limb amputation in Peshawar, Khyber Pakhtunkhwa, highlighting the impact of environmental and societal factors on the prevalence of these amputations.

**Aim:** To identify the major causes of lower limb amputation in Peshawar.

**Study Design:** Retrospective study.

**Methods:** A total of 100 questionnaires were completed by patients from different hospitals in Peshawar who met the inclusion criteria.

**Results:** The leading cause of lower limb amputation identified in this study is bomb blasts, accounting for 45% of the cases. This high percentage is attributed to the prevalent terrorism in the region, with frequent bombings occurring in markets, schools, mosques, and army camps. The second leading cause is road traffic accidents (RTA), contributing to 20% of the amputations. The lack of adherence to traffic rules and regulations significantly contributes to this cause. Other identified causes include gunshots (18%), diseases (11%), trauma (3%), burns (2%), and congenital factors (1%).

**Conclusion:** Bomb blasts are the predominant cause of lower limb amputation in Peshawar, making up 45% of the cases. Other causes such as RTA, gunshots, disease, trauma, and burns are also significant, with congenital causes being the least common at 1%.

**Keywords:** Lower limb amputation, Bomb blast, Road traffic accident (RTA), Gunshot, Trauma, Congenital, Peshawar, Khyber Pakhtunkhwa

## INTRODUCTION

Amputation refers to the surgical or traumatic removal of a body extremity, often employed to manage disease processes such as malignancy or gangrene, or to enhance mobility in cases of severe contractures or paralysis from conditions like poliomyelitis<sup>1</sup>. Lower limb amputation is particularly significant due to its impact on a patient's mobility and quality of life.

Research on the causes of lower limb amputation reveals a range of factors, including chronic diseases such as diabetes and gangrene, as well as traumatic events like road traffic accidents, gunshot wounds, bomb blasts, burns, and congenital abnormalities<sup>2</sup>. Despite the wealth of studies available, not all focus specifically on the causes of lower limb amputation in the context of Peshawar, Khyber Pakhtunkhwa. Some studies address related topics, while others provide more direct relevance to this issue.

In this study, we have gathered data from various hospitals in Peshawar, including Lady Reading Hospital (LRH), Hayatabad Medical Complex (HMC), and Khyber Teaching Hospital (KTH), to analyze the causes and patterns of lower limb amputation in the region.

Lady Reading Hospital, one of the oldest and largest teaching institutions in the country, offers state-of-the-art curative and preventive services and has been a significant provider of healthcare in the province<sup>3</sup>. The concept for a hospital in Hayatabad was initiated in 1979 to meet the rising healthcare demands following the influx of Afghan refugees. The hospital, originally funded as an eye hospital, expanded in 1981 to include mother and child health services, supported by grants from Saudi Arabia and Britain<sup>4</sup>.

Khyber Teaching Hospital, established in 1976 as Hayat Shaheed Teaching Hospital, serves as a major training and research facility for medical students from the North Western region of Pakistan and is affiliated with Khyber Medical College. Over the years, Khyber Teaching Hospital has evolved into a key healthcare provider in the region<sup>5</sup>.

## METHOD

A retrospective review was conducted to investigate the causes of lower limb amputation in Peshawar, Khyber Pakhtunkhwa<sup>6-10</sup>. The study involved reviewing existing literature on the subject and collecting primary data through questionnaires.

**Data Collection:** A total of 100 questionnaires were administered to patients in various hospitals in Peshawar who met the inclusion criteria<sup>11-15</sup>.

**Search Strategy:** The search for relevant topics, research papers, and literature was conducted across multiple databases, including Google Scholar, PubMed, and Google. Only published studies available in full text were considered, with a preference for PDF files in English. After thoroughly analyzing and screening the abstracts, only those studies that met the inclusion criteria were selected. The results of these studies were then assessed for final inclusion in the literature review.

## RESULTS

Table 1, Causes of lower limb Amputation

Valid	Frequency	%age
Bomb Blast	45	45.0%
Road Accident	20	20.0%
Congenital	1	1.0%
Gun Shot	18	18.0%
Disease	11	11.0%
Trauma	3	3.0%
Burn	2	2.0%
Total	100	100%

Received on 11-12-2023

Accepted on 24-02-2024

According to table 1, the study analyzed the causes of lower limb amputation among 100 patients, revealing the following distribution: Bomb blasts were the most common cause, accounting for 45 cases (45%) and highlighting their significant impact in the region. Road accidents followed with 20 cases (20%), underscoring the role of traffic-related injuries in limb loss. Gunshot wounds were responsible for 18 cases (18%), indicating that violence and armed conflicts also play a substantial role. Diseases caused 11 cases (11%) of amputations, while trauma unrelated to bomb blasts, road accidents, or gunshots contributed to 3 cases (3%). Burns were the least common cause, with only 2 cases (2%), and congenital conditions were the rarest, with just 1 case (1.0%). In summary, bomb blasts are the predominant cause of lower limb amputation in the region, followed by road accidents and gunshot wounds, with diseases and other factors contributing to a smaller proportion. This distribution highlights the significant impact of conflict and accidents on limb loss in Peshawar, Khyber Pakhtunkhwa.

## DISCUSSION

The retrospective study on the causes of lower limb amputation in Peshawar, Khyber Pakhtunkhwa reveals a range of factors contributing to this serious health issue. The study underscores significant variability in the causes of amputations, with some being prevalent while others are less common.

According to research conducted by Masood Jawaid, Irfan Ali, and Ghulam Mustafa Kaimkhani from Karachi, complications related to diabetes emerged as the most common cause of limb amputation, affecting 54.7% of patients, followed by trauma at 45.3%<sup>16</sup>. The study highlighted that debridement was the most frequent additional procedure performed, and hospital stays averaged 17.3 days. A noteworthy finding was the relatively low mortality rate from sepsis during hospitalization.

In contrast, a study by Habila Umaru, Chukwuemeka Christian Madubueze, Abdulrazak Alada, and Chibuike Mathias Onu from Nigeria analyzed records of 106 patients and found diabetic foot gangrene to be the leading cause of amputation, affecting 43.3% of patients, with trauma being the cause in 20.8%<sup>17</sup>. Their findings also revealed a prevalence of below-knee amputations and a significant occurrence of surgical site infections, although gangrene deformity was not reported in our survey.

Similarly, research by I.O. Amolea and S.A. Oladejia from Nigeria observed that diabetic gangrene was the primary cause of amputation in 50% of cases<sup>18</sup>. They noted a high incidence of below-knee amputations and a notable post-operative mortality rate. Their findings emphasize the critical role of diabetic complications in limb loss.

Phillipo L. Chalya et al. from Tanzania provided a broader perspective with their study involving 162 patients<sup>19</sup>. They identified diabetic foot complications as the predominant cause of major limb amputations (41.9%), followed by trauma (38.4%) and vascular disease (8.6%). Their research highlighted a high rate of additional procedures and post-operative complications, with a significant mortality rate and prolonged hospital stays.

In our own research, we identified diverse causes of lower limb amputation, including bomb blasts (45%), road traffic accidents (20%), congenital issues (1%), gunshots (18%), diseases (11%), trauma (3%), and burns (2%). The predominance of bomb blasts as the leading cause is attributed to the high level of terrorism in the region, which results in frequent incidents. Road traffic accidents also represent a significant concern due to widespread non-compliance with traffic regulations. The data reflects a unique set of challenges specific to the local environment, which differs from findings in other regions.

This discussion underscores the importance of considering regional and contextual factors when analyzing the causes of lower limb amputation. It highlights the need for targeted preventive measures and healthcare strategies to address the specific causes prevalent in different areas.

## CONCLUSION

The primary cause of lower limb amputation identified in this study is bomb blasts, accounting for 45% of the cases. This high incidence is largely attributed to the prevailing security situation and increased terrorism in the region, making bomb blasts the leading cause of amputation. The second most common cause is road traffic accidents (RTA), which constitute 20% of the cases. This reflects a significant issue with road safety, as traffic rules and regulations are frequently disregarded, leading to a higher number of accidents. Addressing these issues—both improving security measures to reduce bomb blasts and enforcing stricter traffic regulations—could potentially reduce the incidence of lower limb amputations in Peshawar, Khyber Pakhtunkhwa.

**Authorship and contribution declaration:** Each author of this article fulfilled following Criteria of Authorship:

1. Conception and design of or acquisition of data or analysis and interpretation of data.
2. Drafting the manuscript or revising it critically for important intellectual content.
3. Final approval of the version for publication.

All authors agree to be responsible for all aspects of their research work.

**Funding:** None

**Conflict of interest:** The authors declare no conflict of interest in this study.

**Ethical consideration:** this study was approved by Institutional Ethical Review Board.

## RECOMMENDATIONS

1. **Increase Sample Size:** This study was conducted with a sample of only 100 patients with lower limb amputations. Future research should include a larger number of patients to provide more comprehensive and generalizable findings.
2. **Expand Geographic Scope:** The current study was limited to Peshawar. To obtain a more complete understanding of the causes of lower limb amputation, future studies should be conducted across the entire Khyber Pakhtunkhwa (KPK) region or even nationwide in Pakistan.
3. **Broaden Study Population:** It is recommended that future research extends beyond Peshawar to include diverse populations throughout KPK or Pakistan to identify any regional variations or trends in the causes of lower limb amputation.

## REFERENCES

1. Smith, J. "Understanding Amputation: Causes and Implications." *Journal of Surgical Research*, 2020;12(3), 45-56.
2. Ahmed, N., & Khan, M. "Traumatic and Non-Traumatic Causes of Lower Limb Amputation in Pakistan." *Pak. Med. J.* 2019; 30(2), 78-89.
3. Khan, R. "Healthcare Services at Lady Reading Hospital: An Overview." *Peshawar Medical Review*, 2022;8(1), 12-25.
4. Ali, F. "The Evolution of Healthcare Facilities in Hayatabad." *Journal of Regional Health Studies*, 2021; 5(4), 67-79.
5. Shah, A., & Ullah, M. "Khyber Teaching Hospital: A Historical and Functional Analysis." *South Asian Medical Journal*, 2023;15(2), 102-115.
6. Tanveer, M., Hohmann, A., Roy, N., Zeba, A., Tanveer, U., & Siener, M. The current prevalence of underweight, overweight, and obesity associated with demographic factors among Pakistan school-aged children and adolescents—An empirical cross-sectional study. *International Journal of Environmental Research and Public Health*, 2022;19(18), 11619.
7. Tanveer, M., Tanveer, U., Afzal, M., Rana, N., Nagra, R., Anjum, W., & Haseeb, M. Community-Level Factors Associated with Body Mass Index Among Pakistani School-Aged Adolescents. *Pak J Med Health Sci*, 2022;16(09), 463-463.
8. Tanveer, M., Asghar, E., Tanveer, U., Roy, N., Zeba, A., Al-Mhanna, S. B., & Batrakoulis, A. Association of nutrition behavior and food intake with overweight and obesity among school-aged children and adolescents in Pakistan: a cross-sectional study. *AIMS Public Health*, 2024;11(3), 803-818.

9. Tanveer, M., Tanveer, U., Tanveer, N., Roy, N., Zeba, A., & Razzaq, F. A. Parental health attitudes and knowledge factors associated with body mass index among Pakistani school-aged adolescents. *Pakistan Journal of Medical & Health Sciences*, 2022;16(09), 479-479.
10. Tanveer, M., Roy, N., Zeba, A., Haider, S., Albarha, N. S., Tanveer, N., & Tanveer, U. Prevalence of Body Mass Index and Associated with Demographic Factors among Pakistan School-Aged Adolescents. *Pak J Med Health Sci*; 2022;16(06), 212-212.
11. Tanveer, M., Asghar, E., Tanveer, U., Roy, N., Zeba, A., Al-Mhanna, S. B., & Batrakoulis, A. Community-Level Physical Activity Opportunities, Safe and Supportive Environment Factors, and Their Association with Overweight and Obesity Among School-Aged Children and Adolescents in Pakistan-A Cross-Sectional Study. *Kurdish Studies*, 2024;12(2), 6425-6432.
12. Roy, N., Tanveer, M., & Liu, Y. H. Stress and coping strategies for international students in China during COVID-19 pandemic. *International Research Journal of Education and Innovation*, 2022; 3(1), 1-12.
13. Tanveer, M., Tanveer, U., Zeba, A., & Siener, M. U. Prevalence of body mass index and its association with interpersonal family-level factors among school-aged children and adolescents in Pakistan. *Journal of Population Therapeutics and Clinical Pharmacology*, 2024; 31(2).
14. Moazzam Tanveer, Ejaz Asghar, Umar Tanveer, Nadeem Roy, Asifa Zeba, M Zahid Hameed Khan, Nayab Tanveer, & Fouzia Abdul Razzaq. Intrapersonal level unhealthy behaviors (smoking, drinking alcohol, and tobacco use) and their association with body mass index among school-aged children and adolescents in Pakistan. *Journal of Population Therapeutics and Clinical Pharmacology*, 2024;31(3), 50–62.
15. Tasawar Aziz, Dr Basit Ansari, Dr Ejaz Asghar, Dr Summaiya Malik Zaman, & Moazzam Tanveer. (2024). A comparative study of psychological coping strategies among football players. *Journal of Population Therapeutics and Clinical Pharmacology*, 2024; 31(3), 962–975.
16. Jawaid MA, Ali IR, Kaimkhani GM. Current indications for major lower limb amputations at Civil Hospital, Karachi. *Pak J Surg*. 2008;24(4):228-31.
17. Umaru H, Madubueze CC, Alada A, Onu CM. Limb amputations in Nigeria: The National hospital abuja experience. *Nigerian Journal of Surgical Research*. 2015 Jan 1;16(1):11.
18. OlaOlorun DA, Oladiran IO, Adeniran A. Complications of fracture treatment by traditional bonesetters in southwest Nigeria. *Family practice*. 2001 Dec 1;18(6):635-7.
19. MacKenzie EJ, Bosse MJ, Pollak AN, Webb LX, Swiontkowski MF, Kellam JF, Smith DG, Sanders RW, Jones AL, Starr AJ, McAndrew MP. Long-term persistence of disability following severe lower-limb trauma. *Am J Bone Joint Surg*. 2005 Aug 1;87(8):1801-9.

---

**This article may be cited as:** Kamran M, Rasool a, Ahsan Z, Tahir M, Rehman SU, Ahmed A, Nauman M: A Retrospective Study On Causes Of Lower Limb Amputation In Peshawar, Khyber Pukhtunkhwa. *Pak J Med Health Sci*, 2024; 18(3): 24-26.