SYNOPSIS

"Comparative Analysis of Blood Pressure Issues in Post-Amputation Individuals and Non-Amputees"

Introduction

Amputation, while a life-saving surgical intervention, leads to a cascade of physical, psychological, and social consequences. Beyond loss of mobility, individuals with limb loss experience systemic physiological changes that may significantly impact blood pressure (BP) regulation. These changes, which include autonomic dysfunction, reduced physical activity, and psychosocial stressors, increase vulnerability to non-communicable diseases (NCDs) such as hypertension.

Despite the growing burden of NCDs in India, minimal research has addressed how amputation status interacts with blood pressure control and associated health determinants. This study aims to investigate the comparative prevalence of hypertension and hypotension in amputees versus non-amputees, and to explore how economic, psychological, and cultural variables influence these outcomes.

Research Question

What are the patterns and determinants of blood pressure regulation among individuals with limb amputations compared to matched non-amputees in the Indian context

Objectives

1. To assess the prevalence and pattern of hypertension and hypotension in post-amputation individuals compared to non-amputees.
2. To examine the association between mental health, psychosocial stress, pain perception, and BP regulation in amputees.
3. To evaluate the influence of environmental, cultural, and economic determinants on access to BP-related care and self-management practices.

Materials and Methods

Study Design

A community-based **cross-sectional comparative study** using a mixed-method approach.

Study Area

Data collection was conducted in rural and urban field sites in India, facilitated by **Spark Minda Foundation** through rehabilitation centres and outreach programs.

Study Population

- **Cases (Group A):** Adults aged 18–65 years with upper or lower limb amputations.
- **Controls (Group B):** Age-, gender-, and comorbidity-matched non-amputees.

Inclusion Criteria

- Aged 18–65 years.
- Willing to give informed consent.
- For amputees: minimum 3 months post-amputation.

Exclusion Criteria

- Individuals with cognitive impairments impeding consent or participation.
- Pregnant women.
- Recent surgical intervention (within 3 months).

Study Tools

- Structured bilingual questionnaire (English-Hindi).
- Standardized clinical equipment for BP, height, weight, and heart rate.
- Mental well-being and lifestyle checklists.

Duration of Study

- **March 10 – May 31, 2025** (approx. 12 weeks)

Sample Size

- Total: **160 participants**
  - 80 amputees
  - 80 matched non-amputees

Sampling Technique

- **Purposive sampling** with matched controls on age, gender, and comorbidity status.

Data Collection

Quantitative data included BP readings, BMI, heart rate, and demographic indicators. Qualitative data was gathered via interviewer-administered structured questionnaires assessing psychosocial

stress, stigma, family support, healthcare access, and cultural beliefs. Mental well-being was rated on a 10-point scale.

Definitions

- **Hypertension:** SBP ≥140 mmHg and/or DBP ≥90 mmHg or on anti-hypertensive treatment.
- **Hypotension:** SBP <90 mmHg and/or DBP <60 mmHg.
- **Amputee:** Individual with surgical removal of upper/lower limb ≥3 months ago.
- **Mental Well-being:** Self-reported score on a scale from 1 (very poor) to 10 (excellent).
- **Healthcare Access:** Self-reported ease or difficulty in availing services in the past 6 months.

Data Analysis Plan

Descriptive statistics (percentages, frequencies) will be used to analyse compliance rates. Data will be represented using charts and tables to highlight trends and ward-wise differences in documentation practices

.Ethical Considerations

- **Approval:** Institutional Review Board clearance from IIHMR University.
- **Consent:** Written informed consent was obtained from all participants.
- **Confidentiality:** All data was anonymized; no identifiers were used in reporting.
- **Voluntary Participation:** Participants could withdraw at any time without consequences.

Implications of the Study

- **Policy makers:** To integrate amputee-specific monitoring into national NCD control programs.
- **Health professionals:** To adopt a holistic approach in rehabilitation encompassing mental, economic, and cultural dimensions.
- **Community programs:** To address stigma, improve accessibility, and empower amputees through inclusive care.

References

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2. Modan B et al. (2008). *Increased cardiovascular mortality in traumatic lower limb amputees*. *Am J Cardiol*.
3. Jiang Y et al. (2022). *Effect of lower extremity amputation on cardiovascular hemodynamics*. *J Biomech*.
4. Zhu Y et al. (2024). *Risk of heart disease in patients with amputation: A nationwide cohort study*. *JAHA*.