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EDITORIAL

Orthopedic Research in Nepal: Status, Challenges, and Opportunities!

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Nepal faces significant challenges in developing a robust orthopedic research infrastructure despite a growing burden of musculoskeletal conditions affecting its population. This editorial examines the current state of orthopedic research in Nepal, highlighting persistent gaps in evidence-based studies and suggesting potential pathways for improvement.

The Global Context and Nepal's Research Landscape

Globally, only 11% of orthopedic studies qualify as Level I evidence, with randomized controlled trials constituting a mere 3% of the literature.[1] Low income countries (LICs) contribute just 0.1% of orthopedic publications, and low and middle income countries (LMICs) contribute 2.7%, in contrast to 85.7% from high-income countries (HICs) which represent only 16% of the global population.[2]

The landscape of orthopedic research in Nepal reveals considerable gaps. Bibliometric analyses show that orthopedic publications from Nepal constitute a very small portion of the country's total medical research output.[3] This disproportionately low representation fails to address the growing burden of musculoskeletal pathology in Nepal.

The quality of research further underscores the gap: only 7.4% of LMICs studies provided Level I/II evidence, with most Nepalese studies being observational or case series (Level IV). Moreover, 56% of Nepal's research involved HICs collaborations. This disparity emphasizes the urgent need for investment in locally led, high-quality orthopedic research tailored to Nepal's context and it's unique healthcare challenges.2

Overall, Nepal's research landscape is in a phase of gradual development. With 26 medical colleges and several tertiary hospitals publishing their own journals, there is growing interest in academic research. However, most journals are in the early stages, often with irregular publication and limited visibility. 5 While disciplines like orthopedics are beginning to gain attention, they still receive relatively limited space in many general medical journals. A review of recent publications shows that case reports predominate, followed by original articles—primarily using cross-sectional study designs. To strengthen the quality and impact of research, there is a clear need for structured training, mentorship, and support for more rigorous study designs across all disciplines.

Consequences of the Research Gap

The dearth of locally relevant research perpetuates a cycle of dependency on imported evidence, which often fails to address local challenges. Certain disease patterns in our context eg. trauma, infections, and neglected and delayed presentation of musculoskeletal conditions, differ from the degenerative pathologies predominant in Western research (4). Surgical techniques validated in high-income settings may fail to address our problems due to resource limitations, non-availability of technology, or differing presentation (delayed or neglected). Thus, research and interventions must be tailored to local demographics, cultural contexts, and health system needs and capacities.

Barriers to Evidence-Based Research

Multiple factors contribute to these research gaps:

1. **Infrastructure limitations:** Many orthopedic departments lack research laboratories, data management systems, and specialized equipment necessary for conducting rigorous experimental and clinical studies.

2. **Funding constraints:** There is a dearth of dedicated funding for orthopedic research in Nepal.

3. **Training deficiencies:** Limited opportunities for formal research methodology training in post-graduate orthopedic programs and fellowships.

4. **Clinical workload:** Overwhelming clinical service demands leave little time for academic pursuits, while inadequate mentorship further discourages young orthopedic surgeons from pursuing research careers.

5. **Academic career in Orthopedic research:** Young surgeons are discouraged to pursue an academic career in orthopedics because of lack of security in the long run.

Pathways to Progress: Solutions for Nepal

Addressing the gap in evidence-based orthopedic research in Nepal requires coordinated action across multiple domains:

1. **Targeted capacity building:** Integrating research methodology training into orthopedic residency curricula and establishing mentorship programs would strengthen the foundation for future studies. Structured workshops, journal clubs, and collaborations with global institutions can help build critical research skills.

2. **Resource allocation:** Dedicated funding mechanisms for orthopedic research, particularly for prospective studies addressing locally relevant clinical questions, are essential for sustainable progress. Government and private healthcare institutions, as well as international agencies working in the health sector, must recognize research as an integral component of healthcare systems.

3. **Data infrastructure:** Developing standardized clinical registries for common orthopedic conditions would generate valuable epidemiological data while facilitating outcome-based research.

4. **Academic incentives:** Career advancement should be linked to research productivity, emphasizing quality over quantity of publications.

5. **Focus on local relevance:** Studies should prioritize local needs such as trauma, infections, and cost-effective interventions tailored to Nepal's resource constraints. Such locally generated evidence would better guide clinical practice than imported guidelines from dissimilar contexts.

6. The establishment of the **Nepal Orthopaedic Association Journal (NOAJ)**, alongside emerging fellowship programs and research training initiatives, marks a positive step in strengthening orthopedic research in Nepal. NOAJ offers a dedicated platform for publishing context-specific research, helping to address local challenges in musculoskeletal health. This contributes to building a body of evidence that is relevant to our local requirements, as well as creating a platform for knowledge exchange amongst orthopedic surgeons in Nepal.

CONCLUSION

Nepal's orthopedic care system faces an important crossroad: a rising tide of musculoskeletal conditions clashes with stark gaps in locally relevant research. Yet this crisis harbors transformative potential. Every unstudied trauma case in a remote village, every imported protocol mismatched to Nepal's realities, and every untreated child with congenital deformities underscores the cost of inaction—but also the power of homegrown solutions.
Emerging initiatives like the Nepal Orthopaedic Association Journal, research and training programs, and global partnerships—prove progress is possible. The path forward demands bold systemic shifts. Policymakers must treat research as a public health priority, not an academic luxury. By investing in local researchers and context-driven studies, Nepal can shift from a consumer of foreign evidence to a pioneer of LMIC-relevant evidence and innovation. The time has come to turn Nepal's challenges into a blueprint for resource-smart orthopedic care—proving that where needs are greatest, impactful research can thrive. The bones of change are here; now is the moment to build!!

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