



Tailoring Gynecological Surgical Techniques to Bangladeshi Patients: A Cross-Sectional Study Assessing Global Advancements, Local Challenges, and Post-Operative Outcomes

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Authors' contributions

This work was carried out in collaboration among all authors. Author SI designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the research. Authors RK, RJB and SA managed the analyses of the study. Author SA managed the literature searches. All authors read and approved the final research.

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ABSTRACT

Background: Gynecological surgical techniques have seen significant global advancements in recent years. This study aimed to understand the degree to which these innovations align with the unique socio-cultural, anatomical, and physiological challenges of Bangladeshi patients and to assess the efficacy of locally adapted procedures.

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Methods: A cross-sectional study was conducted with a sample size of 1492 Bangladeshi women, focusing on their awareness of global advancements, the unique challenges they face, the local adaptations of surgical techniques they underwent, and post-operative outcomes.

Results: 56.4% of participants reported awareness of global advancements. Major challenges identified were socio-cultural barriers (43.6%) and anatomical/physiological concerns (38.7%). 65.1% underwent surgeries with local adaptations, especially prevalent in rural areas (72.4%). Surgeries with local adaptations showed a 92% success rate, reduced post-operative complications, and shorter average recovery time by 2 days compared to standardized global techniques.

Conclusion: While global innovations in gynecological surgeries provide foundational knowledge, the superior outcomes of locally adapted techniques emphasize the importance of tailoring these advancements to the specific needs and challenges of Bangladeshi patients. The study underscores the paramount significance of contextualizing medical interventions to optimize health outcomes in diverse settings.

Keywords: Gynecological surgery advancements; Bangladeshi patients; socio-cultural barriers; local surgical adaptations; post-operative outcomes.

1. INTRODUCTION

Gynecological surgery represents a cornerstone of healthcare for women, addressing a wide range of conditions from benign masses and reproductive concerns to malignancies [1]. As medical technology and knowledge have progressed over the past decades, so too have the techniques and strategies employed in gynecological surgeries [2]. Yet, surgery is not a one-size-fits-all domain; the specific needs, demographics, and cultural contexts of patient populations can drive the necessity for adaptive and specialized approaches [3]. Bangladesh, with its diverse and predominantly South Asian populace, brings forth unique challenges and considerations in gynecological care. Historically, a combination of factors including socio-economic constraints, cultural beliefs, and limited access to advanced medical facilities have influenced healthcare approaches and decisions in the country [4]. Furthermore, the anatomical and physiological variations, combined with regional prevalence of certain gynecological conditions, necessitate a tailored approach to surgical interventions [5]. Over the last 40 years, as a reflection of global advancements, Bangladesh has seen marked improvements in its healthcare infrastructure and training, leading to enhanced surgical outcomes [6]. However, it is imperative that as global surgical techniques evolve, they are concurrently adapted to meet the unique challenges and needs of Bangladeshi patients. Factors such as patient literacy, socio-economic status, and cultural beliefs can influence surgical preparedness, consent, and post-operative care, underscoring the necessity of a holistic and culturally sensitive approach [7].

Additionally, the regional variance in disease prevalence and presentation in Bangladesh compared to Western populations can influence surgical decision-making and technique adaptations [8].

1.1 Objectives

In the study, we aim to achieve several core objectives. Firstly, we seek to systematically review the latest global advancements in gynecological surgery techniques, emphasizing their relevance and potential for Bangladeshi patients. Simultaneously, it is essential to gain an in-depth understanding of the distinct challenges faced by this patient population, factoring in socio-cultural, anatomical, and physiological intricacies inherent to Bangladesh. A critical facet of our study is the analysis of local adaptations of global surgical techniques, assessing how they have been molded to cater to the needs of Bangladeshi women. Finally, we strive to evaluate post-operative outcomes, focusing on recovery patterns and the efficacy of adapted techniques in comparison to standard global approaches, ensuring that the surgical interventions are both effective and culturally cognizant.

2. METHODS

2.1 Study Design, Sampling Technique, and Sample Size

This is a mixed-methods research study, which amalgamates both qualitative and quantitative research paradigms. The study spanned over a period of 18 months, commencing in January

2022 and culminating in June 2023. The design facilitates a holistic understanding of gynecological surgical techniques, with a special focus on their evolution globally and their localized adaptation for Bangladeshi patients. A stratified random sampling method was employed. The population was divided into strata based on surgical procedures, age, and region within Bangladesh. Post stratification, samples were randomly chosen from each stratum in proportion to its size to ensure representation from diverse backgrounds and experiences. The total sample size for this study was 1492 participants. This included patients who underwent gynecological surgery, healthcare providers, and surgeons across various healthcare institutions in Bangladesh.

2.2 Variables

- **Dependent Variable:** Post-operative outcomes which encompassed surgical success rate, recovery time, and complications.
- **Independent Variables:** Types of surgical techniques used (global vs. localized), patient's age, region, socio-economic background, and type of surgical condition.
- **Control Variables:** Hospital facility quality, surgeon's experience, and duration since surgery.

2.3 Statistical Analysis

Quantitative data were analyzed using SPSS (Statistical Package for Social Sciences) version 26. Descriptive statistics, including means and standard deviations, were first computed for all continuous variables. Categorical data were

presented as frequencies and percentages. Inferential statistical tests, such as chi-square and t-tests, were employed to ascertain relationships between variables.

To compare post-operative outcomes between global and localized techniques, an independent samples t-test was utilized. For assessing the correlation between types of surgical techniques and recovery time, Pearson's correlation coefficient was determined.

Qualitative data, derived from in-depth interviews, were subjected to thematic analysis using NVivo 12 software. Themes and sub-themes were identified, and representative quotations were selected to illustrate key findings.

3. RESULTS

3.1 Assessment of Global Advancements

Out of the 1492 participants, 842 (56.4%) reported being aware of the latest global advancements in gynecological surgery techniques. Table 1 delineates the distribution of awareness across different age groups and regions.

3.2 Understanding Unique Challenges

Upon assessing challenges, 651 participants (43.6%) identified socio-cultural barriers as the most predominant, while 578 (38.7%) pinpointed anatomical and physiological concerns. Economic constraints were noted by 263 participants (17.6%). Table 2 showcases the distribution of reported challenges.

Table 1. Awareness of global advancements in gynecological surgery techniques

Age Group	Aware (%)	Not Aware (%)	p-value
18-30	62.1	37.9	0.043
31-50	58.4	41.6	0.037
51+	48.7	51.3	0.021

Chi-square test: $\chi^2(2) = 12.34, p = 0.002$

Table 2. Predominant challenges faced by participants

Challenge	Frequency (%)	p-value
Socio-cultural Barriers	43.6	0.016
Anatomical/Physiological	38.7	0.02
Economic Constraints	17.6	0.055

Chi-square test: $\chi^2(2) = 16.21, p = 0.0003$

3.3 Local Adaptation Analysis

Of the 1492 participants, 972 (65.1%) underwent surgeries that incorporated local adaptations of global techniques. These adaptations showed a higher prevalence in rural areas at 72.4% compared to urban areas at 59.3%, as shown in Table 3.

3.4 Post-operative Outcomes Evaluation

Participants who underwent surgeries with local adaptations reported a 92% success rate with fewer post-operative complications. In comparison, those treated with standardized global techniques had an 86% success rate. Recovery time was notably shorter by an average of 2 days for the locally adapted techniques group. Table 4 provides a comprehensive comparison.

4. DISCUSSION

The adaptation of surgical techniques to cater to specific populations has long been a subject of medical exploration and interest. This study's findings underscore the importance of such adaptations, particularly in the realm of gynecological surgeries for Bangladeshi women. The heightened awareness of global advancements in gynecological surgery techniques among the younger population (18-30 years) compared to those above 50 might be attributed to increased accessibility to information and perhaps more frequent interactions with the healthcare system in their reproductive age [9]. However, even with this awareness, the barriers faced in accessing and benefiting from these advancements cannot be ignored. The substantial proportion (43.6%) of participants

who identified socio-cultural barriers underscores the weight of societal norms, beliefs, and practices in medical decisions. This is consistent with studies from other regions, highlighting that deeply ingrained cultural norms can impact women's health choices [10]. The anatomical and physiological concerns raised by 38.7% of participants might indicate potential variances in disease presentation or surgical requirements for Bangladeshi women. Such disparities have been previously noted, suggesting that regional genetic, dietary, and environmental factors might contribute to unique gynecological health patterns and needs [11]. The higher prevalence of locally adapted techniques in rural areas signifies the crucial role of context in medical practice. This is in line with previous studies that emphasize the importance of tailored healthcare approaches in rural settings due to infrastructural challenges, different patient expectations, and varied disease presentations [12]. Urban centers, with their closer proximity to global knowledge hubs and more cosmopolitan patient base, might still heavily rely on standard global techniques. Yet, the evidence suggests that even in these settings, local adaptations can offer better outcomes. The notable success rate and reduced post-operative complications of surgeries that incorporated local adaptations echo the sentiment of several researchers who advocate for the importance of contextualizing medical interventions [13]. The specificity of techniques to the patient's socio-cultural and physiological context could lead to better alignment with their needs, thereby ensuring better compliance and post-operative care. The reduced recovery time further attests to the potential advantages of such tailored interventions, offering implications for healthcare cost savings and patient convenience [14]. Our

Table 3. Adoption of local adaptations in surgical techniques

Region	Adopted Local Adaptations (%)	Didn't Adopt (%)	p-value
Rural	72.4	27.6	0.007
Urban	59.3	40.7	0.01
Chi-square test: $\chi^2(1) = 9.32, p = 0.0022$			

Table 4. Post-operative outcomes based on surgical techniques

Outcome Metrics	Local Adaptations (%)	Standard Techniques (%)	p-value
Surgical Success Rate	92	86	0.005
Reported Post-op Complications	8	14	0.012
Chi-square test: $\chi^2(1) = 11.07, p = 0.0009$			

study offers insights that can significantly impact policy-making and clinical practices in Bangladesh. While the global advancements in gynecological surgeries provide a robust foundation, understanding and adapting them to the Bangladeshi context can optimize outcomes. It paves the way for further exploration in other medical fields, emphasizing that while globalization brings forth a wealth of knowledge, localization ensures its effective application [15].

5. CONCLUSION

This study emphasizes the vital role of aligning global advancements in gynecological surgery techniques with the specific needs and challenges faced by Bangladeshi patients. Our findings elucidate that while global innovations offer a foundational platform, it is the localized adaptations that yield superior post-operative outcomes and cater to the unique socio-cultural, anatomical, and physiological nuances inherent to the Bangladeshi populace. As healthcare strives for excellence in patient-centric care, the marriage of global knowledge with local insights, as demonstrated in the gynecological realm in Bangladesh, becomes paramount in ensuring optimized health outcomes and patient satisfaction.

CONSENT

It is not applicable.

ETHICAL APPROVAL

The ethical approval for this study was considered by the Ministry of Health, Government of Peoples Republic of Bangladesh

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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