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Global Utilization of Laparoscopic Surgery: An Examination of Trends in High- and Low- and Middle-Income Countries

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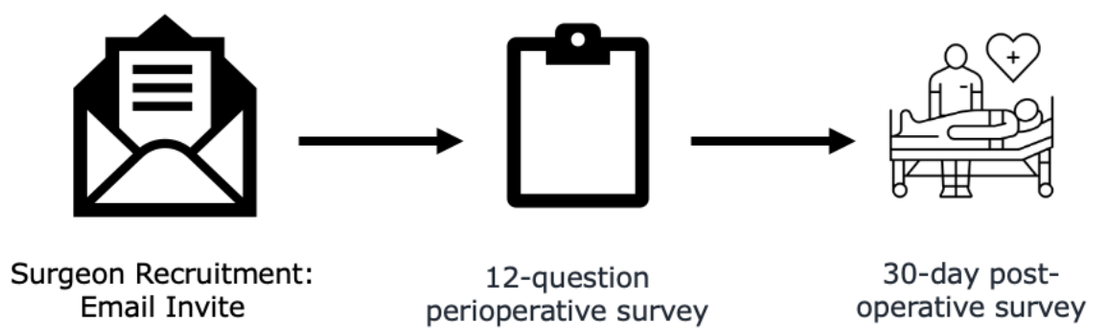
Introduction

- Laparoscopy is standard in high-income countries (HICs); however, expanding its use in low and middle-income countries (LMICs) faces significant hurdles, including high costs, a shortage of biomedical technicians, and inadequate sterilization capabilities.
- This study used international networks to create a database on global laparoscopic cases, emphasizing the need for context-specific approaches to advance laparoscopic surgery worldwide.

Materials and methods

- Surgeons from Japan, Singapore, Uganda, United States, Cambodia, Vietnam, and Malaysia were recruited
- Countries were grouped into LMICs and HICs based on income status, as defined by World Bank classification.
- Data was collected from April 2021 to February 2023, and descriptive statistics were generated.



Results

- A total of 198 laparoscopic surgeries were completed by 36 surgeons during the study period.
- In LMICs, most surgical patients were aged 30-50 years (n=28, 38%) and 18-30 years (n=19, 26%), while in HICs, patients were predominantly <2 years old (n=45, 36%) and 6-12 years old (n=24, 19%) (P<.001).
- Anti-reflux procedures, appendectomies, and cholecystectomies were among the most common laparoscopic surgeries performed.

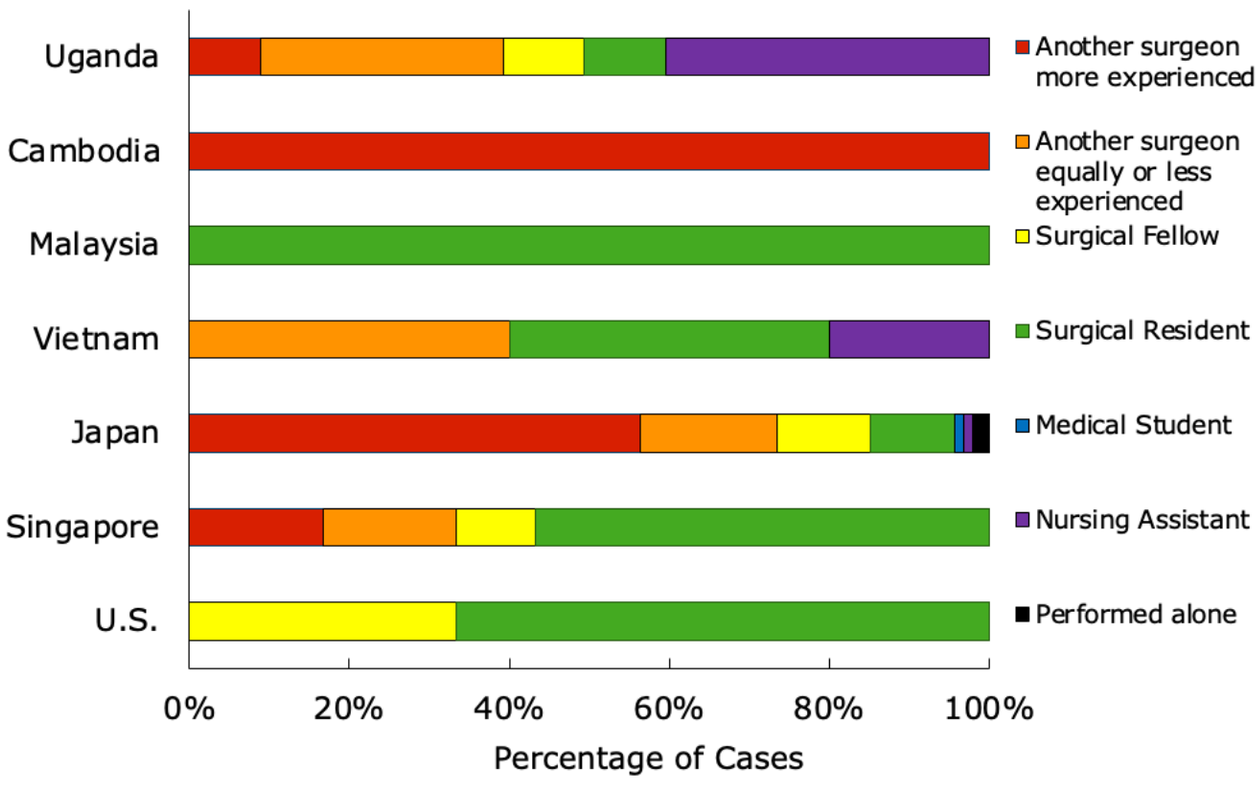


Figure 1 Surgical assistant present during laparoscopic cases. Surgical assistants varied, with Japan reporting the highest usage of experienced surgeons as assistants (n=53, 56%).

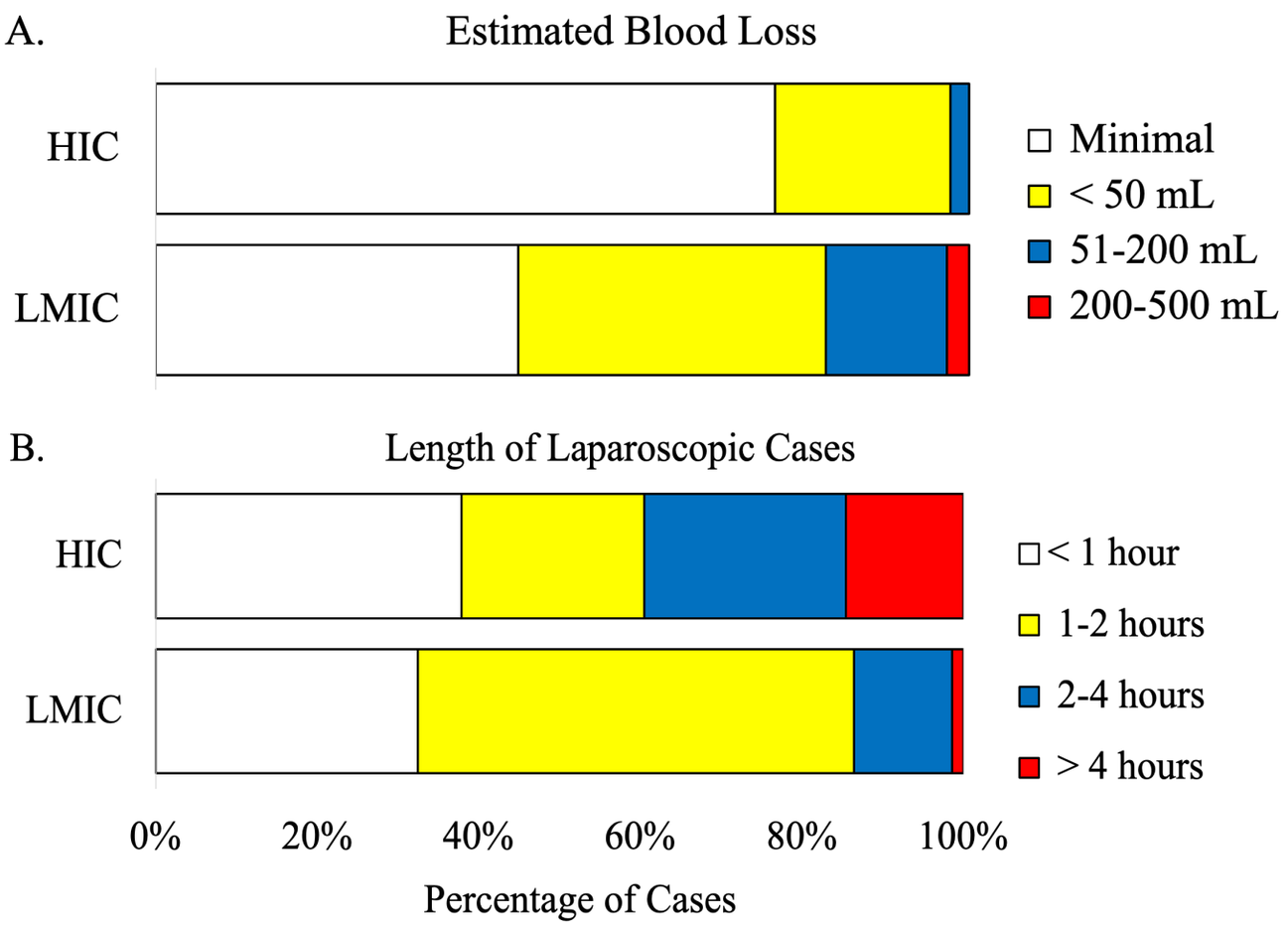


Figure 2 Surgical details of laparoscopic cases. (A) Estimated blood loss. Minimal blood loss was reported in both LMICs (n=33, 45%) and HICs (n=99, 80%), with more cases in LMICs estimating <50 mL and 51-200 mL blood loss compared to HICs (P<.001). (B) Length of laparoscopic cases. Case length in LMICs was significantly longer than in HICs (p-value<.001).

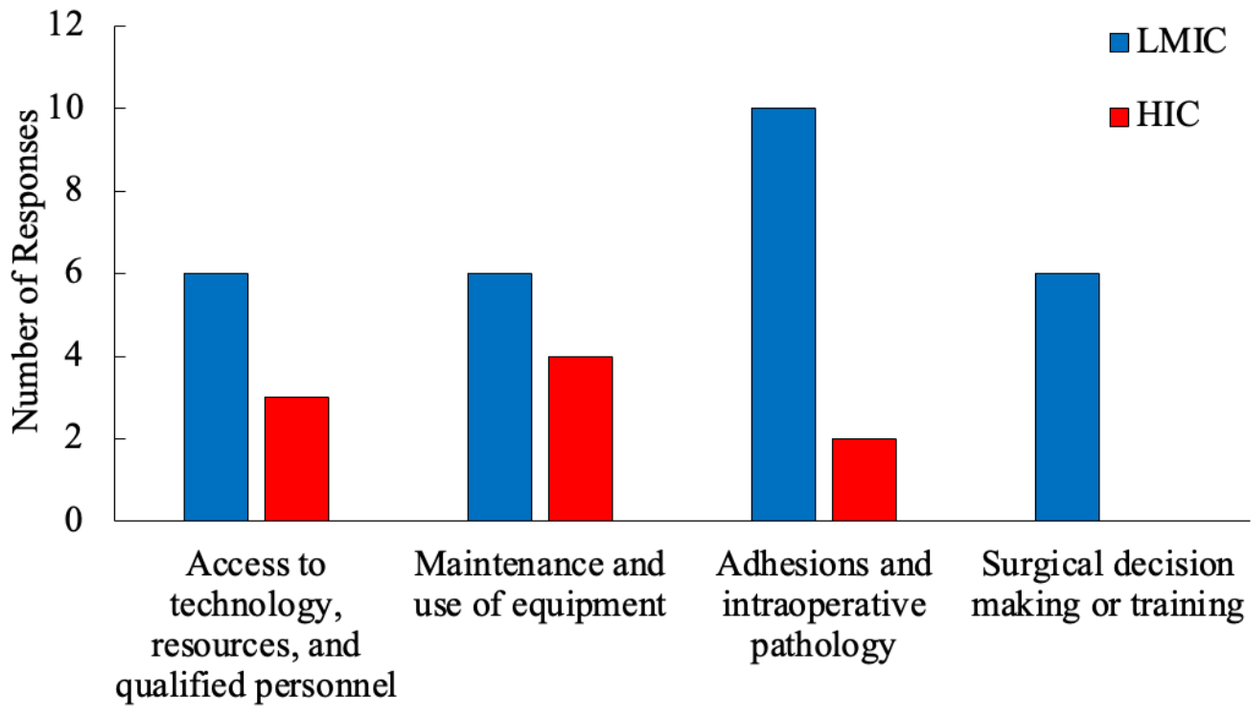


Figure 3 Themes Identified in Free Responses Concerning Operative Problems Encountered. 35 surgeons filled in a free response about problems during the case. The total number of responses is greater than N due to surgeons stating more than one theme.

Conclusion

- This study highlights significant disparities in the uptake and performance of laparoscopic surgery between high-income countries and LMICs.
- The roles of surgical assistants differed significantly, with LMIC surgeons struggling to find adequate support compared to their HIC counterparts.
- The identified barriers—access to resources, equipment maintenance, difficult intraoperative pathology, and surgical training—are critical areas that need targeted interventions.