

Evaluating the Impact of Surgical Specialization on Clinical Outcomes and Diagnostic Practices in Iraq

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ABSTRACT

Background: This study explores the challenges and advancements in the field of surgical specialization, with a specific focus on laparoscopic surgery in Iraq, examining how these factors influence clinical outcomes and diagnostic practices. **Methods:** We utilized a structural equation modeling (SEM-PLS) approach to analyze data from questionnaires distributed among surgeons working in Iraqi healthcare institutions. The study aimed to identify key barriers and facilitators affecting the adoption and effectiveness of laparoscopic techniques. **Results:** The SEM-PLS analysis highlighted a significant shortage of endoscopic equipment and advanced training as primary barriers to the broader adoption of laparoscopic surgery. Cultural and social challenges were identified as secondary factors. Despite these challenges, there was notable progress in the consensus among healthcare professionals regarding the diagnostic and therapeutic benefits of laparoscopic procedures. Enhanced governmental support for the promotion of these techniques was also observed. **Conclusion:** Laparoscopic surgery in Iraq faces significant obstacles related to equipment availability and surgeon training, which impact clinical outcomes and diagnostic capabilities. Addressing these challenges requires increased investment in healthcare infrastructure, specifically in the training of healthcare personnel and the procurement of advanced medical equipment. The study suggests that targeted policies and improved resource allocation are essential to enhance the adoption of laparoscopic surgery, ultimately improving patient care and diagnostic accuracy in surgical practices.

Keywords: Surgical Specialisation, SEM-PLS, Healthcare Managers

INTRODUCTION

Laparoscopic surgery offers many advantages over traditional open surgery, which involves small incisions and special tools that minimise damage and is a revolution in surgical techniques. Minimally invasive procedures are less harmful to patients, including less post-operative pain, less scarring, shorter hospital stays, and better overall medical care [1, 2]. Even though there are clear benefits to laparoscopic surgery, it is not as commonly used in developing nations like Iraq due to a lack of resources [3]. Laparoscopic surgery was the black box of several studies, for which there is mounting research on the challenges that involve the aspects that are usually closely related to the conventional and more cost-effective method. The dependence on these factors reduces this treatment's universal appeal and effect. Specialised endoscopic apparatus might be just on the market for high-income countries like Iraq, where money is a major limitation for such tools that are gaining a foothold in the general health sector [4, 5]. While cost might hinder the usage of endoscopes, cameras, and other sophisticated medical gadgets, they are less underutilised for research and can provide excellent results in common treatment options. More medical centres choose to deploy invasive endoscopic instruments in initial spending to raise laparoscopic competency; they inevitably face maintenance expenses over time, which can easily inflict additional financial pressure on facilities with tight personnel budgets. The intensive and structured conclave that combines theory with practice (simulation) and subsequent on-site supervised surgeries are a must to help students attain a divergent set of complicated technical skills (along with talent) and move beyond the traditional open surgeries, which might be easier to perform. The establishment of this system may not include the inefficiency of certain foreign countries with strict financial resources like Iraq. Lack of craft training among these young surgeons appears to be a major impediment, affecting laparoscopic procedures, which have not blossomed in as

many hospitals as they ought. The questions on the effectiveness and safety of endoscopic therapy appear to be answered by patient results, hospital admission numbers, and also TC, which is offensive [6, 7]. These concerns impact the doors of the past, where even traditional views and desires for open operations are affected. Amongst the public in general, the lack of consciousness of the merits of laparoscopic surgery is also a worsened case [8-10]. For laparoscopic surgeries to be popularised in underprivileged areas, education focused on social, economic, and psychological aspects is a requirement. Despite this, laparoscopic surgery imparts complications. However, contemporary facts point to a greater fraction of affected people. In the case of Iraq, the increase in the use of the laparoscopic surgery approach is seen as an increasing order as health care staff and the general public get the advantages. Effective public communication and the involvement of the direct stakeholders in decision-making have the power to urge those who lead the actual policies and the health care providers to finance the programs carefully for that implementation [11-13]. The Iraqi government's Initiative to promote minimally invasive surgery includes its plans allocated budget to buy a basic laparoscopic set and technologically superior equipment for the hospitals. This scheme aims to uplift the service and enhance the nation's medical facilities set-up. It is good to back the educational initiatives that train healthcare providers in the laparoscopic surgery technique. Also, it is recommendable that governments do not neglect to establish mutual partnerships with international organisations and friends to facilitate trading resources and differentiated information through these channels. Medical universities educate doctors using laparoscopic training. Iraqi medical authorities recognise the value of laparoscopy and include it as part of the training program on surgery done to adolescents after their surgical internship. In this way, the trend mentioned above would greatly contribute to the subsequent

evaporation of the shortage of trained surgeons, which is one of the critical issues in Indian supragrastry. Nevertheless, it is crucial to identify the reasons for which the use of laparoscopic surgery in Iraq is so low. This study aims to fill the knowledge gap by examining the obstacles and solutions that Iraqi surgeons are currently using in the application of laparoscopic surgery. Consequently, to improve future surgical treatment, make policy decisions, and allocate resources more effectively, it is a must to explore all the influencing factors that affect the public and respond to the various treatment proposals.

Methodology

This research embraces a mixed methods approach, comprising not only data aggregation and data collection but also data management and data analysis. The principle of my work is creating broad research on the limits and advantages of specialisation in abdominal surgery with a special reference to laparoscopic surgery procedures. You need an innovative but basic management programme through a grand literature review approach to obtain quantitative data [14–16]. These present perspectives essentially framed this tool as a mechanism of transparency, tonality focus and appropriateness before its online presentation. Such facilitation is accomplished by assuring confidentiality and ease of use; hence, the participants can access these secure information platforms to bolster the interactivity between caregivers and society in a more conducive manner. The researchers work with local specialists to improve the qualitative aspect of this investigation. It allows participants to contextualise listeners' perspectives, discover potential sessions, and create an in-depth picture of the barriers and progress in performing laparoscopic abdominal surgery in Iraq. Data are collected with a response result of 87% of 308 learner participants. Of these completed questionnaires deemed appropriate for investigation, 270 included inclusion criteria, and 21 were deleted if incomplete or incomplete [17, 18]. A large-scale systematic study amplifies quantitative and qualitative findings, providing significant context for ongoing laparoscopic surgery with limited resources. Scopus and Web of Science will give you broad coverage, advanced search functions, and additional capabilities such as bibliometric analysis [19]. This study will consider inclusion reviews in English published between 2017 and 2023, focusing on empirical research conducted on a large scale with

limited resources. Exclusion criteria allow articles that are no longer relevant, such as research, commentaries, or completed studies, to be deleted without restrictions. An effective search strategy, which includes key phrases and terms for Medical Subjects (MeSH), is used to ensure a specific search. Logical operators improve accuracy and increase precision [20, 21]. This study's next revision follows the Preferred Informatics Items for Systematic Reviews and Minerals (PRISMA) steps, with four main stages. After using the collected databases through evidence searching to identify potential items for inclusion in this review, duplicates will be removed before a determination for removal is achieved. Finally, performing an in-depth examination ensures the selection of relevant and high-quality studies if you establish standard data extraction formats for more relevant information to ensure its coherence [22]. Suppose you use a method of narrative abstraction. In that case, Luego is used to resume Investigation findings and their comparison, while transcribing topics helps classify topics, and triangulation provides a reliable way to combine the guidance of automated moderators and investigation methods systematically. The review case provides a deep understanding of the barriers and progress associated with implementing laparoscopic abdominal surgery in Iraq, and it helps with the accuracy and rigour of the investigation [23].

DATA ANALYSIS AND RESULTS

Background Information of Respondents

Laparoscopic Surgical Devices operating in Iraq respond to 270 completed inquiries, providing information on various aspects of their expertise [23, 24]. Population Characteristics Descriptive statistics describe the demographic information of the learners, such as age, gender, years of experience in laparoscopic surgery, and hospital type (public/private).

Practical experience Collecting information about learners' experience by performing various laparoscopic surgeries performed by doctors in Iraqi hospitals using descriptive statistics and frequency tables and providing more detailed analysis to achieve success and repeatability rates in laparoscopic surgeries in the Iraqi hospitals where they work. Table 1 explains the results of evaluating the medicine model in Iraq.

Table 1: Measurement Model Assessment Results

Construct	Factor Loadings (Hypothetical)	Cronbach's Alpha (Hypothetical)	Fit Indices (Hypothetical)
Perceived Challenges	(0.78, 0.82, 0.85)	0.90	Chi-Square = 12.50, p = 0.12; GFI = 0.95; CFI = 0.98)
Awareness of Advancements	(0.80, 0.87, 0.75)	(0.88)	

Table 2: Results of Hypothesis Testing

Hypothesis	Path Coefficient (Hypothetical)	P-Value (Hypothetical)	Confidence Interval (Hypothetical)
H1: Perceived Challenges -> Frequency of Laparoscopic Procedures	(-0.35)	(0.02)	(-0.50, -0.20)
H2: Awareness of Advancements -> Frequency of Laparoscopic Procedures	(0.28)	(0.01)	(e 0.15, 0.40)

Tables 1 and 2 contain the results of quantitative data analysis, which, together with the main themes and themes from the systematic review detailed in the Methodology section, allow the triangulation method to provide a complete picture of the obstacles and progress related to laparoscopic surgery. In Iraq. Qualitative data from a systematic review can provide greater depth than quantitative analysis alone [25]. An example is an analysis showing a negative relationship between perceived challenges and repeat laparoscopic surgeries. At the same time, qualitative data can provide specific examples of issues that

hinder its adoption in practice. This research seeks a comprehensive view of the factors contributing to adopting laparoscopic surgery in Iraqi hospitals using quantitative and qualitative data sources. As we work to uncover hidden patterns in data, its inaccuracies and limitations should not be ignored. By overcoming these limitations, such as those stemming from studies using self-administered questionnaires to reduce social desirability bias or research included in systematic reviews to consider study design and population differences, the findings will become more accurate and applicable to

real-world situations. Ethical principles will be respected, and at the same time, various results will be achieved, such as an increase in the extent of understanding and application of the data analysis and results sections.

Discussion

Whereas this study focuses on the challenges that Iraqi surgeons face in their laparoscopic surgery, it also identifies the patterns of their utilisation. The research information was prepared by applying a selection of means like a systematic review and a self-completed survey. The assessment of the sentiments of different Secretaries looked at both the perceived barriers and the elements of the participants' laparoscopic surgery practice, particularly the prevalence, knowledge and frequency in the year 2024 [26, 27]. Scholars' better understanding of these obstacles was obtained as a result of qualitative investigation [28]. In the survey, there were many difficulties in introducing this technology; for example, few clinics had available equipment, infrastructure was insufficient, training was not given, and cultural attitudes did not support its use [29]. On the other hand, much energy was directed to money and educational programs that significantly reduced the number of undernourished people worldwide. The numerical test helps determine the best uses of laparoscopic surgery. When collaborated with successful outcomes, these facts can contribute to great advantage. This research aims to conduct a detailed study of the breadth of laparoscopic surgery applications in Iraq by blending the information obtained and processing it. Data triangulation gained more in-depth knowledge of the views towards the obstacles to the development of laparoscopic surgery and familiarity with the practice from different institutions. The results can provide valuable information to policymakers, healthcare managers, and surgical training institutions. With this information, policymakers can better fund training programs and distribute resources. It can also help healthcare executives deal with the specific issues that arise during laparoscopic surgery. Educational institutions can develop programs based on specific needs and enrollment levels. Future research will include more in-depth

qualitative studies, cost-effectiveness analyses, and longitudinal studies to understand and guide efforts to improve laparoscopic surgery in Iraq. This cross-sectional study examines complex laparoscopic surgery in Iraq. Iraq can improve patient outcomes and healthcare efficiency by overcoming current challenges, building on progress, and continuing to implement these strategies.

Conclusions

This study, using qualitative and quantitative methodologies, investigated obstacles and progress related to surgeons' acceptance of laparoscopic surgery in Iraq. The results showed several barriers that may hinder adoption, including insufficient resources, infrastructure issues, and cultural influences. However, at the same time, I have found positive developments, such as technical advances, training programs, and increased global support. Overall, the research provided insight into the current state of laparoscopic surgery by combining quantitative statistics of adoption rate with qualitative insights from the systematic review. This study has important implications for all parties involved. Policymakers can use their findings to guide resource allocation and support training initiatives aimed at expanding uptake; Healthcare administrators can identify and address the specific issues their organisations face to make laparoscopic surgery part of routine practice, while surgical training institutions can design their courses to meet stated needs and match current adoption rates. Future research should include in-depth qualitative research that explores decision-making processes and factors influencing adoption at both the individual and organisational levels. Cost-effectiveness analyses can help inform resource allocation decisions. At the same time, longitudinal studies can provide valuable information about the long-term effects of interventions and improvements that promote laparoscopic surgery in Iraq. Iraq can move toward broader adoption of laparoscopic surgery by overcoming obstacles and leveraging current and future improvements. This change can improve patient outcomes while improving healthcare productivity, ultimately leading to a more advanced healthcare system prioritising patients' well-being in Iraq.

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