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Research Article

Public Awareness and Perception of Laparoscopic Surgery in Morocco: A Multiregional Cross-Sectional Study

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ABSTRACT

Background: Laparoscopic surgery is now standard of care across many surgical specialties because of its minimally invasive nature, reduced postoperative morbidity and improved cosmetic outcomes. Public understanding of the technique is an important determinant of patient acceptance and of access to minimally invasive procedures. We assessed knowledge, misconceptions, concerns and preferences regarding laparoscopic surgery in the Moroccan general population.

Methods: We conducted a multiregional cross-sectional survey between January 2023 and March 2024 across eight Moroccan regions. A structured questionnaire assessed demographic characteristics, knowledge of laparoscopic surgery, perceived advantages and risks, sources of information, and surgical preference. Factors associated with accurate knowledge and with preference for laparoscopy were examined using multivariable logistic regression.

Results: Of 1,120 participants, 61.4% were aged 20–40 years, 50.8% were women and 72.8% were urban residents. Overall, 81.5% had heard of laparoscopic surgery, but only 64.2% correctly identified it as a minimally invasive technique using trocars and pneumoperitoneum; 39.8% believed it involves a laser. Cholecystectomy was correctly identified as an indication by 89.6%, whereas 27.4% considered obesity a contraindication. Preference for laparoscopy was expressed by 76.3%. In multivariable analysis, higher education (adjusted OR 2.14; 95% CI 1.58–2.89), urban residence (OR 1.67; 1.22-2.29) and prior personal or familial surgical experience (OR 1.94; 1.41–2.67) were independently associated with preference for laparoscopy. Participants informed by a physician were more likely to have accurate knowledge than those informed via social media (OR 2.36; 1.71–3.25).

Conclusions: Despite widespread awareness, important misconceptions about laparoscopic surgery persist in Morocco, particularly regarding technical aspects and contraindications. Education level, urban residence and physician-delivered counselling were associated with more accurate understanding and with procedural preference. These findings are associational and should not be interpreted as causal. Strengthening public information and physician-patient communication may support informed decision-making and more equitable access to minimally invasive surgery.

Keywords: Laparoscopic surgery; Minimally invasive surgery; Public awareness; Health literacy; misconceptions; Morocco; Cross-sectional study

Introduction

Laparoscopic surgery has progressively replaced open approaches across a broad range of abdominal, gynaecological and urological procedures[1,2]. Compared with open surgery, the minimally invasive approach is associated with less postoperative pain, shorter hospital stay, faster return to activity and improved cosmetic results. As access to laparoscopy expands in low- and middle-income settings, the attitudes and understanding of the general public become increasingly relevant: patient knowledge and perception shape demand, influence the acceptance of a proposed procedure, and contribute to equitable uptake of minimally invasive care[3].

Evidence from several settings indicates that public knowledge of minimally invasive surgery is often incomplete and that misconceptions are common, ranging from confusion with laser or robotic technology to misunderstanding of indications and risks. In resource-limited contexts, prior awareness of laparoscopy among patients can be low and is frequently linked to educational attainment and to the information received from health professionals. To our knowledge, no large multiregional study has previously characterised public perception of laparoscopic surgery in the Moroccan general population[4,5].

We therefore conducted a multiregional cross-sectional survey to evaluate the level of knowledge, the prevailing misconceptions, the perceived advantages and risks, the sources of information, and the surgical preferences regarding laparoscopic surgery among adults in Morocco, and to identify factors associated with accurate knowledge and with preference for the laparoscopic approach.

Patients and Methods

Study design and setting

We performed a multiregional, observational cross-sectional survey between January 2023 and March 2024 across eight administrative regions of Morocco. The study was designed and reported in accordance with the STROBE recommendations for cross-sectional studies.

Sampling strategy and eligibility

Participants were recruited using a stratified convenience sampling approach to ensure representation from each of the participating regions. Recruitment was conducted in public hospitals, primary healthcare centres, universities, shopping centres and other public gathering areas. Adults aged 18 years or older who agreed to participate were eligible for inclusion; healthcare professionals and incomplete questionnaires were excluded.

The sample size was calculated assuming a 50% prevalence of adequate knowledge of laparoscopic surgery, a 95% confidence level and a 3% margin of error, yielding a minimum required sample of 1,067 participants. A total of 1,250 individuals were approached, of whom 1,170 agreed to participate; 50 questionnaires were excluded because of incomplete responses, resulting in a final analytical sample of 1,120 participants. The participation rate was 93.6% and the final analysable response rate was 89.6%.

Questionnaire development and validation

The questionnaire was specifically developed for this study following a comprehensive review of the literature on public perceptions of minimally invasive surgery. An initial version was designed by a multidisciplinary team including surgeons, anaesthesiologists and epidemiologists, and covered five domains: demographic characteristics; knowledge of laparoscopic surgery; perceived advantages and risks; sources of information; and surgical preference.

Content validity was assessed by a panel of five experts who evaluated the relevance, clarity and comprehensiveness of each item, and minor modifications were made according to their recommendations. A pilot study involving 30 volunteers from the general population was subsequently conducted to assess comprehensibility, feasibility and completion time; based on participant feedback, several questions were simplified and reorganised. The final questionnaire demonstrated satisfactory internal consistency, with a Cronbach's alpha coefficient of 0.82.

The questionnaire was originally developed in French and translated into Modern Standard Arabic. Forward and backward translations were independently performed by two bilingual translators to ensure semantic equivalence, and explanations were provided in Moroccan Darija when necessary to facilitate participant understanding.

Questionnaire administration

Data were collected using a mixed methodology combining face-to-face interviews and electronic questionnaires. Electronic questionnaires were administered through Google Forms using secure access links. Measures were implemented to minimise duplicate responses, and all questionnaires were reviewed before inclusion in the final database.

Variables and outcomes

The two primary outcomes were (i) accurate knowledge of laparoscopic surgery, defined as correct identification of the technique as minimally invasive using trocars and pneumoperitoneum, and (ii) stated preference for the laparoscopic approach. Candidate explanatory variables included age group, sex, area of residence (urban/rural), education level, prior personal or familial surgical experience, and the main source of information about laparoscopy.

Statistical analysis

Data were analysed using IBM SPSS Statistics version 27.0 (IBM Corp., Armonk, NY, USA). Categorical variables were expressed as frequencies and percentages, whereas continuous variables were summarised as means ± standard deviations or medians with interquartile ranges, as appropriate. Associations between participant characteristics and knowledge levels were assessed using the chi-square test and Student's t-test. Variables with a p-value < 0.20 in univariable analyses, together with variables considered clinically relevant, were entered into multivariable logistic regression models. Adjusted odds ratios (OR) with 95% confidence intervals (CI) were reported. Missing data represented less than 5% of observations and were handled using complete-case analysis. A two-sided p-value < 0.05 was considered statistically significant.

Ethical considerations

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of the Faculty of

Medicine and Pharmacy of Casablanca (15 December 2022). All participants provided informed consent before participation, which was voluntary, anonymous and confidential.

Results

Participant characteristics

A total of 1,120 participants were included. The most represented age group was 20–40 years (61.4%), with a slight female predominance (50.8%; sex ratio 0.97). Urban residents accounted for 72.8% of respondents. Most participants had a university-level education (56.6%), and Casablanca-Settat was the most represented region (27.7%) **(Table 1)**.

Table 1: Demographic characteristics of the 1,120 participants. Percentages are calculated on the total sample (n = 1,120).

Characteristic	Category	n (%)
Age group, years	20–40	688 (61.4)
	Other age groups	432 (38.6)
Sex	Female	569 (50.8)
	Male	551 (49.2)
Residence	Urban	815 (72.8)
	Rural	305 (27.2)
Education level	No formal education	74 (6.6)
	Primary education	134 (12.0)
	Secondary education	278 (24.8)
	University education	634 (56.6)
Region	Casablanca-Settat	310 (27.7)
	Rabat-Salé-Kénitra	180 (16.1)
	Marrakech-Safi	150 (13.4)
	Fès-Meknès	130 (11.6)
	Tanger-Tétouan-Al Hoceïma	120 (10.7)
	Souss-Massa	95 (8.5)
	Oriental	70 (6.3)
	Béni Mellal-Khénifra	65 (5.8)

Knowledge and misconceptions

Overall, 81.5% reported having heard of laparoscopic surgery, yet only 64.2% correctly identified it as a minimally invasive technique using trocars and pneumoperitoneum. A persistent misconception was observed, with 39.8% believing that laparoscopy involves the use of a laser. Cholecystectomy was correctly identified as an indication by 89.6% of participants, whereas 27.4% considered obesity a contraindication **(Table 2)**.

Table 2: Knowledge of laparoscopic surgery and prevailing misconceptions (n = 1,120).

Item	Response	n (%)
Had previously heard of laparoscopic surgery	Yes	913 (81.5)
Correctly identified it as a minimally invasive technique (trocars, pneumoperitoneum)	Correct	719 (64.2)
Believed that laparoscopy involves the use of a laser (misconception)	Yes	446 (39.8)
Correctly identified cholecystectomy as an indication	Correct	1004 (89.6)
Considered obesity a contraindication (misconception)	Yes	307 (27.4)

Perceived advantages

Reduced postoperative pain was the most frequently cited benefit (74.5%), followed by shorter hospital stay (70.2%) and better aesthetic outcome (68.9%) **(Table 3)**.

Table 3: Perceived advantages of laparoscopic surgery (n = 1,120).

Perceived advantage of laparoscopy	(%) n
Reduced postoperative pain	(74.5) 834
Shorter hospital stay	(70.2) 786
Better aesthetic / cosmetic outcome	(68.9) 772

Preference for laparoscopy and associated factors

Preference for the laparoscopic approach was expressed by 76.3% of respondents. In multivariable logistic regression, higher education level (adjusted OR 2.14; 95% CI 1.58–2.89; $p < 0.001$), urban residence (OR 1.67; 95% CI 1.22–2.29; $p = 0.002$) and prior personal or familial surgical experience (OR 1.94; 95% CI 1.41–2.67; $p < 0.001$) were independently associated with preference for laparoscopy. Participants who reported physician-delivered information were significantly more likely to demonstrate accurate knowledge than those informed via social media (OR 2.36; 95% CI 1.71–3.25; $p < 0.001$) **(Table 4, Figure 1)**.

Table 4: Factors independently associated with preference for laparoscopy and with accurate knowledge (multivariable logistic regression). OR, odds ratio; CI, confidence interval. All confidence intervals exclude 1.0, consistent with the reported statistical significance.

Variable	Outcome	Adjusted OR	95% CI	p
Higher education level	Preference for laparoscopy	2.14	1.58–2.89	<0.001
Urban residence	Preference for laparoscopy	1.67	1.22–2.29	0.002
Prior personal/familial surgical experience	Preference for laparoscopy	1.94	1.41–2.67	<0.001
Physician-delivered information (vs. social media)	Accurate knowledge	2.36	1.71–3.25	<0.001

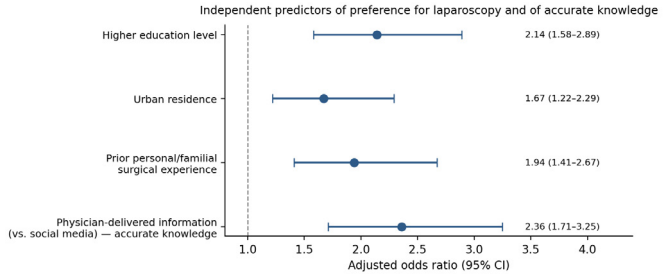

Figure 1: Forest plot of adjusted odds ratios (95% CI) for the independent predictors of preference for laparoscopy and of accurate knowledge. The dashed line marks the null value (OR = 1).

Discussion

In this multiregional survey of 1,120 Moroccan adults, awareness of laparoscopic surgery was high (81.5%), but accurate technical understanding was substantially lower (64.2%), and specific misconceptions were common-most notably the belief that laparoscopy uses a laser (39.8%) and that obesity constitutes a contraindication (27.4%)[6,7]. Preference for the laparoscopic approach was nonetheless frequent (76.3%). Accurate knowledge and preference were associated with higher education, urban residence, prior surgical experience and, for knowledge, with information received directly from a physician rather than from social media.

These observations are consistent with reports from other settings showing that, although the public is broadly aware of minimally invasive surgery, detailed understanding is frequently incomplete and shaped by educational attainment and by the source of information. The gap between general awareness and accurate technical knowledge underscores the importance of the information channel: physician-delivered counselling was associated with markedly higher odds of accurate knowledge than social media, supporting the value of structured, clinician-led patient education[8,9].

The persistence of misconceptions has practical implications. Misbelief that obesity is a contraindication could deter eligible patients from seeking minimally invasive care, while confusion with laser technology may distort expectations. Targeted public-information campaigns and improved physician–patient communication-particularly oriented towards less-educated and rural populations, who were less likely to express preference for laparoscopy-may help close these gaps and promote more equitable access[10,11].

Strengths

The principal strengths of this work are its large sample size (1,120 participants), its multiregional coverage across eight regions, and the use of multivariable analysis to identify factors independently associated with knowledge and preference. To our knowledge, this is the first large study of public perception of laparoscopic surgery in the Moroccan general population, and it carries direct implications for patient education.

Limitations

Several limitations should be acknowledged. First, the cross-sectional design precludes any causal inference; the reported associations describe correlation, not causation. Second, the predominance of urban respondents (72.8%) and the sampling approach may have introduced selection bias and limit representativeness of the wider Moroccan population, including rural communities. Third, responses were self-reported and therefore subject to recall and social-desirability bias. Finally, the findings should be generalised to the whole Moroccan population only with caution. These considerations should temper interpretation and motivate future, probability-based and longitudinal studies.

Conclusion

Despite widespread awareness of laparoscopic surgery in Morocco, significant misconceptions persist, particularly regarding technical aspects and contraindications. Education level, urban residence and medical counselling were associated with more accurate understanding and with procedural preference. Strengthening public information campaigns and improving physician–patient communication may enhance informed decision-making and support more equitable access to minimally invasive surgery.

Declarations

Ethics approval and consent to participate

The study was approved by the Ethics Committee of the Faculty of Medicine and Pharmacy of Casablanca (15 December 2022) and conducted in accordance with the Declaration of Helsinki. Informed consent was obtained from all participants.

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Conflicts of interest

The authors declare no conflicts of interest.

Data availability statement

The datasets generated and analysed during the current study are available from the corresponding author upon reasonable request.

References

1. von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Lancet 2007;370(9596):1453-1457.
2. A systematic review and meta-analysis of the outcomes of laparoscopic cholecystectomy compared to the open procedure in patients with gallbladder disease.
3. Meta-analysis of laparoscopic versus open cholecystectomy in elderly patients. World J Gastroenterol 2014;20(46):17626-17634.
4. Comparing the outcomes of laparoscopic versus open surgery for colorectal cancer: a systematic review and meta-analysis.
5. Patient perceptions about laparoscopy at Komfo Anokye Teaching Hospital, Kumasi, Ghana.
6. Patient perceptions of open, laparoscopic, and robotic gynecological surgeries.
7. Public awareness and perception of robotic-assisted surgery: a cross-sectional analysis of sociodemographic influences. Front Public Health 2025.
8. Robotic surgery: public perceptions and current misconceptions. J Robot Surg 2024.
9. Knowledge, attitude, and perception of robotic-assisted surgery among the general population in Saudi Arabia: a cross-sectional study. J Robot Surg 2024.
10. Awareness, perception, knowledge, and attitude toward robotic surgery in a general surgical outpatient clinic in Singapore, Asia.
11. Knowledge, attitude, awareness, and future expectations of robotic surgery in patients attending surgical specialty clinics.