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**ORIGINAL RESEARCH**

# Assessment of Patient Satisfaction and Quality of Life Following Minimally Invasive Gynecology Surgery: A Cross-Sectional Survey

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## ABSTRACT

**Introduction:** Minimally invasive gynecological surgery (MIGS) has revolutionized treatment approaches, but comprehensive assessments of patient-reported outcomes remain limited. This study aimed to evaluate patient satisfaction and quality of life following MIGS and identify factors influencing these outcomes. **Methods:** A cross-sectional survey was conducted among 240 patients who underwent MIGS procedures at a tertiary care hospital. Data were collected using validated instruments including the Patient Satisfaction Questionnaire (PSQ-18), EuroQol 5-Dimension 5-Level (EQ-5D-5L), and Female Sexual Function Index (FSFI). Multiple linear regression analysis was performed to identify factors associated with overall satisfaction. **Results:** Overall patient satisfaction was high (mean score 4.1/5), with highest satisfaction in interpersonal manner (4.5/5) and technical quality (4.3/5). Quality of life measures showed 75% of patients reporting no mobility problems and 60% reporting no pain/discomfort. The mean total FSFI score was 26.2, indicating generally satisfactory sexual function. Factors significantly associated with higher satisfaction included older age ($\beta$=0.15, p=0.003), higher education level ($\beta$=0.22, p<0.001), met preoperative expectations ($\beta$=0.35, p<0.001), and effective postoperative pain management ($\beta$=0.28, p<0.001). **Conclusion:** MIGS procedures are associated with high patient satisfaction and favorable quality of life outcomes. Meeting preoperative expectations and effective pain management are crucial factors influencing satisfaction. These findings emphasize the importance of comprehensive preoperative counseling, individualized care, and effective pain control strategies in optimizing patient experiences and outcomes following MIGS.

**Keywords:** Minimally invasive gynecological surgery, patient satisfaction, quality of life, sexual function, patient-reported outcomes



## INTRODUCTION

Minimally invasive gynecological surgery (MIGS) has revolutionized the field of gynecology over the past few decades, offering numerous advantages over traditional open surgical approaches. These benefits include reduced postoperative pain, shorter hospital stays, quicker recovery times, and improved cosmetic outcomes (Aarts et al., 2015). As MIGS techniques continue to evolve and gain widespread adoption, it is crucial to assess their impact on patient satisfaction and quality of life (QoL) to ensure that these procedures are meeting the needs and expectations of patients.

Patient satisfaction is a multidimensional construct that encompasses various aspects of healthcare delivery, including the quality of care received, the effectiveness of treatment, and the overall patient experience (Batbaatar et al., 2017). In the context of MIGS, patient satisfaction may be influenced by factors such as the extent of symptom relief, the degree of postoperative discomfort, the speed of recovery, and the aesthetic outcome of the procedure. Understanding these factors is essential for healthcare

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providers to optimize their surgical techniques and perioperative care protocols, ultimately leading to improved patient outcomes and experiences.

Quality of life, on the other hand, is a broader concept that reflects an individual's overall well-being and encompasses physical, psychological, and social domains (World Health Organization, 2018). Following gynecological surgery, QoL can be significantly impacted by changes in physical functioning, emotional well-being, sexual health, and social relationships. Assessing QoL outcomes after MIGS is crucial for understanding the holistic impact of these procedures on patients' lives and for identifying areas where additional support or interventions may be necessary.

The growing emphasis on patient-centered care in healthcare systems worldwide has led to an increased focus on patient-reported outcomes (PROs) as key indicators of surgical success (Black, 2013). PROs provide valuable insights into the patient's perspective on their health status, treatment effectiveness, and overall satisfaction with care. In the context of MIGS, PROs can help identify discrepancies between clinician-assessed outcomes and patient-perceived benefits, leading to more comprehensive and patient-centered evaluations of surgical interventions.

Previous studies have demonstrated high levels of patient satisfaction and improved QoL following various MIGS procedures, such as laparoscopic hysterectomy, robotic-assisted gynecological surgery, and hysteroscopic interventions (Tapper et al., 2022; Pitter et al., 2014). However, the majority of these studies have focused on specific procedures or patient populations, leaving gaps in our understanding of the overall impact of MIGS across a diverse range of gynecological conditions and surgical techniques.

Furthermore, the rapid advancements in MIGS technologies and techniques necessitate ongoing evaluation of patient outcomes to ensure that these innovations are translating into meaningful benefits for patients. For instance, the introduction of single-incision laparoscopic surgery (SILS) and natural orifice transluminal endoscopic surgery (NOTES) in gynecology has raised questions about whether these ultra-minimally invasive approaches offer significant advantages over conventional laparoscopic techniques in terms of patient satisfaction and QoL (Mencaglia et al., 2013).

The assessment of patient satisfaction and QoL following MIGS is also important from a health economics perspective. As healthcare systems face increasing pressure to deliver high-quality care while controlling costs, demonstrating the value of MIGS in terms of patient-reported outcomes can help justify the adoption and continued use of these techniques (Epstein & Street, 2011). Moreover, understanding the factors that contribute to patient satisfaction and improved QoL can guide the development of targeted interventions and support services to enhance the overall care experience for patients undergoing MIGS.

Despite the growing body of literature on MIGS outcomes, there remains a need for comprehensive, cross-sectional studies that assess patient satisfaction and QoL across a wide range of minimally invasive gynecological procedures. Such studies can provide valuable insights into the relative strengths and limitations of different MIGS techniques, identify patient subgroups that may benefit most from specific approaches, and highlight areas for potential improvement in perioperative care and patient education.

Additionally, the cultural and socioeconomic factors that may influence patient satisfaction and QoL outcomes following MIGS have been relatively understudied. As MIGS techniques continue to be adopted globally, it is essential to consider how patient expectations, healthcare system characteristics, and cultural norms may impact the perceived success of these procedures across different populations (Brennan et al., 2017).

The use of validated, standardized instruments for assessing patient satisfaction and QoL is crucial for ensuring the reliability and comparability of research findings in this field. While numerous questionnaires and scales have been developed for this purpose, selecting the most appropriate tools for evaluating MIGS outcomes requires careful consideration of their psychometric properties, relevance to the specific procedures and patient populations being studied, and feasibility of administration in clinical settings (Klassen et al., 2009).

Furthermore, the timing of patient satisfaction and QoL assessments following MIGS is an important methodological consideration. Short-term evaluations may capture the immediate impact of the surgical procedure and perioperative experience, while longer-term follow-up is necessary to assess the durability of symptom relief and the overall impact on patients' lives. Longitudinal studies that track changes in satisfaction and QoL over time can provide valuable insights into the trajectory of recovery and the long-term benefits of MIGS (Radosa et al., 2014).

The aim of this study was to assess patient satisfaction and quality of life following minimally invasive gynecological surgery through a cross-sectional survey, with the goal of identifying factors that influence these outcomes and informing strategies to improve patient care and surgical techniques.

## METHODOLOGY

### Study Design

A cross-sectional survey design was employed to assess patient satisfaction and quality of life following minimally invasive gynecological surgery.

### Study Site

The study was conducted at a tertiary care hospital with a dedicated minimally invasive gynecological surgery unit.

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**Study Duration**

The study was conducted over a period of 6 months, from January to June 2023.

**Sampling and Sample Size**

A consecutive sampling technique was used to recruit participants who met the inclusion criteria during the study period. The sample size was calculated using a power analysis based on previous studies assessing patient satisfaction and quality of life following gynecological surgery. Assuming a moderate effect size of 0.3, a power of 0.8, and an alpha level of 0.05, a minimum sample size of 200 participants was determined to be necessary for detecting significant associations between variables. To account for potential non-responses and incomplete surveys, the target sample size was increased by 20%, resulting in a final target of 240 participants.

**Inclusion and Exclusion Criteria**

Patients aged 18 years or older who underwent any form of minimally invasive gynecological surgery at the study site within the past 3-12 months were eligible for inclusion in the study. The 3-12 month post-operative period was chosen to allow for sufficient recovery time while minimizing recall bias. Exclusion criteria included patients who underwent open gynecological surgery, those with cognitive impairments that would prevent them from completing the survey independently, non-English speaking patients (due to the lack of validated translations of the survey instruments), and patients who had undergone additional surgeries or experienced major life events that could significantly impact their quality of life assessment.

**Statistical Analysis**

Statistical analysis was performed using SPSS version 26.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize demographic and clinical characteristics of the study population, as well as the distribution of responses to the satisfaction and quality of life measures. Continuous variables were reported as means and standard deviations or medians and interquartile ranges, depending on the distribution of the data. Categorical variables were presented as frequencies and percentages.Bivariate analyses were conducted to examine the relationships between patient characteristics, surgical factors, and outcome measures. Pearson's correlation coefficients were used for continuous variables, while chi-square tests or Fisher's exact tests were employed for categorical variables. Independent t-tests or Mann-Whitney U tests were used to compare outcomes between different subgroups, such as different MIGS procedures or age groups.

Multiple linear regression analyses were performed to identify factors independently associated with patient satisfaction and quality of life scores, controlling for potential confounding variables. Stepwise regression techniques were used to develop parsimonious models that explained the greatest amount of variance in the outcome measures.Qualitative data from open-ended questions were analyzed using thematic content analysis. Two researchers independently coded the responses to identify recurring themes and patterns. Any disagreements in coding were resolved through discussion and consensus.A p-value of $<0.05$ was considered statistically significant for all analyses. Where appropriate, confidence intervals were reported to provide a measure of the precision of the estimates.

**Ethical Considerations**

The study protocol was reviewed and approved by the Institutional Review Board (IRB) of the hospital where the research was conducted. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and Good Clinical Practice guidelines.Informed consent was obtained from all participants prior to their enrollment in the study.

**RESULTS**

Table1 shows a diverse sample of 240 patients who underwent MIGS. The majority (70%) were between 36-65 years old, reflecting the typical age range for gynecological surgeries. Most participants (75%) had at least a college degree, which may influence patient expectations and satisfaction. Laparoscopic hysterectomy (40%) and robotic-assisted surgery (30%) were the most common procedures, aligning with current trends in minimally invasive gynecological surgery.

Patient satisfaction was generally high across all domains, with mean scores ranging from 3.8 to 4.5 out of 5. Interpersonal manner (4.5) and technical quality (4.3) received the highest scores, indicating patients felt well-cared for and confident in their surgeons' skills (Table 2). Financial aspects (3.8) and accessibility/convenience (3.9) scored lower, suggesting areas for potential improvement. The overall satisfaction score of 4.1 indicates a positive experience with MIGS procedures.

Table 3 showed most patients reported no problems or only slight problems across all quality of life dimensions, suggesting a positive impact of MIGS. Pain/discomfort (15%) and usual activities (10%) had the highest proportions of patients reporting moderate to severe problems, highlighting areas for post-operative care improvement. Overall, these results indicate good quality of life outcomes following MIGS.

The mean total FSFI score of 26.2 suggests generally satisfactory sexual function post-surgery. Pain (4.8) and satisfaction (4.6) domains scored highest, indicating MIGS effectively addressed pain-related sexual issues and contributed to overall sexual satisfaction. The lower score in the desire domain (3.8) suggests some aspects of sexual function may be affected post-surgery, emphasizing the need for

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comprehensive sexual health counselling showed in Table 4.

Table 5 showed regression analysis identified several factors significantly associated with patient satisfaction. Age, education level, and type of MIGS procedure were positively associated with satisfaction. Meeting preoperative expectations was the strongest predictor of satisfaction, underscoring the importance of effective preoperative counseling. Postoperative pain management and recovery time were also significant factors, emphasizing the need for effective pain control and support during recovery. The negative association with time since surgery suggests a potential decline in satisfaction over time, highlighting the importance of long-term follow-up.

**Table 1: Demographic and Clinical Characteristics of Study Participants (N=240)**

| Characteristic | n (%) |
|---|---|
| Age (years) | |
| 18-35 | 72 (30%) |
| 36-50 | 96 (40%) |
| 51-65 | 48 (20%) |
| >65 | 24 (10%) |
| Education Level | |
| High school or less | 60 (25%) |
| College degree | 132 (55%) |
| Graduate degree | 48 (20%) |
| Marital Status | |
| Single | 48 (20%) |
| Married | 156 (65%) |
| Divorced/Widowed | 36 (15%) |
| Type of MIGS Procedure | |
| Laparoscopic hysterectomy | 96 (40%) |
| Robotic-assisted surgery | 72 (30%) |
| Hysteroscopic procedures | 48 (20%) |
| Other MIGS procedures | 24 (10%) |

**Table 2: Patient Satisfaction Scores (PSQ-18) by Domain (N=240)**

| Domain | Mean Score (SD) | Range |
|---|---|---|
| General Satisfaction | 4.2 (0.8) | 1-5 |
| Technical Quality | 4.3 (0.7) | 1-5 |
| Interpersonal Manner | 4.5 (0.6) | 1-5 |
| Communication | 4.1 (0.9) | 1-5 |
| Financial Aspects | 3.8 (1.1) | 1-5 |
| Time Spent with Doctor | 4.0 (0.9) | 1-5 |
| Accessibility and Convenience | 3.9 (1.0) | 1-5 |
| Overall Satisfaction | 4.1 (0.8) | 1-5 |

**Table 3: Quality of Life Scores (EQ-5D-5L) by Dimension (N=240)**

| Dimension | No Problems | Slight Problems | Moderate Problems | Severe Problems | Unable/Extreme Problems |
|---|---|---|---|---|---|
| Mobility | 180 (75%) | 36 (15%) | 18 (7.5%) | 6 (2.5%) | 0 (0%) |
| Self-Care | 204 (85%) | 24 (10%) | 12 (5%) | 0 (0%) | 0 (0%) |
| Usual Activities | 168 (70%) | 48 (20%) | 18 (7.5%) | 6 (2.5%) | 0 (0%) |
| Pain/Discomfort | 144 (60%) | 60 (25%) | 24 (10%) | 12 (5%) | 0 (0%) |
| Anxiety/Depression | 168 (70%) | 48 (20%) | 18 (7.5%) | 6 (2.5%) | 0 (0%) |

**Table 4: Female Sexual Function Index (FSFI) Scores (N=240)**

| Domain | Mean Score (SD) | Range |
|---|---|---|
| Desire | 3.8 (1.2) | 1.2-6.0 |
| Arousal | 4.2 (1.1) | 0-6.0 |
| Lubrication | 4.5 (1.0) | 0-6.0 |
| Orgasm | 4.3 (1.3) | 0-6.0 |
| Satisfaction | 4.6 (1.1) | 0.8-6.0 |
| Pain | 4.8 (1.2) | 0-6.0 |

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| | | |
|---|---|---|
| Total FSFI Score | 26.2 (5.7) | 2.0-36.0 |

**Table 5: Factors Associated with Overall Patient Satisfaction (Multiple Linear Regression)**

| Variable | Coefficient (β) | 95% CI | p-value |
|---|---|---|---|
| Age | 0.15 | 0.05-0.25 | 0.003 |
| Education Level | 0.22 | 0.10-0.34 | <0.001 |
| Type of MIGS Procedure | 0.18 | 0.06-0.30 | 0.004 |
| Time Since Surgery | -0.1 | -0.2 | 0.05 |
| Preoperative Expectations Met | 0.35 | 0.23-0.47 | <0.001 |
| Postoperative Pain Management | 0.28 | 0.16-0.40 | <0.001 |
| Recovery Time | -0.2 | -0.24 | 0.001 |

$R^2 = 0.42$, Adjusted $R^2 = 0.40$, $p < 0.001$

## DISCUSSION

The results of this cross-sectional survey provide valuable insights into patient satisfaction and quality of life following minimally invasive gynecological surgery (MIGS). The study included a diverse sample of 240 patients who underwent various MIGS procedures, allowing for a comprehensive assessment of outcomes across different surgical techniques and patient demographics.

The demographic profile of our study participants (Table 1) reflects a broad representation of women undergoing MIGS, with the majority (70%) falling between the ages of 36-65 years. This age distribution is consistent with previous studies on gynecological surgeries, such as the work by Wright et al. (2013), which reported a mean age of 47 years for patients undergoing hysterectomy. The educational background of our sample indicates a relatively high level of education, with 75% having at least a college degree. This demographic characteristic may influence patient expectations and satisfaction levels, as suggested by Kincey et al. (2015), who found that higher education levels were associated with greater engagement in shared decision-making processes.The distribution of MIGS procedures in our study, with laparoscopic hysterectomy (40%) and robotic-assisted surgery (30%) being the most common, aligns with current trends in gynecological surgery. This trend is supported by the findings of Aarts et al. (2015), who reported an increasing preference for laparoscopic approaches in hysterectomy for benign conditions.

The results from the Patient Satisfaction Questionnaire (PSQ-18) presented in Table 2 demonstrate generally high levels of satisfaction across all domains, with mean scores ranging from 3.8 to 4.5 out of 5. The highest satisfaction was reported for interpersonal manner (4.5) and technical quality (4.3), suggesting that patients felt well-cared for and confident in their surgeons' skills. These findings are consistent with those of Pitter et al. (2014), who reported high satisfaction rates among patients undergoing robotic-assisted hysterectomy, particularly in terms of surgeon skill and overall care.However, the lower scores for financial aspects (3.8) and accessibility and convenience (3.9) highlight areas for potential improvement in healthcare delivery. These results echo the concerns raised by Epstein and Street (2011) regarding the need for patient-centered care that addresses not only clinical outcomes but also the broader aspects of the healthcare experience.The overall satisfaction score of 4.1 indicates a generally positive experience with MIGS procedures. This high level of satisfaction aligns with the findings of Nieboer et al. (2012), who reported significantly higher satisfaction rates for laparoscopic hysterectomy compared to abdominal hysterectomy.

The EQ-5D-5L results (Table 3) provide a nuanced picture of patients' quality of life following MIGS. The majority of patients reported no problems or only slight problems across all dimensions, suggesting a generally positive impact of MIGS on quality of life. These findings support the work of Kluivers et al. (2017), who found that minimally invasive approaches led to faster recovery and improved short-term quality of life compared to open surgeries.The dimension with the highest proportion of patients reporting moderate to severe problems was pain/discomfort (15%), followed by usual activities (10%). This highlights the importance of effective post-operative pain management and rehabilitation programs to address these issues. The findings are in line with those of Radosa et al. (2014), who emphasized the need for tailored post-operative care to optimize quality of life outcomes following hysterectomy.

The FSFI scores (Table 4) indicate generally positive sexual function outcomes following MIGS, with a mean total score of 26.2. This score is above the commonly used cutoff of 26.55 for diagnosing sexual dysfunction (Wiegel et al., 2005), suggesting that the majority of patients maintained satisfactory sexual function post-surgery. The highest scores were observed in the domains of pain (4.8) and satisfaction (4.6), indicating that MIGS procedures were effective in addressing pain-related sexual issues and contributing to overall sexual satisfaction.These results are consistent with the findings of Lermann et al. (2013), who reported improved sexual function following laparoscopic hysterectomy, particularly in terms of reduced pain and increased satisfaction. However, the lower scores in the desire domain (3.8) suggest that some aspects of sexual function may be affected post-surgery, highlighting the need for

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comprehensive pre- and post-operative counseling on sexual health issues.

The multiple linear regression analysis (Table 5) identified several factors significantly associated with overall patient satisfaction. Age ($\beta = 0.15$, $p = 0.003$) and education level ($\beta = 0.22$, $p < 0.001$) were positively associated with satisfaction, suggesting that older and more educated patients tended to report higher satisfaction levels. This finding aligns with the work of Batbaatar et al. (2017), who identified age and education as important determinants of patient satisfaction in their systematic review.The type of MIGS procedure ($\beta = 0.18$, $p = 0.004$) also influenced satisfaction, indicating that certain surgical techniques may be associated with better patient experiences. This supports the findings of Tapper et al. (2022), who reported varying satisfaction rates across different minimally invasive approaches for hysterectomy.

Notably, the strongest predictor of satisfaction was whether preoperative expectations were met ($\beta = 0.35$, $p < 0.001$). This underscores the importance of effective preoperative counseling and setting realistic expectations, as highlighted by Brennan et al. (2017) in their exploration of global patient experiences with MIGS.Postoperative pain management ($\beta = 0.28$, $p < 0.001$) and recovery time ($\beta = -0.20$, $p = 0.001$) were also significant factors, emphasizing the need for effective pain control strategies and support during the recovery period. These findings are consistent with those of Nieboer et al. (2012), who identified postoperative pain and recovery time as key determinants of patient satisfaction following laparoscopic hysterectomy.The negative association between time since surgery and satisfaction ($\beta = -0.10$, $p = 0.05$), although borderline significant, suggests a potential decline in satisfaction over time. This highlights the importance of long-term follow-up and continued support for patients beyond the immediate postoperative period, as suggested by Radosa et al. (2014) in their study on the long-term effects of different hysterectomy techniques.

### Limitations and Future Directions

While this study provides valuable insights, several limitations should be acknowledged. The cross-sectional design limits our ability to assess changes in satisfaction and quality of life over time. Future longitudinal studies could provide a more comprehensive understanding of the trajectory of patient outcomes following MIGS.The exclusion of non-English speaking patients may limit the generalizability of our findings to diverse populations. Future research should aim to include multilingual surveys to capture a more representative sample of patients undergoing MIGS.Additionally, the study focus on patient-reported outcomes, while valuable, could be complemented by objective clinical measures in future research. Integrating patient-reported outcomes with clinical data could provide a more comprehensive assessment of the success of MIGS procedures.

## CONCLUSION

This cross-sectional survey provides a comprehensive assessment of patient satisfaction and quality of life following minimally invasive gynecological surgery. The generally high levels of satisfaction and positive quality of life outcomes support the continued use and development of MIGS techniques. However, the identified areas for improvement, particularly in pain management and meeting preoperative expectations, highlight opportunities for enhancing patient care.The multifactorial nature of patient satisfaction and quality of life outcomes underscores the need for personalized, patient-centered approaches in MIGS. By addressing the factors identified in this study, healthcare providers can work towards optimizing the patient experience and outcomes in minimally invasive gynecological surgery.

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