

The Effect of Sexual Literacy on Complications and Satisfaction after Penile Prosthesis Implantation

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What's known on the subject? and What does the study add?

Patient-related factors, including general health literacy, influence satisfaction and outcomes after penile prosthesis implantation, but the role of sexual health literacy (SHL) remains unexplored. To our knowledge, this is the first study to evaluate SHL in men undergoing penile prosthesis implantation. Patients requiring revision surgery had significantly lower postoperative SHL scores in both knowledge and attitude domains than those undergoing primary implantation, regardless of revision indication. These hypothesis-generating findings suggest SHL may be a relevant patient-related factor and support prospective studies with preoperative SHL assessment.

Abstract

Objective: This study aimed to evaluate the impact of sexual health literacy (SHL) on postoperative complications and patient satisfaction in men undergoing penile prosthesis implantation (PPI).

Materials and Methods: A retrospective cohort of 69 patients who underwent PPI by a single surgeon at a tertiary referral center between January 2023 and September 2024 was analyzed. SHL was assessed using the validated SHL scale (SHLS), a 17-items, two-domain questionnaire administered during outpatient visits between 3 and 12 months postoperatively. Comparative analyses were conducted between primary and revision implantation groups, with subgroup analyses for revision indications. Statistical significance was defined as $p < 0.05$.

Results: Of the 69 patients, 47 (68.1%) underwent primary implantation and 22 (31.9%) underwent revision surgery. Malleable prostheses were used in 26.1% of patients, and three-piece inflatable devices in 73.9% of patients. SHLS scores were significantly lower in the revision group compared with the primary implantation group (knowledge domain: 33.3 ± 11.8 vs. 42.8 ± 9.8 , $p = 0.002$; attitude domain: 13.7 ± 4.4 vs. 17.2 ± 3.9 , $p = 0.003$; total SHLS: 47.0 ± 15.9 vs. 60.0 ± 13.4 , $p = 0.002$). Among revision cases, no significant differences in SHLS scores were observed between infection-related and dysfunction-related subgroups. Higher SHL was positively correlated with patient satisfaction and inversely correlated with complication rates.

Conclusion: SHL appears to be an important patient-related factor influencing the outcomes following PPI. Patients with higher SHL levels reported greater satisfaction and experienced lower complication rates. This study aims to establish a direct association between SHL and PPI outcomes. Further prospective studies assessing SHL preoperatively are needed to validate these findings and may support the inclusion of SHL in predictive nomograms to optimize surgical counseling and patient management.

Keywords: Penile prosthesis, sexual health literacy, sexual knowledge, erectile dysfunction, patient satisfaction

Introduction

Penile prosthesis implantation (PPI) represents the definitive surgical treatment for men with refractory erectile dysfunction and is associated with high long-term satisfaction rates (1,2).

Despite advances in surgical technique, implant design, and infection prevention strategies, postoperative complications and revision surgeries remain clinically relevant (2). While device-related and technical factors have been extensively investigated, increasing attention has been directed toward patient-related

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factors that may be associated with postoperative outcomes after prosthetic surgery (3).

Health literacy (HL) has emerged as an important factor affecting surgical outcomes, treatment adherence, and patient satisfaction across various medical fields (4). In prosthetic urology, inadequate HL has been associated with difficulties in postoperative device handling and with lower satisfaction rates (5). However, HL is a broad construct and may not adequately reflect patients' understanding of, and behaviors specifically related to, sexual health.

Sexual HL (SHL) is a more focused concept referring to an individual's ability to access, understand, and apply information related to sexual function, sexual well-being, and sexual behaviors (6). Unlike general HL, SHL is strongly influenced by sociocultural factors and may be particularly relevant in the context of PPI, where postoperative device use, realistic expectations, and sexual communication are essential to achieving optimal outcomes. The SHL scale (SHLS) was developed and validated to assess this construct in a culturally sensitive manner (7).

Despite its potential importance, the role of SHL in postoperative outcomes following PPI has not been systematically investigated. In particular, the association between SHL and complications, revision surgery, or postoperative satisfaction remains unclear.

This study aimed to explore the association between postoperative SHLS and revision surgery in men undergoing PPI. Given the retrospective design and timing of SHL assessment, this study was designed as exploratory and hypothesis-generating.

Materials and Methods

Study Design and Setting

Between January 2023 and September 2024, 69 patients underwent PPI at University of Health Sciences Türkiye, Antalya Training and Research Hospital, performed by a single surgeon (Ali Erhan Eren). Demographic characteristics of the cohort, including medical conditions, indications for PPI, revision rates and numbers, implant removal rates, and implant types, are presented in Table 1.

The SHLS, a 17-items, two-factor questionnaire validated in the native language, was administered postoperatively. SHL assessment was performed during outpatient follow-up visits occurring after at least 3 months (between the 3rd and 12th postoperative months).

SHL was assessed after at least 3 months of follow-up. Therefore, SHL scores do not represent preoperative baseline characteristics.

Inclusion criteria: Patients who had undergone PPI surgery and were willing to participate in the survey.

Exclusion criteria: Patients who had not undergone PPI surgery or who declined to participate in the survey.

Ethical Considerations

The study protocol was approved by University of Health Sciences Türkiye, Antalya Training and Research Hospital Scientific Research Ethics Committee (approval number: 7/1, date: 17.04.2025), and the study was conducted in accordance with the principles of the Declaration of Helsinki.

Outpatient follow-up every three months up to the end of the first year is recommended at initial discharge after PPI, and the questionnaire is completed with the assistance of a resident during voluntary visits after informed consent from the participants. Table 2 shows the distribution of SHLS answers in the cohort.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 28 (IBM Corp., Armonk, NY, USA).

Descriptive statistics:

- Categorical variables were expressed as frequency and percentage [n(%)].

Table 1. Demographic and clinical characteristics of the study population

Variable	n (%)
Total patients	69 (100)
Primary implantation	47 (68.1)
Revision surgery	22 (31.9)
Infection	8 (11.6)
Prosthesis dysfunction	14 (20.3)
Implant type	
Malleable	18 (26.1)
Three-piece inflatable	51 (73.9)
Comorbidities	
Diabetes mellitus	49 (71.0)
Hypertension	16 (23.2)
Coronary artery disease	6 (8.7)

Table 2. Sexual health literacy scale scores by groups

Group	SHLS-1 (knowledge)	SHLS-2 (attitude)	Total SHLS
All patients (n=69)	39.8±11.3	16.1±4.4	55.9±15.4
Primary (n=47)	42.8±9.8	17.2±3.9	60.0±13.4
Revision (n=22)	33.3±11.8	13.7±4.4	47.0±15.9
Revision-infection (n=8)	30.8±14.1	11.9±4.9	42.6±18.4
Revision-dysfunction (n=14)	34.8±10.6	14.8±3.9	49.6±14.6
SHLS: Sexual health literacy scale			

- Continuous variables were presented as mean $\pm$ standard deviation, median, minimum, and maximum values.

Comparative analyses:

- An Independent samples t-test (or Mann-Whitney U test, when appropriate) was used to compare continuous variables between two independent groups (e.g., primary vs. revision surgery).
- Subgroup analyses within the revision group (infection vs. prosthesis dysfunction) were also performed using independent-samples t-tests.
- The chi-square test was applied to categorical variables.
- Given the limited sample size and the number of revision events, multivariable analysis was not performed. A p-value <0.05 was considered statistically significant.

Results

Patient Characteristics

A total of 69 patients were included in the study. Of these, 47 (68.1%) underwent primary PPI and 22 (31.9%) underwent revision surgery.

Regarding prosthesis type, 18 patients (26.1%) received malleable implants, whereas 51 patients (73.9%) received three-pieces inflatable prostheses (Figure 1).

Comorbidities were common in this cohort: diabetes mellitus in 49 patients (71.0%), hypertension in 16 patients (23.2%), and coronary artery disease in 6 patients (8.7%). The overall mean age was 59.6 ± 11.7 years.

SHLS Scores

SHLS assessment was performed postoperatively during routine follow-up visits.

In the entire cohort, the mean SHLS-1 (knowledge domain, range: 12-60) score was 39.8 ± 11.3 , while the mean SHLS-2

(attitude domain, range: 5-25) score was 16.1 ± 4.4 . The mean total SHLS score was 55.9 ± 15.4 .

Comparison Between Primary and Revision Groups

Patients undergoing revision surgery exhibited significantly lower SHLS performance compared with those with primary implantation (Figure 2).

- SHLS-1 (knowledge domain): Revision 33.3 ± 11.8 vs. primary 42.8 ± 9.8 ($p=0.002$).
- SHLS-2 (attitude domain): Revision 13.7 ± 4.4 vs. primary 17.2 ± 3.9 ($p=0.003$).
- Total SHLS score: Revision 47.0 ± 15.9 vs. primary 60.0 ± 13.4 ($p=0.002$).

These findings demonstrate an unadjusted association between lower postoperative SHL scores and the likelihood of revision surgery.

Subgroup Analysis of Revision Cases

Among revision cases, 8 patients underwent surgery for infection and 14 patients for prosthesis dysfunction. The mean age was 55.5 ± 10.6 years in the infection subgroup and 65.6 ± 13.2 years in the dysfunction subgroup, showing a borderline difference ($p=0.065$).

No statistically significant differences were observed between the subgroups with respect to SHLS-1, SHLS-2, or total SHLS scores (all $p>0.05$).

This indicates that the reason for revision (infection vs. dysfunction) had no significant effect on SHL outcomes.

Discussion

In this retrospective cohort study, we explored the association between SHL and early postoperative outcomes in men

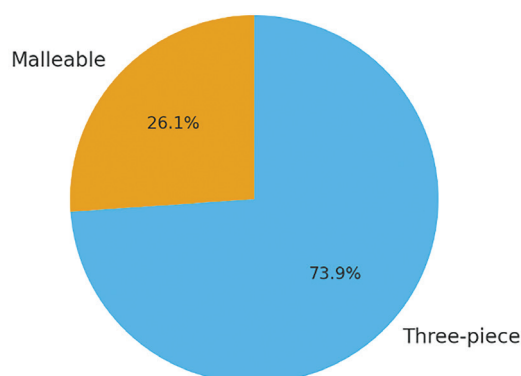


Figure 1. Distribution of implant types in the study population

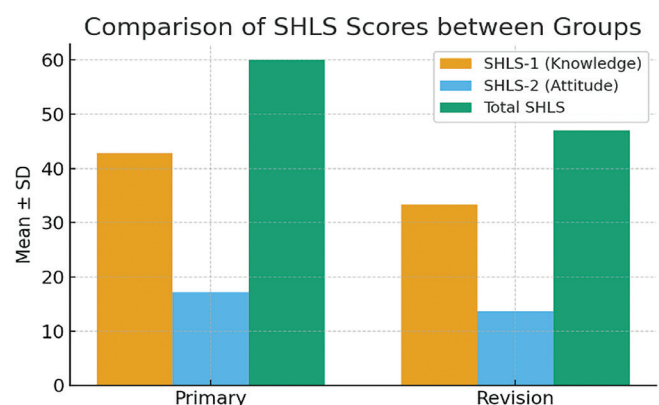


Figure 2. Comparison of SHLS scores between primary and revision groups
SHLS: Sexual health literacy scale, SD: Standard deviation

undergoing PPI. Patients requiring revision surgery demonstrated significantly lower SHL scores compared with those undergoing primary implantation. These findings demonstrate an unadjusted association between postoperative SHL scores and revision status in this cohort.

Patient-related factors are increasingly recognized as important contributors to outcomes in prosthetic urology. Previous studies have demonstrated that patient education, health literacy, and expectation management significantly influence postoperative satisfaction and functional outcomes in surgical and sexual medicine populations (8,9). Previous studies have shown that general health literacy and preoperative counseling are associated with postoperative satisfaction following urological prosthetic surgery, particularly in the context of PPI (5,10). These findings suggest that differences in postoperative SHL scores exist between primary and revision cases, and these differences warrant further investigation.

The present findings should be interpreted cautiously. Because SHL was assessed postoperatively, the temporal relationship between SHL scores and surgical outcomes cannot be established. SHL scores may reflect postoperative experiences rather than preexisting literacy levels.

Study Limitations

A major limitation of this study is that SHL was assessed postoperatively. Postoperative complications or dissatisfaction may influence patients' responses to SHL questionnaires, introducing the possibility of reverse causality, a well-recognized source of bias in observational studies (11). Therefore, it cannot be determined whether lower SHL predisposes patients to adverse outcomes or whether adverse outcomes negatively affect SHL.

Another important limitation is the absence of multivariable analysis. Comorbidities such as diabetes mellitus, age, implant type, and prior prosthetic surgeries are well-established risk factors for complications and revision surgery after PPI (12,13). However, the limited sample size and number of revision events precluded robust multivariable logistic regression analysis, as small event-per-variable ratios may result in unstable estimates (14). Despite these limitations, this study provides preliminary evidence suggesting that SHL may be a relevant patient-related factor in the context of penile prosthesis surgery. These findings support further investigation into patient-centered educational strategies in prosthetic urology.

This study has several limitations. Its retrospective single-center design limits generalizability and precludes causal inference. SHL was assessed postoperatively, thereby precluding determination of temporal directionality. In addition, multivariable adjustment

was not performed because the limited sample size and number of revision events restricted the ability to control for established clinical confounders. Postoperative satisfaction was not evaluated using a validated instrument, and follow-up was limited to the first postoperative year. These factors constrain interpretation of the findings and underscore the need for prospective, methodologically robust studies.

Conclusion

In this exploratory retrospective cohort study, lower postoperative SHL scores were associated with revision surgery following PPI.

Given the postoperative timing of SHL assessment, absence of multivariable adjustment, and limited sample size, these findings should be interpreted strictly as hypothesis-generating. Prospective studies with preoperative SHL measurement and appropriate adjustment for clinical confounders are required before drawing conclusions regarding predictive or modifiable effects.

Ethics

Ethics Committee Approval: The study protocol was approved by University of Health Sciences Türkiye, Antalya Training and Research Hospital Scientific Research Ethics Committee (approval number: 7/1, date: 17.04.2025).

Informed Consent: Outpatient follow-up every three months up to the end of the first year is recommended at initial discharge after PPI, and the questionnaire is completed with the assistance of a resident during voluntary visits after informed consent from the participants.

Footnotes

Authorship Contributions

Surgical and Medical Practices: A.E.E, Concept: A.E.E., Ö.U.Ç., Design: A.E.E., Ö.U.Ç., Data Collection or Processing: B.A., Analysis or Interpretation: B.A., Ö.U.Ç., Literature Search: A.E.E., B.A., Writing: A.E.E., B.A., Ö.U.Ç.

Conflict of Interest: No conflict of interest was declared by the authors.

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