Submitted: 25 June, 2025 Accepted: 10 September, 2025 Published: 30 December, 2025 DOI:10.22514/jomh.2025.140

ORIGINAL RESEARCH

JOMH Journal of Men's Health

Comparative insights into patient satisfaction and its determinants in malleable and inflatable penile prostheses

Bander A Binjabaan[1,*], Abdullah Khawaji[1], Khalaf Alshammrani[1], Abdulaziz Alhazzaa[1], Abdalatiff Bedaiwi[1], Hossam S EI-Tholoth[1], Abdulmalik Almardawi[1], Khaled Bedaiwi[1], Mossa Alnami[1], Abdulmajeed Althobaity[1]

[1]Urology Department, Prince Sultan Military Medical City, 11159 Riyadh, Saudi Arabia

***Correspondence**
Bbinjabaan@psmmc.med.sa
(Bander A Binjabaan)

Abstract

Background: Penile prosthesis implantation is a well-established surgical treatment for erectile dysfunction. Both malleable and inflatable penile prostheses offer effective solutions, each with distinct advantages and disadvantages. However, treatment satisfaction reflects a person's subjective evaluation of the treatment experience, beyond clinical effectiveness. This study aimed to compare patient satisfaction between malleable and inflatable penile prostheses and examines factors influencing satisfaction. **Methods**: A retrospective cohort study was conducted on patients who underwent penile prosthesis implantation at a single tertiary referral center between January 2021 and September 2023. Patient satisfaction was assessed six months after penile implantation using the modified Erectile Dysfunction Inventory of Treatment Satisfaction (EDITS) questionnaire along demographics and clinical data. **Results**: Among 130 participants, 71 (54.6%) received a malleable penile prosthesis and 59 (45.4%) an inflatable one. Both groups reported overall high satisfaction, with significantly higher satisfaction in the inflatable group regarding penile prosthesis, expectation fulfillment and continued use (p = 0.029, 0.008, and 0.019, respectively). Dissatisfaction with device configuration was reported by 15.5% of malleable recipients, while none was reported in the inflatable group. Perceived change in length was noted by 21.1% of malleable and 13.6% of inflatable recipients. In the malleable group only, Body Mass Index (BMI), comorbidities, and past surgical history were associated with satisfaction. Those with BMI under 30 reported greater satisfaction in expectation and partner-related domains, and no dissatisfaction was reported by individuals without comorbidities or with prior surgical history. **Conclusions**: Both prosthesis types yielded high satisfaction, inflatable implants showing superior outcomes. Patient factors such as BMI, comorbidities and surgical history influenced satisfaction in malleable prosthesis recipients.

Keywords

Penile implant; Satisfaction; Erectile dysfunction; Impotence

1. Introduction

Erectile Dysfunction (ED) is defined as the consistent inability to obtain or sustain an erection strong enough for satisfying sexual intercourse [1, 2]. ED significantly impacts the quality of life and psychosocial well-being of both men and their partners [3, 4].

Penile prosthesis implantation (PPI) is a well-known recognized treatment for managing Erectile Dysfunction (ED) in patients who are unresponsive to other therapies [5, 6]. A penile prosthesis is a surgically implanted device within the penis. The prosthesis types have evolved with passage of time, along with advancements in surgical techniques to improve the durability and quality of the device [7]. Currently two types of penile prosthesis are available; an inflatable and malleable [8]. Malleable devices are known for their simplicity, affordability, and low risk of mechanical failure, making them easy to use [9]. While, inflatable devices are more complex and costly, but offer greater flexibility and a more natural appearance, with the added benefits of complete detumescence [10].

Satisfaction outcomes following Penile prosthesis implantation (PPI) are an essential measure of success in addressing erectile dysfunction [11], as it reflects not only the mechanical success of the device but also the alignment of patient expectations with outcomes and necessary to tailor treatment approaches. Treatment satisfaction reflects a person's subjective evaluation of the treatment experience, beyond clinical effectiveness. Numerous studies have reported high satis-

faction rates, exceeding 85% among both patients and their partners following the penile prosthesis implantation [12–15]. However, the comparison between the penile prosthesis types requires further evaluation concerning various factors. Patient satisfaction is influenced by multiple factors including ease of use, long-term satisfaction, and clinical characteristics which remain underexplored in comparative studies.

The study aims to address this gap by evaluating the satisfaction outcomes with both types of implants; malleable or inflatable. Secondarily, to identify the associated factors with the satisfaction that can help clinicians to personalize their approach, align with patient's expectations, improve shared decision-making processes, and optimize clinical outcomes.

2. Materials and methods

2.1 Study design and sample

A retrospective cohort study was conducted to compare the satisfaction outcomes and associated factors following two types of penile prosthesis implantation. Patients with erectile dysfunction who had penile prosthesis implantation, at a single tertiary referral center in Saudi Arabia between January 2021 and September 2023 were included in the cohort. Patients receiving either malleable or 3-piece inflatable penile implants were included, regardless of their age. Demographic data including age and region, as well as medical history, comorbidities, duration of erectile dysfunction, body mass index (BMI), past surgical history, and Hemoglobin A1c level were collected. Patients who completed the satisfaction questionnaire was included in the study. Patients with less than 6 months post operative follow-up were excluded. All penile prosthesis implantations were performed by an experienced andrologist under general or regional anesthesia. The type of prosthesis was chosen collaboratively by the patient and the clinician based on patient preference, lifestyle, and clinical factors.

2.2 Operational definition

Patient satisfaction is defined as a subjective evaluation of the treatment trying to capture an individual's personal evaluation of the treatment received. Satisfied term is considered to have a positive experience, indicates that the treatment met their expectations or convenient or overall impact. However dissatisfied were considered to have negative experience, reflects unmet expectations or benefits. The term neither satisfied nor dissatisfied indicates ambivalence or uncertainty in the domain.

2.3 Data collection tool

2.3.1 Modified EDITS questionnaire

Patient satisfaction was assessed six months after implantation using the modified Erectile Dysfunction Inventory of Treatment Satisfaction (EDITS) questionnaire. The EDITS is a valid and reliable tool with a test-retest reliability of 0.98 [16]. The questionnaire has multidimensional structure like feelings about the effectiveness of treatment, ease of use, expectations, continuation of penile prosthesis usage, confidence and the partner satisfaction, based on patient's own perception, as captured through self-reported responses. The options are based on Likert scale; satisfied, neither satisfied nor dissatisfied and dissatisfied.

2.3.2 Patient's subjective perception on penile changes

The study also assessed the patient subjective perception for any observed changes in either penile sensation, size, and girth, as well as satisfaction with penile configuration following the procedure. Questions were used to determine the level of satisfaction with penile configuration: Are you satisfied with the general appearance of your genitalia and the shape of your penis after the implant? Are there any changes in sensation, numbness, or reduced sensation in the phallus? Are there any changes observed in size or girth of the penis?

The study adhered to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist [17] for reporting observational studies, ensuring comprehensive and transparent reporting of study design, methodology and results. The study received permission from the hospital to utilize the data. Ethical approval was not required due to the retrospective nature of the study. Written informed consent was obtained from participants for the use of their data in this study.

2.4 Statistical analysis

Data analyses were performed using SPSS version 20.0 SPSS version 20.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics summarized the data. The numerical variable is reported as mean $\pm$ standard deviation (SD) or, for skewed distributions, as median and interquartile range. Categorical variables were presented as frequencies and percentages. Comparison between the two group's satisfaction were conducted using the Mann-Whitney U test while associations between demographic variables and satisfaction levels were assessed using Chi square or Fisher Exact Test, categories were divided into two major groups. A p-value of < 0.05 was considered statistically significant with a 95% confidence interval (CI).

3. Results

A total of 130 patients were included in the study, where 71 (54.6%) received malleable penile prosthesis (MPP) and 59 patients (45.4%) had inflatable penile prosthesis (IPP). The response rate of the survey was 100%, all the participants responded to the survey. The participants' ages ranged from 17 to 86 years, with the majority falling between 56–75 years. A detailed summary of the participants' demographics and clinical characteristics is provided in Table 1.

The findings of the modified Erectile Dysfunction Inventory of treatment satisfaction (EDITS) for patients with malleable penile prostheses and inflatable penile prostheses showed significant differences in satisfaction questionnaire between the two groups (Table 2). It indicates high overall satisfaction in both the groups, with IPP reported significantly greater satisfaction in penile prosthesis. For the question "How satisfied

TABLE 1. Patient's demographic and medical history.

Characteristics	Total n (%) N = 130	Malleable penile prosthesis n (%) 71 (54.6)	Inflatable penile prosthesis n (%) 59 (45.4)	*p*-value
Age, yr (median, IQR)	63, 12	66, 11	61, 53	0.004
– 15–35	3 (2.3)	2 (2.8)	1 (1.7)	
– 36–55	26 (20.0)	9 (12.6)	17 (28.8)	
– 56–75	91 (70.0)	53 (74.6)	38 (64.4)	
– >75	10 (7.6)	7 (9.8)	3 (5.0)	
Region				
– East	2 (1.5)	1 (1.4)	1 (1.7)	
– Middle	89 (68.5)	52 (73.2)	37 (62.7)	
– North	3 (2.3)	1 (1.4)	2 (3.4)	
– South	34 (26.2)	15 (21.1)	19 (32.2)	
– West	2 (1.5)	2 (2.8)	-	
BMI				
– Less than 30	104 (80.0)	59 (83.1)	45 (76.3)	
– More than 30	26 (20.0)	12 (16.9)	14 (23.7)	
Indication of surgery				
– Refractory ED	115 (88.5)	62 (87.3)	53 (59.8)	
– Priapism	9 (6.9)	6 (8.5)	3 (5.1)	
– Redo	2 (1.5)	1 (1.4)	1 (1.7)	
– Exchange	4 (3.1)	2 (2.8)	2 (3.4)	
Comorbidities				
– None	29 (22.3)	10 (14.1)	19 (32.2)	
– Present	101 (77.7)	61 (85.9)	40 (67.8)	
Past surgical History				
– None	120 (92.3)	63 (88.7)	57 (96.6)	
– Hernia	1 (0.8)	1 (1.4)	-	
– Kidney Transplantation	6 (4.6)	5 (7.0)	1 (1.7)	
– Pelvic Surgery	3 (2.3)	2 (2.8)	1 (1.7)	
Duration of ED, yr (median, IQR)	5, 4	6, 4	5, 4	0.681
– 1–5	66 (50.7)	35 (49.2)	31 (52.5)	
– 6–10	54 (41.5)	32 (45.0)	22 (37.2)	
– 11–15	9 (6.9)	4 (5.6)	5 (8.4)	
– 16–20	1 (0.8)	-	1 (1.7)	
HbA1c (median, IQR) (range: 5–11.8) mean ± SD	7.5, 2.8 7.4 ± 1.6	7.5, 2.2 7.6 ± 1.5	7.0, 3.0 7.2 ± 1.7	0.171
– 5–8.5	97 (74.6)	54 (76.0)	43 (72.8)	
– >8.5	33 (25.3)	17 (23.9)	16 (27.1)	

ED: Erectile Dysfunction; SD: standard deviation; BMI: body mass index; IQR: Interquartile range; HbA1c: Hemoglobin A1c.

TABLE 2. Modified Erectile Dysfunction Inventory of Treatment Satisfaction (EDITS) for malleable and inflatable penile prostheses.

Question	Options	Total	Malleable penile prosthesis	Inflatable penile prosthesis	*p*-value
Overall, how satisfied are you with your penile prosthesis?					
	Very satisfied	109 (83.8)	54 (76.1)	55 (93.2)	0.28
	Neither satisfied nor dissatisfied	8 (6.2)	6 (8.5)	2 (3.4)	0.27
	Very dissatisfied	13 (10.0)	11 (15.5)	2 (3.4)	**0.02**
During the past four weeks, to what degree has the treatment you received for your erectile dysfunction met your expectations?					
	Completely	103 (79.2)	49 (69.0)	54 (91.5)	0.15
	Somewhat	19 (14.6)	16 (22.5)	3 (5.1)	**0.008**
	Not at all	8 (6.2)	6 (8.5)	2 (3.4)	0.27
How likely are you to continue using your penile prosthesis?					
	Very Likely	110 (84.6)	54 (76.1)	56 (94.9)	0.24
	Neither likely nor unlikely	14 (10.8)	12 (16.9)	2 (3.4)	**0.01**
	Very unlikely	6 (4.6)	5 (7.0)	1 (1.7)	0.18
During the past four weeks, how easy was it for you to use this treatment?					
	Very easy	112 (86.2)	59 (83.1)	53 (89.8)	0.68
	Neither easy nor difficult	6 (4.6)	3 (4.2)	3 (5.1)	0.82
	Very difficult	12 (9.2)	9 (12.7)	3 (5.1)	0.16
How confident has your penile prosthesis made you feel about your ability to engage in sexual activity?					
	Very confident	110 (84.6)	56 (78.9)	54 (91.5)	0.43
	It has had no impact	15 (11.5)	12 (16.9)	3 (5.1)	**0.04**
	Considerably less confident	5 (3.8)	3 (4.2)	2 (3.4)	0.83
Overall, how satisfied do you believe your partner is with the effects of this treatment for your erectile dysfunction?					
	Very satisfied	104 (80.0)	51 (71.8)	53 (89.8)	0.25
	Neither satisfied nor dissatisfied	9 (6.9)	7 (9.9)	2 (3.4)	0.18
	Very dissatisfied	17 (13.1)	13 (18.3)	4 (6.8)	0.07

Bold are significant values.

are you with your penile prosthesis?", a significant difference was observed in the "Very dissatisfied" response between MPP and IPP ($p = 0.02$). For the question "To what degree has the treatment you received for your erectile dysfunction met your expectations?", a significant difference was found in the "Somewhat" response ($p < 0.05$). Regarding the statement "Would you continue using the penile prosthesis?", a significant difference was observed in the "Neither likely nor unlikely" response ($p = 0.01$). For the question related to confidence "Has the penile prosthesis improved your ability to engage in sexual activity?", a significant difference was noted in the response "It has had no impact" between MPP and IPP ($p = 0.04$).

No statistically significant differences were observed, regarding ease of use and partner satisfaction.

In questionnaire responses, 92.3% of IPP patients expressed overall satisfaction, compared to 76.1% of MPP patients. In terms of expectation fulfillment, 91.5% of IPP recipients reported that the treatment met their expectations, in contrast to MPP patients, reported 69%. Furthermore, when asked about the likelihood of continuing to use the prosthesis, 94.9% of IPP were very likely to continue, compared to 76.1% in the MPP patients. Despite these differences, both groups reported ease of use, with no significant difference in the ease of using the device. IPP patients also reported greater confidence 91.5% in engaging in sexual activity. Moreover, the response on the patient's subjective view of partner satisfaction on the effects of penile prosthesis for the erectile dysfunction, a higher percentage of IPP patients (89.8%) believed their partners were very satisfied compared to 71.8% in MPP recipients.

These findings suggest that while both types of prosthesis have high satisfaction rates, IPP patients tended to report better overall satisfaction, better meeting of expectations and higher partner satisfaction.

The finding on penile sensation, length and girth changes postoperatively showed that most patients observed no changes in penile sensation (Table 3), however, 21.1% of MPP patients and 13.6% of IPP patients observed a decrease in length whereas 8.5% MPP and 6.8% IPP recipient observed girth reduction. In between the two types of prosthesis, these differences was not statistically significant ($p = 0.31$, $p = 0.75$). However, the association was found significant when chi square was analyzed on the patients who perceived a reduction in penile length were more likely to report dissatisfaction

TABLE 3. Patient's subjective perception of penile changes.

Variables	Total n (%) N = 130	Malleable penile prosthesis n (%) 71 (54.6)	Inflatable penile prosthesis n (%) 59 (45.4)	*p*-value
Sensation				
– Intact	128 (98.5)	70 (98.6)	58 (98.3)	0.988
– Decreased	2 (1.5)	1 (1.4)	1 (1.7)	0.907
Length				
– No Change	107 (82.3)	56 (78.9)	51 (86.4)	0.635
– Decreased	23 (17.7)	15 (21.1)	8 (13.6)	0.317
Girth				
– No Change	120 (92.3)	65 (91.5)	55 (93.2)	0.919
– Decreased	10 (7.7)	6 (8.5)	4 (6.8)	0.752
Configuration				
– Satisfied	119 (91.5)	60 (84.5)	59 (100.0)	0.359
– Not Satisfied	11 (8.5)	11 (15.5)	-	0.002

(p = 0.02). Treatment satisfaction with penile configuration, significant difference (p = 0.002) were observed between the groups, IPP patients (100%) expressing satisfaction compared to MPP group, which have 15.5% dissatisfaction with the appearance of genitalia and shape of the penis following the implant.

The association of clinical factors with modified EDITS questionnaire was analyzed using Fisher exact test. Significant associations were found only in MPP group with some of the clinical factors, like BMI (p = 0.03, p = 0.01), Comorbidities (p = 0.05) and past surgical history (p = 0.04). No significant associations were identified in the inflatable penile implant group (Table 4).

Table 5 further provides the detailed evaluation of above association of variables with the modified EDITS. The observed counts and percentages for satisfaction and dissatisfaction was explored in the variables where significant *p*-value was found among recipients of malleable penile prosthesis, categorized by various clinical factors (comorbidities, BMI, and past surgical history). Patients with BMI less than 30 reported more satisfied responses in the expectation domain as well as in partner satisfaction. Patients who do not have any comorbidities reported 0 response of dissatisfaction. Furthermore, it is observed that individuals with past surgical history including hernia, kidney transplantation or pelvis surgery were intervened with malleable prosthesis and found satisfaction with implantation, as no response of dissatisfaction was reported among the individuals who had past surgical history in the MPP group.

4. Discussion

This study compared the satisfaction levels and associated factors between malleable penile prostheses (MPP) and inflatable penile prostheses IPP among patients with erectile dysfunction. Overall, patients with IPP reported higher satisfaction rates (93.2% *vs.* 76.1%), greater alignment with expectations (91.5% *vs.* 69%), and higher partner satisfaction (89.8% *vs.* 71.8%). Additionally, IPP patients expressed more confidence in engaging in sexual activity and were more likely to continue using the prosthesis. Among clinical factors, BMI less than 30 was significantly associated with expectations and partner satisfaction in the MPP group, underscoring its potential impact on outcomes.

TABLE 4. Association of demographic variables with satisfaction in both groups.

Variable	Malleable Penile Prosthesis			Inflatable Penile Prosthesis		
	Satisfaction	Expectation	Partner Satisfaction	Satisfaction	Expectation	Partner Satisfaction
	p-value					
Age (yr)	0.32	0.21	0.25	0.45	0.13	0.18
BMI (Less than 30, More than 30)	0.30	**0.03**	**0.01**	0.23	0.66	0.56
Comorbidities (Yes, no)	**0.05**	0.11	0.42	0.20	0.47	0.63
Past Surgical Hx (Present, absent)	0.09	**0.04**	0.27	0.86	0.83	0.80
Duration of ED (yr)	0.67	0.63	0.68	0.64	0.57	0.51

ED: Erectile Dysfunction; BMI: body mass index. Bold means significant.

TABLE 5. Observed count in each category among malleable penile prosthesis.

Variable	Category	Satisfied* %	Dissatisfied** %	*p*-value
Comorbidities				
	Yes	44 (61.9)	17 (23.9)	0.05
	No	10 (14.0)	0	
BMI (Expectations)				
	Less than 30	44 (61.9)	15 (21.1)	0.03
	More than 30	5 (7.0)	7 (9.8)	
Past Surgical Hx				
	None	41 (57.7)	22 (30.9)	0.04
	Hernia	1 (1.4)	0	
	Kidney Transplantation	5 (7.0)	0	
	Pelvic Surgery	2 (2.8)	0	
BMI (Partner Satisfaction)				
	Less than 30	46 (64.7)	13 (18.3)	0.01
	More than 30	5 (7.0)	7 (9.8)	

**Includes very satisfied responses.*
***Includes neither satisfied nor dissatisfied as well as dissatisfied responses.*
BMI: body mass index.

The findings align with previous studies reporting high satisfaction rates for both MPP and IPP, highlighting the efficacy of penile prostheses in addressing ED. Luna *et al*. [18] evaluated satisfaction following inflatable penile prosthesis implantation. However, their study did not include a comparison between different types of implants, and a different questionnaire was utilized to assess outcomes. They reported that 4 patients (3.7%) experienced a reduction in both length and girth, while 60.5% reported decrease in penile size after the procedure. In contrast, our study observed slightly different outcomes within the IPP group; with 6 patients (8.5%) reporting a decrease in girth and 15 patients (21.1%) reported a decrease in length of phallus. In our study, perceived reduction in penile length emerged as a significant contributor to dissatisfaction (p = 0.02), it emphasize the importance of preoperative counseling regarding potential changes in penile appearance, including length and girth. Ensuring patients have realistic expectations and discussing these possibilities in detail may help reduce dissatisfaction rates.

A similar study [19] evaluated the patient satisfaction after inflatable penile prostheses implantation and demonstrated high satisfaction in patient and partner satisfaction. Moreover, a study [20] evaluated patient and their partner satisfaction along with determinants with satisfaction among those who underwent for Penile Prosthesis Implantation PPI, regardless of type. In contrast to our study where comparison with respect to types has been explored. It was found high satisfaction and significantly correlated patient's satisfaction with implanted penis size and patients and partners attitude towards PPI.

A study [21] evaluated the determinants of patient satisfaction after penile prosthesis implant, including patients with Peyronie's disease (PD) and Radical prostatectomy (RP). It found that patients with PD, a history of RP and BMI more than 30 kg/m^2 scored significantly lower on EDITS questionnaire compared to the general implant population. However, the study did not compare satisfaction between different types of implants. Contrary to our study, we observed significant associations between BMI (less than 30 kg/m^2) with expectations and partner satisfaction for patients with MPP (p = 0.03, p = 0.01), though these individuals did not have PD or RP.

The association of BMI with satisfaction outcomes in MPP group suggests that patient-specific factors should guide prosthesis selection. This study reinforces the importance of personalized treatment planning and shared decision-making to align patient's expectation with clinical outcomes. In the broader context, this study adds to the growing body of evidence on penile prostheses, emphasizing the role of patient reported outcomes in evaluating treatment outcomes.

A systematic review [22] comparing malleable and inflatable penile prostheses revealed high patient satisfaction with both types, though some studies reported higher satisfaction rates with inflatable devices. Specifically, the inflatable group demonstrated higher overall satisfaction and a greater likelihood of continued use compared to malleable (p = 0.013 and p = 0.018, respectively), similar to our study. While other responses from the EDITS questionnaire suggested higher satisfaction with inflatable, but these differences were not statistically significant. Frydman *et al*. [23] also assessed the penile prosthesis long-term outcomes using EDITS questionnaire however the options are based on five categories instead of three as observed in our study. They found 91 (71.1%) satisfied according to EDITs scale, though our study found 55 patients (93.2%) highly satisfied in inflatable penile prosthesis implant.

Study have posited that elevated Hemoglobin A1c (HbA1c) levels could increase the risk of postoperative complications particularly infections, in penile prosthesis surgeries. For instance, a large insurance claims analysis suggested that poorly controlled diabetes, as indicated by elevated HbA1c, may

predispose patients to complications like infections, leading to revision surgeries [24]. Similarly, a study reported [25] a higher infection rate among diabetic patients undergoing penile implants compared to non-diabetic counterparts, proposing that optimizing glycemic control pre-operatively might reduce this risk. Contrary to these findings, our study observed no complications even amongst participants with HbA1c levels exceeding 8.5, with a range from 5 to 11.8 and a mean 7.4 $\pm$ 1.6. Notably, 25.3% of our cohort has HbA1c >8.5, yet neither mechanical nor infectious complications were documented. This discrepancy may underscore advancements in surgical techniques, infection control measures, and implant technology, which could mitigate risks previously attributed to poor glycemic control.

Our findings are generally in line with the recommendations of the American Urological Association (AUA) guidelines [26], which highlight careful selection of inflatable and malleable devices according to individual needs and comprehensive counseling to align postoperative outcomes with patient and partner expectations. In accordance with the guidelines, we found that IPP recipients were more satisfied, more in compliance with expectations, and had more satisfied partners than MPP recipients. Our findings support the guidelines' observation that IPP typically results in higher satisfaction rates, but that MPP devices remain suitable for selected patients, which our results also support. Additionally, the reported reductions in penile length and girth in a subset of patients echo the guideline's recommendation to address these possibilities preoperatively. Although BMI is not specifically mentioned in the guidelines, our discovery that MPP patients who had a BMI below 30 reported higher levels of satisfaction contributes to the discussion about patient-specific selection criteria. Though the absence of postoperative complications among patients with increased HbA1c may be due to advancements in surgical technique not specifically covered in current guidelines, no significant differences with current standards were found.

The clinical implication of this study emphasizes the importance of patient-specific prosthesis selection. While inflatable devices are associated with higher satisfaction, malleable implants remain a viable option for certain populations, particularly those with multiple comorbidities. Shared decision making is essential to ensure that patients receive the device best suited to their needs and expectations.

Despite its strength that study had a diverse tertiary center cohort with a six-month follow-up for assessing adaptation and satisfaction, but has it some limitation as well, that it was conducted at a single tertiary center in Saudi Arabia, which may limit the geographic and ethnic diversity of participants and affect the generalizability of finding to other settings. Additionally, the retrospective design, absence of specific questionnaire for MPP and IPP satisfaction, perceived partner satisfaction by patient, and potential recall bias was also the limitation of the study.

Future studies should build on the study findings by exploring device longevity and complications to provide a more comprehensive assessment of prosthesis performance. Multicenter prospective studies with larger cohorts could enhance generalizability and minimize biases. Research into innovative prosthetics designs or modifications addressing the limitations of current devices could also be beneficial.

5. Conclusions

In conclusion, both malleable and inflatable penile prostheses provide over all high levels of patient satisfaction. However, inflatable penile prostheses may offer superior satisfaction outcomes, especially in meeting with expectations, continuation of treatment, confidence, and with penile configuration postoperatively. Patients who perceived a reduction in penile length were more likely to report dissatisfaction, especially in the MPP group. Clinical factors such as BMI, comorbidities and past surgical history influenced satisfaction outcomes, particularly in the malleable group. Patient characteristics and clinical history should be considered when selecting the type of prosthesis to optimize individual satisfaction.

ABBREVIATIONS

ED, erectile dysfunction; BMI, body mass index; EDITS, Erectile Dysfunction Inventory of Treatment Satisfaction; PPI, penile prosthesis implantation; IPP, inflatable penile prosthesis; MPP, malleable penile prosthesis; STROBE, Strengthening the Reporting of Observational Studies in Epidemiology; SD, standard deviation; PD, Peyronie's disease; RP, Radical prostatectomy; HbA1c, Hemoglobin A1c; AUA, American Urological Association; CI, Confidence Interval; IQR, Interquartile Range.

AVAILABILITY OF DATA AND MATERIALS

The data presented in the current study are available on reasonable request from the corresponding author.

AUTHOR CONTRIBUTIONS

BAB—designed the research study. AK, KA, AAlh, AB—defined methodology and validate the procedure. HSET—analyze the data. AAlm, KB, MA, AAlt—supervised the project and wrote the manuscript. All authors proofread the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was conducted in accordance with the Declaration of Helsinki. The requirement for ethical approval was waived by Prince Sultan military medical city in Riyadh. Permission was taken from hospital to use the data and written informed consent was obtained from participants for the use of their data in this study.

ACKNOWLEDGMENT

We would like to thanks all the participants and the department for their cooperation in completion of this study.

FUNDING

This research received no external funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

[1] Greenberg DR, Richardson MT, Tijerina JD, Bass MB, Eisenberg ML. The quality of systematic reviews and meta-analyses in erectile dysfunction treatment and management published in the sexual medicine literature. The Journal of Sexual Medicine. 2019; 16: 394–401.

[2] Wang CM, Wu BR, Xiang P, Xiao J, Hu XC. Management of male erectile dysfunction: from the past to the future. Frontiers in Endocrinology. 2023; 14: 1148834.

[3] Bajic P, Mahon J, Faraday M, Sadeghi-Nejad H, Hakim L, McVary KT. Etiology of erectile dysfunction and duration of symptoms in patients undergoing penile prosthesis: a systematic review. Sexual Medicine Reviews. 2020; 8: 333–337.

[4] Elterman DS, Bhattacharyya SK, Mafilios M, Woodward E, Nitschelm K, Burnett AL. The quality of life and economic burden of erectile dysfunction. Research and Reports in Urology. 2021; 13: 79–86.

[5] La Croce G, Schifano N, Pescatori E, Caraceni E, Colombo F, Bettocchi C, *et al*. Which patient may benefit the most from penile prosthesis implantation? Andrology. 2022; 10: 1567–1574.

[6] Chung E, Bettocchi C, Egydio P, Love C, Osmonov D, Park S, *et al*. The International Penile Prosthesis Implant Consensus Forum: clinical recommendations and surgical principles on the inflatable 3-piece penile prosthesis implant. Nature Reviews Urology. 2022; 19: 534–546.

[7] Wang VM, Levine LA. Safety and efficacy of inflatable penile prostheses for the treatment of erectile dysfunction: evidence to date. Medical Devices: Evidence and Research. 2022; 15: 27–36.

[8] Burnett AL, Edwards NC, Barrett TM, Nitschelm KD, Bhattacharyya SK. Addressing health-care system inequities in the management of erectile dysfunction: a call to action. American Journal of Men's Health. 2020; 14: 1557988320965078.

[9] Chung E, Wang J. State-of-art review of current malleable penile prosthesis devices in the commercial market. Therapeutic Advances in Urology. 2023; 15: 17562872231179008.

[10] Kılıçarslan H, Kaynak Y, Gökcen K, Coşkun B, Kaygısız O. Comparison of patient satisfaction rates for the malleable and two piece-inflatable penile prostheses. Turkish Journal of Urology. 2014; 40: 207–210.

[11] Minervini A, Ralph DJ, Pryor JP. Outcome of penile prosthesis implantation for treating erectile dysfunction: experience with 504 procedures. BJU International. 2006; 97: 129–133.

[12] Barton GJ, Carlos EC, Lentz AC. Sexual quality of life and satisfaction with penile prostheses. Sexual Medicine Reviews. 2019; 7: 178–188.

[13] Jorissen C, De Bruyna H, Baten E, Van Renterghem K. Clinical outcome: patient and partner satisfaction after penile implant surgery. Current Urology. 2019; 13: 94–100.

[14] Manfredi C, Fortier É, Faix A, Martínez-Salamanca JI. Penile implant surgery satisfaction assessment. The Journal of Sexual Medicine. 2021; 18: 868–874.

[15] Habous M, Tal R, Tealab A, Aziz M, Sherif H, Mahmoud S, *et al*. Predictors of satisfaction in men after penile implant surgery. The Journal of Sexual Medicine. 2018; 15: 1180–1186.

[16] Althof SE, Corty EW, Levine SB, Levine F, Burnett AL, McVary K, *et al*. EDITS: development of questionnaires for evaluating satisfaction with treatments for erectile dysfunction. Urology: The Gold Journal. 1999; 53: 793–799.

[17] Von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP; STROBE Initiative. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. The Lancet. 2007; 370: 1453–1457.

[18] Luna E, Rodriguez D, Barrios D, Hernandez H, Bianco F, Gheiler E. Evaluation of quality of life after inflatable penile implantation and analysis of factors influencing postsurgery patient satisfaction. The Journal of Sexual Medicine. 2022; 19: 1472–1478.

[19] Vakalopoulos I, Kampantais S, Ioannidis S, Laskaridis L, Dimopoulos P, Toutziaris C, *et al*. High patient satisfaction after inflatable penile prostheses implantation correlates with female partner satisfaction. The Journal of Sexual Medicine. 2013; 10: 2774–2781.

[20] Andrianne R, Pairoux JF, Debois C, Mormont C, Coppens L, Kempeneers P. Patient satisfaction and retrospective evaluation of benefits of penile prosthetic implantation surgery: the OEDIPUS study. Annals of Medicine and Medical Research. 2018; 1: 1002.

[21] Akin-Olugbade O, Parker M, Guhring P, Mulhall J. Determinants of patient satisfaction following penile prosthesis surgery. The Journal of Sexual Medicine. 2006; 3: 743–748.

[22] Alamri H, Alsharyoufi M, Alkhathami F, Alsayed R, Alzaidy A, Albejawi A, *et al*. Malleable versus inflatable penile prosthesis: systematic review. International Journal of Medicine in Developing Countries. 2023; 7: 1549–1555.

[23] Frydman V, Pinar U, Abdessater M, Akakpo W, Grande P, Audouin M, *et al*. Long-term outcomes after penile prosthesis placement for the management of erectile dysfunction: a single-centre experience. Basic and Clinical Andrology. 2021; 31: 4.

[24] Chen T, Li S, Eisenberg ML. The association between hemoglobin A1c levels and inflatable penile prosthesis infection: analysis of US insurance claims data. The Journal of Sexual Medicine. 2021; 18: 1104–1109.

[25] Haobus M, Almannie R, Aziz M, Farag M, Ralph D, Mulhall J, *et al*. Correlation of fasting blood sugar at the time of penile prosthesis surgery with the level of glycated hemoglobin and the outcome of surgery. African Journal of Urology. 2021; 27: 90.

[26] Burnett AL, Nehra A, Breau RH, Culkin DJ, Faraday MM, Hakim LS, *et al*. Erectile dysfunction: AUA guideline. The Journal of Urology. 2018; 200: 633–641.

How to cite this article: Bander A Binjabaan, Abdullah Khawaji, Khalaf Alshammrani, Abdulaziz Alhazzaa, Abdalatiff Bedaiwi, Hossam S El-Tholoth, *et al*. Comparative insights into patient satisfaction and its determinants in malleable and inflatable penile prostheses. Journal of Men's Health. 2025; 21(12): 37-44. doi: 10.22514/jomh.2025.140.