



Evaluate the knowledge, attitudes, and practices of emergency medicine physicians in managing priapism cases—a cross section study

Sameh Saad Aziz, MD^{1,2}, Walaa Adel Siam, MD¹, Yasser Salem N. Saleh, MD^{3,4},
Asmaa A. Hashem, MD⁵, Altaf Bandy, PhD⁶ , Saleh Salem Bahaj, PHD^{7,*},
Amany Ali Essa Elshemally, MD⁸ 

¹Department of Emergency Medicine, Faculty of Medicine, Suez Canal University, Ismailia, 41522, Egypt

²Department of Emergency Medicine, Faculty of Medicine, Qassim University, Al-qassim, 52571, Saudi Arabia

³Department of Dermatology, Venereology, and Sexology, Faculty of Medicine, Suez Canal University, Ismailia, 41522, Egypt

⁴Dermatology, Department of Medicine, College of Medicine, Shaqra University, Shaqra, 11911, Saudi Arabia

⁵Department of Medical Microbiology and Immunology, Faculty of Medicine, Suez Canal University, Ismailia, 41522, Egypt

⁶Department of Community Medicine, College of Medicine, Shaqra University, Shaqra, 11961, Saudi Arabia

⁷Department of Microbiology and Immunology, Faculty of Medicine and Health Sciences, Sana'a University, Sana'a, 72738, Yemen

⁸Department of Emergency Medicine, Faculty of Medicine, Kafr Elsheikh University, Kafr Elsheikh, 33516, Egypt

*Corresponding author: Department of Microbiology and Immunology, Faculty of Medicine and Health Sciences, Sana'a University, Sana'a, Yemen.
Email: salehbahaj2025@hotmail.com

Abstract

Introduction: Priapism is an emergency condition treated by emergency medicine (EM) physicians and urologists/andrologists. EM physicians are the first-line healthcare providers for this condition, and their knowledge, attitudes, and practices regarding priapism remain unclear.

Aim: The aim of this study was to understand emergency physicians' perspectives regarding priapism to help re-structure EM programs.

Methods: This cross-sectional study on knowledge, attitude, and practice (KAP) surveyed emergency physicians from a university and other hospitals in the Ismailia governorate, Egypt. A validated questionnaire was sent via an online e-survey following the CHEERIES guidelines. Bivariate analysis of demographic characteristics and KAP was performed using odds ratios and 95% confidence intervals. Spearman's rho was used to measure the correlation between knowledge, attitude, and practice. A $P < 0.05$ was considered statistically significant.

Main Outcome Measure: Emergency physicians completed an e-survey of their knowledge, attitudes, and practices regarding priapism.

Results: A total of 149 participants were surveyed. 140 (93%) of EM physicians believed priapism was a medical emergency. 139 (93%) respondents were aware of the long-term complications of priapism. Further, 136 (91.3%) respondents strongly supported the multidisciplinary approach. Of these, 79 (53%) gave intra-cavernous sympathomimetic therapy and 75 (50.3%) did aspiration with irrigation. EM physicians <30 years of age had significantly better knowledge about priapism (OR = 2.47 (1.23–4.96); $P = 0.01$). Similarly, young physicians had better attitudes (OR = 3.24 (1.31–8.02); $P = 0.01$) and female physicians demonstrated better practice (OR = 3.36 (1.65–6.82); $P = 0.001$) toward priapism. A significant positive correlation was observed between knowledge and attitude ($r = 0.487$), and knowledge and practice ($r = 0.281$) at $P < 0.001$.

Clinical Implications: EM physicians agreed that EM-based therapy is appropriate for straightforward cases of acute ischemic priapism. Existing educational programs for EM physicians may not adequately equip them in handling priapism in practice.

Strengths and Limitations: This study is the first to investigate EM knowledge, attitude, and practice (KAP) for priapism handling. The study identified areas for improvement in this regard. However, the cross-sectional design, single governorate setting, and self-administered questionnaire limit its generalizability.

Conclusion: Despite the satisfactory knowledge and attitudes of EM physicians regarding priapism and infection control, this study identified potential areas for improvement in the use of guidelines on invasive treatment.

Keywords: priapism; knowledge; attitude; practice; emergency medicine.

Introduction

Priapism is a condition in which the penis sustains a protracted, stiff erection for 4 hours or more in the absence of proper excitation.¹ A population-based, retrospective cohort analysis reported an incidence of 1.5 per 100 000 person-years and 2.9 per 100 000 person-years for men aged 40 and older.^{2,3} This critical health issue can affect any age group

and has a significant social and financial impact.⁴ It primarily affects adults aged between 20 and 40 years, with impotence rates ranging from 35% to 60%.⁵ It is a significant issue influencing health care systems, with longer hospital stays and increased expenses and has negative influence on patients' aspects of life.⁶ Three categories of priapism are identified: ischemic, non-ischemic, and stuttering.⁷ Ischemic priapism is

Received: October 27, 2024. Revised: December 9, 2024. Accepted: January 15, 2025

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the most frequent priapism variation, accounting for nearly 95% of all identified cases.⁸ Hematological disorders, such as sickle cell disease, hyper-viscosity syndromes linked with myeloproliferative diseases, hypercoagulable states, trauma, neoplasms, neurologic problems, and drugs such as Viagra, are thought to account for ~40% of priapism.⁹ Ischemic priapism is a urological/andrological emergency that requires rapid intervention, such as surgical needle aspiration to eliminate excess blood, saline flushing into penile veins to enhance blood flow, surgical shunting to vent blood from the penis, and addressing underlying causes.¹⁰ Priapism is primarily addressed by urologists/andrologists, but emergency medicine (EM) physicians may be the primary line of care. Therefore, EM physicians must be skilled in managing this condition.¹¹ Despite its inclusion in the EM curriculum of clinical practice, the perception of priapism among EM physicians is not well documented. In addition, urologists/andrologists and emergency physicians view their roles in controlling priapism. Given that patients with priapism require collaborative care, understanding the preferences of each professional is critical.¹²

Hence, Urologists/andrologists and EM physicians are expected to support the emergency management of uncomplicated priapism cases. We hypothesized that existing learning models may not adequately prepare EM physicians for handling priapism cases in their routine practice. Our research question is, “Do existing learning models adequately prepare emergency medicine physicians to handle priapism cases in routine practice?”

Materials and methods

Design and setting

This cross-sectional study evaluated the knowledge, attitudes, and practices of EM physicians regarding priapism management. The participants were surveyed from university hospitals and other hospitals in Ismailia from April 2024 to September 2024.

Study population

The study included EM physicians from various healthcare settings, including university hospitals, general hospitals, central hospitals, and specialized centers with different professional levels (residents, specialists, and consultants). EM physicians with at least 1 year of experience who were willing to participate were included in this study. Experience of less than one year, unwillingness to participate and absence of EM physicians on leave were excluded.

Data collection tools and methods

Respondents were asked to complete a self-administered questionnaire produced by the researchers. The questionnaire was created after reviewing previous studies that were published and validated by experts.

A validated questionnaire with four sections was administered to the participants. In section 1, data on demographic characteristics and work experience. Sections 2, 3, and 4 assessed the knowledge, attitude, and practice of priapism respectively, using Likert scale and multiple-choice questions. Ten, six, and seven questions evaluated the knowledge, attitude, and practice of EM physicians. The final section of the questionnaire dealt with infection control practices and

contained five questions. The overall score was obtained by adding correct answers to knowledge questions and positive answers to attitude questions, and then divided by the maximum score and multiplied by 100 to obtain the percentage score. The knowledge percent score was divided into three categories: poor (scoring 0–25), fair (score 26–50), and good (score 51–100). Similarly, the attitude percent score was divided into negative, fair, and positive categories using the same cut-offs. This questionnaire was pre-tested on 30 participants, and the validity and internal consistency were analyzed. The questionnaire was modified until a Cronbach's alpha score of >0.70 for knowledge (0.76), attitude (0.74), and practice (0.78) was obtained. The data of the 30 participants were excluded from the final survey.

The questionnaire was developed as an e-survey and followed the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) guidelines for conducting internet e-surveys. The introductory page details the title, purpose of the study, confidentiality, and voluntarily of the study. Furthermore, statements on the risks and benefits of participation were provided. The time required to complete the questionnaire and contact information of the principal investigator were provided. A consent statement was provided. Participants who provided consent could proceed to the subsequent sections of the questionnaire.

Ethics and informed consent

The research protocol was approved by the institutional review board (IRB) of the Suez Canal University of Ismailia governante (number 5654) on March 31, 2024. Informed consent was obtained from each participant. The first page of the survey contained all necessary information according to the CHERRIES checklist on an electronic e-survey (Improving the quality of Web surveys: the CHERRIES | EQUATOR Network). These details were presented on the first page of the survey questionnaire after which consent was provided. Participants who provided consent could proceed to the next section of the survey.

Our study utilized the KAP structures, which are commonly used in medical education and behavior research. The model-guided questionnaire design, data collection, analysis, and interpretation (refer to [Figure 1](#)).

Statistical analysis

The data were analyzed using SPSS version 20.0 for Windows (SPSS, Inc., Chicago, IL, USA). Frequencies and percentages were calculated for categorical variables, such as gender, age, and workplace. Bivariate analysis of demographic characteristics and KAP were performed using odds ratios and 95% confidence intervals. Spearman's rho was used to measure the correlation between knowledge, attitude, and practice. Demographic characteristics, knowledge, attitude, and practices of priapism were described using descriptive statistics, including percentages (%), frequencies, mean, and standard deviation (SD). A $P < 0.05$ was considered statistically significant.

Results

Baseline demographic characteristics of the participants

The total number of participants in this study was 149, 83 (55.7%), were females, and the rest were males. 68 (45.6%),

Demographics and personal characteristic

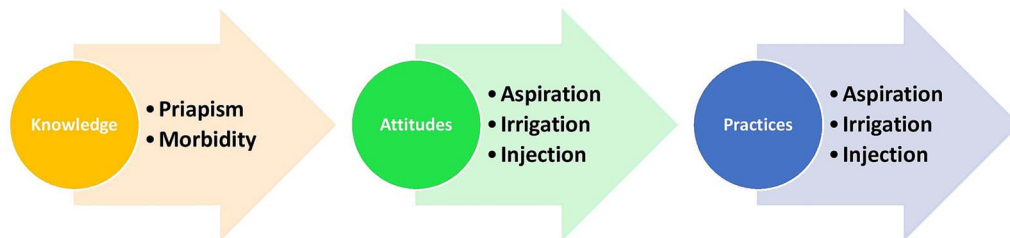


Figure 1. The conceptual framework of the study.

Table 1. Demographic characteristics of the study population (n = 149).

Characteristic	Number (n)	Percent (%)	P-value
Gender			
Female	83	55.7%	0.16
Male	66	44.3%	
Age group			
30–40 years	68	45.6%	< .001 ^a
40–50 years	20	13.4%	
50–60 years	3	2.1%	
< 30 years	58	38.9%	
Workplace			
Central hospital	14	9.4%	< .001 ^a
General hospital	30	20.13%	
Specialized center	21	14.09%	
University hospital	84	56.38%	
Duration of experience			
10–15 years	37	24.8%	< .001 ^a
5–10 years	29	19.5%	
<5 years	63	42.3%	
>15 years	20	13.4%	

^a Significant

were aged between 30 and 40 years and were statistically ($P = <.001$) greater in number compared to other age groups. Eighty-four (56.38%) of participants worked in university hospitals and 63 (42.3%) had less than five years of experience, both variables showed a statistical significance ($P < 0.00$). (Table 1).

Knowledge of priapism

All knowledge item questions were significantly agreed upon by the EM physicians. One hundred and forty (93%) EM physicians believed that priapism is a medical emergency, and there was a strong agreement regarding the classification and causes of priapism $P < 0.001$. A maximum of 139 (93%) respondents expressed awareness of the long-term complications of erectile dysfunction. In addition, the EM physicians strongly agreed on the early diagnosis and management (Table 2).

Attitude toward priapism

It was agreed upon by 117 EM physicians that there is a possible risk of long-term sequelae, such as erectile dysfunction,

due to priapism. Further, 136 (91.3%) respondents strongly supported the multidisciplinary approach, and 130 (87.2%) felt a need for special training in the management of priapism. The overwhelming majority underlined the need for early consultation of the urologist/andrologist in the treatment. ($P < 0.001$). Table 3.

Priapism practices

Most of the EM physicians managed priapism with laboratory tests 114 (76.5%) and conservative measures 104 (69.8%); $P < 0.001$. 79 (53%) gave intra-cavernous sympathomimetics and 75 (50.3%) did aspiration with irrigation. The majority [134 (89.9%)] of EM physicians consulted a urologist, and 116 (77.9%) provided follow-up care; $P < 0.001$. (Table 4).

Infection control practices

145 (97.32%) washed hands before and after procedures, and 119 (79.9%) followed PPE use as infection control practice ($P < 0.001$). 142 (95.3%), regarded the importance of PPE use, while 145 (97.32%) believed that EM physicians should have a good knowledge of infection control practices. (Table 5).

Bi-variate analysis between demographic characteristics and KAP

EM physicians aged 30 years had significantly better knowledge about priapism (OR = 2.47 [1.23–4.96]; $P = 0.01$). Similarly, young EM physicians had better attitudes (OR = 3.24 [1.31–8.02]; $P = 0.009$). Female EM physicians demonstrated better practice of the same (OR = 3.36 [1.65–6.82]; $P = 0.001$). Workplace and experience were not significantly associated with knowledge, attitude or practice (Table 6).

There was a significant positive correlation between knowledge and attitude ($r = 0.487$), and knowledge and practice ($r = 0.281$) at $P < 0.001$. However, attitude and practice did not show a significant association ($P = 0.743$) (Table 7).

Discussion

Priapism is an emerging medical disorder characterized by an uncontrollably painful erection that lacks sexual stimulation, resulting in penile fibrosis and impotence.^{13,14} Rapid interaction with this emergency, especially during the first 4 golden

Table 2. Knowledge of priapism among emergency physicians.

Knowledge items	Strongly Disagree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)	P value
Priapism is a medical emergency that requires immediate intervention	0 (0%)	3 (2%)	6(4%)	44 (29%)	96 (64%)	<0.001 ^a
Priapism can be categorized into ischemic and non-ischemic	0 (0%)	1 (0.61%)	13 (8.72%)	59 (39.597%)	76 (51. %)	< .001 ^a
The most common cause of priapism is idiopathic	9 (6.04%)	19 (12.75%)	36 (24.16%)	62 (41.61%)	23 (15.44%)	< .001 ^a
Sickle cell disease is a common underlying condition associated	1 (0.67%)	4 (2.68%)	29 (19.4%)	60 (40.26%)	55 (36.91%)	< .001 ^a
Trauma to the genitals is a potential cause of priapism	0 (0%)	20 (13.4%)	28 (18.8%)	71 (47.7%)	30 (20.1%)	< .001 ^a
Intracavernous injections for erectile dysfunction can lead to priapism	0 (0%)	3 (2.01%)	28 (18.79%)	69 (46.31%)	49 (32.89%)	< .001 ^a
A thorough medical history and physical examination are important in evaluation of priapism	0 (0%)	2 (1.34%)	8 (5.37%)	44 (29.53%)	95 (63.76%)	< .001 ^a
Aspiration and irrigation of the corpora cavernosa is the first line of treatment in priapism	1 (0.67%)	14 (9.39%)	40 (26.84%)	66 (44.29%)	28 (18.79%)	< .001 ^a
Surgical shunting procedures are typically reserved for refractory priapism	0 (0%)	4 (2.68%)	36 (24.16%)	79 (53.02%)	30 (20.13%)	< .001 ^a
Priapism can lead to long-term complications	0 (0%)	0 (0%)	9 (6.04%)	74 (49.66%)	66 (44.3%)	< .001 ^a

^aSignificant**Table 3.** Attitude of emergency physicians towards priapism.

Attitude items	Strongly Disagree n(%)	Disagree n(%)	Neutral n(%)	Agree n(%)	Strongly Agree n(%)	P value
Priapism cases are challenging to manage in the emergency department	2 (1.34%)	15 (10.07%)	15 (10.07%)	70 (46.98%)	47 (31.54%)	<.001 ^a
Priapism requires a multidisciplinary approach	1 (0.67%)	1 (0.67%)	11 (7.38%)	66 (44.29%)	70 (46.98%)	< .001 ^a
Emergency physicians should receive specialized training in priapism management	0 (0%)	5 (3.36%)	14 (9.4%)	75 (50.34%)	55 (36.91%)	< .001 ^a
Effective communication with the patient and reassurance are important in management	0 (0%)	0 (0%)	5 (3.36%)	52 (34.90%)	92 (61.74%)	< .001 ^a
Emergency physicians should be proactive in addressing potential complications	0 (0%)	1 (0.67%)	10 (6.71%)	71 (47.65%)	67 (44.96%)	< .001 ^a
Timely referral to an andrologist/urologist is crucial for optimal outcomes	0 (0%)	0 (0%)	4 (2.68%)	43 (28.86%)	102 (68.46%)	< .001 ^a

^aSignificant**Table 4.** Practice of emergency physicians towards priapism.

Practice items	Yes n(%)	No n(%)	P value
How often do you perform a thorough physical examination in cases of priapism	87 (58.4%)	62 (41.6%)	0.041 ^a
How often do you order laboratory tests in cases of priapism	114 (76.5%)	35 (23.5%)	< .001 ^a
How often do you attempt conservative measures as initial treatment in priapism	104 (69.8%)	45 (30.2%)	< .001 ^a
How often do you use intracavernous injections of sympathomimetics in priapism	79 (53%)	70 (47%)	0.461
How often do you make irrigation aspiration to a case of priapism	75 (50.3%)	74 (49.7%)	0.935
How often do you consult a andrologist/urologist for priapism cases	134 (89.9%)	15 (10.1%)	< .001 ^a
How often do you provide appropriate counselling and follow-up in priapism cases	116 (77.9%)	33 (22.1%)	< .001 ^a

^aSignificant

Table 5. Responses of emergency physicians towards infection control practices.

Practice items	Yes n(%)	No n(%)	Cannot say	P value
How often do you wash your hands before and after patient care	145 (97.32%)	4 (2.68%)	0 (0%)	< .001 ^a
How often do you wear gloves, goggles, gown, surgical mask when make irrigation aspiration to a case of priapism	119 (79.9%)	30 (20.1%)	0 (0%)	< .001 ^a
Personal protective equipment PPE is a useful strategy for reducing risk of transmission of microbes	142 (95.30%)	1 (0.67%)	6 (4.02%)	< .001 ^a
Health care facilities and instruments can be the source of infection and disease epidemics	141 (94.63%)	1 (0.67%)	7 (4.69%)	< .001 ^a
Emergency physicians should know infection control policy of dealing with blood splash and spills and possible blood borne pathogens	145 (97.32%)	0 (0%)	4 (2.68%)	< .001 ^a

^aSignificant

hours, can help the patient and prevent sequelae.¹ Scaling up these interventions relies on the knowledge and attitudes of both the general community and healthcare staff.¹⁵ EM physicians with adequate understanding and attitude toward priapism therapy, including physical aspiration, irrigation, and injection, can improve their practice and provide accurate patient information.^{15,16}

Health professionals, especially EM physicians, serve as educators, therapists, and advocates to prevent complications of priapism and reduce related morbidity.^{15,16} This study examined the knowledge, attitudes, and practices of EM physicians regarding priapism and its management.

Demographics and Significance of Findings

This study included 149 participants, of whom 55.7% were women. The participants' age groups and workplaces showed significant variation, with 42.3% having less than five years of experience and a large number working in university hospitals (56.38%). These demographic results highlight the dominance of early career professionals, which could influence knowledge levels, emergency decision-making, and compliance with infection control practices.

Priapism Knowledge and Management Practices

This study revealed that most EM physicians (93%) recognized priapism as a medical emergency, showing high awareness regarding its classification, causes, and complications like erectile dysfunction. Familiarity with sickle cell disease, trauma, and drug-induced causes of priapism is critical in Egypt, where sickle cell disease is prevalent.¹⁷

Compared with studies from other regions, knowledge about priapism among Egyptian EM physicians is generally higher than in some developing countries. For example, a study in Nigeria revealed a lower awareness of priapism's ischemic and non-ischemic types of priapism and management techniques.¹⁸ In addition, another study by Dai et al. (2020) included participants from all areas with varying degrees of emergency medical training. The study enrolled 91 EM residency program directors and assistant directors (31.6% of programs), 227 EM residents (14.7% of programs), and 94 urologists (6.3% of survey respondents) participated.¹⁹

More than 90% of respondents agreed that emergency medical personnel should independently address priapism in practice. Senior EM residents (17%) felt "not at all" confident in managing priapism, and 25.5% had never principally managed this entity during training. The programs had a formalized Priapism curriculum (81%), with 19% including

treatment simulations. However, 36% of locals believed that the current curriculum was insufficient.¹⁹

Training of EM physicians to manage priapism professionally and the behaviors of EM physicians and urologists were clearly specified. All parties believe that EM physicians should be skilled and empowered to autonomously handle uncomplicated priapism.^{12,20}

However, this study revealed variability in the practice of priapism management. Among the physicians, 76.5% routinely conducted laboratory tests; only 53% administered intracavernous injections, and 50.3% performed aspiration. In this study, many physicians felt insufficiently prepared to manage priapism in practice as corporal aspiration, irrigation, and sympathomimetic injections for priapism management. It is difficult to determine whether these responses extrapolate to all EM residents because priapism management are not "key index procedures" for EM according to the Model of Clinical Practice in EM and is not tracked.¹² However, because EM procedural experiences do not vary significantly by program setting or size, our findings are likely representative of global EM training experiences. Therefore, a gap may exist between the current educational paradigm and the preparedness of senior residents to manage priapism after graduation.

Similar studies in developed countries, like the U.S., show that intracavernous sympathomimetics are more frequently used in emergency settings.²¹ Moderate use of invasive techniques in Egypt can be attributed to either lack of training or concerns about resource availability. Priapism is a time-dependent association between the length of an erection and the risk of experiencing persistent erectile dysfunction.³

Montague et al. (2003) emphasized that timely treatment of ischemic priapism, ideally within the first 4–6 hours, is critical for preserving erectile function. The longer the ischemia persists, the greater the risk of fibrosis and long-term erectile dysfunction.²²

Therefore, for investing those critical "Golden hours" EM physicians should be trained to start managing priapism in practice as corporal aspiration, irrigation, and injection of sympathomimetic agents. Time may be lost when requesting a specialized urologist/andrologist in an unequipped hospital or healthcare center.

The comparison of the practices of specialists, such as urologists, could provide a broader and more nuanced perspective on the subject. Specialists possess in-depth expertise and have established protocols that can serve as benchmarks for evaluating or enhancing emergency practices. By analyzing these practices, this study can identify gaps, synergies, or

Table 6. Bivariate analysis between demographic characteristics and the knowledge, attitude, and practice (n = 149).

Characteristics	Knowledge			Attitude			Practice		
	Satisfactory (n)	Unsatisfactory (n)	Odds ratio [95% CI]	P value	Positive (n)	Negative (n)	Odds ratio [95% CI]	P value	No practice (n)
Female (83)	45	38	0.72	0.33	64	19	1.08	0.84	43
Male (66)	41	25	[0.37-1.40]		50	10	[0.50-2.31]		16
<30 years(58)	41	17	2.47	0.01 ^a	51	7	3.24	0.01 ^a	20
>30 years(149)	45	46	[1.23-4.96]		63	28	[1.31-8.02]		39
Non-university hospital(65)	32	33	0.53	0.06	49	16	0.89	0.77	25
University hospital(84)	54	30	[0.27-1.04]		65	19	[0.41-1.92]		34
<10 years(63)	41	22	1.7	0.12	53	10	2.17	0.06	22
>10 years(86)	45	41	[0.87-3.31]		61	25	[0.95-4.93]		37
Consultant(44)	25	19	0.94	0.88	30	14	0.53	0.12	18
Other than consultant(105)	61	44	[0.46-1.93]		84	21	[0.24-1.19]		41

^a Significant at a $P < 0.05$

areas in which emergency care may benefit from specialist knowledge.

In addition, instrument validation is crucial to ensure that the tools used in emergency and specialist settings are reliable, accurate and applicable to diverse scenarios. This step not only strengthens the study's methodological rigor and practical relevance.

Finally, exploring strategies to integrate specialist practices into emergency training programs can help improve the overall healthcare system. Such integration could involve collaborative workshops, simulation-based training, or interdisciplinary guidelines, ultimately improving patient outcomes and fostering a culture of continuous learning across specialties.

The comparison with the practices of urologists is important and has been replaced with the practice expected of them through the guidelines in the textbook on urology. The steps in future research will include this comparison and testing a training program for emergency doctors on how to ideally deal with these cases, which will be taught and trained on by the urologist.

Attitudes toward Multidisciplinary Approaches and Training

The findings revealed a strong consensus on the need for multidisciplinary approaches and the importance of specialized training. A comparison with studies in countries such as Canada and the United Kingdom shows similar trends, where specialized training in emergency departments and early involvement of urologists are emphasized.¹ These findings are consistent with the view that proper training helps improve outcomes in emergency settings by reducing long-term complications.

Weak continuing medical education: no supplementary training courses are included in the portfolio of EM, and few EM programs work with urologists to educate EM physicians about priapism, despite popular demand. This demonstrates the potential to improve quality through integrated instruction. Possible constraints include a lack of prior contact with urologists or well-established regional practice norms. Departmental "Grand Meetings" may be important forums for collaboration. Institutional leaders, departmental staff, and thoughtful consideration of the educational requirements of urology/andrology and EM physicians are crucial.

Simulation is an additional area for enhanced performance. EM residents' and program leaders' predilection for simulation-based priapism instruction reflects a broader tendency regarding simulation-based learning within EM.²³ There are only two documented simulation models for priapism instruction in the academic literature; hence, the absence of reasonable, easily, and readily available models could be a substantial hurdle.^{24,25} In our study, there were no simulation-based priapism models free for easy learning or manikins for priapism management training available for cardiopulmonary resuscitation.

Although the data revealed high levels of awareness among participants, especially regarding the emergency nature of priapism and its complications, the study also underscores critical deficiencies in the practical application of invasive management techniques, such as intracavernous injections and corporal aspirations. These deficiencies indicate the

Table 7. Correlation between knowledge, attitude, and practice.

Domain	Statistic	Knowledge	Attitude	Practice
Knowledge	Spearman's rho	-		
	df	-		
	P value	-		
Attitude	Spearman's rho	0.487	-	
	df	147	-	
	P value	<0.001 ^a	-	
Practice	Spearman's rho	0.281	0.027	-
	df	147	147	-
	P value	<0.001 ^a	0.743	-

^aSignificant at a *P* <0.05

pressing need to address barriers to training and resource availability that influence patient care outcomes.

These findings, in relation to current medical practice, underscore the need for timely and autonomous decision-making on the part of the EM physician, especially during those critical "golden hours." Early intervention using techniques such as aspiration and injection can significantly reduce the risk of long-term complications like erectile dysfunction. However, variability in practice patterns, especially in resource-constrained environments, suggests that current training programs and protocols are not sufficiently robust.

Actionable strategies based on these findings can be developed to enhance the standard of care. For example, simulation-based training modules for priapism management should be integrated into the EM curriculum. This can be achieved in collaboration with urology departments by offering interdisciplinary training sessions that improve both cognitive and technical competencies. In addition, institutional leaders and policymakers should ensure that resources are provided to EM facilities with the tools and medications necessary for managing priapism effectively.

Further, educational efforts must be extended beyond clinical techniques to include comprehensive patient education and counseling. EM physicians can play a strong role as educators in supporting preventive measures and increasing awareness among high-risk patients with SCD regarding the risk of priapism. These factors may play a crucial role in lessening the incidences and severities of priapism.

In the good infection control practices this study reported, lies a potential for systemic improvement: healthcare institutions can use this protocol as a basis for establishing standardized guidelines in managing priapism, hence guaranteeing coherence across different practice settings. Comparative studies between Egypt and other regions have shown that targeted training and resource enhancement can bridge gaps in practice and bring standards of care closer to global benchmarks.

Fundamentally, the management of such lacunas involves multiple disciplines. These include incorporating the management of priapism into continuing medical education, using simulation-based learning more frequently, and facilitating greater collaboration between the EM and urology professions. This will not only ensure an increase in competency on an individual physician level but also provide systemic improvements to emergency care, with overall improvement in patient outcomes.

Focusing on implications and providing actionable recommendations, this study demonstrates how priapism

management can be transformed into a model for effective emergency care interventions.

Infection Control and Safety Practices

Infection control practices were stringently followed in the results of our investigation, with nearly all physicians (97.32%) washing hands before and after procedures, and the majority (95.3%) recognized the importance of personal protective equipment. In comparison, studies from countries with higher infection control standards, like the UK, have reported similar high compliance rates.²⁶ However, some African countries have reported lower adherence, particularly because of resource constraints.²⁷

This study was limited by sampling and nonresponse bias and low response rates. Although these limitations are notwithstanding, to our knowledge, this is the first study to describe physicians' attitudes regarding priapism management, to define EM residents' educational experiences, and to identify opportunities for quality improvement.

Recommendations for Future Research

Training and Resource Allocation: Further studies are needed to explore how resource availability impacts the management of priapism in low-resource settings like Egypt, and how targeted training can improve the practice of advanced interventions like intracavernous injections and shunting procedures.

Patient Outcomes: Investigating the long-term outcomes of patients with priapism, especially those managed in emergency settings, could provide insights into the effectiveness of early interventions. **Multicenter Studies:** Conducting multicenter studies across Egypt, especially in rural hospitals, would provide a more comprehensive view of practice variations and training needs.

Conclusion

The findings demonstrate strong knowledge and generally good practice among emergency physicians in Egypt regarding priapism and infection control. However, gaps in the use of invasive treatments and the need for specialized training highlight areas for improvement. The comparative analysis suggests that Egypt's emergency care standards align with those in middle-income countries but can benefit from structured education programs and resource enhancement. Regarding the indicated preferences, few EM education and training programs offer priapism courses that include simulation or urologic/andrologic partnership. There is potential for quality enhancement.

Acknowledgments

There are no sponsors or fund for the research, it was supported by the author.

Author contributions

SA, WS, YS, AH, AB, SB, and AE conceived and performed experiments, wrote the manuscript, and secured funding. SA, WS, YS, AH, SB, and AE performed experiments. YS and AB provided data analysis. SA, WS, YS, AH, AB, and AE provided expertise and feedback.

Funding

None declared.

Conflicts of interest

There are no conflicts of interest.

There are no sponsors or fund for the research; the author supported it.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethical approval

Institutional review board and Research Ethical Committee in accordance with the Helsinki Declaration guidelines.

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