African Journal of Urology (2018) **24**, 19–23

African Journal of Urology

Official journal of the Pan African Urological Surgeon's Association
web page of the journal

www.ees.elsevier.com/afju
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Urethral Stricture
Original article

Patient knowledge of urethral stricture disease in a state sector South African Academic Hospital

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Received 10 February 2016; received in revised form 20 November 2017; accepted 6 December 2017
Available online 16 February 2018

KEYWORDS
Urethral stricture disease;
Urethral stricture;
Patient knowledge;
Knowledge;
Education;
Disease prevention;
Affordible technology;
South Africa;
Public health;
Developing country

Abstract
Introduction: The knowledge urethral stricture patients in a developing country Specialist Clinic have regarding their own disease, remains uncertain.
Objectives: To measure patient's knowledge of own disease attending Tygerberg Urethral Stricture clinic.
Patients and methods: A total of 81 patients were assessed from May to August 2015, presented with a questionnaire containing questions on demographics, ten knowledge questions and qualitative comments. Subgroups were created for patient less and more than 50 years of age, and education level up to Grade 10 and more than Grade 10. Means were compared using the Student t-test, correlations were assessed using Pearson's correlation coefficient and the significance was assumed at an alpha level of 0.05.
Results: Average age of patients attending the clinic was 55, the average level of education Grade 7 (completed Primary School). The average level of knowledge for all patients was 46%, with the highest score for Question 2 (80%) relating to the definition of a urethral stricture. The lowest score was achieved for Question 8 (28%) relating to self-catheterization frequency. There was no linear correlation between knowledge and age, and a very weak correlation between patient knowledge and level of education.
Conclusion: This study demonstrates that the level of knowledge of own disease is unacceptably poor across the whole patient profile. Interventions to improve patient knowledge regarding urethral stricture disease is indicated.

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Introduction

Male urethral strictures confine its victims to a lifetime of chronic disease burden. Studies have shown male urethral stricture rates as high as 0,6% of the exposed population, and resulting in 5000 inpatient visits annually, mostly due to complications [1]. Regard-

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Peer review under responsibility of Pan African Urological Surgeons' Association.

https://doi.org/10.1016/j.afju.2017.12.001
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ing these men diagnosed with a urethral stricture, up to 42% suffer from a sequelae such as a urinary tract infection, and 11% are incontinent [2]. Some studies have captured a complication rate as high as 90%, with the majority of men typically burdened with lower urinary tract symptoms, and a minority affected by the more serious chronic urinary retention, renal failure, erectile dysfunction, urethral carcinoma and bladder failure [1]. This is a disease worth addressing due to the number of patients affected.

Despite the condition altering a patient's life, the knowledge affected men in a developing country have regarding their diagnosis, remains uncertain. Patient recall after informed consent [3] concludes that a mere 29% of information could be extracted following a consultation, and another study showing only 25% of possible complications could be recalled [4]. In South Africa, patient autonomy and communication are valued as priority areas to improve patient satisfaction [5,6], yet for urethral strictures, there appears to be no instrument to measure patient's knowledge of their own particular disease.

From a demographical viewpoint regarding urethral strictures in South Africa, a study done at Tygerberg Academic Hospital, South Africa, has shown that the prevalence of urethral strictures is highest among 40–50 year old coloured men who had little schooling. The study also concludes that the incidence can be reduced by uplifting moral and educational standards and emphasising the potential dangers of catheterisation and instrumentation [7]. Taking into consideration abovementioned study with the 2012 South African national consensus, a developing country like South Africa already struggles with a lack of education. South Africa has a primary school completion rate of 94,7% in 2011, but for an older generation it might be too late. The percentage functionally illiterate men by 2012 aged 15–59 years was 11,9% but for males >60 years of age illiteracy was 40,1%. Indicating that an older generation, already proved the majority in Urethral stricture disease patients in Tygerberg Hospital Stricture Clinic, are more likely to be illiterate or have a low level of schooling [8].

A systematic review done by DeWalt et al. confirms that low literacy is associated with a range of adverse health outcomes. People who read at lower levels are 1,5–3 times more likely to have an adverse health outcome compared to those on higher levels [9].

Urethral stricture patients are presented with a large amount of new information; thus it would be natural to remember selective information better. A prostate oncology study showed information content and patient-healthcare provider relationship affect patient satisfaction [10]. We are increasingly expected to transfer information with the goal to increase patient knowledge. Patients were also more likely to recall potential benefits compared to potential problems following transurethral resection of the prostate, despite emphasizing both equally [11]. Education input from informative booklets and the multidisciplinary health team also ensures high knowledge scores [12].

It appears that the level of knowledge of urethral stricture disease is unknown. Due to the palliative manner in which most cases are treated with repeated dilation many opportunities and patient contact exist to gain knowledge and sufficient knowledge might exist. Measuring the knowledge based on important clinical questions will give insight into the need for education programs per specialist clinic visits.

Objectives

1. Primary objective: To assess the level of knowledge male Urethral Stricture Disease patients attending Tygerberg Hospital urethral stricture clinic has regarding their own disease
2. Secondary objective: To assess what possible factors could influence this level of knowledge.

Definitions

Grade—South African school system has 12 Grades with Grades 1–7 Primary School, Grades 8–12 High School and thereafter Tertiary education.

Subjects and methods

A cross-sectional study was performed asking patients attending the urethral stricture clinic to fill in a questionnaire based on 10 carefully selected questions composed of expert opinion (Appendix 1 in Supplementary material). An informed consent form was signed prior to attempting the questionnaire and patients were voluntary enrolled (Appendix 2 in Supplementary material). Inclusion criteria were all adult male patients attending the urethral stricture clinic at Tygerberg Hospital with the diagnosis of a urethral stricture. Patients excluded from participating in this study were acutely ill patients, those refusing to sign a consent form, patients not diagnosed with a urethral stricture, females, children and patients who wrongfully ended up at the urethral stricture clinic.

Guessing was controlled by adding a third and fourth answer option "do not know" and "I don't understand the question" in addition to "true" and "false". In addition, we added a comment section where the patient could share their experience of their disease qualitatively. Patients were encouraged to answer truthfully and were rewarded with a pen for their efforts. Only patients older than 18 years of age with a diagnosed urethral stricture were selected to participate in this study. The questionnaire was translated into Afrikaans and Xhosa by medical staff native to each language. The questionnaire was limited to one A4 page with wording spaced in such a manner to make the reading and filling in acceptable to patients. Patients needing help could ask. Limited demographic detail was collected in the available space. To control for duplicates hospital numbers were collected, and patient identities were kept confidential at all times.

Correct answers were analyzed in terms of the whole group and a comparison formulated between the over 50 year olds to the less than 50 year olds. Education level until Grade 10 were also compared with education levels over Grade 10. Individual questions between groups were compared using a 2×2 table and Chi-square test were done. Comparing means was done by a two tailed t-test (Student t-test). A P-value of less than 0.05 were elected as statistically significant. Confidence intervals (95%) and odds ratios comparing the group's correct answers are reported.

Results

The total number of patients included in our study was 81, with the average age of patients was 55 years old, the average level of education Grade 7 (completed Primary School) (Table 1). The average level of knowledge for all patients was 46%, with the highest score for Question 2 (80%) relating to the definition of a urethral stric-

Table 1 Background information on all patients.

Age: average (median, range)	55 (58, 18–87)
Attendance in months: average (median, range)	62.8 (36, 1–600)
Visiting frequency in months: average (median, range)	4.3 (3, 0–12)
Education level: average (median, range) (13 is post school training)	7 (8, 0–13)
Clinics missed according to patient: average (median, range)	1.6 (1, 1–4)

ture. The lowest score was achieved for Question 8 (28%) relating to self-catheterization frequency (Question 8: I only need to self-catheterize once a month to keep my stricture open) (Table 2). The only statistical significant level comparing patient more and less than 50 years of age was the education level ($p = 0.032$) (Table 3). More educated patients scored higher on Question 2 relating to urethral stricture definition ($p = 0.018$) (Table 4). There was no linear correlation between knowledge and age, as well as only a very weak correlation between knowledge and level of education (Table 5).

Qualitatively answers that stood out was, for example, Mr. X a 41-year-old male from Kraaifontein "I had to quit my job. I go to the toilet often and get up to pee regularly, it runs freely by itself." And Mr. B aged 36 from Bellville "I can't work properly and can't make love to my wife, and [have] urine problems". "It was very hard in the beginning but since I attended the clinic it is a lot better" stated a 52 year old male from Goodwood.

Discussion

The average age of a patient attending the urethral stricture clinic was 55 years of age, ranging from 18 to 87 years of age. This average age is in contrast with a previous study done in Tygerberg Hospital in 1994, stating an age group of 40–50 years old men dominated the study [7]. The definition of a urethral stricture remains unchanged from this study, being a symptomatic pathological narrowing of the urethra diagnosed on radiographic imaging.

The increased average age might be due to the average life expectancy in the region increasing or reflecting the palliative nature of urethral stricture management at this institution. The attendance was calculated in months ranging from when the patient had their first visit to the Tygerberg Hospital Urethral Stricture clinic, with an average of 62,8 months. The average frequency of urethral stricture clinic visits was every 4,3 months. The average level of completed education was Grade 7 which concludes Primary education without advancement to High school. The older subgroup was significantly less educated than the younger group which is most likely related to the different political eras these patients stem from. Clinic attendance was reportedly very good. This might be a misrepresentation of urethral stricture patients as only those attending the clinic well would be measured and those regularly missing clinic appointments could have been missed due to the cross-sectional nature of the study.

The most correct answers obtained for a specific question were Question 2 80% (65/81), related to the definition of urethral strictures. It is concerning that nearly 20% of patients with a diagnosed urethral stricture attending the urethral stricture clinic, do not know what a urethral stricture is. The more educated group scored significantly better in Question 2 (Table 4). The lowest score obtained was

Table 2 Answers to questions: summary.

	Q1 gender	Q2 definition	Q3 dilatations	Q4 catheter complications	Q5 STD's	Q6 renal failure	Q7 epididymo-orchitis	Q8 self-catheter frequency	Q9 urethro-plasty	Q10 Fournier's gangrene Sx's	Category average (%)
All	58% (47)	80% (65)	46% (37)	43% (35)	40% (32)	33% (27)	42% (34)	28% (23)	53% (43)	32% (26)	46% (36.9/81)
Less than 50 years old (n = 28)	46% (13)	82% (23)	32% (9)	46% (13)	46% (13)	36% (10)	54% (15)	25% (7)	61% (17)	43% (12)	47% (13.2/53)
More than 50 years old (n = 53)	64% (34)	79% (42)	53% (28)	42% (22)	36% (19)	32% (17)	36% (19)	32% (17)	49% (26)	26% (14)	45% (23.8/53)
Education Grade 0–10 (n = 53)	53% (28)	72% (38)	51% (27)	20 (38%)	19 (36%)	17 (32%)	26 (49%)	18 (34%)	28 (53%)	17 (32%)	45% (23.8/53)
Education >Grade 10 (n = 28)	68% (19)	96% (27)	36% (10)	54% (15)	46% (13)	36% (10)	29% (8)	18% (5)	54% (15)	32% (9)	47% (13.1/28)

Table 3 Data comparison with patients less than 50 years old and more than 50 years old.

Comparing less than 50 years old with more than 50 years old	<50 years old	>50 years old	p-Value	Odds ratio of having a correct answer	Confidence interval
Age (mean)	35.3	65.6	<0.0001		
Attendance (mean) months	44.2	92.9	0.17		13.15–69.86
Visiting frequency months	3.8	4.5	0.35		0.69–1.92
Education level	8.6	6.8	0.032		−3.33; −0.15
Question 1	13 (46%)	34 (64%)	0.16	0.48	0.19–1.22
Question 2	23 (82%)	42 (79%)	1	1.2	0.37–3.89
Question 3	9 (32%)	28 (53%)	0.123	0.42	0.16–1.1
Question 4	13 (46%)	22 (42%)	0.84	1.22	0.48–3.07
Question 5	13 (46%)	19 (36%)	0.49	1.55	0.61–3.93
Question 6	10 (36%)	17 (32%)	0.93	1.17	0.44–3.08
Question 7	15 (54%)	19 (36%)	0.19	2.06	0.81–5.24
Question 8	7 (25%)	17 (32%)	0.68	0.7	0.25–1098
Question 9	17 (61%)	26 (49%)	0.44	1.6	0.63–4.06
Question 10	12 (43%)	14 (26%)	0.2	2.08	0.79–5.49
Total score	4.64/10	4.49/10	0.78		−1.24; +0.94

Table 4 Comparison of education level for patients up until Grade 10 and patients more than Grade 10 level.

Comparing education until Grade 10 with education more than Grade 10	Until Grade 10	More than Grade 10	p-Value	Odds ratio of having a correct answer	Confidence interval
Age (mean)	58.7	48.25	0.02		−19.37; −1.65
Attendance (mean)	6.16	3.48	0.064		−5.52; +0.16
Education level	5.53	11.14	<0.0001		4.82; 6.41
Question 1	28 (53%)	19 (68%)	0.28	0.53	0.2–1.38
Question 2	38 (72%)	27 (96%)	0.018	0.09	0.01–0.75
Question 3	27 (51%)	10 (36%)	0.28	1.86	0.72–4.79
Question 4	20 (38%)	15 (54%)	0.25	0.52	0.2–1.32
Question 5	19 (36%)	13 (64%)	0.49	0.64	0.25–1.64
Question 6	17 (32%)	10 (36%)	0.93	0.85	0.32–2.23
Question 7	26 (49%)	8 (29%)	0.95	1.2	0.41–3.52
Question 8	18 (34%)	5 (18%)	0.2	2.33	0.77–7.2
Question 9	28 (53%)	15 (54%)	0.95	0.97	0.39–2.43
Question 10	17 (32%)	9 (32%)	0.99	0.99	0.37–2.66
Total score	4.47/10	4.68/10	0.68		−0.80; +1.21

Table 5 Correlation analysis.

Category	Correlation coefficient	Confidence interval
Knowledge to age	−0.05217	−0.27, 0.17
Knowledge to education	−0.07	−0.28, 0.16

Question 8 with 23/81 (32%), related to frequency in which patients must self-catheterize. The average mark obtained for all correctly answered knowledge questions was 40/81 (46%), this is a concerning level of knowledge given the chronic nature of the disease and multiple opportunities of the patients to gain knowledge via contact with healthcare professionals. The knowledge of own disease is low across the whole patient profile, with very little subgroup differences.

There is a weak correlation between patient knowledge and completed level of education (Table 5). No correlation could be made between patient knowledge and age. A knowledge questionnaire study on Osteoarthritis patients did show higher levels of education obtained a higher score [13,14], yet no relationship between score, age, and duration of disease could be established [12].

Qualitative answers, although not formally analyzed with themes, showed insight into the reduced quality of life some of the patients experienced.

Limitations of this study—a bigger sample size would give a more accurate estimation of patient knowledge. There is also no formally validated questionnaire regarding patient knowledge of urethral strictures. Completion of questionnaires, informed consent and assistance were also dependent on the availability of the principal investigator at all times for the duration of this study.

Conclusion

This study demonstrates that the level of knowledge of own disease is unacceptably poor across the whole patient profile. Formally educated or not, interventions to improve patient population's knowledge regarding urethral stricture disease is indicated.

Future considerations

A bigger sample size can be included in future to get a more accurate estimation of patient knowledge and the formal development of a urethral stricture knowledge score. A formal development of urethral stricture knowledge score— like the IPSS and the IIEF, could become a well accepted part of knowledge measurement. Every patient contact should be a structured opportunity to increase patient knowledge of disease.

The chronicity of the disease creates an opportunity to share and measure knowledge. Patients could be empowered to become advocates of prevention of this disease in particular as related to sexually transmitted diseases. In the Tygerberg Urethral Stricture clinic, patients wait for hours in a corridor to be seen by a specialist. This study provides enough evidence that these patients would benefit from education. An ideal is to implement a multidisciplinary education program by information posters, booklets and increasing consultation lengths.

Authors' contributions

M Barnard: Principal investigator of study.

Van der Merwe: Study supervisor at Stellenbosch University, Urology Department.

Ethical committee approval

Approved with the ethical committee approval number: S15/01/011

Conflict of interest

There are no conflict of interests.

Source of Funding

Print of questionnaires and informed consents and supply of 1x 100 box Black Pens were funded by the University of Stellenbosch's Urology Department. No other expenses were made.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.afju.2017.12.001.

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