



Full Length Research Paper

Occurrence of depressive symptoms among patients on persistent indwelling urinary catheters

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Urinary catheters are used to relieve urinary retention. Its prolonged use has been associated with poor quality of life (QoL) and psychosocial distress among patients. We sought to evaluate the QoL and prevalence of depressive symptoms among patients on prolonged indwelling urinary catheters. A cross-sectional study of patients with indwelling urinary catheters at an outpatient urology clinic of a tertiary hospital in South west, Nigeria. One hundred and fifty-six patients completed a structured questionnaire. QoL was assessed with adapted quality of life assessment index question of International prostate symptoms score. Patients were screened for depressive symptoms using Patient Health Questionnaire 9(PHQ-9). Bi-variate analysis of QoL with route of urinary catheterization and type of bladder drainage; and correlation of duration of catheterization, QoL and PHQ-9 scores were done using chi-square and Spearman Rank's correlation respectively with p value at 0.05. All patients were males with urinary retention as the major indication for urinary catheterization. Average duration of catheterization was 21 months. Poor QoL reported in majority of the patients, worse in younger age group and patients on urethral catheters. The prevalence rate of depressive symptoms was 46.1%. A weak negative correlation exists between duration of catheterization and QoL scores; and between duration of catheterization and depressive symptoms; however, strong correlation existed between QoL scores and depressive symptoms. Prolonged indwelling urinary catheter was related with poor QoL worsened in younger age group and those on urethral catheters with a high prevalence rate of depressive symptoms which correlated with the QoL.

Key words: Urinary catheterization, quality of life, depressive symptoms, Nigeria.

INTRODUCTION

Urinary retention is one of the most common urological emergencies which requires initial urinary catheterization

either by urethral or suprapubic catheterization before the treatment of the underlying cause of the retention (NHS

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choices, 2015; Fitzpatrick and Kirby 2006). Its use is often regarded as prolonged or long-term when the duration of use exceeds four weeks (Jahn et al., 2007). There are few conditions where long term use of urinary catheters are required; such conditions include bladder outlet obstruction not correctable medically or surgically, palliative care of terminally ill patient, patients with neurogenic bladder and retention (Cravens et al., 2000). In such long-term use of urinary catheters, clean intermittent catheterization is preferred to indwelling urinary catheters because of complications associated with indwelling urinary catheters which include bacteraemia, urinary tract infections, bladder stones, fistula formation, erosion of urethra, epididymitis, pyelonephritis, pain along the urethra, loss of dignity and bleeding among others (NHS choices, 2015; Ikuerowo et al, 2007; Cravens et al., 2000; Ramakrishnan and Mold 2004). However, prolonged or long-term use of indwelling urinary catheters may be indicated in a urinary incontinent patient with limited hand dexterity or cognition problem with inability to perform a clean intermittent catheterization. Also, it may be required in a patient who have not responded to specific incontinence treatment who have expressed a preference for it. (Cravens et al., 2000; Fitzpatrick and Kirby 2006; Fitzpatrick et al., 2012; Selius and Subedi 2008).

In Nigeria, urinary retention accounts for substantial number of non-traumatic surgical emergencies (Ugbare et al., 2014; Ibrahim et al., 2015). However, data on the rate of urinary catheterization is limited, as the procedure is often not documented by medical practitioners. (Tijani et al., 2010) Nevertheless; studies have shown widespread use of indwelling urinary catheters in management of urinary retention with many of the patients on prolonged use of indwelling urinary catheters due to lack of funds for definitive treatment and long waiting list of surgery for the underlying pathology of the urinary retention (Bello et al., 2013; Ikuerowo et al., 2007; Nnabugwu et al., 2014). Evidence of practice of clean intermittent catheterization (CIC) by patients who required long term urinary catheterization in Nigeria is limited. The limitation was attributed to limited number of staff with the requisite experience to educate and pay home visit to patients who require CIC in order to ensure instructions are followed and sterility is maintained. (Ugbare et al., 2014). In addition, there is reduced capacity and willingness of patients to learn safe self intermittent urethral catheterization especially among uneducated subjects (Nnabugwu et al., 2014)

Complications which may occur over time in patients with indwelling urinary catheter may worsen the course of illness of the patients and affect their quality of life (QoL) (NHS choices, 2015; Ikuerowo et al., 2007; Cravens et al., 2000)

The presence of indwelling urinary catheter and the associated poor QoL may interfere with the patient's social, sexual and work activities (Jahn et al., 2007;

Onwujekwe et al., 2010; Savage, 2014) with possible effect on the psychosocial well being of the patients. Such psychosocial distress may trigger depressive symptoms with attendant short and long term implications on the patients. (Strömberg et al., 2011) Hence, we sought to evaluate the QoL and prevalence of depressive symptoms among patients on prolonged indwelling urinary catheters.

Patients and methods

This was a cross sectional study of patients on urinary catheters attending the outpatient urology clinic of a tertiary hospital in South West, Nigeria over a 6 months period (April to September, 2015).

Ethical consideration

Ethical approval for the study was obtained from the ethical review committee of the institution and a written consent obtained from the patients before being included in the study.

Inclusion criteria

All patients on urinary catheters of more than 4 weeks duration, who consented to participate in the study during the study period were enrolled.

Exclusion criteria

Patients who declined to give their consents and those with previous diagnosis of depressive disorders or being managed for depressive symptoms were exempted from the study.

Research instruments

The study was conducted with a semi-structured questionnaire designed to collect data on socio-demographic parameters, duration of use of urinary catheter, route of urinary drainage, type of bladder drainage, indication for urinary catheterization, reason(s) for delay in definitive management of the underlying condition, complications experienced over the duration of urinary catheterization, impact of the urinary catheters on daily physical activities and social interaction with people. Quality of life (QoL) was assessed using an adapted quality of life assessment question of International prostate symptoms score (Appendix I).

Screening for depressive symptoms and its severity was done with validated screening tool-Patient Health Questionnaire-9(PHQ-9) (Appendix II).

Data collection

Questionnaire were administered to consecutive consenting patients with prolonged indwelling urinary catheters (duration of >4 weeks) who presented at outpatient urology clinic of the hospital during the study period. Patients who declined to give their consents or had previous history of depressive disorders or being managed for depressive symptoms were excluded.

The questionnaires were administered to the patients by interviewers who are medical doctors in the urology unit of the hospital. Patients' hospital numbers were noted on each questionnaire filled to prevent double entry of respondents during the study period, as most of the patients often present every 4 weeks for urinary catheter change.

Analysis

Data collected include: Sex, age, level of education, occupation, indication for urinary catheterization, duration of catheterization in months; route of urinary catheterization, type of catheter drainage (continuous bladder drainage- in which a urine bag was applied to the catheter for continuous drainage; tidal bladder drainage-urethral catheter spigotted to allow for bladder drainage only when there is urge to void), reason(s) for delay indefinite management of the underlying condition, complications associated with the use of urinary catheters, effect of the indwelling catheters on daily physical activities and social interaction of the patients.

The response from the QoL assessment was scored from 0 to 6, depicting 0 as delighted, 1- pleased, 2- mostly satisfied, 3- mixed about equally satisfied and dissatisfied, 4- mostly dissatisfied, 5- unhappy and 6- terrible.

Screening for depressive symptoms and its severity using Patient Health Questionnaire-9(PHQ-9) had scores ranging from 0 to 27. Scores of 0 to 4 were categorized as having no depressive symptoms while those with score of 5 or more are considered as having depressive symptoms. The severity of depressive symptoms was further categorized into mild with a score of 5 to 9; moderate: 10 to 14; moderately severe: 15 to 19 and severe: 20 to 27.

Analysis of the data was done using Statistical Package for Social Sciences (SPSS) version 21.0. Bi-variate analysis with Pearson's chi-square to determine the relationship of QoL with route of urinary catheterization and type of bladder drainage was done with p-value at 0.05(5%). Yates corrected chi-square were used where applicable because there were variables with frequency of less than 5 in more than 30% of the association table.

Correlation between duration of indwelling urinary catheterization and QoL, duration of indwelling urinary catheterization and PHQ-9 scores; and QoL and PHQ-9 scores were assessed with Spearman Rank's correlation with p-value at 0.05(5%).

RESULTS

One hundred and sixty five patients on prolonged indwelling urinary catheter presented at the urology clinic during the study period, nine patients declined to participate in the study and none of the patients was excluded on account of previous history of depressive disorders. Hence, 156 patients were enrolled for the study with a response rate of 94.5%. All the patients were males with an age range of 35 to 88 years and mean age of 65.0±13.0 years.

The Age groups, Level of education, Occupation, Route of urinary catheterization , Type of bladder drainage,

Indications for urinary catheterization and Reasons for the delay in definitive management are as summarized in Table 1.

The duration of use of indwelling catheters by the patients ranged from 2 to 144 months with an average of 21 months.

Complications of the indwelling urinary catheters recorded were pain along the urethra, blocked catheters/encrustation, epididymitis and bladder calculi (Figure 1) with a complication rate of 59.6%. Further analysis of the complications in relation to duration of urinary catheterization, route of urinary drainage and type of bladder drainage was depicted in Table 2.

The urinary catheter affected the normal daily physical activities in 75 (48.1%) of the patients while social interaction with people was affected in 54 (34.6%) of the patients.

Thirty (19.2%) of the patients had mixed feelings of equal satisfaction and dissatisfaction with the urinary catheter usage, 72 (46.2%) were mostly dissatisfied, 48 (30.8%) were unhappy and 6 respondents (3.8%) felt terrible. None of the respondents was delighted or pleased with urinary catheterization.

Bi-variate analysis of self-reported QoL scores with route of urinary catheterization and type of bladder drainage was depicted in Table 3.

Seventy two of the patients had PHQ-9 score of >4 hence, a prevalence of depressive symptoms of 46.1%. Forty five (28.8%) of which had mild depressive symptoms, 24(15.4%) had moderate depressive symptoms and 3 patients (1.9%) had moderately severe depressive symptoms. None of the patients had severe depressive symptoms.

The correlations of duration of urinary catheterization, QoL scores and depressive symptoms scores (PHQ-9 scores) were depicted in Table 4.

DISCUSSION

Urinary catheterization is often used as a temporary measure to relieve urinary retention prior to the treatment of the cause of the retention (Cravens et al., 2000; Savage, 2014; Thorne and Geraci 2009) such as bladder outlet obstruction from enlarged prostate which can be managed by medical or surgical therapy. Long term use of urinary catheters are often reserved for patients with bladder outlet obstruction not correctable medically or surgically, palliative care of terminally ill patient and patients with neurogenic bladder associated with urinary retention (Cravens et al., 2000). However, in this study, the indications for the long term use of the indwelling urinary catheters were urinary retention from enlarged prostates and urethral strictures (all respondents were males) amenable to treatment but majority of the patients had their treatment delayed because of lack of funds; only one patient had his definitive treatment delayed due to severe co-morbidity. This finding further

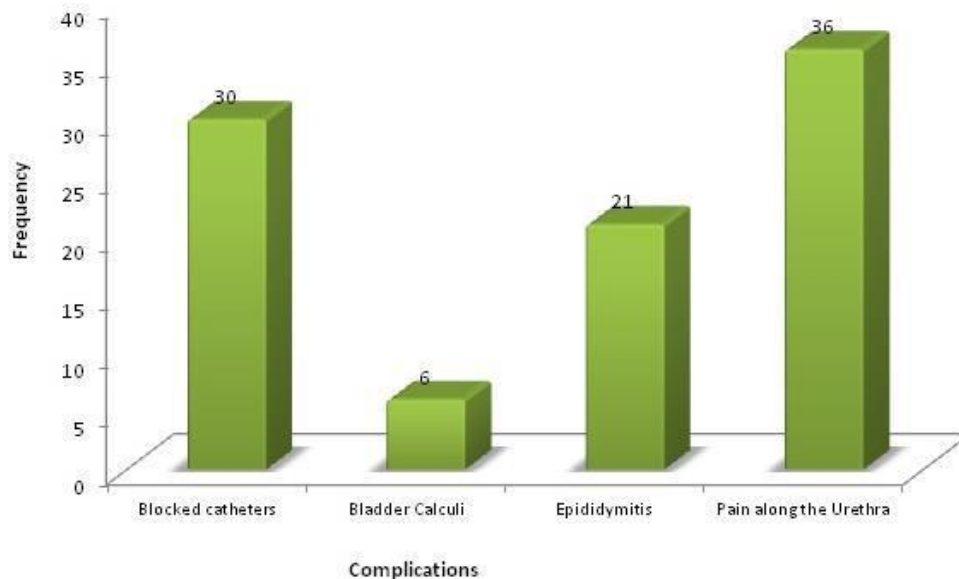


Figure 1. Complication of prolonged indwelling urinary catheters.

corroborated an earlier report from Nigeria attributing lack of funds for definitive treatment as one of the major reasons for prolonged urinary catheterization, a consequence of out-of-pocket payments required for the definitive treatment and near total lack of health insurance safety net among Nigerian patients (Bello et al., 2013).

Prolonged indwelling urinary catheters have been associated with complications such as bacteraemia, urinary tract infections, bladder stones, fistula formation, erosion of urethra, epididymitis, pyelonephritis, pain along the urethra and bleeding in patients (NHS choices, 2016; Ikuerowo et al., 2007; Cravens et al., 2000) Thus, with an average duration of urinary catheterization of 21 months from this study; a high complication rate of 59.6% was not unexpected. The complications recorded were pain along the urethra (23.1%), blocked catheters/encrustation of catheters (19.2%), epididymitis (13.5%) and bladder calculi (3.8%). A larger proportion of the respondents with complications such as blocked catheters, bladder calculi and epididymitis had prolonged indwelling urinary catheterization of 18 months and more. Indwelling urethral catheters were associated with more complications than indwelling suprapubic catheters. This compares with the study by Horgan et al. (1992) in which lower complications were recorded among patients on suprapubic catheters compared to patients on urethral catheters following catheterizations for enlarged prostates with a follow up period of 3 years. Also, a prospective randomized controlled trial of urethral versus suprapubic catheterization by Sethia et al. (1987) shows no major complications associated with the use of suprapubic catheters. Other known advantages of suprapubic catheters include comfortability of patients, easier to

manage, more cost-effective, improved self-image and better suited for sexual relationship (Chapple et al., 2015; Ichsan and Hunt 1987).

Complications reported by the patients were higher among patients on continuous bladder drainage compared to tidal bladder drainage. For example, blocked catheters were reported by 10 patients out of 15 patients (66.7%) on continuous bladder drainage as against 20 patients out of 141 patients (14.2%) on tidal bladder drainage reported blocked catheters. A possible explanation can be derived from a study by Sabbuba et al. (2005) with the objective to determine whether valve regulated-intermittent flow of urine from catheterized bladders decreases catheter encrustation; findings of which show an intermittent flow of urine through catheters increased the time that catheters require to become blocked with crystalline biofilms.

Complications of indwelling urinary catheter have been reported to impact negatively on the quality of life (QoL) of the patients on prolonged indwelling urinary catheters (Ikuerowo et al., 2007; Cravens et al., 2000). Hence, with the high complication rate recorded from this study it is not unexpected that majority of the patients (80.8%) reported a poor QoL ranging from mostly dissatisfied to feeling terrible about their condition with only a few number of patients (19.2%) reported mixed feeling of satisfaction and dissatisfaction.

In this study, age and route of urinary catheterization had a significant association with self-reported QoL of the patients. A worse QoL was reported by patients in the younger age group of less than 55 years ($p < 0.001^y$).

Also, the worst self-reported QoL was observed among patients on indwelling urethral catheters ($p < 0.001$).

Table 1. Socio-demographic characteristics, route of urinary catheterization, type of bladder drainage, Indications for urinary catheterization and reasons for delay of definitive management.

Variable	Frequency (n=156)	Percentage
Age groups		
<45	15	9.6
45-54	15	9.6
55-64	39	25.0
65-74	48	30.8
≥75	39	25.0
Level of Education		
Uneducated	57	36.5
Primary	51	32.7
Secondary	39	25.0
Tertiary	9	5.8
Occupation		
Artisans	27	17.3
Farming	51	32.7
Trading	18	11.5
Civil servant	21	13.5
Retiree	39	25.0
Route of urinary catheterization		
Urethral	96	62.0
Suprapubic	60	38.0
Type of bladder drainage		
Continuous bladder drainage with urine bag	15	9.6
Tidal bladder drainage with spigotted catheter	141	90.4
Indications for urinary catheterization		
Urinary retention from Enlarged prostate	96	61.5
Urinary retention from Urethral stricture	60	38.5
Reasons for delay of definitive treatment		
Lack of funds	153	98.1
co-morbidity	3	1.9

These observations may be related to an earlier report that presence of indwelling urethral catheter impaired sexual functions (Bostock and Kralik 2008, Chapple et al., 2014; Cravens et al., 2000) – one of the major domains in QoL of patients; thus, an assumption that more sexually active younger patients on prolonged indwelling urethral catheters may experience impaired sexual function associated with worsening QoL; however, further studies will be required to ascertain this assumption.

Type of bladder drainage which can be either continuous bladder drainage with a urine bag applied to the urinary catheter for continuous drainage or tidal bladder drainage

with the urethral catheter spigotted to allow for bladder drainage only when there is urge to void, may not necessarily influence the QoL of the patients as there was no statistically significant association between the method of bladder drainage and self-reported QoL of the patients.

Duration of urinary catheterization had a statistically significant weak negative correlation with QoL scores which implied that at a shorter duration of catheter use, the patients reported worse quality of life.

This finding may be explained by the fact that coping with new health realities requires time; hence, the poor QoL may improve with time as the patients accept the reality

Table 2. Analysis of complications in relation to duration of urinary catheterization, route of urinary drainage and type of bladder drainage.

Variable	Complications			
	Blocked catheters (n=30)	Bladder calculi (n=6)	Epididymitis (n=21)	Pain along the urethra (n=36)
Duration of urinary catheterization				
1-6months	0(0.0)	0(0.0)	1(4.8)	20(55.6)
7-12months	1(3.3)	0(0.0)	4(19.0)	12(33.3)
13-18months	3(10.0)	0(0.0)	4(19.0)	4(11.1)
18-24months	10(33.3)	2(33.3)	5(23.9)	0(0.0)
>24months	16(53.4)	4(66.7)	7(33.3)	0(0.0)
Route of urinary catheterization				
Urethral	20(66.7)	4(66.7)	21(100.0)	36(100.0)
Suprapubic	10(33.3)	2(33.3)	0(0.0)	0(0.0)
Method of bladder drainage				
Continuous bladder drainage with urine bag	10(33.3)	5(83.3)	7(33.3)	10(27.8)
Tidal bladder drainage with spigotted catheter	20(66.7)	1(16.7)	14(66.7)	26(72.2)

Table 3. Relationship of quality of life with age, route of urinary catheterization and type of bladder drainage.

Variable	Quality of life score			
	Mixed (%)	Mostly dissatisfied (%)	Unhappy (%)	Terrible (%)
Age Groups				
≤ 44	0 (0.0)	0 (0.0)	15(31.2)	0 (0.0)
45 - 54	0(0.0)	0 (0.0)	12(25.0)	3 (50.0)
55 - 64	3 (10.0)	21 (29.2)	15(31.2)	0 (0.0)
65 - 74	9 (30.0)	33 (45.8)	3(6.2)	3 (50.0)
≥ 75	18(60.0)	18 (25.0)	3(6.2)	0 (0.0)
$\chi^2 = 91.093; \rho < 0.001^y$				
Route of urinary catheterization				
SPC	6 (20.0)	21 (29.2)	33(68.8)	0 (0.0)
Urethral	24(80.0)	51 (70.8)	15(31.2)	6 (100.0)
$\chi^2 = 29.303; \rho < 0.001$				
Type of bladder drainage				
TBD	24(80.0)	66 (91.7)	45(93.8)	6 (100.0)
CBD	6 (20.0)	6 (8.3)	3(6.2)	0 (0.0)
$\chi^2 = 5.123; \rho = 0.163$				

[†]SPC, Suprapubic catheterization; CBD, continuous bladder drainage, TBD, tidal bladder drainage

Table 4. Correlation of duration of urinary catheterization, quality of life and depressive symptoms.

Spearman rank's correlation	Correlation coefficient	P -value
Duration of urinary catheterization Vs QoL score	-0.425	0.002
Duration of urinary catheterization Vs PHQ-9 score	-0.476	<0.001
QoL score Vs PHQ-9 score	0.748	<0.001

[†]QoL, Quality of life; PHQ-9, Patient Health Questionnaire-9 score; P-value < 0.05

of using catheters and consider it as part of their body (Folkman, 2010; Wilde, 2003). However, it may be possible that other factors other than duration of urinary catheterization had a greater influence on the QoL of the patients as the relationship had a weak correlation.

Prolonged indwelling urinary catheters prevented some of the patients in observing their daily physical activities (48.1%) such as routine work; and also affected their social interactions (34.6%) with other people. Such impaired daily physical activities and social interaction may be associated with economic impoverishment and social isolation which in previous studies have been related to susceptibility to depression especially in vulnerable elderly individuals (Alexopoulos, 2005; Capurso et al., 2007). However, possible relationships of economic impoverishment, social isolation and depression were not established in this study, but a high prevalence rate of depressive symptoms similar to the substantial number of patients who reported inability to observe daily physical activities and interact socially were observed among the patients;

There was a high prevalence rate of 46.1% among patients on prolonged indwelling urinary catheters; 28.8% of whom had mild depressive symptoms, 15.4% - moderate depressive symptoms and 1.9% had moderately severe depressive symptoms. The prevalence rate was substantially higher than the reported prevalence rate of 5.2% in the general population of Oyo state, Nigeria (Amaran et al., 2007) where the institution in which the study was carried out was located.

The depressive symptoms had a statistically significant strong correlation between QoL scores, which suggest patients on prolonged indwelling catheter with worsening quality of life may have propensity for depressive symptoms. Also, the relationship between duration of urinary catheterization and depressive symptoms scores (PHQ-9 scores) had a statistically significant weak negative correlation which may suggest at a shorter duration of urinary catheter use, the patients reported worse depressive symptoms scores. This finding may also be explained by the fact that coping with new health realities requires time (Folkman, 2010; Wilde, 2003); hence, the depressive symptoms may improve over time. However, other factors other than the duration of urinary catheterization may have a greater influence on susceptibility to depressive symptoms because of the weak correlation observed.

A major limitation of this study is that being a cross-sectional study, assessment of the mental state of the patients before the urinary catheterization to exclude those with depressive disorders was not possible; but subjectively assessed by patients' self-reporting of not having been diagnosed with depression.

CONCLUSION

The prolonged indwelling urinary catheter was related

with poor QoL worsened in younger age group and those on urethral catheters. The complication rate was high especially in patients on urethral catheters and continuous bladder drainage. A high prevalence rate of depressive symptoms was recorded among the patients with a strong correlation with their QoL. Hence, adequate attention should be paid to QoL of patient on prolonged indwelling urinary catheter due to its correlation with severity of depressive symptoms.

Conflict of Interests

The authors have not declared any conflict of interests.

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Appendix I: Adapted quality of life assessment question of international prostate symptoms score to assess the quality of life.

	Delighted	Pleased	Mostly satisfied	Mixed about equally satisfied and dissatisfied	Mostly dissatisfied	Unhappy	terrible
How do you feel over the period of using the indwelling urinary catheters?	0	1	2	3	4	5	6
Quality of Life assessment index:							

Appendix II. Patient Health Questionnaire 9(PHQ-9).

Over the last two (2) weeks, how often have you been bothered by any of the following problems	Tick as appropriate for each question			
	Not at all(0)	Several days(1)	More than half of the days(2)	Nearly every day(3)
1 Little interest/pleasure in doing things?				
2 Feeling down, depressed or hopeless?				
3 Trouble falling asleep or staying asleep or sleeping too much?				
4 Feeling tired or having little energy				
5 Poor appetite/overeating				
6 Feeling bad about yourself or that you are a failure or have let yourself or your family down?				
7 Trouble concentrating on things such as reading the newspaper or watching television?				
8 Moving or speaking so slowly that other people could notice. OR the opposite- being so fidgety or restless that you have been moving around a lot more than usual?				
9 Thoughts that you would be better off dead OR of hurting yourself in some ways?				
TOTAL				

Scores: 0-4: No depressive symptoms; 5-9: Mild depressive symptoms; 10-14: Moderate depressive symptoms; 15-19: Moderately severe depressive symptoms; 20-27: Severe depressive symptoms.

