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Lower urinary tract symptoms and quality of life among chronic heart failure patients: suggested nursing educational brochure

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Abstract
Up to 50% of chronic heart failure patients suffer from lower urinary tract symptoms; urinary frequency, urgency, and incontinence are extremely bothersome, while nocturnal symptoms may disrupt sleep and quality of life. The medications are used to treat heart failure may also indirectly provoke or exacerbate urinary symptoms.

Aim of the study: to determine the prevalence of Lower Urinary Tract Symptoms among chronic heart failure patients and its impact on their quality of life.

Patients and methods: Cross-sectional research design was utilized in this study. The study sample was composed of two hundred adult patients attending cardiac outpatient clinics male and female; at Assuit University Hospital. **Tools:** Data collected by utilizing the designed interview questionnaire sheet that included demographic data, assessment of lower urinary tract symptoms and World health organization quality of life scale. The study was done in a period of sex months from November 2017 to April 2018.

Results: The results revealed that 72% of the patients have nocturia and 70% of them suffering from frequency urination and urgency followed by 48%, 44%, & 41% of patients suffering from double voiding, intermittent flow of urine, and urinary incontinence respectively; While 38% & 27% of them have hesitancy, and a weak flow stream. In the relationship between quality of life and urinary tract symptoms, there was a strong correlation (r=0.89) and statistically significant difference at p. value <0.01.

Conclusion: Lower Urinary Tract Symptoms have a great effect on the quality of life among patients with chronic heart failure.

Recommendation: Chronic heart failure patients should be provided with sufficient information about lower Urinary Tract Symptoms and how to cope with it to improve their quality of life.

Keywords: chronic heart failure, lower urinary tract symptoms, and quality of life

Introduction

Chronic heart failure (CHF) is a progressive syndrome that results in a poor quality of life for the patient and places an economic burden on the health care system. Despite advances in the treatment of cardiovascular diseases such as myocardial infarction (MI), the incidence and prevalence of CHF continue to increase. An accurate estimation of disease burden is difficult to gather because of the vast number of patients with asymptomatic left ventricular (LV) dysfunction. As the population ages, there is an epidemiological shift toward a greater prevalence of clinical heart failure with preserved LV function, the so-called stiff-heart syndrome. In fact, heart failure with the preserved systolic function may constitute up to two-thirds of cases in patients older than seventy years old. Regardless of age, the lifetime risk of developing heart failure is approximately twenty percent for all patients older than forty years old**.**

In Europe, one million hospitalizations are attributed to acute episodes of HF each year. The annual cost associated with HF in the USA is estimated to be thirty-seven billion dollars, due to age-related increases in prevalence and readmission rates, despite the advances in medical care. In developed countries, the prevalence of HF is approximately one to two percents of the adult population, with the prevalence rising to more than ten percents among persons seventy years of age or older. Examining all of the influences impacting the epidemiology of HF, the numbers of new cases of HF are likely to rise over the next few years, even if the incidence falls, chiefly because of the rapid expansion of the elderly population (AlHabib, *et al*, 2011) [1].

Chronic heart failure may lead to appearance of lower urinary tract symptoms (LUTS) such as frequently passing urine in the toilet (frequency) more than 10 times a day and feeling a sudden, strong desire to pass urine (urgency), and leaking urine while rushing to the toilet (incontinence), waking several times overnight to pass urine (nocturia) more than 2 times per night. More than half of people with chronic heart failure experience continence issues such as urgency and incontinence. Lowered quality of life can occur

in people with heart failure, as well as people with continence problems, People may go out less often because of worrying about having to find a toilet frequently and quickly. Having an accident and leaking urine can be very embarrassing. People may use a continence product for protection in case they leak. (Palmer *et al*., 2009) [25].

Quality of life is impaired in chronic heart failure (CHF), resulting in considerable effect on patients' daily activities, more severe impairment of physical and psychosocial functioning (Francis, *et al*, 2010) [11]. Furthermore, Lower urinary tract symptoms interfere with daily activities and hence may have the greatest negative impact on the patient's quality of life, patients' mental and physical health status because of decreased sleep quality (Kwong, 2010) [17].

LUTS are bothersome, the nurse play an important role; this role involves giving reassurance and information and advice on lifestyle measures such as fluid intake (moderation of fluid intake is an important but excessive reduction of fluid intake can cause a worsening of symptoms and increased risk of infection). Reduction in the intake of fluids containing alcohol, caffeine, and artificial sweeteners together with avoidance of carbonated drinks advised (Haslam, 2009) [12]. Other helpful measures may include: Distraction techniques, such as breathing exercises, squeezing the penis and perineal pressure, which may all help to take the mind off the urge to micturate. (Howard *et al*, 2007) [13].

Significance of the study

CHF and LUTS may affect one to three percent of the general population. The prevalence of lower urinary tract symptoms is much higher, reported to occur in over fifty percent of men and women. Studies indicate that thirty-five to fifty percent of heart failure patients suffer from urinary incontinence. The urinary urgency with or without incontinence is found to be 2.9 times (ninety-five percent) more prevalent in patients with chronic heart failure. These symptoms are associated with reduced functional capacity in adults with heart failure. (Johnelly, 2013) [15].

The researchers observed that patients diagnosed with chronic heart failure have been experienced many lower urinary tract symptoms and theses symptoms affect negatively on their daily activities. The importance of this study is to determine the relationship between lower urinary symptoms and chronic heart failure patients' quality of life.

Aim of the study

- To determine the prevalence of lower urinary tract symptoms among chronic heart failure patients
- To determine the impact of lower urinary tract symptoms on quality of life among chronic heart failure patients
- To develop nursing education brochure.

Research question

1. What's the prevalence of lower urinary tract symptoms among patients with chronic heart failure?
2. Do lower urinary tract symptoms have an effect on the quality of life among patients with chronic heart failure?

Research design

Cross-sectional research design was utilized in this study.

Setting

The study was carried out in cardiac out patient's clinics at Assiut University Hospital.

Study Sample

Assuit University Hospital records, 2017; reported that approximately (364) patients with chronic heart failure attended cardiac out patient's clinics**.** The study sample was composed of 50% (182) from the total number; to avoid dropout add 10% to became sample size 200 adult patients attending cardiac outpatient clinics male and female at Assuit University Hospital suffering from chronic heart failure Aged from 18 to 65 years, free from other chronic diseases. Convenient sample technique was used in this study.

Tools of data collection

The following tools were utilized by the researchers, tested and piloted to collect data pertinent to the study:-

Tool (I): Structured Interview Questionnaire Sheet

This sheet was developed by the researchers based on the best available of evidence. It includes two parts:

Part 1: Demographic data.

It included the following items; patients' age, gender, marital status, residence, occupation, and level of education.

Part 2: Assessment of Lower Urinary Tract Symptoms

This part was developed by the researchers based on the best review of the literature and included the following items:

A) Storage symptoms: Frequency of urination, it included three questions: The presence of frequent urination, how many times of frequency urination a day and the onset of urinary frequency. Urinary incontinence, it was including four questions: The presence of urinary incontinence, suffering period of incontinence, the number of incontinence per day, and associated sneezing, coughing or carrying a heavy load. Urgency, it included two questions: The existence of urgency, and increasing urgency with treatment. Nocturia, it included two questions: The presence of nocturia, and frequency of nocturia per day.

B) Voiding symptoms: Hesitancy, it included the question about the presence of delay in the start of the urination. Double voiding, included the question about the presence of the process of distillation after the end of urination. Weak flow stream, it included two questions: The existence of suffering from an intermittent flow of urine and weak urine flow (Kalejaiye *et al*, 2013) [16].

Tool (II): World health organization quality of life-BREF (WHOQOL - BREF)

It was developed by (WHO, 1996). The WHOQoL-BREF is an abbreviated version of the WHOQoL-100 instrument consisting of 26 questions, which assesses four specific domains of well-being namely physical health (domain 1),

psychological health (domain 2), social relationship (domain 3) and the environment (domain 4). Domain 1: incorporates the following facets: activities of daily living, dependence on medicinal substances and medical aid, energy, and fatigue, mobility, pain and discomfort, sleep and rest, work capacity. Domain 2: assesses bodily image and appearance, negative feelings, positive feelings, self-esteem, spirituality/religious/personal beliefs, thinking, learning, memory and concentration. Domain 3: assesses personal relationships, social supports and sexual activities while domain 4: incorporates the following facets as well: financial resources, freedom/physical safety/security, accessibility and quality of health and social care, home environment, opportunity for acquiring new information and skills, participation in and opportunities for recreation and leisure activities, physical environment (pollution/noise/traffic/climate) and transport.

Scoring the WHOQOL-BREF: The WHOQOL-BREF produces a quality of life profile. It is possible to derive four domain scores. There are also two items that are examined separately: question 1 asks about an individual's overall perception of quality of life and question 2 asks about an individual's overall perception of their health. The four domain scores denote an individual's perception of quality of life in each particular domain. Domain scores are scaled in a positive direction (i.e. higher scores denote higher quality of life). The mean score of items within each domain is used to calculate the domain score. Mean scores are then multiplied by 4 in order to make domain scores comparable with the scores used in the WHOQOL-100. The first transformation method converts scores to range between 4-20, comparable with the WHOQOL-100. The second transformation method converts domain scores to a 0-100 scale.

- **Validity and Reliability:** The tools were tested for content validity by 5 experts of academic medical and nursing staff from the faculty of nursing at Assiut University. Modifications were done accordingly, and then the tools were designed in its final format and tested for reliability by using internal consistency for the tools measured using Cronbach test, the tools proved to be reliable (0.73).

Suggested Nursing Educational Brochure

It was developed by the researchers based on the literature review, were used to improve storage and voiding symptoms, it consists of two parts:

Part one; management of storage symptoms which include teaching the patient how to incontinence management (conservative), including physical exercise, behavioral therapy, lifestyle modifications, adjusted according to the individual behavior fluid intake. Education of the patient bladder training (require that the patient postpone voiding, resist or inhibit the sensation of urgency, and void according to a timetable rather than according to the urge to void). Teach the patient habit training (time or scheduled voiding and encourage the use of toilet). Pelvic muscle exercise (helps to strengthen pelvic floor muscle and can reduce the episodes of incontinence), the exercises can be done in any position (sitting at traffic, at desk at work, etc.), although it's easier while lying down, pelvic floor muscles, tighten them and hold the contraction for five seconds, followed by relaxing them for five seconds, and repeat this sequence five to 10 times a few different times daily for few weeks. Teach the patient how to maintaining skin integrity. Advise patients to reduce the intake of foods that cause bladder irritation, like caffeine, carbonated beverages, pepper and acid foods, and drinks. Weight loss is another conservative strategy to decrease intra-abdominal and intra-bladder pressure.

Part two; management of voiding symptoms: instruct patient or family member to record urinary output, provide enough time for bladder emptying (10 min), and implement intermittent catheterization as appropriate. Explain to with post-micturition dribble how to perform urethral milking. Post-micturition dribble describes the involuntary loss of urine immediately after passing urine, usually in the first few minutes after leaving the toilet. Urethral milking is also known as post-void milking, bulbar urethral elevation or bulbar urethral massage. Urethral milking eliminates post-micturition dribble caused by incomplete emptying of the urethra by the surrounding muscles rather than by obstruction.

Fieldwork

Phase 1: preparatory phase

It includes reviewing current literature and international related literature in the various aspects of the problems using textbooks, articles, and Journals in order to develop the study tools for data collection.

- **Administrative design**

An official approval letter was secured from Nursing Faculty Dean at Assiut University to the director of setting. Before starting any data collection, the explanation for the study aim was done to obtain permission and cooperation for data collection.

- **The pilot study**

A pilot study was conducted on 10% (20) patients of the sample. The purpose of the pilot study was to detect any particular problem in the statements clarity, feasibility, and applicability of the tool. No change was done in the assessment sheet, so the patients selected for the pilot study were included in the main study.

Phase 2: Implementation phase

Data were collected at the cardiac out patient's clinic Assiut University Hospital during the period from November /2017 to April /2018. The tools were all filled with interviewing patients. The purpose of the study was explained to the patients prior to answering the question. Each interview took about 30 minutes. About (7 to 9) sheets were finished (one day/week).

Ethical consideration

Verbal permission with an explanation of the nature and aim of the study was obtained from clinical resident and head nurse at the cardiac out patient's clinic. Also, a verbal consent was obtained from each patient to be included in the study. Clarification of the nature and purpose of the study was done during the initial interview with each patient. The

researcher emphasized that participation is absolutely voluntarily. Confidentiality of the subject was certainly assured.

Statistical design

Data collected and entered by Microsoft Excel 2010 program, the SPSS version (20) (Statistical package for social science) used for statistical analysis of data. The frequency used to calculate count and percentage of qualitative data (e.g. gender), where descriptive used to calculate the mean + standard deviation for quantitative data (e.g. Age). Chi-square test used to test the relation between qualitative variables where T-test and ANOVA used to test the relationship between quantitative data.

Results

Table 1: Frequency distribution of demographic characteristics among chronic heart failure patients (n=200).

Demographic characteristics	*No.*	*%*
1-Age:		
• 18 - <35 years	16	8.0
• 35 - <50 years	62	31.0
• 50 years and more	122	61.0
Mean ± SD	50.4±8.7	
2-Gender:		
• Male	108	54.0
• Female	92	46.0
3-Educational level:		
• Illiterate	112	56.0
• Read and write	62	31.0
• Basic education	18	9.0
• University	8	4.0
4-Marital status:		
• Single	6	3.0
• Married	156	78.0
• Divorced	8	4.0
• Widow\Widower	30	15.0
5-Occupation:		
• Farmer	58	29.0
• Housewife	52	26.0
• Handcraft works	62	31.0
• Employee	24	12.0
• Student	4	2.0

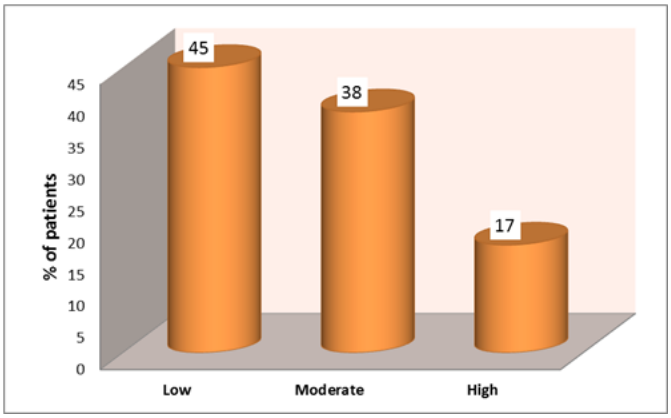

Fig 1: Total score of Quality of Life among chronic heart failure patients (n=200).

Table 2: Relationship between QOL level and storage symptoms among chronic heart failure patients (n=200).

Storage symptoms	Total	%	QOL level						P. value
			Low		Moderate		High		
			No.	%	No.	%	No.	%	
I. Frequency urination:									
– Do you have frequency urination	140	70.0	80	57.1	54	38.6	6	4.3	0.001**
– How many times a day frequent urination?									
• Less than 10 times	82	58.6	36	43.9	40	48.8	6	7.3	0.001**
• More than 10 times	58	41.4	44	75.9	14	24.1	0	0.0	0.001**
– When getting frequent urination?									

• In the daytime	50	35.7	26	52.0	18	36.0	6	12.0	0.223
• In the night	90	64.3	54	60.0	36	40.0	0	0.0	0.001**
II. urinary incontinence:									
– Do you have urinary incontinence?	82	41.0	56	68.3	26	31.7	0	0.0	0.001**
How long has urinary incontinence?									
• Days	24	29.3	14	58.3	10	41.7	0	0.0	0.001**
• Months	42	51.2	32	76.2	10	23.8	0	0.0	0.001**
• Years	16	19.5	10	62.5	6	37.5	0	0.0	0.001**
– How many times a day gets urinary incontinence?									
• Less than 3 times/day	58	70.7	36	62.1	22	37.9	0	0.0	0.001**
• More than 3 times/day	24	29.3	20	83.3	4	16.7	0	0.0	0.001**
– Do gets urinary incontinence during coughing or sneezing, or carry heavy object?	60	30.0	46	76.7	14	23.3	0	0.0	0.001**
III. Urgency:									
– Do you have urgency?	140	70.0	50	35.7	52	37.1	38	27.1	0.396
– Are you becoming urination urgency?									
• Before treatment	88	62.9	20	22.7	46	52.3	22	25.0	0.005**
• After treatment	52	37.1	30	57.7	6	11.5	16	30.8	0.002**
IV. Nocturia:									
– Do you have nocturia?	144	72.0	60	41.7	72	50.0	12	8.3	0.001**
– How many times you have nocturia?									
• Less than 3 times	98	68.1	28	28.6	58	59.2	12	12.2	0.001**
• More than 3 times	46	31.9	32	69.6	14	30.4	0	0.0	0.001**

Table 3: Relationship between QOL level and voiding symptoms among chronic heart failure patients (n=200).

Voiding symptoms	Total	%	QOL level						P. value
			Low		Moderate		High		
			No.	%	No.	%	No.	%	
V. Hesitancy:									
Do you have hesitancy?	76	38.0	32	42.1	32	42.1	12	15.8	0.019*
Double voiding and weak flow stream:									
Do you have double voiding?	96	48	48	50.0	36	37.5	12	12.5	0.001**
Do you suffer from intermittent flow of urine?	88	44	38	43.2	40	45.5	10	11.4	0.001**
Do you have weak flow stream?	54	27	24	44.4	20	37.0	10	18.5	0.114

Table 4: Multiple regression analyses between lower urinary tract symptoms and QOL scale among chronic heart failure patients (n=200).

R	ANOVA test	
	F	P. value
0.89	39.7	0.001**

Table 5: Coefficients of multiple regression analysis between lower urinary tract symptoms and QOL among chronic heart failure patients (n=200).

Items	t	Sig.
• Urinary frequency.	-3.528	0.001**
• Urinary incontinence.	-2.943	0.004**
• Urination urgency.	-3.540	0.001**
• Nocturia.	-2.406	0.018*
• Hesitancy.	-1.111	0.270
• Double voiding.	-1.268	0.208
• Suffer from intermittent flow of urine.	-1.499	0.137
• Weak flow stream.	-1.586	0.116

Table (1): This table reveals that more than half (61%) of studied sample were aged 50 years and more, 54% of them were male, 56% were illiterate, 78% were married and 31% of them were handcraft workers while, more than one quarter (29%, and 26%) of studied sample were farmers and housewives respectively.

Figur (1): This figure indicates that 45% of the studied sample had a low QOL level while only 17% of them had a high QOL level.

Table (2): This table illustrates that 70% of studied samples had urinary frequency, 58.6% of them were having less than ten times a day frequent, and 64.3%. of them were getting frequent urination in the night. There was statistically significant difference between quality of life and urinary frequency regarding low quality of life level. As regards urinary incontinence; the table shows that 41% of studied sample was complaining from urinary incontinence, 51.2% & 70.7% of them were suffered from urinary incontinence from months ago and got it less than three times a day, while 30% of them got urinary incontinence during coughing or sneezing or carrying any heavy object. There was statistically significant difference between quality of life and urinary incontinence regarding low quality of life level.

According to urgency; 70% of studied samples were having urgency and 58.6% of them were complaining from urgency before treatment, there was no statistically significant difference between the quality of life and urgency. Finally the table reveals that 72% of studied samples were having nocturia and 68.1% of them were complaining from nocturia less than 3 times at night Also, there was statistically significant difference between quality of life and nocturia

regarding moderate quality of life level.

Table (3): This table shows that 38% of the studied samples had hesitancy and there was a statistically significant difference between quality of life and hesitancy regarding low and moderate quality of life level. Also the table clears that 48% & 44% of the studied sample was complaining from double voiding and intermittent flow of urine while 27% of them were having weak flow stream. Additionally, there was statistically significant difference between quality of life, double voiding and weak flow stream regarding low quality of life level. Also, there was statistically significant difference between the quality of life and intermittent flow of urine regarding low and moderate quality of life level.

Table (4): This table clears that there is a positive strong multiple correlation between LUT symptoms and QOL (r =0.89) with statistically significant difference by using ANOVA test that means the symptoms affects the QOL (P=0.001**).

Table (5): This table reveals that the most lower urinary tract symptoms affect the QOL is urinary frequency, urinary incontinence, urgency and nocturia with negative t value that means the symptoms decrease QOL with statistically significant difference at $p<0.05$.

Discussion

Lower urinary tract symptoms are common problems among chronic heart failure patients in men and women. The severity of lower urinary tract symptoms affect patients' quality of life and limit their social and physical satisfaction. Lower urinary tract symptoms not only affect the sleep period, anxiety level and social life but also affect the psychological and social quality of life (Tunckiran, 2014) [32].

Based on the results of the current study, more than half of patients' age ranged between 50-65 years old, males; illiterates, married, and more than one-quarter of them were farmers, housewives, and handcraft workers.

As regard to age, the study finding was supported by Mosterd, 2007 who reported that persons younger than 50 years are hardly ever found heart failure, but in those older, than 50 years the prevalence and incidence increase progressively with age. Also, Mosca *et al*, 2007 [21] reported that the majority of the studied samples are in their 55 years has a higher risk of heart failure.

Concerning gender, Eaker *et al*, 2010 [9] was in the same line who reported that most of the patients with chronic heart failure are male. While disagrees with study by Indians & Natives, 2010 who mentioned that the patients who have chronic heart failure were men (11.8%) are slightly more likely than women (9.0%).

According to the educational level, the present study finding was supported by Christensen, *et al*, 2011 who concluded that the relationship between educational level and chronic heart failure with an almost 50% lower risk with the highest level of education compared with the lowest in both men and women. Also, Mostafa, 2008 was agreeing with the present study who reported that the majority of patients with chronic heart failure were illiterates.

As regard to marital status, the present study finding was compatible with Eaker, 2010 [9] who reported that married men are more related to chronic heart failure, according to researchers' opinion, it was suggested that married men at our country were very anxious and worrying about their income especially most common of patients either housewife, or handcraft workers that mean that they depend on their efforts to meet their family daily demands, in addition to their families responsibilities.

According to occupation, the present study results are similar with Bugajska *et al*, 2009 [5] who reported that few numbers of the patients with chronic heart failure are working. On the other hand this finding disagrees with Chacon *et al*., 2008 [6] who found that (54.8%) of the studied sample was without working and housewives.

Concerning quality of life (QOL) level, the current study results showed that more than two fifths of studied sample have a low quality of life level. This finding was in the same line with Mielck & Leidl, 2014 [20] who found that less than half of the studied sample has a low evaluation of the quality of life and which are responsible for poor community health and low satisfied about their health with chronic disease. As the researchers' point of view, this result may be attributed to increased percentage of literacy between the studied samples; in addition to shortage of health services and patients' ignorance of routine checkup for early detection of any complain or routine follow-up after diagnosing the diseases.

The results of the present study revealed that most of the studied sample suffering from LUTS. As the results indicated that more than two-thirds of the studied samples were suffering from frequency urination especially at night. These results are supported with Tannenbaum & Johnell, 2013 who stated that of lower urinary tract symptoms is much higher, the urinary frequency was sixty percent of men and women patients diagnosed with heart failure. As the researchers' readings at scientific journals and reviews, it can be explained that; at night the body of chronic heart failure patients become at rest that leads to decrease the demand and effort on the heart muscle, that in turn increase the tissue perfusion especially the renal perfusion which increases the urine output and urinary frequency especially at night.

There was a statistically significant difference between the quality of life and frequency urination which leads to a lower level of quality of life. These results are supported with Liao *et al*., 2009 [18] who emphasized that frequent urination showed the low quality of life level of patients with heart failure.

As regarding the urinary incontinence, the present results presented that more than one-third of the studied sample have urinary incontinence. This finding agrees with Rita & Hwang, 2013 who emphasized that the urinary incontinence were prevalent in patients with chronic heart failure approximately forty-five percent. Also this study finding was supported by Bouwman *et al*., 2014 [4] who found that the urinary incontinence seems to be related to chronic heart failure. The researchers' point of view was concluded that most heart failure patients take diuretics that increase the patients' desire to urinate frequently throughout the day, leaking urine while rushing to the toilet, and old age patient may experience difficulty at walking several times overnight to pass urine that makes some of them delay the urination

desire and the accumulation of urine may lead to urine leakage and the inability of the patient to control the urination process.

Also, the present study reported that there was a statistically significant difference between the quality of life for studied sample and urinary incontinence which leads to lower quality of life. These findings are consistent with Balci *et al*., 2012 [3] who stated that the urinary incontinence is associated with a negative impact of quality of life of patients with heart failure; it was found that the physical functioning, vitality and mental health scores were lower and the general health perception was worse in patients with urinary incontinence.

As regards to urgency, the study results showed that more than two-thirds of studied sample have urgency. These findings are in the same line with Chiu *et al*., 2012 who mentioned that the occurrence of urgency urination was more than two thirds in the patients with chronic heart failure. Also the present study showed that there was a statistically significant difference between the relationship between quality of life and urgency urine in the case of positive symptoms of the low or moderate quality of life level. This result agrees with Lowenstein *et al*., 2009 who found that there was a statistically significant difference between the quality of life of the studied patients and their desire of urgency, as expected found a moderate correlation between severity of urgency urine and heart failure.

Also, the present study cleared that more than two-thirds of the studied patients were having nocturia less than three times daily. This result was in agreement with Redeker *et al*., 2012 who recommended that nocturia is common among patients with heart failure (HF) and was closely associated with poor sleep quality. Also, this finding is supported by Soufer, 2009 [30] who stated that excessive urination at night (Nocturia) in heart failure caused by fluid redistribution while a person is sleeping lying down. Whereas the present study indicated that there was a statistically significant difference between the quality of life of studied sample and nocturia which lead to low level of quality of life. These findings are consistent with Schulman *et al*., 2005 [28] who found that there was a statistically significant relationship between chronic heart failure and nocturia.

The findings of the present study showed that hesitancy, double voiding and intermittent flow of urine complained by less than half of the studied patients. Less than one-third of studied patients had a weak flow stream of urine**.** These results may occur especially between older men patients because many of them may complain from prostatic hyperplasia that causes the appearance of these symptoms.

As regard hesitancy, there was a statistically significant relationship with the quality of life. This finding disagrees with Sivarethinamohan & Aranganathan., 2013 [29] who found that there was no statistically significant difference between QOL and the delay in the start of the flow of urine (hesitancy).

In addition the current study cleared that there was a statistically significant difference between the quality of life and double voiding, suffering from an intermittent flow of urine and weak flow stream. This finding was consistent with Filocamo *et al*., 2011 [10] who found that double voiding, and an intermittent flow of urine have an impact on the quality of life of heart failure patients.

Finally, it can be concluded that there was strong multiple correlation between lower urinary tract symptoms and quality of life. Storage symptoms as such (frequency, incontinence, urgency, and nocturia) can deteriorate the patients' quality of life.

Conclusions

Based on the result of the present study, it can be concluded that Lower Urinary Tract Symptoms have a strong effect on the quality of life among patients with chronic heart failure.

Recommendations

- Chronic heart failure Patients' should be provided with sufficient information about urinary tract symptoms and how to coping with it to improve their quality of life
- Presence of cardiac nurses in outpatient clinics for providing them with training and awareness regarding normal physiological changes associated with heart failure, common problems, and needs of patients that have an active role in health promotion and disease prevention for that highly growing segment of the population.
- Providing a pamphlet containing information about health education needed for the cardiac patients at cardiac out patients clinics.

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