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Lower urinary tract symptoms among normal-weight, overweight, and obese palestinians: a study of prevalence and impact on the quality of life

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Abstract

Background This study was conducted to assess the prevalence of lower urinary tract symptoms (LUTS) among non-obese and obese Palestinians. The study also aimed to assess the effects of LUTS on the quality of life of obese and non-obese Palestinians.

Methods This was a cross-sectional study that was conducted among normal-weight, overweight, and obese Palestinians using the King Health Questionnaire. The data collected from participants were entered and analyzed using SPSS (version 22).

Results In this study, data were collected from 378 participants. The median age of the participants was 42.0 [30.0, 55.0] years, and the median body mass index was 27.1 [24.0, 30.8] kg/m². Of the participants, 149 (39.4%) were overweight and 112 (29.6%) were obese. The prevalence of urinary hesitancy, incomplete emptying, urgency, nocturia, urgency, urge incontinence, stress incontinence, nocturnal enuresis, intercourse incontinence, bladder pain, number of urinations/24 h, and number of urinations/night was significantly higher among obese participants. Similarly, role limitations, physical/social limitation, personal relationships, emotions, and sleep/energy were affected significantly higher in obese compared to nonobese participants.

Conclusion Higher prevalence of LUTS among obese patients compared to nonobese patients was observed among the Palestinians. Obese patients reported significantly higher deterioration of the quality of life as a result of LUTS compared to nonobese patients. Urologists, nutritionists, public health specialists, and other healthcare providers should consider measures to reduce LUTS among obese patients and improve their quality of life.

Keywords Lower urinary tract symptoms, LUTS prevalence, Obesity, Quality of life

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Background

Lower urinary tract symptoms (LUTS) are a term used for a group of symptoms related to storage of urine, voiding, and post-micturition by International Continence Society (ICS) [1]. Urinary urgency, frequency, nocturia, and urinary incontinence (UI) are some of the most prevalent symptoms [2]. The ICS defines UI as complaint of involuntary urine loss, coming from several mechanisms that affect urine storage in the bladder [3]. Using the ICS criteria, previous studies have estimated that more than half of adults suffer LUTS [4, 5]. In a systematic review conducted in 2018, it was estimated that there are 2.3 billion adult people with LUTS around the world [6]. LUTS are associated with many factors including age and race which are major non-modifiable risk factors for LUTS. On the other hand, other modifiable risk factors such as lifestyle factors were previously reported [7]. Several studies conducted in various populations, linked the incidence, progression and severity of LUTS to several risk factors, such as age, mode of delivery, parity, obesity, as well as high blood pressure, and alcoholism [8–10].

Obesity is among the most common comorbidities related to LUTS. There have not been many studies that looked for the relationship between obesity and LUTS [7, 11–13]. Most of the studies that looked for the association between body mass index and LUTS found that a higher BMI increases prevalence of LUTS [14].

Studies were conducted in Palestine in 2020–2021 to assess the relationship between pregnancy and LUTS and the impact of LUTS on quality of life among women receiving antenatal care at the obstetrics and gynecology clinic [15–18]. The study reported that pregnancy affected LUTS and deteriorated the quality of life of the pregnant women.

A prospective study of American men reported that obesity and weight gain in adulthood were associated with a higher probability of experiencing or deteriorating LUTS [14, 19, 20]. On the other hand, the studies that involved female participants reported that the risk of developing urinary incontinence was higher among women with a high body mass index [21–25]. In a study that included adult males and females who visited a physician complaining of symptoms of urinary tract infections, it was found that patients with general and central obesity were more likely to experience urinary incontinence in both males and females as well as increased risk of overactive bladder in females only [26]. Other studies reported that women who had waist circumferences more than 80 cm were more susceptible to developing LUTS [27, 28]. A preliminary study was conducted to measure the impact of alpha-adrenergic drugs on the quality of life of obese and nonobese patients with LUTS [29]. The study recruited a small number of patients and

did not include the demographic and clinical variables of the patients.

Even though some studies on LUTS were conducted in Palestine, none of them addressed the relationship between LUTS and obesity nor the prevalence of LUTS among normal-weight, overweight, and obese Palestinians. Additionally, the effects of LUTS on the quality of life of normal-weight, overweight, and obese Palestinians were not investigated before. Moreover, no study has been done to investigate how obesity affects the recurrence and course of treatment for patients who have LUTS. Therefore, this study was conducted to assess the prevalence of LUTS among normal-weight, overweight, and obese Palestinians. The study also aimed to assess the effects of LUTS on the quality of life of normal-weight, overweight, and obese Palestinians. This study included a large sample size and assessed the comorbid chronic diseases, urinary/reproductive diseases and health issues suffered by the study participants.

Methods

Study design

This was a cross-sectional study that was conducted among normal-weight, overweight, and obese Palestinians using the King Health Questionnaire [29].

Population and sample size

The study population was normal-weight, overweight, and obese Palestinians. The sample size was calculated using the Raosoft sample size calculator. Setting the margin error at 5%, the confidence interval at 95%, and response distribution at 50%, the sample size was calculated at a 95% confidence interval. The final sample size needed for this study was 377 non-obese and obese Palestinian patients with LUTS.

Inclusion criteria

The participants were adults with LUTS who could read the Arabic language and were visiting the urology clinics in the West Bank of Palestine.

Exclusion criteria

Pregnant women, patients with history of prostate or bladder cancer, neurologic defects in the spinal cord or in the brain, and patients diagnosed with psychiatric illness were excluded.

Sampling technique

Visitors of urology clinics in different hospitals and health centers meeting the inclusion criteria were asked to participate. A convenience sampling technique was followed in this study to recruit the study participants. If the patient was willing to be included in the research, an interviewer-administrated questionnaire was conducted.

Study tool

Data on the quality of life of patients with LUTS were collected from the study population using a questionnaire as the study tool in the hospital settings. The King Health Questionnaire is composed of eight sections. These sections are: general health perceptions, impact on life, role limitations, physical/social limitation, personal

relationships, emotions, sleep/energy, and incontinence severity measures [29]. The study questionnaire is provided as supplementary material.

Table 1 Detailed demographic variables of the participants

Variable	n	%
Residence		
Village	226	59.8
City	121	32.0
Camp	31	8.2
Marital status		
Single	75	19.8
Married	274	72.5
Widow	20	5.3
Divorced	9	2.4
Having chronic diseases		
No	233	61.6
Yes	145	38.4
Chronic diseases*		
Hypertension	82	56.6
Diabetes mellitus	76	52.4
Chronic heart/artery disease	27	18.6
Bone disorder/Arthritis	22	15.2
Endocrine disorder	13	9.0
Gastrointestinal disease	8	5.5
Asthma	6	4.1
Malignancy	6	4.1
Blood disorder	2	1.4
Having urinary/reproductive diseases/health issues		
No	203	53.7
Yes	175	46.3
Urinary/reproductive diseases/health issues**		
Recurrent urinary tract infections	112	64.0
Urinary stones	29	16.6
Benign prostatic hyperplasia	25	14.3
Kidney cancer/prostate cancer	5	2.9
Varicocele	2	1.1
Prostatitis	2	1.1
Sex		
Male	150	39.7
Female	228	60.3
Menopause***		
No	173	45.8
Yes	55	14.6
Body mass index		
Normal-weight	117	31.0
Overweight	149	39.4
Obese	112	29.6

*Calculated based on number of participants who had chronic diseases,

Calculated based on number of participants who had urinary/reproductive diseases/health issues, *Calculated based on number of participants who were female

Validity and reliability

A pilot study with 30 participants from a urology clinic was conducted. The results of the pilot study were used to ensure the test-retest reliability of the answers and Cronbach's alpha was used to ensure that the items in the tool were internally consistent. The test-retest reliability was excellent as indicated by a Pearson's correlation coefficient of 0.94 and the internal consistency of the tool was also excellent as indicated by a Cronbach's alpha of 0.92.

Data analysis

The data collected from participants were entered and analyzed using SPSS (version 22). Continuous data were presented as medians with their interquartile range [Q1, Q3]. Differences in the responses of the non-obese and obese participants were compared using Chi-square/Fisher's exact test. Differences in scores were compared using Kruskal Wallis test. A p value of <0.05 indicated statistical significance.

Results

Characteristics of the participants

In this study, data was collected from 378 participants. The median age of the participants was 42.0 [30.0, 55.0] years, the median height was 1.7 [1.6, 1.8] m, and the median body mass index was 27.1 [24.0, 30.8] kg/m². The median number of normal deliveries for the female participants was 3.0 [1.0, 5.0].

Of the participants, 145 (38.4%) had chronic diseases including hypertension and diabetes mellitus. Moreover, 175 (46.3%) participants reported experiencing urinary/reproductive diseases/health issues including recurrent urinary tract infections and urinary stones. Of the participants, 149 (39.4%) were overweight and 112 (29.6%) were obese. The detailed demographic variables of the participants are shown in Table 1.

Prevalence of the LUTS among the study participants

The prevalence of LUTS among the study participants is shown in Table 2. Of the participants, 125 (33.1%) had incomplete emptying, 112 (29.6%) had urgency, and 93 (24.6%) had frequency. The prevalence of the rest of LUTS is shown in Table 2.

Association between the body mass index and LUTS

In this study, the prevalence of urinary hesitancy, incomplete emptying, urgency, nocturia, urgency, urge incontinence, stress incontinence, nocturnal enuresis, intercourse incontinence, bladder pain, number of urinations/24 h, and number of urinations/night was

Table 2 Prevalence of the LUTS among the study participants

Urinary symptoms	n	%
Urinary hesitancy	78	20.6
Urinary straining	78	20.6
Incomplete emptying	125	33.1
Frequency	93	24.6
Nocturia	81	21.4
Urgency	112	29.6
Urge incontinence	54	14.3
Stress incontinence	50	13.2
Nocturnal enuresis	13	3.4
Intercourse incontinence	16	4.2
Bladder pain	64	16.9

significantly higher among obese participants. The details of these associations are shown in Table 3.

Association between the body mass index and impact of LUTS on the quality of life of the participants

In this study, role limitations, physical/social limitation, personal relationships, emotions, and sleep/energy were affected significantly higher in obese compared to nonobese participants. Differences in the distribution of answers of the participants on the items in the King Health Questionnaire are shown in Table 4.

Table 3 Association between the body mass index and LUTS

Variable		Body mass index						p
		Normal-weight		Overweight		Obese		
		n	%	n	%	n	%	
Urinary hesitancy	No	103	88.0	123	82.6	74	66.1	<0.001
	Yes	14	12.0	26	17.4	38	33.9	
Urinary straining	No	98	83.8	119	79.9	83	74.1	0.193
	Yes	19	16.2	30	20.1	29	25.9	
Incomplete emptying	No	92	78.6	99	66.4	62	55.4	0.001
	Yes	25	21.4	50	33.6	50	44.6	
Urgency	No	97	82.9	116	77.9	72	64.3	0.003
	Yes	20	17.1	33	22.1	40	35.7	
Nocturia	No	101	86.3	123	82.6	73	65.2	<0.001
	Yes	16	13.7	26	17.4	39	34.8	
Urgency	No	99	84.6	112	75.2	55	49.1	<0.001
	Yes	18	15.4	37	24.8	57	50.9	
Urge incontinence	No	112	95.7	124	83.2	88	78.6	0.001
	Yes	5	4.3	25	16.8	24	21.4	
Stress incontinence	No	113	96.6	127	85.2	88	78.6	<0.001
	Yes	4	3.4	22	14.8	24	21.4	
Nocturnal enuresis	No	115	98.3	143	96.0	107	95.5	0.458
	Yes	2	1.7	6	4.0	5	4.5	
Intercourse incontinence	No	115	98.3	142	95.3	105	93.8	0.219
	Yes	2	1.7	7	4.7	7	6.3	
Bladder pain	No	108	92.3	120	80.5	86	76.8	0.004
	Yes	9	7.7	29	19.5	26	23.2	
Number of urinations/24 h	2 times	9	7.7	13	8.7	9	8.0	0.003
	3–7 time	70	59.8	57	38.3	40	35.7	
	8–9 times	21	17.9	48	32.2	32	28.6	
	10–14 times	9	7.7	22	14.8	25	22.3	
	15 time or more	8	6.8	9	6.0	6	5.4	
Number of urinations/night	1 time	77	65.8	73	49.0	38	33.9	<0.001
	2	29	24.8	54	36.2	49	43.8	
	3 or more	11	9.4	22	14.8	25	22.3	
If you were to spend the rest of your life with your current urinary condition, how would you feel about that?	Horrible	8	6.8	21	14.1	17	15.2	0.002
	Not happy all the time	11	9.4	24	16.1	25	22.3	
	Not happy most of the time	13	11.1	28	18.8	21	18.8	
	Neutral	16	13.7	20	13.4	13	11.6	
	Happy most of the time	25	21.4	24	16.1	6	5.4	
	Happy all the time	12	10.3	9	6.0	5	4.5	
Very happy all the time	32	27.4	23	15.4	25	22.3		

Table 4 Differences in the distribution of answers of the participants on the items in the King Health Questionnaire

Item		Body mass index						p	
		Normal-weight		Overweight		Obese			
		n	%	n	%	n	%		
Role limitations	How would you describe your health at the present?	Very poor	2	1.7	1	0.7	3	2.7	0.007
		Poor	4	3.4	12	8.1	15	13.4	
		Fair	11	9.4	19	12.8	24	21.4	
		Good	60	51.3	70	47.0	49	43.8	
		Very good	40	34.2	47	31.5	21	18.8	
How much do you think your bladder problem affects your life?	Not at all	52	44.4	33	22.1	26	23.2	< 0.001	
	A little	37	31.6	51	34.2	30	26.8		
	Moderately	20	17.1	41	27.5	30	26.8		
	A lot	8	6.8	24	16.1	26	23.2		
Physical/social limitation									
Does your bladder problem affect your household tasks? (Cleaning, shopping etc.)	Not at all	70	59.8	54	36.2	45	40.2	0.006	
	Slightly	35	29.9	61	40.9	44	39.3		
	Moderately	8	6.8	24	16.1	14	12.5		
	A lot	4	3.4	10	6.7	9	8.0		
Does your bladder problem affect your job, or your normal daily activities outside the home?	Not at all	67	57.3	57	38.3	34	30.4	< 0.001	
	Slightly	32	27.4	43	28.9	32	28.6		
	Moderately	11	9.4	26	17.4	28	25.0		
	A lot	7	6.0	23	15.4	18	16.1		
Does your bladder problem affect your physical activities (e.g., going for a walk, running, sport, gym etc.)?	Not at all	62	53.0	54	36.2	33	29.5	< 0.001	
	Slightly	38	32.5	49	32.9	30	26.8		
	Moderately	15	12.8	23	15.4	31	27.7		
	A lot	2	1.7	23	15.4	18	16.1		
Does your bladder problem affect your ability to travel?	Not at all	76	65.0	67	45.0	38	33.9	< 0.001	
	Slightly	23	19.7	30	20.1	16	14.3		
	Moderately	9	7.7	28	18.8	26	23.2		
	A lot	9	7.7	24	16.1	32	28.6		
Personal relationships									
Does your bladder problem limit your social life?	Not at all	89	76.1	84	56.4	49	43.8	< 0.001	
	Slightly	16	13.7	39	26.2	33	29.5		
	Moderately	8	6.8	17	11.4	20	17.9		
	A lot	4	3.4	9	6.0	10	8.9		
Does your bladder problem limit your ability to see and visit friends?	Not at all	89	76.1	84	56.4	49	43.8	< 0.001	
	Slightly	16	13.7	39	26.2	33	29.5		
	Moderately	8	6.8	17	11.4	20	17.9		
	A lot	4	3.4	9	6.0	10	8.9		
Does your bladder problem affect your relationship with your partner?	Not applicable	41	35.0	23	15.4	11	9.8	< 0.001	
	Not at all	55	47.0	73	49.0	59	52.7		
	Slightly	14	12.0	33	22.1	22	19.6		
	Moderately	6	5.1	12	8.1	12	10.7		
	A lot	1	0.9	8	5.4	8	7.1		
Does your bladder problem affect your sex life?	Not applicable	41	35.0	23	15.4	11	9.8	< 0.001	
	Not at all	48	41.0	57	38.3	46	41.1		
	Slightly	16	13.7	32	21.5	20	17.9		
	Moderately	9	7.7	15	10.1	16	14.3		
	A lot	3	2.6	22	14.8	19	17.0		
Does your bladder problem affect your family life?	Not applicable	41	35.0	23	15.4	11	9.8	< 0.001	
	Not at all	62	53.0	80	53.7	64	57.1		
	Slightly	9	7.7	32	21.5	20	17.9		
	Moderately	4	3.4	13	8.7	11	9.8		
	A lot	1	0.9	1	0.7	6	5.4		
Emotions									

Table 4 (continued)

Item		Body mass index						p
		Normal-weight		Overweight		Obese		
		n	%	n	%	n	%	
Role limitations								
Does your bladder problem make you feel depressed?	Not at all	77	65.8	71	47.7	44	39.3	< 0.001
	Slightly	29	24.8	45	30.2	33	29.5	
	Moderately	8	6.8	18	12.1	18	16.1	
	A lot	3	2.6	15	10.1	17	15.2	
Does your bladder problem make you feel anxious or nervous?	Not at all	64	54.7	49	32.9	29	25.9	< 0.001
	Slightly	30	25.6	53	35.6	31	27.7	
	Moderately	14	12.0	22	14.8	28	25.0	
	A lot	9	7.7	25	16.8	24	21.4	
Does your bladder problem make you feel bad about yourself?	Not at all	81	69.2	78	52.3	52	46.4	0.005
	Slightly	23	19.7	42	28.2	30	26.8	
	Moderately	9	7.7	16	10.7	12	10.7	
	A lot	4	3.4	13	8.7	18	16.1	
Sleep/energy								
Does your bladder problem affect your sleep?	Never	68	58.1	59	39.6	39	34.8	< 0.001
	Often	43	36.8	86	57.7	58	51.8	
	All the time	6	5.1	4	2.7	15	13.4	
Does your bladder problem make you feel worn out and tired?	Never	65	55.6	51	34.2	32	28.6	
	Often	49	41.9	85	57.0	66	58.9	
	All the time	3	2.6	13	8.7	14	12.5	
Do you do any of the following?								
Do you wear pads to keep dry?	Never	53	45.3	76	51.0	74	66.1	0.031
	Sometimes	30	25.6	26	17.4	17	15.2	
	Often	14	12.0	15	10.1	6	5.4	
	All the time	20	17.1	32	21.5	15	13.4	
Be careful how much fluid you drink?	Never	52	44.4	57	38.3	54	48.2	0.576
	Sometimes	35	29.9	46	30.9	24	21.4	
	Often	19	16.2	27	18.1	21	18.8	
	All the time	11	9.4	19	12.8	13	11.6	
Change your under-clothes because they get wet?	Never	50	42.7	57	38.3	54	48.2	0.303
	Sometimes	38	32.5	46	30.9	24	21.4	
	Often	22	18.8	28	18.8	21	18.8	
	All the time	7	6.0	18	12.1	13	11.6	
Worry in case you smell?	Never	48	41.0	56	37.6	54	48.2	0.345
	Sometimes	40	34.2	48	32.2	24	21.4	
	Often	19	16.2	26	17.4	20	17.9	
	All the time	10	8.5	19	12.8	14	12.5	

Differences in quality-of-life scores as affected by the body mass index

In this study, Role limitations, Physical/social limitation, Personal relationships, Emotions, Sleep/energy, and care scores as measured by the King Health Questionnaire for obese and nonobese participants are shown in Table 5.

Discussion

LUTS are highly prevalent among the general population [27]. In this study, the prevalence of LUTS among obese and nonobese Palestinians and the extent to which these symptoms affected their quality of life were assessed for the first time. The findings of this study showed that obese patients were more affected by a higher prevalence

of LUTS and severe deterioration of the quality of life. These findings are significant and informative to those planning interventions to improve the quality of life of the affected patients and mitigate risk factors that are associated with LUTS including urologists, gynecologists, and other physicians.

Higher prevalence of LUTS was reported among obese patients. These findings were consistent with those previously reported in several studies elsewhere [3, 7, 27–29]. Taken together, these findings can be explained by the increased abdominal pressure in obese patients compared to nonobese patients [30]. Accumulation of fats around the abdominal area is known to increase the intra-abdominal pressure. This, in turn, is known to

Table 5 Differences in quality-of-life scores as affected by the body mass index

Score	Body mass index	Score			p
		Q1	Median	Q3	
Role limitations	Normal-weight	2.0	2.0	4.0	< 0.001
	Overweight	2.0	4.0	5.0	
	Obese	2.0	4.0	5.5	
Physical/social limitation	Normal-weight	3.0	3.0	4.0	< 0.001
	Overweight	3.0	4.0	7.0	
	Obese	3.0	6.0	9.0	
Personal relationships	Normal-weight	0.0	3.0	4.0	< 0.001
	Overweight	3.0	4.0	6.0	
	Obese	3.0	5.0	6.0	
Emotions	Normal-weight	3.0	3.0	6.0	< 0.001
	Overweight	3.0	5.0	7.0	
	Obese	3.5	6.0	9.0	
Sleep/energy	Normal-weight	2.0	4.0	6.0	< 0.001
	Overweight	2.0	6.0	6.0	
	Obese	4.0	6.0	6.0	
Care	Normal-weight	5.0	7.0	10.0	0.186
	Overweight	5.0	7.0	10.0	
	Obese	4.0	7.0	10.0	

increase pressure and exert strain on the bladder and other structures in the pelvic area. This can lead to urinary frequency, urgency, and incontinence. Moreover, previous research has linked obesity and bladder dysfunctions [31]. These dysfunctions include a decreased capacity of the bladder and increased activity of the detrusor muscle. Again, these dysfunctions can increase frequency, urgency, and incontinence. In addition, obesity was shown to be significantly associated with systemic inflammation, which in turn can aggravate LUTS [32]. Visceral fats are known to release pro-inflammatory cytokines including tumor necrosis factor alpha and interleukin 6 which contribute to a state of chronic low-grade inflammation [33]. This inflammation can be associated with changes in bladder functions and higher incidence of LUTS. On the other hand, obesity was also shown to affect the floor muscles in the pelvis. Weakened muscular tone in the pelvis can be associated with incomplete urinary emptying and incontinence. Moreover, a considerable percentage of the patients in this study had chronic diseases including hypertension, diabetes mellitus, and heart diseases. It is well-established that these diseases are risk factors for developing LUTS in both male and female patients [34, 35]. Therefore, these comorbid conditions also contribute to the severity of LUTS and deterioration of the quality of life of the affected patients. Obesity, hypertension, hyperlipidemia, and insulin resistance or type 2 diabetes mellitus are components of the metabolic syndrome [36]. Many previous studies have established strong links between the different components of metabolic syndrome, LUTS, and

deterioration of the quality of life of the affected patients [33, 37, 38].

In this study, a considerable percentage of the participants also had urinary and reproductive health issues that can be intricately associated with experiencing LUTS [39]. These health issues included recurrent urinary tract infections, renal stones, and benign prostatic hyperplasia. Urinary tract infections can cause inflammation and scarring of the urinary tract. These conditions can cause LUTS that can be manifested as urgency, frequency and dysuria. On the other hand, urinary stones can block urine flow and cause symptoms that can be linked to LUTS [40]. Moreover, benign prostatic hyperplasia is a common condition in older men where the prostate gland enlarges and compresses the urethra, hence resulting in LUTS that can be manifested as difficulty in initiation of urination, weak urine stream, and incomplete bladder emptying [41]. Kidney and prostate cancers can obstruct the urinary tract thus leading to similar symptoms that can be linked to LUTS. Although varicocele is primarily linked to male infertility, the enlargement of veins inside the scrotum could also affect the surrounding structures and contribute to discomforts and LUTS [42]. Prostatitis is another type which is a result of prostate gland inflammation. Prostatitis can be associated with painful urination, pelvic pain, and frequent urination [43]. Together, these findings indicate that the interplay between obesity, systemic inflammation, metabolic syndrome, and urinary/reproductive health issues can cause physical discomfort and deterioration of the quality of life of the affected patients. These findings along with those previously reported could inform urologists, nutritionists,

public health specialists, and other healthcare providers to counsel patients on the importance of maintaining a healthy weight. Obese and overweight patients might be advised on the importance of losing weight.

In this study, obese patients reported higher deterioration of quality of life because of LUTS compared to non-obese patients. It is well-established that the intensity of LUTS can determine the deterioration in the quality of life [29]. As obese patients reported higher LUTS, it was not surprising to observe that obese patients reported higher deterioration of quality of life because of LUTS compared to nonobese patients. These findings indicate that urologists and other healthcare providers should consider measures to reduce the intensity/severity of LUTS among obese patients and seek ways to improve their quality of life.

Limitations

In this study a cross-sectional design was used. Cross-sectional studies can shed light on a snapshot of data at a single point in time. Therefore, establishing causality between the increased body mass index and LUTS cannot be established using this study design. In this study, a convenience sampling approach was used. This approach can increase the likelihood of selection bias. This bias can limit the external validity and the ability to generalize the results. The study was conducted with the use of King's Health Questionnaire. Therefore, the data collected in this study could be limited by recall and desirability bias. In this study, the participants were categorized based on their body mass index. It could have been more interesting to differentiate the patients based on their central obesity. It has been argued that central obesity is a stronger indicator of disease risk compared to obesity that is based on the body mass index alone. Additionally, chronic medications can also cause and/or deteriorate LUTS. In this study, we did not assess the impact of the chronic medications used by the patients on experiencing LUTS.

Conclusion

Higher prevalence of LUTS among obese patients compared to nonobese patients was observed among the Palestinians. Obese patients reported significantly higher deterioration of the quality of life because of LUTS compared to nonobese patients. Urologists, nutritionists, public health specialists, and other healthcare providers should consider measures to reduce LUTS among obese patients and improve their quality of life.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12894-024-01587-5>.

Supplementary Material 1

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Author contributions

Hatim Hijaz, Riad Amer, and Ramzi Shawahna were involved in the conception and design of the work, analysis and interpretation of data, and drafting and final approval of the manuscript. Yazeed Amous, Sabreen Isefan, and Kholoud Hamarshah were involved in the data acquisition, analysis, drafting of the work and final approval of the version to be published. All authors approved the final manuscript.

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Data availability

All data analyzed in this study were included in the manuscript. The datasets used in the analysis or entered into statistical software can be obtained from the corresponding author upon making a reasonable request.

Declarations

Ethics approval and consent to participate

Approval was taken from the Institutional Review Board (IRB) at An-Najah National University (Ref. no. Med.Sept.2023/53). The participants gave written informed consent. Participation was voluntary and the participants were told that their data would be kept confidential and available for the researchers only and the questionnaires would be kept with the researchers in a safe place. For data analysis and presentation, coded numbers would be used instead of names to keep patient's information confidential.

Competing interests

The authors declare no competing interests.

Consent to publish

Not applicable.

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