Prevalence, Impact and Correlates of Treatment-Seeking for Urinary Incontinence In Elderly Patients Attending Main University Hospital Of Alexandria, Egypt

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Abstract

Introduction: Urinary incontinence may be Stress urinary incontinence, Urge incontinence, or Mixed urinary incontinence. Variations in the prevalence rates of urinary incontinence have been reported in the literature. Urinary incontinence affects the lives of patients. The direct relationship between urinary incontinence, stress and depression has already been documented. **Aim:** to study the prevalence and correlates of treatment-seeking for urinary incontinence in elderly patients attending tertiary care hospitals in Alexandria and to explore the impact of incontinence on quality of life in terms of its effect on physical, behavioral, psychological, social and sexual well-being. **Subjects:** Elderly patients aged ≥65with urinary incontinence (UI) attending a urinary incontinence outpatient clinic or geriatric department of Alexandria Main University hospital. **Results:** In our study the prevalence of UI was estimated to be 69%. Stress incontinence was the most common type 67.3%, followed by urge incontinence 19.7% and mixed type was the least 13.0%. The highest proportion leaked once or more per day 72.661%. The most common activities leading to urine leakage were hand washing 91.5%. A total of 45.5% suggested restricted mobility due to hospitalization and musculoskeletal disorders. The prevalence of depressive symptoms among elderly patients with UI was 67.9%. 54%of cases stated that their general health was poor and 26.3% mentioned it was very poor. **Conclusion:** From this study it was concluded that the prevalence of urinary incontinence among elderly patients was estimated to be 69% and it was common in elderly female. There were significant associations between urinary incontinence and depression, psychological stress and life limitation. The prevalence of depressive symptoms in elderly patients with UI was 67.9%. UI was considered as an obstacle in good social and physical well-being.

Key words : Prevalence, urine incontinence, elderly.

INTRODUCTION:

Urinary incontinence is defined by the International Continence Society (ICS) as "involuntary loss of urine". Incontinence may be subdivided into three categories: Stress urinary incontinence, which is caused by the involuntary loss by effort, exercise, sneeze or cough, and Urge incontinence, which is the involuntary loss of urine accompanied by or following a sudden compelling desire to void which

is difficult to defer and Mixed urinary incontinence, which is defined as "involuntary urine loss accompanied by urgency and present by effort, exercise, sneezing or cough" [1].

Variations in the prevalence rates of urinary incontinence have been reported in the literature reflecting different definitions of incontinence, target populations, sampling approaches and data collection methods. The prevalence of UI is highest among older adults in both sexes, with estimates as high as 60% [2,3]. Evidence suggests that UI is more prevalent in women up to 80 years of age; thereafter, the rates of UI in men and women are similar [4].

However, simply reporting the prevalence of urinary incontinence may be misleading because UI is not always perceived as bothersome by women. It is argued that the prevalence of incontinence that is problematic hygienically or socially would be more indicative of the need for health services since women who do not consider their incontinence as troublesome may not seek treatment [5].

Although it is not a life-threatening condition in elderly people, the symptoms associated with a loss of bladder control (frequency, urgency, nocturia, and UI) have personal and psychosocial implications, causing anxiety, social withdrawal, sense of shame, loss of self-confidence, and reduced quality of life [6,7]. Although, the prevalence of urinary incontinence is similar to that of other chronic diseases, research regarding to its effect on the quality of life of patients has only recently started in the last fifteen years [8].

The direct relationship between urinary incontinence, stress and depression has been adequately documented. Severe depression significantly affects the degree to which the patient perceives incontinence, which is significant in altering the quality of life and general functioning of the patient [9].

Urinary Incontinence is related to reduced personal and social life and reduced total quality of life. It may seriously affect sociability, and the social gatherings the patient attends are modified so that possible unpleasant moments and embarrassment by sudden loss of urine are avoided [10]. In the elderly, UI can be an important factor in the decision to place an elderly person in a nursing home, in most cases due to caregiver stress [11].

Studies that address the psychosocial issues of incontinence have tended to focus on measuring the impact of incontinence on quality of life rather than exploring the impact of incontinence on the quality of life of older people. Relatively few studies have explored the psychosocial impact of incontinence in elderly men and women [12] and consequently there are gaps in our understanding of how incontinence affects them. This supports the need for research studies such as this, which explore the experiences of both older men and women with incontinence.

AIM:

The aim of this work was to examine the prevalence and correlates of treatment-seeking for urinary incontinence in elderly patients attending tertiary care hospitals in Alexandria and to explore the impact of incontinence on quality of life in terms of its effect on physical, behavioral, psychological, social and sexual well-being .

Subjects:

Elderly patients aged 65 years or older with urinary incontinence (UI) attending the urinary incontinence outpatient clinic or geriatric department of Alexandria Main University hospital during the period from 1st April to October 2017.

Sampling size and method:

Simple random sampling methods were used for the patients. Outpatient records were used to enroll patients for the study. Using a significance level of 5% for calculating the adequate sample size in prevalence study; $n=Z^2 P(1-P) /d^2$ where n was the required sample size, Z was the statistic corresponding to 95% level of confidence (standard value of 1.96), P is the expected prevalence (Data indicated prevalence rate 26%, and d was precision (corresponding to effect size) (3%).

n= 296:300. The sample was increased by nearly 10% to account for contingencies such as non-response or recording errors. Thus the total required sample size was 330 elderly patients with UI.

Recruitment:

Potential participants were identified using patient records of continence and geriatric clinics. The data indicated that an average of 40 patients attended the UI clinic on a monthly basis. Recruitment packs containing a letter of participation and participant information guide were prepared and provided to elderly people (or literate care givers) who met the inclusion and exclusion criteria. The recruitment strategy aimed to capture older people who sought help and were willing to discuss their incontinence.

Inclusion Criteria:

1. Participants age ≥65 years.
2. With clinically and uro-dynamically diagnosed urinary incontinence
3. Both genders.
4. Those who were currently accessing UI clinics for the management of urinary incontinence for any cause.
5. Subjects with normal hearing.
6. Those had a willingness to share experiences with the researcher.

Exclusion criteria:
1. Urinary tract infection.
2. Invalidating neurological disease.
3. Urogenital cancer.
4. Psychiatric disease and/or advanced cognitive alteration.

Ethical Approval
The protocol was approved by the ethical committee of the faculty of medicine and was approved by the director of the university hospital and head of geriatric and urosurgical departments. Informed consent was obtained from all participants. The purpose and benefits of this study are explained. Privacy and confidentiality were ensured and maintained throughout the study.

It was decided that the details of the professional background of the researcher would be important in assuring participants of the confidentiality of the research and help allay fears of talking about the personal and sensitive topic of urinary incontinence.

Data management:
Following data collection, raw data were coded and scored and coding instruction manual was prepared. Data was fed to the computer and statistical analysis was performed using Statistical Package for Social Sciences (SPSS version20.0). Significance of the obtained results was judged at 5% level of significance.

Data processing:
Complete confidentiality was maintained while the data were being processed. This stage had two major objectives:
1. Clean data by performing a series of comprehensive checks, making corrections whenever possible. Different statistical procedures (frequencies, means, standard deviations, median and cross tabulations) were used to check the validity of data and spot any error.
2. Produce analytical results. This involved the recording of variables into forms required for analysis.

Data analysis:
Dummy tables were designed to facilitate data analysis and tabulations. Descriptive statistics were used to summarize the outcome variables. Continuous variables were summarized with median and categorical variables as frequencies and percentages. Appropriate inferential statistics were done.

Monte Carlo and Chi square tests of statistical significance were used to explore associations in categorical and ordinal data, Mann Whitney U non-parametric test was used to compare means in numerical data of the two groups. A value of $p \leq 0.05$ was considered statistically significant.

We hypothesized that treatment seeking for UI was explained by sociodemograpgic factors, clinical presentation and symptom impact, as well as some important psychosocial factors of the respondent as well. To test this hypothesis, a multivariate logistic regression model was developed. The factors included in the multivariate model were based on the association of treatment seeking with UI in the bivariate analysis. An α-level<0.05 was used to determine of statistical significance.

Statistical analysis of the data:

Data were fed to the computer using IBM SPSS software package version 20.0. Qualitative data were described using number and percent. Comparison between different groups regarding categorical variables was tested using Chai-square test. Quantitative data were described using mean and standard deviation for normally distributed data. For normally distributed data comparison between two independent populations were done using independent t-test while more than two populations were analyzed F-test (ANOVA) to be used. Significance test results were quoted as two-tailed probabilities. Significance of the obtained results was judged at the 5% level.

METHODS:

Research design:

A hospital-based cross sectional descriptive epidemiological study was conducted as it was the most appropriate to achieve the objectives of the study.

Research setting:

Urosurgical department both inpatient and outpatient clinics seeking for treatment of UI and any patient that had associated urological complaints were excluded as well as the Geriatric department (in patient or outpatient clinics) of Main University Hospital of Alexandria.

Data collection method and tools:
Quality assurance of data collection:

Before collecting the data, a pilot study was conducted at the Main University hospital of Alexandria on 30 eligible patients to test the following:

1. The suitability of the used questionnaires as regards phrasing and culture of interviewees.
2. Estimated average time of filling the formats.
3. The whole administrative technique.
4. In testing the reliability of the formats, the Chronbach alpha will be estimated.

Feedback of the pilot study indicated that:
1. The questionnaire format and standardized scales could be easily and quickly completed.
2. The average time estimated to fill each format was 20 minutes per patient.
3. No administrative obstacles were raised.
4. There was good cooperation and support from the general manager of the hospital, colleges, patients and their care givers.

Direct in depth-interviewing

Data were collected using a pretested, preceded semi-structured interview format. In-depth interviews were conducted by the investigator himself to answer the questions. During the interviews, the following data were collected:

1- Participant characteristics (age, gender, marital status, level of education, residence, occupation, co-morbidities and body mass index).
2- Underlying causes of UI: neurological abnormalities, previous pelvic operation, constipation, medication and lifestyle habits.
3- Type of incontinence was defined as follows: Stress Incontinence; leakage with cough, sneezing, exercise, activity, Urge Incontinence; leakage with the urgent desire to void, Mixed Incontinence; combination of stress and urge, Overflow Incontinence, leakage associated with over-distended bladder, Functional incontinence, leakage due to physical inability to get to bathroom.
4- Urinary Incontinence clinical presentation included: symptom duration, frequency, amount of urine leakage, associated lower urological complaints, voiding pattern, degree of bothersomeness, and activities leading to urine loss.
5- The severity of incontinence were assessed using the Sandvik Severity Index [13] for Urinary Incontinence. Two items were scored as follows: How often was urine leakage experienced? (Never = 0, Less than once a month = 1, several times a month = 2, several times a week = 3, every day and/or night = 4), How much urine lost each time? (A few drops = 1, A little = 1, More = 2). Severity index = (points for frequency) * (number of points). The minimum and maximum scores were 0 and 8 respectively. The higher the score the more severe is urinary incontinence.

6- Depressive symptoms were evaluated using 15- items geriatric depression scale [14]. Each question was scored as 0 (negative data), 1 (positive data). Results were total scores between 0 and 15; a score of 0 to 5 was normal and a score above 5 indicated depressive symptoms.

7- Impact on the quality of life of incontinent patients were assessed using The King's Health Questionnaire (KHQ) [15]. It was considered Grade A by the International Consultation on Incontinence (ICI), because it complied with all international requirements for this type of tool, and it was widely acknowledged and used. It comprised 21 items divided into 9 domains: general health perception (1 item); UI impact (1 item); role limitations (2 items); social limitations (2 items); physical limitations (2 items); personal relationships (3 items); emotions (3 items); sleep/energy (2 items) and incontinence impact (5 items). A further domain assessed the severity of symptoms. Each KHQ item had four possible answers on a Likert type scale. The percentage of repercussions in each domain ranged from 0% (Better quality of life) to 100% (worse quality of life). The total score ranged from a minimum of 28 points to a maximum of 115. The higher the total score, the greater is the influence of UI in quality of life.

RESULTS:

Section (1): Prevalence of urinary incontinence in elderly patients

Outpatient records indicated that an average of 80 elderly patients attended geriatric clinics and Urosurgical departments monthly. A total of 480 elderly attended a 6 month-period of field visit from 1st April to end of October2017. 330 elderly patients with urinary incontinence (UI) were identified. The prevalence of UI was estimated to be 69% figure (1).
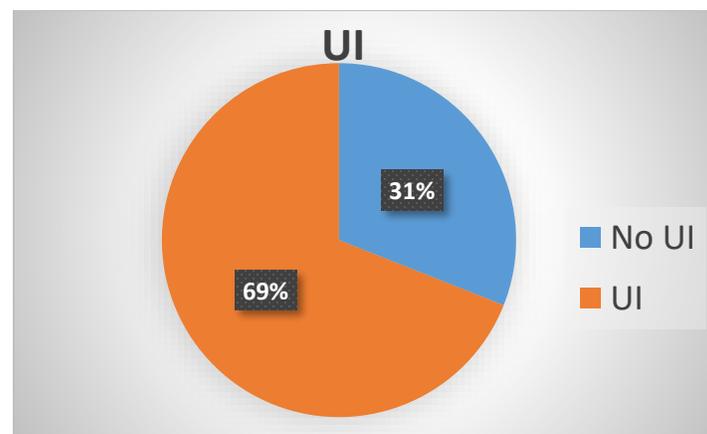

Figure (1): prevalence of UI in elderly patients attending the Main University Hospital of Alexandria; medical record information.

Section (2): Characteristics of the studied elderly patients

Background characteristics

A total of 330 elderly patients with UI were enrolled in this study. Table (1) presented background characteristics of the elderly patients. The age of the elderly patients ranged between 65 and 90 years with a mean age of 68.3 ± 5.6 years. Those in the age group 65< 70 years constituted 34.2% of the studied sample, age group 70:< 80 years were56.7%, while the least proportion 9.1% was in the age group 80 -90 years age group. Nearly three quarters of the studied patients 73.6% were females while the remaining 26.4% were male.

Approximately 53.6% of the study elderly were married. Unmarried patients who either single, widow or divorced constituted 46.4%.

Vast majority of the studied elderly were either illiterate or had no formal education and just able to read and write which constitute 96.4% however, 1.8% were either completed their basic education or university graduated.

Working elderly were only 5.5% of the sample while the majority 94.5% were not working or on pension. Less than one third of the participants 28.2% were living in urban residence while 71.8% were rural dwellers.

More than two thirds of the studied elderly 70.3% took medications for multiple chronic illnesses. Based on BMI, more than one third of the studied sample 36.7% was either overweight or obese. The highest prevalence of self-reported comorbid conditions among the studied elderly patients with UI were Diabetes mellitus 50.6% and obesity 44.8%. Less than a third 26.7% had congestive heart failure. Less common comorbidities were chronic cough 19.7%, depression 12.1%, and constipation 7.6%. The least common comorbidities were neurologic diseases such as stroke, Parkinson's or memory loss in very early stage *3.0% and bronchial asthma 2.1%.*

Table (1): Background characteristics of elderly patients with UI attending the Main University Hospital of Alexandria

Background characteristics	No (n=330)	%
Age(years)		
65:<70	113	34.2
70<80	178	56.7
80:90	30	9.1
Sex		
Male	87	26.4
Female	243	73.6
Marital status		
Married	177	53.6
Unmarried	153	46.4
Educational level		
Illiterate/no formal education	318	96.4
Basic completed	6	1.8
Secondary/middle completed	0	0.0
University graduate and above	6	1.8
Working status		
Not working/on pension	312	94.5
Working	18	5.5
Residence		
Urban	93	28.2
Rural	237	71.8
Comorbidities#		
Diabetes mellitus	167	50.6
Obesity	148	44.8
Congestive heart failure	88	26.7
Chronic cough	65	19.7
Depression	40	12.1
Constipation	25	7.6
Neurologic (stroke, Parkinson, Dementia very early stage)	10	3.0
Bronchial asthma	7	2.1
Medications		
No	98	29.7
Yes	232	70.3
Body mass index(BMI)(Kg/m^2)		
<25	209	63.3
≥25	121	36.7

Unmarried include: widow, widower, divorced and separated

#: Categories are not mutually exclusive.

Medications included beta-blockers, diuretics, antidepressants, sedatives, narcotics, antipsychotics, some

gout medications, herbals and chemotherapy.

Clinical characteristics

The results of this study revealed that stress incontinence was the commonest type encountered among the study subjects 67.3%, followed by urge incontinence 19.7% while mixed type was the least 13.0%. There was statistical significant difference between male and female according to the type of UI where higher proportions of males were diagnosed either urge 74.7% or mixed incontinence 18.4% while in females, stress incontinence was the most common type encountered 88.9% (table 2).

Table (2): Gender distribution of elderly patients attending the Main University Hospital of Alexandria by type of UI

Type of UI	Male %	Female %
Stress incontinence	8.9	88.9
Urge incontinence	74.7	0
Mixed incontinence	18.4	11.1

More than half of elderly 54.5% had symptom duration ≥5 years. The highest proportion leaked once or more per the day 72.1% while 78.5% leaked drops or little amount of urine. However, severe incontinence was noted among 46.0% of elderly. Vast majority of the studied elderly 98.2% reported associated lower urological complaints (frequency, urgency, dysuria, nocturia, hematuria, vaginal pressure and pain in the lower abdomen). Great bothersomeness was reported by the majority of participants 81.5%. Of those reported bothersomeness, 50.0% encountered social problems and 39.0% encountered mixed hygienic, social and sexual problems. Most of patients 79.1% received medications as a formal treatment modality in the past. Minorities had either surgery 2.1% or received behavioral therapy (bladder training) 1.8%. Nearly half of elderly 49.3% claimed that they could hold the urine for just few minutes once the bladder felt full. About 42.7% voided urine at night while a third 33.0% voided during day time and 24.3% voided both day and night (table 3).

Table (3): Clinical presentation of UI by elderly patients attending the Main University Hospital of Alexandria

Clinical presentation	No (n=330)	%
Type of UI		
Stress	222	67.3
Urge	65	19.7
Mixed	43	13.0
Symptom duration		
<6 months	30	9.2
6 months:<2years	39	11.8
2 years:<5years	81	24.5
≥5 years	180	54.5
Frequency of urine leakage		
Once or more per day	238	72.1
Once or more per week	85	25.8
Once or more per month	7	2.1
Amount (Volume)		
Drops or little amount	259	78.5
Moderate	59	17.9
Large(Complete bladder empty)	12	3.6
Severity of UI (score)#		
Mild (1-2)	116	35.0
Moderate (3-4)	63	19.0
Severe(+4)	151	46.0
Associated lower uorologicl complain*		
Yes	6	1.8
No	324	98.2
Degree of bothersomness@		
Not at all	30	9.2
Slight	16	4.8
Moderate	15	4.5
Great	269	81.5
If yes (300)		
Hygienic problem	33	11.0
Social problem	150	50.0
Mixed (Hygienic problem, Social problem, sexual)	117	39.0
Formal treatment modality received in the past		
No	43	13.0
Surgery	7	2.1
Medication	261	79.1
Behavioral therapy (bladder training)	6	1.8
Once the bladder feels full, how long can you hold the urine?		
Few minutes	163	49.3
Cannot tell when the bladder is full	21	6.4
As long as l want	58	17.6
Less than a minute or two	88	26.7
Voiding pattern		
Day	109	33.0
Night	141	42.7
Day and night	80	24.3

:Sandvik's Severity Index= points for frequency X points for amount.(Total score range0-8 with higher scores indicating more severe UI.

*Associated lower urological complaints include: frequency, urgency, dysuria, hematuria, vaginal pressure and pain in the lower abdomen.

@Degree of bothersome is assessed by urogenital distress inventory-6

Activities leading to urine leakage

Table (4) represented the responses of elderly patients according to activities leading to urine leakage. The commonest activities reported by the subjects were washing hands 91.5%, changing position from sitting or standing up 90.6%, laughing 78.5%, Lifting 77.9% and Retching 71.5%. Less common activities included: running 54.8% and bending down 47.3%. However, running water 38.8%, rushing to the toilet 34.2% and sneezing or coughing 25.8% were the least common activities leading to urine leakage. Activity score ranged between 18 and 50 with median 32.8 (IQR = 7.6).

Table (4): Responses of elderly patients with urinary incontinence (n = 330) attending Main University Hospital of Alexandria according to activities leading to urine leakage.

Activity	Negative responses		Positive responses	
	No.	%	No.	%
Changing position from sitting or standing up	31	9.4	299	90.6
Running	149	45.2	181	54.8
Sneezing or coughing	245	74.2	85	25.8
Laughing	71	21.5	259	78.5
Lifting	73	22.1	257	77.9
Bending down	174	52.7	156	47.3
Retching	94	28.5	236	71.5
Rushing to the toilet	217	65.8	113	34.2
Running water	202	1.2	128	38.8
Washing your hands	28	8.5	302	91.5
Activity score Minimum – maximum Median (IQR)	18 – 50 32.8 (7.6)			

Negative responses included never or rarely. Positive responses included sometimes, often or always. Categories are not mutually exclusive.

Reported underlying causes of UI

Vast majority of incontinent respondents about 96.4% mentioned that constipation or stool impaction were the main cause of UI. Nearly two thirds 62.4% stated recurrent urinary tract infections as a cause of UI. About 45.5% suggested restricted mobility due to hospitalization, musculoskeletal disorder, neurologic disorder or environmental barriers as an underlying cause of UI. Minority 2.1% reported previous pelvic operation or intervention as a cause (table 5).

Table (5): Reported underlying causes of UI in patients attending Main University Hospital of Alexandria

Causes of UI	No (n=330)	%
Constipation/stool impaction	318	96.4
Recurrent urinary tract infection	206	62.4
Restricted mobility	150	45.5
Previous pelvic operation	7	2.1

Previous pelvic operations: For women include hysterectomy, ovary removal, urethral stricture or dilatation: for men include radical prostatectomy.
Restricted mobility: hospitalization, musculoskeletal disorder, neurologic disorder and environmental barriers.

Lifestyle of elderly patients

Elderly patients with UI were more likely to report high impact physical activities 80.3%, increased stress and anxiety 75.2% and more likely to consume excessive caffeine (> 2 cups /day), 59.1%. Less common life style factors were; being overweight / obese 51.2%, using artificial sweeteners/dietary supplements 46.1%, and restricted mobility 45.5%. The least common factors were drinking too many fluids 31.5% and being smoker 30.3% table (6).

Table (6): Life style of elderly patients with UI attending Main University Hospital of Alexandria

Life style	No (n=330)	%
Smoking	100	30.3
Being overweight/Obese	169	50.2
High impact physical activities	265	80.3
Excessive caffeine consumption(>2cups/day)	195	59.1
Drinking too many fluids	104	31.5
Restricted mobility	150	45.5
Artificial sweetners/Dietary supplementation	152	46.1
Increased stress/Anxiety	248	75.2

Section (3): Psychosocial impact of urinary incontinence
Quality of life

The overall median King's Health Questionnaire (KHQ) for the studied elderly was 68.2%. The total median KHQ score for women was significantly higher than that for men (67.1 versus 59.7 respectively, *P*= 0.002). Table (7) illustrated median KHQ scores for the elderly patients with UI on the 9 domains. The highest median scores (%) were observed for the following subscales; UI impact 82.7%, physical limitations 82.5%, social limitations 81.5%, and role limitations 81.0%. Lower scores (%) were observed for sleep and energy 60.7%, emotions 55.6% and health perception domains 50.0%. The least score was for the domains of severity

measures 33.3% and personal relationships 25.0%. Women had significantly higher scores than men on the following subscales: emotions (p = 0.017) and severity measures (p = 0.000) while men had significantly higher scores than women on the following subscales: health perceptions (p = 0.004) and role limitations (p = 0.001). There were no statistical differences between the two sexes on: UI impact (p=0.118), physical limitations (p=0.258), social limitations (p=0.776), personal relationships (p=0.310) and sleep and energy (p=0.073). The most affected domain in women regarding the quality of life was "severity measures 35.8%" while in men it was "personal relationships 41.8%".

Table (7): Scores on the King's health questionnaire (KHQ) domains for male and female patients with urinary incontinence attending Main University Hospital of Alexandria

KHQ domain	Overall (n = 330)	Male patients (n = 87)	Female patients (n = 243)	Statistical significance
Health perception Minimum-maximum Median (IQR)	25.0 – 66.7 50.0 (6.2)	50.0 (4.3)	43.2 (4.5)	Z = 2.870 **(p = 004)** *
UI impact Minimum-maximum Median (IQR)	33.3 – 100.00 82.7 (10.4)	81.1 (2.4)	83.7 (6.9)	Z = 1.568 (p = 0.118)
Role limitations Minimum-maximum Median (IQR)	33.3 – 100.00 81.0 (10.4)	87.4 (7.3)	78.7 (9.1)	Z = 3.260 **(p = 001)** *
Physical limitations Minimum-maximum Median (IQR)	16.7 – 100.00 82.5 (4.4)	80.1 (4.3)	81.6 (5.8)	Z = 1.133 (p = 0.258)
Social limitations Minimum-maximum Median (IQR)	16.7 – 100.00 81.5 (4.4)	80.8 (4.1)	81.7 (3.7)	Z = 0.284 (p = 0.776)
Personal relationships Minimum-maximum Median (IQR)	33.3 – 66.7 25.0 (6.7)	39.9 (6.1)	41.8 (3.9)	Z = 1.016 (p = 0.310)
Emotions Minimum-maximum Median (IQR)	22.2 – 100.0 55.6 (22.2)	53.9 (8.9)	59.6 (6.3)	Z = 2.403 **(p = 0.017)** *
Sleep and Energy Minimum-maximum Median (IQR)	16.7 – 100.0 60.7 (12.2)	57.1 (8.3)	62.1 (8.7)	Z = 1.799 (p = 0.073)
Severity measures Minimum-maximum Median (IQR)	8.0 – 100.0 33.3 (25.0)	35.8 (10.5)	46.3 (11.6)	Z = 3.979 **(p = 0.000)** *

King's health questionnaire (KHQ): 21 items about urinary tract symptoms yield scores in 9 domains (general health perception. incontinence impact. role limitations. physical limitations. social limitations. personal relationships. emotions. sleep/energy & severity of symptoms).

Scoring: Each is rated using a 4 or 5 points Linkert scale. Domain scores range from 0(best) to 100 (worst). There are 2 single-item domains (general health perceptions and incontinence impact) and the severity of symptoms domain is scored using a scale from 0 (best) to 30 (worst). Higher score indicate a greater symptoms.

Z: Mann Whitney U test level of significance is at 5%.

Table (8) revealed that stress incontinence (SUI) had more impact on the quality of life than that of urge or mixed incontinence as indicated by higher median scores in most of KHQ domains specially role limitation, physical and social limitations.

Table (8): Median scores related to UI type in the different KHQ domains of patients with urinary incontinence attending Main University Hospital of Alexandria

KHQ domains	Median SUI (IQR) (n=222)	Median UUI (IQR) (n=65)	Median MUI (IQR) (n=43)
General health perception	25 (0-37.5)	50 (25-62.5)	50 (25-50)
UI impact	33.3 (33.3-66.7)	66.7 (66.7-100)	83.3 (41.7-100)
Role limitations	80.6 (72.4-89.6)	36.7 (0-58.3)	58.3 (33.3-91.7)
Physical limitations	82.1 (72.9-92.5)	46.7 (8.3-74.8)	50 (16.7-66.7)
Social limitations	80.1 (68.2-90.1)	61.5 (49.2-66.7)	22.2 (0-50)
Personal relationships	22.5 (0-41.2)	3.8 (0-16.7)	12.8 (0-50)
Emotions	11.1 (0-27.8)	33.3 (16.7-94.4)	27.8 (0-41.7)
Sleep and energy	50.3 (25-63.2)	16.7 (0-58.3)	33.3 (16.7-50)
Activities performed	50 (28.8-75)	75 (33.3-91.7)	54.1 (33.3-75)

SUI = Stress urinary incontinence, UUI = Urge urinary incontinence, MUI = Mixed urinary incontinence, IQR: Inter Quartile Range

Depression

The prevalence of depressive symptoms (as measured by geriatric depression scale) among UI elderly patients was 67.9% table (9).

Table (9): Depression status of patients with UI attending Main University Hospital of Alexandria

Depression status	No(n=330)	%
Normal (Score<5)	106	32.1
Depressive symptoms(Score≥5)	224	67.9

Impact of depression on quality of life of UI elderly patients
The results of this study indicated that older adults with UI had a negative view of their overall health status. Table (10) revealed general health perception of elderly patients with UI according their depression status. None of the depressive patients perceived that their general health was very good; a minority 0.9% stated that it was good and 18.8% thought it was fair. However, the highest proportion of depressive

elderly 54.0% stated that their general health was poor and 26.3% mentioned it was very poor. The difference in general health perception of the elderly patients with UI regarding their depression status was statistically significant (p = 0.001).

Table (10): General Health Perceptions of elderly patients with urinary incontinence attending Main University Hospital of Alexandria according to their depression status

General Health Perceptions	Depression status				Total
	Normal < 5 (n=106)		Depressive symptoms ≥ 5 (n=224)		
	No.	%	No.	%	
Very good	12	11.3	0	0.0	12
Good	50	47.2	2	0.9	52
Fair	40	37.7	42	18.8	82
Poor	4	3.8	121	54.0	125
Very poor	0	0.0	59	26.3	59
Monte Carlo test	19.8				
P	0.001*				

*Significant at 5%

Table (11) illustrated incontinence impact on life of elderly patients with UI according their depression status. None of the depressive elderly stated that UI not impacted their life at all. The life of only 3.1% of elderly was little impacted. However, more than half of elderly 54.5% stated that their life was

moderately impacted and 42.4% mentioned that their life was impacted a lot. The difference in incontinence impact on life of the elderly patients with UI as regards their depression status was statistically significant (p = 0.001).

Table (11): Incontinence Impact on life of elderly patients with urinary incontinence attending Main University Hospital of Alexandria according to their depression status

Incontinence Impact on life	Depression status				Total
	Normal < 5 "n=106"		Suggests depression ≥ 5 "n=224"		
	No.	%	No.	%	
Not at all	32	30.2	0	0.0	32
A little	68	64.2	7	3.1	75
Moderately	6	5.7	122	54.5	128
A lot	0	0.0	95	42.4	95
Monte Carlo test	22.8				
P	0.001*				

*: Significant at 5% level.

Depressive incontinent elderly patients had significantly higher scores on all of life limitations subscales of KHQ as compared to normal incontinent patients, (P < 0.05) (table 12).

Table (12): Life limitations (scores) of elderly patients with urinary incontinence attending Main University Hospital of Alexandria according to their depression status

Life limitation	Depression status		P value
	Normal < 5 (n=106)	Suggests depression ≥ 5 (n=224)	
Role limitations			
Range	42.0-65	70-80	0.001*
Mean ± S.D.	55.2 ± 6.8	75.6 ± 6.3	
Physical limitations			
Range	50.0-70.0	75-90	0.001*
Mean ± S.D.	65.2 ± 6.9	82.6 ± 7.0	
Social limitations			
Range	52.0-70.0	78-90	0.000*
Mean ± S.D.	60.2 ± 6.65	83.6 ± 6.0	
Personal relationships			
Range			
Mean ± S.D.	55.0-69	70-82	0.000*
	61.5 ± 5.7	76.5 ± 8.2	
Emotions			
Range	30.0-50.0	65.0-75.0	0.000*
Mean ± S.D.	42.6 ± 8.2	70.0 ± 6.9	
Sleep/ Energy			
Range	45.0-70.0	60-80	0.003*
Mean ± S.D.	55.2 ± 8.5	72.6 ± 8.2	
Severity measures			
Range	50.0-68.0	70.0-85.0	0.003*
Mean ± S.D.	60.5 ± 5.9	75.9 ± 7.0	

P: value of Mann Whitney U non-parametric test
*Significant at 5% level

Section (4): Determinants of incontinence health care seeking

After adjustment for confounders, the following factors were significantly associated with odds of health care seeking for UI. Women's decisions to seek treatment for urinary incontinence were significantly associated with advanced age (OR=3.5, CI=1.7-6.1), having a higher educational level (OR=2.6, CI=1.1-6.8), stress type of UI (OR=4.1, CI=1.6-10.9), severe UI (OR=3.7, CI=2.7-10.2), night-time voiding pattern (OR=2.7, CI=1.2-8.4), higher scores of activities leading to UI (OR=4.3, CI=1.9-9.5), mobility restriction (OR=2.6, CI=1.4-4.7), worse health perception scores (OR=2.3, CI=1.2-8.2), worse disease-specific quality of life scores (OR=10.2, CI=3.7-20.5) and presence of depressive symptoms (OR=4.8, CI=1.9-8.6). In men help-seeking was explained by advanced age (OR=3.1, CI=1.9-6.8), the

presence of co-morbid condition (OR=2.7, CI=1.4-6.9), severe UI (OR=2.8, CI=1.2-8.6), associated lower urological complaints (OR=9.2, CI=2.5-12.4), worse disease-specific quality of life scores (OR=3.6, CI=1.4-7.9) and presence of depressive symptoms (OR=2.3, CI=1.8-6.4). These variables explained 84.6 % of the variability in care seeking behavior ($R^2 = 84.6\%$) table(13).

Table (13): Multivariate logistic regression analysis of potential significant predictors of health care seeking behaviour among male and female elderly patients with UI attending Alexandria Main University Hospital

Determinant	Males (n = 87)		Females (n = 243)	
	Adjusted OR	95% CI	Adjusted OR	95% CI
Socio-demographic factors - Advanced age - High educational level	3.1 -------	1.9 – 6.8 --------	3.5 2.6	1.7 – 6.1 1.1 – 6.8
Clinical data - Presence of co-morbid condition	2.7	1.4 -6.9	------	------
UI presentation - Stress type of incontinence - Severe UI - Associated lower urological complaints - Voiding pattern (night- time voids)	------ 2.8 9.2 ------	------- 1.2 – 8.6 2.5 – 12.4 --------	4.1 3.7 ------ 2.7	1.6 – 10.9 2.7 – 10.2 ------- 1.2 – 8.4
Activities leading to UI (scores)	-------	-------	4.3	1.9 – 9.5
Mobility restriction	--------	-------	2.6	1.4 – 4.7
Worse health perception scores	-----	-------	2.3	1.2 – 8.2
Worse disease-specific quality of life scores	3.6	1.4 – 7.9	10.2	3.7 – 20.5
Depressive symptoms	2.3	1.8 – 6.4	4.8	1.9 – 8.6

These variables explained 84.6 % of the variability in care seeking behavior ($R^2 = 84.6\%$)
OR = odds ratio   CI = Confidence interval

DISCUSSION:

The present study was performed on an average of 80 elderly patients attended geriatric clinic and Urosurgical departments monthly. Thus a total of 480 elderly attended through 6 month-period of field visit from 1st April till October 2017.
Of these, 330 elderly patients with urinary incontinence (UI) were identified. The prevalence of UI was 69% in this study. 73.6% were females and 26.4% were males.

The present study was consistent with Nygaard L. et al. [16], who reported that the incidence of urinary incontinence in elderly ranged from 23-32%, in both sex. That result was in agreement with our results, because also they found that the prevalence in men was approximately one third that of women, until it equalizes in the ninth decade.

Urinary incontinence can be considered as a normal part of aging when in fact it's not and is observed in women at any age group from different cultures and races, contrary to general opinion which is more common in elderly population, thus constituting a worldwide problem [17].

Also, in agreement with this study, Brian Buckley et al [18] who demonstrated that, the prevalence of incontinence in men of all ages is certainly lower than that for women.

Many studies had indicated that the overall prevalence rate of incontinence in the male population was 3-10% with urge incontinence being the prominent symptom reported in 40-80% of patients [19]. Next, mixed incontinence 10-30%, whereas isolated stress incontinence accounts for less than 10% of incontinence in male patients. Stress incontinence in men was rare unless the patient had some type of prostate surgery or had suffered neurological injury or trauma.

Incontinence in men increases with age and appears to rise more steadily than it does in women. That is, there are no spikes in prevalence similar to those that occur for women around menopause. However, the estimates for severe incontinence in men in their 70's and 80's is still only about half of that in women. A major consideration in the incontinent male patient, especially with urge incontinence, is the potential contribution of bladder outlet obstruction to bladder over activity. Many men suffering from bladder over activity will also have bladder outlet obstruction. Such a situation can affect therapeutic options for patients [20].

In the present study, more than half of the studied patients (53.6%) were married while unmarried patients who either single, widower or divorced constituted 46.4%. Similar to these results the study performed by Sherina. [21] who found that 60.1% of studied participants were married and 39.9% were unmarried.

In this study, vast majority of the studied elderly were either illiterate or had no formal education, only 5.5% were working elderly, less than one third of the participants 28.2% were living in urban residence, 70.3% took medications for multiple chronic illnesses and based on BMI 36.7% were either overweight or obese.

In contrast to this study, Oladosu et al. [22] who determined the prevalence and described possible trigger factors of urinary incontinence (UI) among adult women in a Nigerian community. Five thousand and one women were interviewed during the Ibadan Urinary Incontinence Household Survey (IUIHS). There were more respondents from urban 53.3% than semi-urban 46.7% locations and approximately one-half 52% had secondary education as the highest level attained. However, it was similar to the results of the present study in that the highest proportion of women 61.4% were currently married, whereas 29.7% had never married. The proportion of nulliparous women was 32.8%. In this study BMI was more than 25 in 36.7% of the patients and 44.8% of the patients were obese, these results were similar to the study performed by Vik Khillar et al. [23] who found that women with BMI 25-29.9 (overweight) were more likely to have UI.

The clinical data of the patients in this study were partially similar to the study performed by Candce et al [24] who found that daytime voiding frequency was 7.1 ± 2.9 and nocturia was present equally between groups. The majority of women (59%) with severe UI had SPPB ≤9 compared with 26% among women with moderate UI ($p = 0.02$). Also these results were in agreement with the study performed by Cortes et al [25] who found association between UI and comorbidities such as diabetes, obesity, medications and previous surgery.

In the current study, the most common activities reported by the subjects were washing hands, changing position from sitting or standing up, laughing, Lifting and Retching and this was in agreement with the study done by Anne et al. [26] who found that, sitting long time and occupational full time in work consider stress incontinence in Australian adults.

However, in contrast to these results Ingrid E et al., [27] who demonstrated that, with stress incontinence, movements and activities such as coughing, sneezing, and lifting put greater abdominal pressure on the bladder caused the leakage of urine.

In this study, the major cause of incontinence was constipation (96.4%). Nearly two thirds 62.4% stated recurrent urinary tract infections as a cause. Less than half (45.5%) suggested restricted mobility due to hospitalization, musculoskeletal disorder, neurologic disorder or environmental barriers as an underlying cause of UI. Minority reported previous pelvic operation or intervention as a cause. In agreement with our results, Hsieh et al, [35] found that, pooled prevalence of UI increased with age to 21% to 32% in elderly. Poor general health, comorbidities, severe physical limitations, cognitive impairment, stroke, urinary tract infections, prostate diseases, and diabetes were associated with UI.

Moreover, regarding lifestyle of elderly patients with UI in the current study, elderly patients with UI were more likely to report high impact physical activities, increased stress and anxiety and more likely to consume excessive caffeine (> 2 cups /day). Similar to these results, Tatyana et al, [28] who investigated the relationship between urinary incontinence (UI) and quality of life/depression in elderly patients. They found that, most of incontinence elderly patients' chronic illness (diabetes mellitus, obesity and tract infection), non-active, smoking habits and lonely.

Regarding the quality of life, the present study showed that the highest median scores were observed for the following subscales; UI impact, physical limitations, social limitations. Lower scores were observed for sleep and energy, emotions and health perception domains while the least score was for the domains of severity measures and personal relationships.

The results of the current study revealed that the prevalence of depressive symptoms (as measured by geriatric depression scale) among UI elderly patients was 67.9%. In agreement with our results, Sule et al., [29] who found that, there was a negative correlation between UI and the depression score. The relative risk for depression with UI was calculated. An increased risk of depression was found in those with UI compared with those without UI, it could be concluded that depression was a significant risk factor for patients with UI. Quality of life scale was significantly lower in the group with UI. The physical and mental scores on the SF-36 quality of life scale showed that both scores were statistically lower in the group with UI.

On the other hand, Arslantas H. et al [30] demonstrated that, elderly patients with UI who lived with a partner with or without children had lower depression scores than those who lived alone. The nuclear family was the most important social support in old age. In older patients, losing loved ones leaded to increase in the feelings of loneliness and caused depression. One study reported depressive symptoms in 50% of older adults with UI and major depression in 20–25 %[31].

In accordance with the results of the current study Ateşkan et al [32], reported that psychosocial effects including shame, social isolation, and depression. According to this study, it was important to remember that UI may lead to the development of depression in elderly patients. In addition, most of the elderly patients with UI defined old age in negative terms, whereas it was defined positively in the elderly patients without UI. UI reduces the quality of life of elderly patients by causing physical, psychological, and social problems.

Kwong et al [33], found that physical factors related to UI had a more negative impact than mental factors. In this study it was found that both mental and physical factors affected the quality of life. It was expected that the exposure would only be to physical functions on the quality of life scale, but the decrease in mental function appeared to be due to depression.

Elderly patients with UI experienced not only a loss of physical function, but also deterioration in their mental condition. From this point of view, it was considered that the physical functioning and quality of life of these elderly patients would improve after treatment for UI. Elderly patients with UI should not only be evaluated in terms of physical functioning, but also in terms of mood changes. Reducing UI in elderly patients would improve their quality of life and reduce rates of depression.

Regarding general health perception of elderly patients with UI according their depression status this study showed that none of the depressive patients perceived that their general health was very good; a minority stated that it was good and 18.8% thought it was fair. However, the highest proportion of depressive elderly stated that their general health was poor. In agreement with these results Ya Ko et al [34] stated that elderly patients with UI had a worse perception of health and were more likely to be depressed. However, these associations could be because respondents with UI were indeed less healthy as a result of greater comorbidities. In the present study it was found that none of the depressive elderly stated that UI not impacted their life at all. The life of only 3.1% of elderly was little impacted.

These results were consistent with the study performed by Lai et al [35], who demonstrated that there was a positive association between the severity of depression symptoms and OAB/incontinence symptoms. However, to the best of our knowledge, the nature behind this association was unknown but could be explained that the symptoms and functional impairment associated with (Overactive bladder) OAB/incontinence may lead to depression, the possibility that OAB and depression may share a common pathophysiological pathway in some patients deserves further research.

Conclusion:

From this study it was concluded that the prevalence of urinary incontinence among elderly patients was estimated to be 69% and it was common in elderly female. There were significant associations between urinary incontinence and depression, psychological stress and cause Life limitation. The prevalence of depressive symptoms in elderly patients with UI was 67.9%. UI was considered as an obstacle in good social and physical well-being.

DISCLOSURES

Authors declare that there is no conflict of interest.

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