

Use of Absorbent Products in Older Men and Women Are Associated with Depressive Symptoms: A Retrospective Study from a University Hospital

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Abstract

Objective: Urinary incontinence (UI) is defined as the involuntary leakage of urine. UI is a challenging geriatric syndrome and most of the patients use absorbent products or diapers to hold urine and protect their clothes. We aimed in this study to evaluate the relationship between the use of absorbent products and the presence of depressive symptoms in patients with UI.

Materials and Methods: One-hundred and fifty-nine (159) community-dwelling older adults with UI who applied to our hospital outpatient clinic of geriatrics were included in the study. A comprehensive geriatric assessment was performed on the patients, and the risk of depression was evaluated with the Yesavage geriatric depression scale (GDS). Those with a GDS score of 5 and above were considered as presence of depressive symptoms.

Results: Depressive symptoms were determined in 71 patients (44.6%). 91.2% of the patients were female, and the mean age was 73.6±6.4 years. The patients were divided into two groups according to the presence of depressive symptoms. The rate of use of absorbent products was 68.6% in the group with depressive symptoms and 45.9% in the group without depressive symptoms, and the difference was statistically significant ($p<0.05$). Use of absorbent products increases the risk of depression regardless of sex, living alone, multimorbidity, and severity and the type of incontinence (odds ratio: 2.65, 95% confidence interval: 1.27-5.57, $p=0.010$).

Conclusion: The use of absorbent products in patients with UI is associated with the depressive symptoms. These patients should be screened for depression and evaluated for appropriate treatment options for incontinence and depression.

Keywords: Absorbent products, urinary incontinence, depression, older adults

Introduction

Urinary incontinence (UI), in other words, involuntary leakage of urine is a commonly seen health problem in adults (1), however, this geriatric syndrome is not properly treated because it is normalized with increasing age and mostly kept quiet with embarrassment. It is estimated that nearly half of the adult women experienced UI, on the other hand only 25-61% of those who had symptomatic UI seek medical care (2). The prevalence of UI in women aged 60 years and older was 50 to 70% (3). Furthermore, not just older women who suffered from UI, the risk of UI in men is also increasing with the aging

process. The prevalence of UI in men aged 65 years and older is reported between 11 to 34% (4,5). Even though it is accepted as UI has no effect on survival, a meta-analysis showed that the presence of UI increases the risk of mortality by 20% in institutionalized patients (6). It was demonstrated that patients with UI have decreased quality of life (7), sexual dysfunction (8), increased morbidity (9,10), anxiety and mood disorders (11), and increased caregiver burden (12).

There is increasing evidence in the literature that UI had an impact on quality of life, social isolation, and limitations in lifestyle. These limitations in the lifestyle include decreased fluid

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intake, avoidance of places with no public toilets, and exercises such as weight-lifting. Social relationships can also be affected by UI, as embarrassment and incontinence are accepted as issues that should not be talked about (13). In a study conducted in Finland, it was found that the risk of depression rises 4.5 times in patients with UI (14). Another large-scale study revealed that the presence of depressive symptoms has increased two times in older adults with UI (15). Men with lower urinary tract dysfunction symptoms were investigated for anxiety and depression and quality of life, men with UI had experienced higher rates of anxiety and depression (16).

Different studies investigate the impact of the type, frequency, and duration of UI on depressive symptoms. Patients with urge incontinence have more psychological burdens than those with stress incontinence (7). Using standardized questionnaires, Macaulay et al. (17) investigated the psychological factors of 211 women, and it was discovered that women suffering from sensory urgency had worse self-esteem and were more nervous than those suffering from stress incontinence. Patients with bladder overactivity were just as worried and had low on self-esteem as patients with sensory urgency, but they also had unpleasant thoughts and anxieties and performed worse on psychometric tests (17). Another large-scale study conducted on more than 3000 women with the ages between 30-90 years old stated that the type of UI (urge/mixed) UI and severity of UI (moderate-to-severe) UI were each associated with increased odds of major depression in women with UI (18).

Pharmacological and non-pharmacological approaches are available in the management of UI. Since there is no absolute cure for UI, many patients wear absorbent products to avoid the distress of socially disabling leakage and odor problems. The use of pads in different countries ranges from 29% to 52% (19). There are different types of absorbent products for light, moderate, and heavy UI, besides disposable and reusable products, and body-worn and underpad designs. Although the exact number of pad users is uncertain, the cost of containment products to health care facilities is substantial. In addition, it is necessary to be able to balance the clinical benefit of the use of absorbent products with unfavorable effects.

The negative psychological impact of UI in patients is studied repeatedly, nevertheless, there is limited evidence in the relation between the use of absorbent products for urine leakage and depression. In this study, we aimed to reveal the association between depressive symptoms and the use of absorbent products in patients with UI.

Materials and Methods

Study Population and Study Design

The study was conducted as a retrospective cross-sectional study between 01 January 2020 and 31 December 2021. One-

hundred and fifty-nine patients who applied between these two-year time periods who had UI and were referred to a geriatric nurse for non-pharmacological lifestyle modifications were included in the study. Patients with UI were referred to the geriatric nurse after the recovery from reversible UI reasons. The transient causes of UI are delirium, infection, atrophic vaginitis, pharmaceuticals, psychological disorders, excessive urine output, reduced mobility and stool impaction (20). All the participants were evaluated with a comprehensive geriatric assessment.

Comprehensive geriatric assessments of the patients were recorded from the electronic files of the participants retrospectively. Frailty was defined according to the clinical frailty scale (CFS) (12). CFS was defined according to clinical judgment by the physician of the patient between 1 (very fit) to 9 (terminally ill). Patients whose scale was equal to or more than 4 were accepted as patients living with frailty. Polypharmacy was defined as the usage of 5 or more medications (13). Fall event was recorded if the patient had fallen unintentionally in the previous year. Difficulty in falling asleep, frequent awakening during the night, or awakening early in the morning were categorized as insomnia. The risk of malnutrition was evaluated by mini-nutritional assessment-short form (MNA-SF) (21). MNA-SF scores between 8-11 were defined as the risk of malnutrition and, scores lower than 8 were accepted as malnutrition. The presence of depression risk was assessed by 15-item Yesavage geriatric depression scale (YGDS) (22) and 5 and higher scores were evaluated as depression. Six-item Katz activities of daily living (ADL) score and 8-item Lawton-Brody instrumental activities of daily living (IADL) score were used for assessing the functionality of the patients' (23). The cognitive status of patients was evaluated by MMSE and clock-drawing test (24,25). In mini-mental status examination (MMSE) test, six different cognitive domains, orientation, memory registration, attention, delayed recall, language, and motor functions were evaluated.

UI was accepted as involuntary urine leakage by the expression of patients or their caregivers, after the recovery of reversible UI reasons. The type of UI and its severity defined by Incontinence severity index (ISI) (26), and frequency were also recorded from the files of the interview of the geriatric nurse. ISI consists of two questions, regarding frequency and amount of leakage. It categorizes UI into slight, moderate, severe, and very severe. First question is "How often do you experience urinary leakage?" and the answer is one of them: Never, I do not leak urine (0 point), Less than once a month (1 point), A few times a month (2 point), A few times a week (3 point), Every day and/or night (4 point). Second question is "How much urine do you lose each time?". Answer is one of them: None, I do not leak urine (0 point), Drops (1 point), Small Splashes (2 point) and More (3 point). The total score is calculated by the multiplication of the scores of first and second question. A total score more than 8 is accepted as severe UI (26).

Ethical Approval

The study protocol was in adherence with the principles in the Declaration of Helsinki. The Ethics Committee of Hacettepe University approved the study protocol with the decision number 2022/18-01.

Statistics

The data of two groups according to the presence of diaper use were analyzed. Normality tests were performed. Categorical variables were stated as number (n) and percentage (%), and continuous variables as median (IQR) or mean \pm standard deviation (SD) values according to the normal distributions or not. To evaluate the relationships between categorical variables, a chi-square test was used. Multivariable logistic regression analysis was wielded to investigate the relationship between diaper use and the presence of depressive symptoms. Age, living alone, multimorbidity, use of diaper, and severity of incontinence were included in the regression model. A value of $p < 0.05$ (two-sided) was accepted as statistically significant. The data obtained in the study were analyzed statistically using IBM SPSS Statistics v. 24.0 software (IBM Co., Armonk, NY, USA).

Results

The final analysis was made on 159 patients. The study population was categorized into two groups according to the presence of depressive symptoms. The mean age of the study population was 74.26 ± 6.6 years and the female ratio was 91.2%. No difference was observed between groups regarding age, sex, education, living alone, duration, and type and severity of incontinence. The most commonly encountered type of UI was the mixed UI in both groups following by urge IU. No statistically significant differences observed in type of UI between two groups ($p = 0.841$). Furthermore, when the frequency of geriatric syndromes was examined, no statistically significant difference was observed between the groups including frailty, dementia, history of falls and polypharmacy. Basic ADL scores were similar in patients with depressive symptoms and no depressive symptoms. Instrumental ADL scores were statistically lower in patients with depressive symptoms ($p = 0.004$). Patients with depressive symptoms had lower MNA-SF scores, and the difference is statistically significant ($p < 0.001$). Insomnia was more frequently seen in patients with depressive symptoms ($p = 0.002$). Patients with depressive symptoms had used diapers or other absorbent products more frequently than patients who had no depressive symptoms (68.6% vs 45.9%, $p = 0.05$). The results were shown in Table 1. In the multivariable logistic regression analysis (Table 2), it was found that the use of diapers was significantly associated with the presence of depressive symptoms independent of patient's sex, living alone, multimorbidity, and severity and type of UI (odds ratio: 2.65, 95% confidence interval: 1.27-5.57, $p = 0.010$).

Discussion

UI is a frequent geriatric syndrome in older adults, wrongly normalized and comprehended as a natural cause of aging, especially in older women. Nevertheless, UI causes psychological problems such as anxiety and mood disorders, social isolation, and as a result, decreased quality of life. Even though the relationship between the experience of UI and depression is frequently explored, on the other hand, limited studies showed regarding the effect of absorbent product use on depressive symptoms in individuals with incontinence. Previous studies reveal patients with urge incontinence more frequently encounter with psychological problems. Furthermore, the severity of UI affects the presence of depressive symptoms. According to our findings, in older men and women with UI use of absorbent products is significantly associated with depressive symptoms regardless of sex, living alone, multimorbidity, and the severity and the type of UI. Increasing age was found to reduce the risk of the presence of depressive symptoms with respect to our data, we interpreted this situation as a result of the acceptance of incontinence with advancing age.

Providing confidentiality (no one will notice UI or odor), convenience, and skin protection from moisture are some reasons why patients prefer absorbent products. A study from Poland conducted on patients with stress UI also found that the use of absorbent products increases with the severity of UI, furthermore, women with severe UI pursue medical help more than others. A study exploring the effect of absorbent product use on the distress caused by UI in women diagnosed with heart failure revealed that absorbent products were commonly used in women with severe UI. The authors have concluded that using absorbent products indirectly affects UI discomfort by changing how women see the necessity of seeking UI treatment (27).

Differently from the aforementioned study, we found that the use of these products was associated with the presence of depressive symptoms regardless of the severity of UI.

The use of absorbent products had another effect on UI besides providing confidentiality. It has been shown that with the use of absorbent products there is an increase in the rate of accidents and a decrease in the rate of successful voids (28). Absorbent products are preferred since the inadequate treatment. Even though older patients stated that they would choose UI medications over absorbent products (29), caregivers would like to use these products according to Johnson et al. (30). On the other hand, absorbent products, especially diapers, can be a reasonable option in some instances, such as for older people living with frailty or dementia (31).

There are also some studies with conflicting results on the effect of the use of absorbent products on the quality of life. The perceived risk of poor pad efficacy, absence of discreteness,

	Depressive symptoms absent (n=88)	Depressive symptoms present (n=71)	p-value
Age, years mean \pm SD	74.2 \pm 6.4	72.9 \pm 6.3	0.18
Sex, female n (%)	80 (90.9)	65 (91.5)	0.89
Education, >5 years	13 (14.8)	11 (15.5)	0.95
Living status, alone	13 (14.8)	19 (26.8)	0.06
Type of incontinence, n (%)			0.841
Urgency	36 (40.9)	30 (42.3)	
Mixed	45 (51.1)	37 (52.1)	
Stress	4 (4.6)	3 (4.2)	
Other	3 (3.4)	1 (1.4)	
Duration of incontinence, >1 year, n (%)	57 (71.3)	55 (82.1)	0.12
Severe incontinence, n (%)	38 (48.7)	40 (57.1)	0.11
Absorbent product use, n (%)	39 (45.9)	48 (68.6)	0.005
Pharmacological treatment for incontinence, n (%)	8 (9.2)	7 (10.0)	0.87
Multimorbidity, n (%)	76 (86.4)	57 (80.3)	0.30
Comprehensive geriatric assessment			
	Depressive symptoms absent (n=88)	Depressive symptoms present (n=71)	p-value
Living with frailty, CFS, n (%)	46 (52.3)	42 (59.2)	0.39
Dementia, n (%)	9 (10.2)	8 (11.3)	0.83
Basic ADL, median (IQR)	5.0 (1.0)	5.0 (1.0)	0.12
Instrumental ADL, median (IQR)	8.0 (1.0)	7.0 (2.0)	0.004
MMSE, median (IQR)	27.0 (6.0)	26.0 (6.0)	0.31
MNA-SF, median (IQR)	14.0 (2.0)	12.0 (4.0)	0.000
Polypharmacy, n (%)	59 (67.0)	48 (54.5)	0.75
History of falls, n (%)	18 (20.5)	9 (12.7)	0.24
Insomnia, n (%)	22 (25.0)	34 (47.8)	0.002
Use of diuretics, n (%)	42 (47.7)	32 (45.7)	0.80

CFS: Clinical frailty scale, ADL: Activities of daily living, MMSE: Mini-mental state examination, MNA-SF: Mini-nutritional assessment-short form, SD: Standard deviation

Model 1	OR	95% confidence interval	p-value
Absorbent product use	2.57	1.33-4.98	0.005
Model 2			
Absorbent product use	3.13	1.27-7.72	0.013
Insomnia	5.36	1.99-14.40	0.001
Model 3			
Age	0.94	0.88-0.99	0.047
Absorbent product use	2.65	1.27-5.57	0.010

*The model 1 is the unadjusted model, Model 2 includes use of absorbent products, insomnia, nutritional status and IADL score. Model 3 includes age, sex, living alone, multimorbidity, type and severity of UI, and use of absorbent products, OR: Odds ratio

and the requirement for complicated pad care regimes were all related to high anxiety levels reported in a study aiming to investigate the both positive and negative "treatment effects" of absorbent products (32). Therefore, it is not appropriate to make a plain comment when the use of absorbent products has a positive or negative effect on quality of life in individuals with UI. As a result of the retrospective design of our study, patients' quality of life and self-perceptions regarding the use of absorbent products could not be evaluated.

Study Limitations

There are some limitations to our study. Because of the retrospective design of our work, the cause-effect relationship was not revealed between the use of absorbent products and the presence of depressive symptoms. The type of absorbent products was not recorded, and also there was no information about how long and how often the patients used these absorbent products because of the retrospective design of the study and this is another limitation. However, some strong aspects of our work are also present, all patients had an interview with the geriatric nurse and all patients were evaluated with a comprehensive geriatric assessment. Another strength is that our work is a novel study in this area showing depressive symptoms with the use of absorbent products.

Conclusion

In this study, a significant relationship was found between the use of absorbent products and the presence of depressive symptoms in UI, a geriatric syndrome that is mostly hidden and normalized by older adults. Prospective long-term studies are needed to show the cause-effect relationship more clearly.

Ethics

Ethics Committee Approval: The study protocol was in adherence with the principles in the Declaration of Helsinki. The Ethics Committee of Hacettepe University approved the study protocol with the decision number 2022/18-01.

Informed Consent: Retrospective study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Concept: M.G., M.Ö., S.C., A.O.B., B.B.D., Design: M.G., M.Ö., S.C., A.O.B., B.B.D., Data Collection or Processing: M.G., M.Ö., S.C., A.O.B., Analysis or Interpretation: M.G., S.C., A.O.B., C.B., M.G.H., M.C., B.B.D., Literature Search: M.G., S.C., A.O.B., C.B., M.G.H., M.C., B.B.D., Writing: M.G., S.C., A.O.B., C.B., M.G.H., M.C., B.B.D.

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