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Risk Factors and Prevalence of Urinary Incontinence in Elderly Women, a Case Study in Japan and Taiwan

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A B S T R A C T

Knowledge of the conditions of elderly women in Japanese and Taiwanese communities, particularly in relation to risk factors and their association with urinary incontinence, is of interest. This study aimed to identify risk factors and prevalence of urinary incontinence in elderly women in the community of the Japanese and Taiwanese case study areas. The research method used was a systematic review based on PRISMA guidelines. Data sources were obtained from PubMed and Science Direct for the period 2000-2020 using specific inclusion and exclusion criteria. Evaluation was conducted for quality and bias risk using a standardized assessment system. Results showed that the prevalence of urinary incontinence in elderly women in Japanese and Taiwanese communities ranged from 29.8% to 31.3%. Many factors influenced urinary incontinence, such as age, body mass index (BMI), and smoking habits. From the two selected articles in Japan and Taiwan, it was concluded that urinary incontinence was commonly experienced by elderly women in the community, and awareness of this condition could help improve management.

1. Introduction

As the productive age of the population ends, there will be a shift towards an elderly population. The development of the elderly population requires its own handling of well-being, health, and quality of life, which needs to be prioritized in order to maintain the quality of the population during the ongoing shift. The quality of life is improving for the elderly through empowering productive elderly individuals is necessary, through a healthy and active lifestyle [1]. The number of elderly people is expected to increase by more than two billion in the next 30 years.

This study will focus on geriatric syndromes commonly found in the elderly. According to WHO and research that incontinence, pressure ulcers, falls, delirium, and functional decline are health problems in the elderly [2], [3]. The complaint of involuntary urine leakage, according to the International Continence Society Guidelines, is known as urinary incontinence. Another problem is the prevalence of urinary incontinence in the population, which ranges from 9.9% to 44%. In elderly women, urgency urinary incontinence is the most common.

Urinary incontinence occurs due to lesions in the urinary tract caused by aging processes or disease [4]. The risk factors that have been studied include age, ethnicity, genetic factors, pregnancy, parity, hysterectomy, menopause, urinary tract infections, diabetes mellitus, dementia, multiple sclerosis, Parkinson's syndrome, nerve lesions, physical activity, and obesity. Urinary incontinence can have negative impacts on quality of life. If left untreated, this condition can lead to depression and increased patient suffering.

Patients often do not report complaints of urinary incontinence because it is often seen as a part of aging and embarrassing. By understanding the risk factors, medical professionals can identify the causes and provide appropriate treatment. The aim of this study is to review articles on the study of risk factors and their relationship with urinary incontinence in elderly women in Japan dan Taiwann communities.

2. Research Method

The research approach employed was a systematic review following the PRISMA guideline to determine the heightened risk of urinary incontinence in older

women with risk factors in comparison to the general population in Japan and Taiwan [5]. A literature search was carried out on PubMed and Science Direct, utilizing Boolean operators "urinary incontinence" AND "risk factors" AND (elderly OR older OR aged) AND (women OR female). Selection and identification were conducted according to the PRISMA recommendations.

This study used inclusion and exclusion criteria. The inclusion criteria consisted of observational studies published in English between 2000 and 2020, conducted in Japan and Taiwan, with samples consisting of women aged 60 and living in the community. The exclusion criteria included systematic reviews, randomized controlled trials, experimental studies, intervention studies, studies focused on specific types of urinary incontinence, studies focused on neurogenic urinary incontinence, urinary incontinence due to infection, urinary incontinence due to pregnancy, urinary incontinence after surgery, urinary incontinence related to fecal incontinence, treatment studies, and updated articles. The QUIPS tool was used to assess the risk of bias in selected articles [6]. The quality of prevalence studies was evaluated based on "Guidelines for critical appraisal for the health research literature: prevalence or incidence of a health problem" [7].

The initial literature search conducted in early June 2020 using Boolean operators on the Science Direct and PubMed databases retrieved 4,416 articles. After eliminating duplicate articles, 4,137 articles were left to be sorted based on inclusion and exclusion criteria. Ultimately, only 205 articles remained. From these articles, the full text of 39 articles that met the criteria were screened, and only 2 articles were selected for qualitative synthesis as indicated in Table 1.

Table 1. Baseline Characteristics of Studies

Characteristics	Japan and Taiwan	Study Design	N
Harai, M, et al. [8]	Japan	Cohort study	746
Hsieh, C, et al. [9]	Taiwan	Cross sectional	1,517

Age Range and Median Method Urinary Incontinence Definition Urinary Incontinence Prevalence 65-74 (70) Questionnaire (ICIQ-SF) Leakage of urine at least once a week 31.3% [10]. Incidence rate over 1 year: 14.5%, remission rate: 11.0% 60 or older Questionnaire (self-reported) Involuntary loss of urine during daily activities 29.8% [11].

The second part of the baseline characteristics of the studies, including the age range and median age of the participants, the method used to measure urinary incontinence, the definition of urinary incontinence, and the prevalence of urinary incontinence [12]. For participants aged 65-74 years old, a questionnaire called ICIQ-SF was used to assess urinary incontinence, which was defined as leakage of urine at least once a week [13]. The prevalence of urinary incontinence in this group was 31.3%, with an incidence rate over 1 year of 14.5% and a remission rate of 11.0% [14]. For participants aged 60 or older, self-reported questionnaires were used to measure urinary incontinence, which was defined as involuntary loss of urine during daily activities [15]. The prevalence of urinary incontinence in this group was 29.8%.

Table 2. Assessment of Bias Risk Level.

Study	A	B	C	D	E	F	G	H	I	Quality
Jepang [8]	1	1	1	1	0	0	1	1	6	Medium
Taiwan [9]	1	1	1	1	1	1	0	1	7	High

Criteria used in the assessment of study quality in Table 3. Each letter from A-I represents a criterion considered in the assessment. The following is a more detailed explanation:

a. A = Study Design and Sampling Method: This criterion assesses whether the study design and sampling method used are appropriate and relevant to the research objectives.

b. B = Sampling Framework (Unbiased): This criterion assesses whether the sampling framework used is appropriate and unbiased, so that it can accurately represent the population being studied.

c. C = Sample Size (Min. 378): This criterion assesses whether the sample size used is adequate to obtain accurate and reliable results.

d. D = Accurate Measurement (Valid Instrument): This criterion assesses whether the instrument used to measure the variables being studied is scientifically proven to be valid.

e. E = Unbiased Measurement: This criterion assesses whether the measurement of the variables being studied is done without bias or influence from other factors.

f. F = Response Rate (Min. 70%): This criterion assesses whether the response rate of study participants has reached the minimum required to maintain result accuracy.

g. G = Results (CI and p-value): This criterion assesses whether the results obtained from the study have been reported in full, including confidence interval (CI) and p-value.

h. H = Study Subjects: This criterion assesses whether the selected study subjects are appropriate and representative of the population being studied.

i. I = Total Score: The sum of the scores given for each criterion will result in the total score for the study.

Table 5. Risk Factors Investigated >= 2 Studies.

Study	Age	BMI	Smoking
Jepang [8]	*P*-value =.560	*P*-value =.022	Smoking 1 – 299 cigarets *P*-value =.893 OR = 1.07 CI 95% (0.39 - 2.99) Smoking >300 cigarets *P*-value =.043 OR = 1.86 CI 95% (1.02 – 3.41)
Taiwan [9]	*P*-value = <.001 OR = 1.04 CI 95% (1.02 – 1.05)	OR = 1.05 per unit CI 95% (1.02 –1.09)	OR = 1.96 CI 95% (1.17 – 3.28)

In Table 3, there are 3 risk factors that have been examined by two studies as shown in Table 3. These factors are age, BMI (Body Mass Index), and smoking [16], [17].

3. Result and Discussion

The discussion on the prevalence of urinary incontinence in elderly women in Japanese and Taiwanese societies is very interesting. The prevalence of urinary incontinence in the elderly women in Japanese and Taiwanese societies has been reported to range from 29.8% to 31.3%, but differences in the definition of urinary incontinence, data collection methods, study design, and settings can affect the range of prevalence. Studies have reported a significant relationship between age and urinary incontinence, with older elderly women at higher risk of experiencing urinary incontinence. There is also a significant relationship between body mass index (BMI) and urinary incontinence, where an increase of one BMI score can increase the likelihood of urinary incontinence by 5%. The relationship between BMI and urinary incontinence, especially stress urinary incontinence, may be caused by obesity that increases intra-abdominal pressure and decreases pelvic muscle strength.

Smoking habits have also been reported to have a significant relationship with urinary incontinence in elderly women in Japan and Taiwan, where smokers have a risk up to 2 times higher of experiencing urinary incontinence. Smoking can trigger a more frequent urge to urinate, and COPD, which often occurs in smokers, can increase pressure on the bladder and worsen the symptoms of urinary incontinence.

4. Conclusion

In conclusion, the prevalence of urinary incontinence among elderly women in Japan and Taiwan ranges from 29.8% to 31.3%. Age, body mass index (BMI), and smoking habits are reported as common risk factors for urinary incontinence in these regions. Based on these studies, it can be concluded that elderly women in Japan and Taiwan with older age, higher BMI scores, and smoking habits have a higher risk of urinary incontinence compared to those without these conditions. Further research can be conducted by conducting a literature review that compares similar aspects, especially for recent studies.

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