



Introduction

Urinary incontinence (UI) is defined as any involuntary loss of urine. Its prevalence varies from 17% to 55%, with a noticeable relationship between the increase in UI prevalence with increasing age.

As part of the aging, there is a loss of muscle mass and strength that negatively influences functionality and increases risk of falls.

Some studies in the literature have investigated the association between urinary incontinence and functional variables.

Then, the aim of this review is to verify if there is a relationship between each of the following functional variables (strength, balance, postural control, flexibility, gait, general physical performance and falls) with urinary incontinence in elderly women.

Methods and Materials

This is a systematic review of cross-sectional studies. Electronic search was conducted on MEDLINE/Pubmed, Embase, CINAHL and Web of Science in September 2022.

The eligibility criteria is shown in Table 1.

Due to differences in outcome measures between the included studies, a descriptive analysis was performed. Meta-analysis was performed when possible.

Table 1. Eligibility criteria

Original observational studies (cross-sectional, cohort or case-control) published in English, Portuguese or Spanish.
Full text article with no limit of year of publication
Elderly women (aged 60 or more) with lower urinary tract symptoms and no history of dementia or other neurological disorders
Comparison group of elderly women (aged 60 or more) without lower urinary tract symptoms and no history of dementia or other neurological disorders
Studies that evaluated the outcome functional variables (e.g balance, strength, gait) and falls history

Results

Six studies were included in the review with a total of 2549 participants of which 1028 women reported UI. Included studies used different outcome measures for lower limb function (strength, balance, postural control, flexibility, gain, general physical performance).

Only 3 studies reported muscle strenght. In one study, it was found that there was no significant difference in knee extensor and flexor muscle strength (measured in 30-degree and 60-degree position), between women with and without UI. Two studies used the sit-to-stand test, however in different manners. The 30-second sit-to-stand test found no statistical significant difference in the number of movements performed in 30 seconds. The five times sit-to-stand test also found no difference in the time to perform the test between groups.

Postural control was assessed in two articles using a force platform. The analysis was with no statistical significant difference between continence status with displacement of center of pressure (COP) for one of those studies.

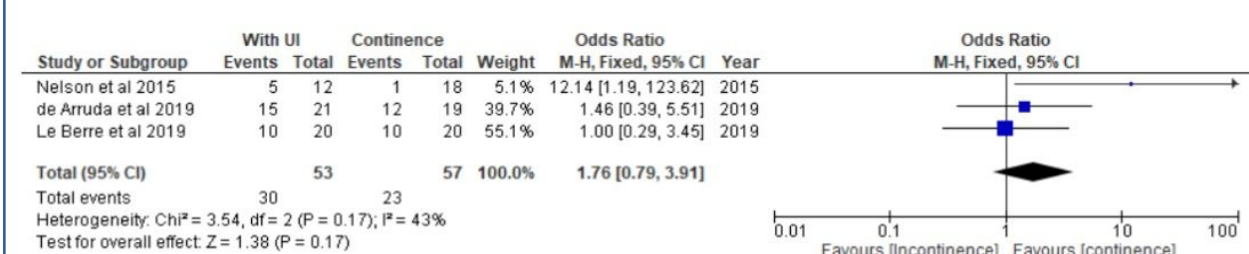
Results

The second manuscript found a difference between continent and incontinent women in the average speed of COP ($p=0.0048$) and oscillation area of COP ($p=0.0139$) with eyes closed. In the dual task test, there was a difference in the oscillation area of COP between women with and without UI, and women with UI had worse results ($p=0.0331$). However, a joint analysis of the data was not performed because the latter manuscript did not present exact numbers.

Two studies evaluated the gait variable. The first of them used the 6-meter walking and Time Up and Go (TUG) tests. The results showed the worst value for women with urgency urinary incontinence (UII) or mixed urinary incontinence (MUI) compared with continent women ($p<0.001$), but there was no difference between women with stress urinary incontinence (SUI) and continent women. The second manuscript used the 10-meter walking and 6-minute walking tests. In this study, women with UI demonstrated a slower gait speed than continent women in the 10-meter test ($p=0.05$) but no significant differences between the two groups were found for the 6-minute walking test.

Balance was assessed by three manuscripts, and there was no significant difference in none of the tests applied. Fall history was assessed by three studies and all of them were analyzed on a meta-analysis and presented in Figure 1.

Figure 1. Meta-analysis considering the history of falls between continent and incontinent women



Discussion

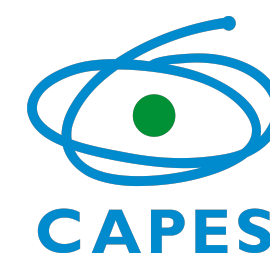
There is a low number of studies aiming to understand physical functioning differences between continent and incontinent women.

The studies included in this review used different outcome measures and those studies using the same test, presented the data in different effect measure/variability.

This prevented us from pooling data to better understand the whole scenario for the relationship between the studied variables.

Conclusions

There seems to be a difference on gait and displacement of center pressure between continent and incontinent women. In spite of this, no affirmation can be done once there is a large heterogeneity in the analyzed outcomes to allow robust statements based on qualitative analysis. More robust and higher quality studies are needed in order to understand physical functioning differences between continent and incontinent women.



References

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