Symptomatic pelvic floor disorders in community-dwelling older Australian women

Berihun M. Zeleke [a,b], Robin J. Bell [a], Baki Billah [c], Susan R. Davis [a,*]

[a] Women's Health Research Program, School of Public Health and Preventive Medicine, Monash University, Melbourne, Victoria 3004, Australia
[b] Department of Epidemiology and Biostatistics, Institute of Public Health, College of Medicine and Health Sciences, University of Gondar, Gondar, Ethiopia
[c] Department of Epidemiology and Preventive Medicine, School of Public Health and Preventive Medicine, Monash University, Melbourne, Victoria 3004, Australia

ABSTRACT

Objectives: To assess the prevalence, and factors associated with, pelvic floor disorders in a representative sample of community-dwelling older Australian women.
Methods: 1548 women, aged 65–79 years, were recruited to this cross-sectional study between April and August 2014. Pelvic floor disorders, including urinary incontinence (UI), fecal incontinence (FI), and pelvic organ prolapse (POP), were assessed using validated questionnaires. Multivariable logistic regression was used to assess factors associated with each, and having one or more pelvic floor disorders.
Results: Among 1517 women (mean age = 71.5 ± 4.1 SD years), 47.2% (95% CI, 44.7–49.7%) of women had one or more pelvic floor disorders, with 36.2% (95% CI, 33.8–38.6%) having UI, 19.8% (95% CI, 17.8–21.9%) having FI, and 6.8% (95% CI, 5.6–8.2%) having POP. Of the women with POP, 53.4% had UI, 33% had FI and 26.2% had both.
   The proportion of women with one or more pelvic floor disorders increased with parity from 34.6% (95% CI, 7.8–11.7%) for nulliparous women, to 45.3% (95% CI, 40.3–59.1%) for 1–2 births, and 52.1% (95% CI, 48.3–55.8%) for ≥3 births. Obese women were more likely to have at least one pelvic floor disorder (OR = 1.77; 95% CI, 1.36–2.31, $p < 0.01$).
Conclusion: Pelvic floor disorders are common in older women. Physicians caring for older women should be mindful that older women presenting with symptoms of one pelvic floor disorder are likely to have another concurrent pelvic floor problem.

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1. Introduction

Pelvic floor disorders, namely urinary incontinence (UI), fecal incontinence (FI), and pelvic organ prolapse (POP), are strongly associated with ageing [1–4]. Hence, with the increasing life expectancy of women, knowledge of the prevalence, and the risk factors for pelvic floor disorders, is of public health importance. It is also important to know whether having one pelvic floor disorder increases the likelihood of having other pelvic floor problems.

Studies of the prevalence of pelvic floor disorders have mainly reported on UI, with some providing data for FI [5,6]. Our recent systematic review revealed that data about FI is mainly from clinic-based studies, and small, non-representative samples, with few older women included [6]. Questionnaire-based studies of symptomatic pelvic floor disorders, including symptomatic POP, undertaken in the USA [3,7] and Sweden [8,9], have not provided separate prevalence data for older women, and the samples of older women included in their reports have been small. Furthermore, conclusions are limited by the heterogeneity of the definitions and research methods used, and use of non-validated assessment tools, resulting in substantial variability in the reported prevalences of UI and FI among older women [5,6].

To address the gap in knowledge about pelvic floor disorders among community-dwelling older women, we have investigated the prevalence and concurrence of UI, FI and symptomatic POP using validated questionnaires in a representative sample of older women recruited from across Australia. We have also explored factors that are associated with having these conditions.

* Corresponding author at: Women's Health Research Program, Department of Epidemiology and Preventive Medicine, School of Public Health and Preventive Medicine, Monash University, Level 6, 99 Commercial Rd, Melbourne, Victoria 3004, Australia. Fax: +61 399030828.
   E-mail address: susan.davis@monash.edu (S.R. Davis).

2. Methods

2.1. Study design and population

This was a population-based, cross-sectional study of a range of health issues in older Australian women. The findings in relation to menopausal symptoms have been published separately [10]. Study participants were recruited, between April and August 2014, from the Roy Morgan Research Single Source Database. This dynamic database is based on the Australian electoral roll (voting is compulsory in Australia), covering all metropolitan and non-metropolitan electoral areas across Australia. It is continually refreshed, with 50,000 new contacts each year, each remaining on the database for approximately 2 years. Women in the database, aged 65–79 years, were contacted by telephone and invited to participate in a 'survey of the health of older women'. We have used this robust approach to recruiting a representative sample of Australian women at midlife for other studies [11,12]. We purposefully sampled women so that the age distribution of our sample mimicked the age distribution of Australian women in the range 65–79 years in 2011.

A study questionnaire, an explanatory statement, and a reply paid envelope were posted to the women who verbally agreed to participate. All returned questionnaires were checked for completeness and de-identified questionnaires were electronically scanned and incorporated into an SPSS database. Participants were asked to provide permission to be contacted by phone for essential data clarification.

2.2. Study questionnaires

Demographic data collected included level of education, employment status, including volunteering and carer roles, partnership status, smoking and alcohol use, and general medical and obstetric history. We also collected self-reported height and weight.

The presence and type of UI was assessed by the Questionnaire for Urinary Incontinence Diagnosis (QUID) [13]. The QUID is a validated questionnaire that contains the following 6 questions: "Do you leak urine (even small drops), wet yourself, or wet your pads or undergarments": (1) When you cough or sneeze? (2) When you bend down or lift something up? (3) When you walk quickly, jog, or exercise? (4) While you are undressing to use the toilet? (5) Do you get such a strong and uncomfortable need to urinate that you leak urine (even small drops) or wet yourself before reaching the toilet?, and (6) Do you have to rush to the bathroom because you get a sudden, strong need to urinate?

The response to each question ranges from 0 to 5 based on symptom frequency (0 for "none of the time" through to 5 for "all of the time"; score 1 = rarely, 2 = once in a while, 3 = often and 4 = most of the time) in the preceding one month. A total score of ≥ 4 out of 15 for questions 1, 2 and 3 gives a classification of stress UI and a total score of ≥ 6 out of 15 for questions 4, 5 and 6 a classification of urge UI. The presence of both stress and urge UI was classified as mixed UI. Women having both or either conditions were classified as having any UI.

The Pelvic Organ Prolapse Distress Inventory-6 (POPDI-6) and the Colorectal-Anal Distress Inventory-8 (CRADI-8), two of the three subscales of the Pelvic Floor Distress Inventory-20 [14], were used to determine the presence of POP, and FI, respectively. The POPDI-6 (6 symptom questions) and the CRADI-8 (8 symptom questions) have good test–retest reliabilities (intra-class coefficient >0.85), and provide both a symptom inventory and measure the degree of distress and bother caused by the symptoms [14,15].

Questions in the CRADI-8 scale assessed the presence of well-formed or loose incontinence. "Any FI" was defined as loss/leakage of well-formed or loose stool beyond control and was expressed as a dichotomous outcome variable (yes/no). Flatus incontinence was not included in the analysis because it is reported frequently, but is less bothersome than formed or loose FI.

"Symptomatic POP" was defined as a positive response to the POPDI-6 symptom question stated as: "Do you experience bulging or something falling out you can see or feel in the vaginal area?". This is consistent with other studies that have assessed the prevalence of symptomatic POP [1,3]. An affirmative response correlates well with the presence of a vaginal bulge on examination [16]. A symptomatic pelvic floor disorder was defined as having one or more of the three disorders (UI, FI or symptomatic POP).

For the CRADI-8 and the POPDI-6 scales, the presence or absence of a symptom at least once in the preceding 3 months was recorded. If the symptom was absent the score was 0. If the symptom was present, the respondent then rated how bothersome the symptom was using a 1–4 point Likert-type scale. The symptom scores were aggregated for each scale (values within the range of 0–4) and multiplied by 25 to obtain the score for each scale (range 0–100). For each subscale, a total score of 33–66 out of 100 indicated moderate distress and a total score of $\geq 67/100$ indicated severe distress.

2.3. Data analysis

The total sample size was based on the primary study outcome of our study i.e., moderate-severe vasomotor symptoms, with a 95% confidence interval of $\pm 1.8\%$ around a percentage prevalence estimate of 15%.

Descriptive statistics were used to present data in tables and graphs. We investigated the associations between outcome variables and potential risk factors using binary and multivariable logistic regression. Variables included in the multivariable analysis were chosen if they have been associated in the univariate analysis ($p < 0.1$), or identified in previous studies as being either associated with or could potentially confound an association. There was significant collinearity between the variables "ever been diagnosed with any cancer", and "history of pelvic surgery", and hence we excluded one of them from the multivariable model. We excluded underweight (BMI <18.5 kg/m^2) women ($n = 37$) from the logistic regression analysis as they may be unwell. Adjusted and unadjusted odds ratios, and their 95% confidence intervals, were calculated. All statistical tests were two-sided, and a p-value <0.05 was considered statistically significant. All analyses were performed using STATA version 13.1 (StataCorp. 2013, Texas).

3. Results

3.1. Participant characteristics

4,714 eligible women were contacted by telephone and 2558 (54.3%) agreed to participate in the study. 581 (12.3%) of women contacted were excluded either because their age-group quota was filled ($n = 548$) or their age was outside the study target range ($n = 33$). A study questionnaire was sent to 1977 women, and 1592 (80.5%) returned the questionnaire. After excluding blank questionnaires ($n = 38$), questionnaires missing one or more of the responses required to assess UI, FI, and symptomatic POP ($n = 31$), late replies ($n = 4$), and those out of the age range ($n = 2$), the final analysis included 1517 women (Fig. 1).

The mean age of women included in the final analysis was 71.5 ± 4.1 (standard deviation, SD) years, and their body mass index (BMI) was 27.9 ± 6.0 kg/m^2. Over half (52.8%) were partnered, 91.5% were parous and 45.0% had three or more children. Ninety five (6.3%) were taking menopausal hormone therapy (MHT) and 104 (6.9%) were using vaginal estrogen. 637 (42.5%) reported prior pelvic surgery, 330 (21.8%) hysterectomy with bilateral oophorec-