

Fear of falling during activities of daily living after total hip arthroplasty in Japanese women: a cross-sectional study

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Abstract

Objectives To investigate the prevalence of fear of falling, and identify factors associated with fear of falling during activities of daily living after total hip arthroplasty (THA).

Design Cross-sectional study.

Setting Community.

Participants Two hundred and fourteen women who had undergone THA.

Main outcome measures Fear of falling after THA was assessed for 12 activities of daily living using a fear of falling score. The number of falls in the past year, total Oxford Hip Score (OHS), total Penn State Worry Questionnaire (PSWQ) score and walking capacity were recorded as descriptive statistics. Multiple linear regression analysis was performed, with total fear of falling score as the dependent variable and age, body mass index, time since THA, bilateral THA, total OHS, history of falling, walking capacity and total PSWQ score as the independent variables.

Results A number of participants (mean age = 64.2) experienced fear of falling while ascending and descending stairs: 45% (97/214), taking a bath: 26% (56/214), bending to pick something up off the floor: 26% (55/214), and getting up from lying on the floor: 25% (54/214). Fear of falling during activities of daily living after THA was significantly correlated with total OHS, history of falling, walking capacity, total PSWQ score and age ($P < 0.05$).

Conclusions Fear of falling develops in certain activities of daily living after THA. It is associated with poorer functional outcome, history of falling, lower walking capacity, higher anxiety level and older age.

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Keywords: Fear of falling; Fall; Total hip arthroplasty; Activities of daily living; Anxiety; Walking

Introduction

Total hip arthroplasty (THA) is a widely used treatment for severe osteoarthritis of the hip. THA provides a relatively safe, effective, long-term solution to the pain, immobility and disability associated with the condition, and allows patients to perform most of their normal activities of daily living [1,2]. However, despite such improvements, lower leg strength and

mobility of patients after THA are not comparable with those of the general population [3,4]. In addition, motion difficulties or biomechanical changes in some activities of daily living persist after THA [5,6].

Fear of falling is a common and potentially disabling problem among older people living in the community. The psychological state can induce a debilitating downward spiral, marked by loss of confidence, reduced activity and, consequently, loss of independence in healthy older adults [7]. Although fear of falling is a major component of the 'post-fall syndrome' [8,9], it can develop in elderly individuals who have not experienced a fall [10]. The prevalence of fear of falling has been well investigated in older people, but little is known about its prevalence after THA. Patients

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who have undergone THA could experience fear of falling during activities of daily living due to persistent impairments in function. Detailed information about fear of falling after THA could enable effective instruction for activities of daily living, and thus may prevent excessive fear related to activity limitation. As such, this cross-sectional study aimed to investigate the prevalence of fear of falling, and identify factors associated with fear of falling during activities of daily living after THA. It was hypothesised that, after THA, patients experience fear of falling during certain activities of daily living, and this experience is related to functional outcome.

Methods

Participants

This study had a cross-sectional design. Participants were recruited via advertising and oral announcements by staff members in the hospital. The advertisement was posted at the hospital entrance and online. The oral announcements were made by nurses or therapists for community-dwelling outpatients visiting the hospital for a regular check-up. Three hundred and eighty-one community-dwelling older Japanese people were assessed for eligibility in this study. The inclusion criterion was THA. No criteria were set regarding age or postoperative period. Patients with neurological impairment (e.g. stroke, Parkinson's disease, paresis of the lower limbs), cardiovascular disease, arthrorheumatism, visual impediment, dizziness, severe cognitive impairment or hip osteoarthritis without THA were excluded. The number of male participants was fairly small ($n = 24$); therefore, men were excluded to avoid possible confounding due to the unbalanced sex distribution. All participants gave written informed consent for participation in the study. This research was approved by the Ethical Review Board of Kyoto University Graduate School of Medicine, Kyoto, Japan (E1265).

Data collection

Demographics

A printed copy of the questionnaire was delivered to each participant at meetings for patients with THA. Medical information, including the date of operation, operated side (bilateral or unilateral), revision THA, number of medications and number of comorbidities, was collected with a self-administered questionnaire and confirmed using clinical records. For the participants who had undergone bilateral THA, the date of the latest operation was used. In all cases, THA had been performed using a posterolateral approach.

Fear of falling

The Falls Efficacy Scale [11] was modified to evaluate fear of falling in the participants. The original version consists of 10 items, nine of which were included in the modified version

(‘answering the telephone’ was excluded because few people with fear of falling during this activity were observed); three additional items, related to movements on the floor that could be restricted after THA, were included in the modified version. As such, the modified version included 12 items. The nine activities of daily living from the original Falls Efficacy Scale were: cleaning the house; getting dressed (including putting on socks); preparing simple meals; taking a bath; simple shopping; getting in and out of a chair; walking around the neighbourhood; reaching into cabinets or closets; and going up and down stairs. The additional three items were: getting in and out of a conventional or Japanese-style bed; getting up from lying on the floor; and bending to pick something up off the floor. The scale was dichotomised to describe whether or not a person feels fear. The participants were asked to complete a questionnaire on whether they experienced fear of falling in these 12 different activities of daily living, and score their responses as ‘fear’ (score 1) or ‘no fear’ (score 0). The possible total fear of falling score ranged from 0 to 12, with lower scores indicating greater confidence.

History of falling

In the self-completed questionnaire, participants were asked how many times they had fallen in the previous year. A fall was defined as an event that resulted in the person unintentionally coming to rest on the ground, floor or other lower level [12]. Falls resulting from extraordinary environmental factors (e.g. traffic accidents, falls while riding a bicycle) were excluded from the count.

Functional outcome

The Japanese version of the Oxford Hip Score (OHS) was used for the self-assessment of a patient's disability after THA [13,14]. The questionnaire contains the following 12 items: usual level of hip pain; trouble with washing and drying; transport difficulties; difficulty in putting on socks/stockings/tights; shopping for household items independently; walking time before severe pain; difficulty in climbing stairs; pain on standing up from sitting; limping when walking; sudden severe pain from the hip; work interference due to pain; and pain while in bed at night. Each item is scored from 1 (no symptoms or impairment) to 5 (severe symptoms or impairment). The scores are added to obtain a total value that can range from 12 to 60, with a lower score indicating less impairment or fewer symptoms.

Psychological state

The Japanese version of the Penn State Worry Questionnaire (PSWQ) was used to measure anxiety [15,16]. The validity and reliability of the Japanese version of this questionnaire have been confirmed previously [16]. The questionnaire contains 16 items which are rated on a five-point scale (from ‘not at all typical of me’ to ‘very typical of me’). Examples of the items are: ‘My worries overwhelm me’, ‘When I am under pressure I worry a lot’, ‘I am always worrying about something’ and ‘I worry about projects until they

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