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2 Feet 4 Life: A Foot Care Self-Management Intervention for Older Adults Without Diabetes

Jennifer J. O'Connor, MSN/Ed, BSN

Deidre D. Wipke-Tevis, PhD

Sinclair School of Nursing, University of Missouri, Columbia, MO, USA

One in three older adults have foot problems such as corns, calluses, foot pain, or nail disorders, but those problems are often ignored until they threaten mobility or quality of life.¹⁻

⁴ Foot problems can lead to loss of foot function, falls, and are a direct cause of 1 in 13 hospital admissions.⁵ With proper self-management, skin and nail problems can be addressed before they become severe; however, older adults without diabetes are not routinely informed of self-management techniques unless they consult a specialist. Foot care self-management programs improve foot health, knowledge, self-efficacy, self-management behaviors, and foot health in persons with diabetes mellitus (DM).⁶⁻¹¹ Older adults without DM also experience foot problems¹²⁻¹³ yet, to date, only two studies, exist in the extant literature that evaluate the effects of a self-management program on older adults without DM.¹⁴⁻¹⁵

The self-management intervention, 2 Feet 4 Life, was based on Social Cognitive Theory and delivered in four weekly, one-hour group sessions. The program included self-management teaching, interactive lecture, and group activities, including instruction, demonstration, and practice of routine foot care. Program topics included appropriate foot hygiene and footwear, identification and treatment of common foot problems, demonstration of proper foot care with opportunities for practice and instructor feedback, and guidance in obtaining appropriate footwear.

This pilot study employed a two-group experimental design with repeated measures, aimed to test the impact of 2 Feet 4 Life on foot care knowledge, self-efficacy, behaviors, and foot pain in older adults without diabetes. An exploratory aim evaluated the impact of 2 Feet 4 Life on foot health. Study feasibility and acceptability data were collected. Study outcomes were measured using these tools: Foot Self-care Knowledge Questionnaire,¹⁶ Foot Care Confidence Scale,¹⁷ Nottingham Assessment of Functional Foot Care [foot care behaviors],¹⁸ Manchester Foot Pain and Disability Index,¹⁹ and Foot Health Score.²⁰ Recruitment and retention rates were tracked, an intervention manual and checklist were developed, and intervention participants were interviewed to evaluate the content, delivery and burden of study participation.

Study participants were 32 adults without DM, age 65 or older, recruited from two Midwestern United States (U.S.) community senior centers. Exclusion criteria included: diagnosis of DM and inability to see or reach one's feet. One community center was randomized to receive the 2 Feet 4 Life intervention; the other served as a Control group. The Intervention group completed four assessment visits: Time 1 (baseline), Time 2 (immediately post-intervention; one month after baseline), Time 3 (3 months post-intervention; four months after baseline) and Time 4 (6 months post-intervention; seven months after baseline). Control group participants were randomized into two subgroups: True control (n=8) and Bias control (n=8). True control subgroup completed four assessment visits: Time 1 (baseline), Time 2 (one month after baseline), Time 3 (four months after baseline) and Time 4 (seven months after baseline). Bias control subgroup only completed two assessment visits: Time 1 (baseline) and Time 4 (7 months after baseline) which allowed the exploration of possible effects of recall bias

and social desirability on the outcomes. Time 1, 2, and 3 data are completed; Time 4 data are being collected.

Of the 32 participants, the average participant was a 73-year-old female (range 65-88, sd 6.6) with an associate's degree and an income between \$35,000- \$50,000/year. Intervention group participants were 5.4 years older than Control group participants. The odds of the Control group not having hypertension was 4.4 times the odds of the Intervention group not having hypertension. Otherwise groups were equivalent at baseline. Outcomes were not normally distributed ($p < .000$); therefore, data were described using median, interquartile range, minimum and maximum. Median values for each time point were plotted and visually compared for differences at baseline and over time between the groups.

Foot care knowledge scores were similar at Time 1 for all groups with slight increases throughout the study follow-up. The Intervention group's median Time 1 knowledge score was 8.5 out of a possible 11 points. The Intervention group's median knowledge score increased to 10 points at Time 2 and was maintained at Time 3. Both True and Bias Control groups had median knowledge scores of 8 points at Time 1. True Control group showed small increases at Time 2 (median 8.5 points) and Time 3 (median 10 points). While small increases in median knowledge were observed after the 2 Feet 4 Life intervention, all groups had very high median foot care knowledge scores at baseline.

Self-efficacy scores were identical at Time 1 for all groups with small decreases throughout the study follow-up. The Intervention group's median self-efficacy score was 59 out of a possible 60 points at Time 1, but decreased slightly to 58.5 points at Time 2 which was maintained at Time 3. Both True and Bias Control groups had median scores of 59 points at Time 1. Although True Controls showed a slight increase in self-efficacy (median 59.5 points) at Time 2, the median self-efficacy score then dropped to 57 points at Time 3. Overall, these data suggest this sample of older adults was confident in their foot care self-management and any minor decreases are likely within the error of the measurement of the Foot Care Confidence Scale.

Foot care behavior scores were slightly lower for the Control groups than the Intervention group at Time 1. The Intervention group median foot care behavior score at Time 1 was 50.5 out of possible 70 points. The Intervention group's appropriate foot care behaviors increased at Time 2 (median 54 points) and at Time 3 (median 58.5 points). At Time 1, True Control's median foot care behaviors score was 47.5 points while Bias Control's median score was 48 points. True Controls had more modest median increases in foot care behaviors at Time 2 (49 points) and Time 3 (52 points). While this sample had fairly high foot care behaviors at baseline, these data suggest the 2 Feet 4 Life intervention had a tendency to modestly improve foot care behaviors over time.

Foot pain was very low at Time 1 in both groups. At Time 1, median foot pain was 0.5 out of a possible 34 points for the Intervention group. Indeed, 50% of the Intervention group had no baseline pain. Intervention group foot pain remained unchanged at Time 2; however, median foot pain score fell to 0 at Time 3. True Control group had a median score of 0 at Time 1 (with 75% reporting no pain) and Time 2 (with 43% reporting no pain); however, median pain scores increased slightly to 0.5 at Time 3. Bias Control group also had a median score of 0 at Time 1, with 63% reporting no pain. Overall, this

sample had very little foot pain making it difficult to evaluate to potential impact of 2 Feet 4 Life.

Foot health scores were slightly lower for the Control groups than the Intervention group at Time 1 with varying decreases throughout the study follow-up. At Time 1, the Intervention group's median foot health score was 7.5 out of a possible 90 points. At Time 2, the Intervention group's median score dropped to 4 points and this score was maintained at Time 3. True Control group's median foot health score was 5.5 points at Time 1, which dropped to 3.5 points at Time 2 and this score was maintained at Time 3. Bias Control group's baseline foot health score was 6.5 at Time 1. While this sample of older adults had very good foot health at baseline, these data suggest that the 2 Feet 4 Life intervention had a tendency to modestly improve foot health over time.

Sixty-nine individuals expressed interest in the study. Of those, 68.1% (47/69) were screened. Of the 47 screened, 31.9% (15/47) either did not meet eligibility requirements or declined study participation. Participant attrition was 6.25% (2/32). Moreover, no physical or psychosocial adverse events occurred. These data suggest it is feasible to safely recruit and retain community-dwelling older adults for foot health intervention studies using the 2 Feet 4 Life program.

In general, participants found study participation acceptable. Participants reported the total number of intervention sessions was appropriate and all but two found the session length acceptable. For some, outcome measure wording was difficult to understand due to minor language use differences between the US and the United Kingdom.

Nonetheless, participants did not find the surveys overly burdensome.

This was the first study to test a nurse run, community-based, foot care self-management program for older adults without DM in the U.S. Study procedures were found to be feasible and the intervention and outcome measures were acceptable to participants. While small improvements were seen in the Intervention group in terms of foot care knowledge, behavior and foot health, this sample of older adults was, as a group, homogenous and quite knowledgeable and confident about foot care and had only minor foot problems at baseline. Outcome measures may require revision to improve clarity for use in the U.S. Future research needs to include a more diverse sample as well as persons with more complex and severe foot problems.

Title:

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Keywords:

foot care, older adults and self-management

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Abstract Summary:

The high prevalence of foot problems in older adults necessitates preventative foot self-care. This feasibility study evaluated a foot care self-management program on community-dwelling older adults without diabetes. Implementation of best practices may protect foot health, preserve function and mobility, and extend older adults' healthy, active years of life.

Content Outline:

Introduction

1. Background and significance of foot problems in older adults
2. Foot care self-management interventions utilized in persons with and without diabetes

Specific Aims

1. To collect feasibility data on the 2 Feet 4 Life intervention and study processes
2. To test the impact of 2 Feet 4 Life on foot care knowledge, self-efficacy, behaviors, foot pain, and foot health in older adults without diabetes

Methods

1. Design
 1. Two-group experimental design with repeated measures
2. Setting and Sample
 1. Two Midwestern United States senior centers
 2. 32 community-dwelling older adults without diabetes able to see and reach their feet
3. Intervention
 1. Four weekly, one hour group sessions
 2. Self-management teaching, demonstration, practice of routine foot care.
3. Weekly Topics
 1. appropriate foot hygiene and footwear
 2. identification and treatment of common foot problems
 3. demonstration of proper foot care, practice, and instructor feedback
 4. guidance in obtaining appropriate footwear
4. Outcomes and Measures

1. Feasibility and acceptability
1. Recruitment and retention
2. Intervention manual and checklist
3. Participant interviews
2. Foot care knowledge
1. Foot Self-care Knowledge Questionnaire
3. Foot care self-efficacy
1. Foot Care Confidence Scale
4. Foot care behaviors
1. Nottingham Assessment of Functional Foot Care
5. Foot pain
1. Manchester Foot Pain and Disability Index
6. Foot health
1. Foot Health Score

Results

1. Feasibility and Acceptability
1. Participants found program acceptable
2. Investigators found recruitment, retention, & intervention feasible
2. Foot care knowledge
1. High median foot care knowledge at baseline
2. Small increases over time
3. Foot care self-efficacy
1. High median foot care self-efficacy at baseline
2. Minor decreases over time
4. Foot care behaviors
1. High median foot care behaviors at baseline
2. Modest increases over time
5. Foot pain
1. Very low foot pain at baseline
2. Minor decreases over time
6. Foot health
1. Very good foot health at baseline
2. Modest improvement over time

Implications and future research

1. 2 Feet 4 Life intervention was feasible and acceptable
2. Intervention group showed tendency toward small improvements in foot care knowledge, foot care behaviors, and foot health
3. Future research needs to include more diverse population with more complex and severe foot problems
4. Community-based foot care self-management programs may enhance function and preserve independence, particularly in those with limited healthcare access

First Primary Presenting Author

Primary Presenting Author

Jennifer J. O'Connor, MSN/Ed, BSN
 University of Missouri
 Sinclair School of Nursing
 Doctoral Student

Columbia MO
USA

Author Summary: Jennifer O'Connor has been worked as a foot care nurse since 2006, obtaining her certification in foot care nursing in 2009. Jennifer is a PhD candidate at the University of Missouri, a T32 Health Behavior Change Predoctoral Fellow and a Jonas Global Scholar. Jennifer is passionate about the foot health of community-dwelling older adults without diabetes and this is a presentation of her dissertation work.

Second Author

Deidre D. Wipke-Tevis, PhD
University of Missouri
Sinclair School of Nursing
Associate Professor of Nursing, PhD Director
Columbia MO
USA

Author Summary: Deidre D. Wipke-Tevis PhD, RN is an Associate Professor and PhD Program Director at the University of Missouri-Columbia. She obtained her BSN from the University of Missouri-Columbia and her MS(N) and PhD from the University of California-San Francisco. Her clinical background is nursing care of cardiac, vascular, general surgery and surgical stepdown/telemetry patients. Her research areas of interest are prevention and treatment of wound and skin problems, and self-management of cardiovascular diseases and microcirculation disorders.