

**A PILOT PROJECT: FALL REDUCTION AND PREVENTION IN THE ELDERLY**

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## Abstract

**Introduction**—The purpose of this paper is to determine if a multifactorial tool utilized along with a health coaching method assist in decreasing falls in the elderly community dwelling persons over the age of 65, and aid in the promote self-care management in comparison to single method strategies.

**Method**—The Missouri Alliance for Home Care (MAHC-10) Fall Assessment tool was utilized as a valid, evidenced-based, multifactorial tool to identify where risks exist for the elderly community-dwelling persons with high fall risk scores (greater than 4); initial baseline scores were determined and compared to scores after the health coaching intervention; participants were measured for self-efficacy and fear of falling. Participants were initially telephoned and informed of the study, followed by a face-to-face interview, two weekly follow-up telephone calls, and one final face-to-face evaluation visit.

**Results**—15 participants completed the 4 week project where the method of the intervention and knowledge of the MACH-10 scores varied with each individual and with the participant's willingness to develop new behavioral modifications.

**Conclusion**—With the MACH-10 tools, participants received information on their risk of falling. This information enhanced their motivation and self-efficacy and aided them to set obtainable goals. More importantly, it reduced the percentage of falls among this group. A larger sample is recommended to provide a greater level of confidence among this particular population and health care setting.

## **Introduction**

Fall reduction and prevention is an important issue for public health to address in order to improve the quality of life, health, and safety for the elderly population which dwells within our communities. Falls are an enormous threat to the health and well-being of the older adult and to the mental well-being of family caregivers. In 2013 the Centers of Disease Control and Prevention (CDC) estimated that one in three adults, age 65 and greater fall each year; with a small percentage of elderly fallers escaping without injury, and leaving another 20 to 30 percent seriously impaired with injuries ranging from fractures to brain trauma.<sup>1</sup> Of those who suffer with hip fractures, 40 percent never fully recover and will die within one year.<sup>1</sup> Falls have been identified as the leading cause of injury and death in the United States elderly population<sup>1</sup>; and the same issue of falls, injury, and death has been noted to vary, but takes precedence among elderly persons globally.<sup>2</sup>

The devotion of time and attention to falls in the elderly spans back for many decades in an attempt to identify fall-related risk factors and to determine prevention strategies that will promote safety within this population. One earlier longitudinal study noted that with each decade of life there is a rising frequency of falls in the elderly<sup>3</sup>. Women were noted to have a higher fall rate and falls with injury than men; and of those who ultimately died after suffering many falls, there was a noted clustering of falls prior to their death.<sup>3</sup> There is strong evidence that the etiology of falls consists of multiple factors and requires a multifactorial approach and patient-centered strategies to modify risk factors and mitigate falls based on individualized preferences and needs.<sup>4</sup>

The world's population is aging and the number of elderly people is increasing at an amazing rate. In the United States alone, it is predicted that 77 million baby-boomers will be living the next 20 to 30 years in retirement; many of these baby-boomers are expected to celebrate their 100<sup>th</sup> birthdays living in their homes alone, with an aging spouse, or family caregiver.<sup>5</sup>

The purpose of this paper is to determine whether a multifactorial approach utilized along with a health coaching method is shown to be better than single-method strategies at decreasing falls and promoting self-care management in an elderly population living in a community.

## **Method**

### **Project setting, population, and issue**

The project was performed with the cooperation of a large home health agency in Orange County, California. The framework for the project allowed the researcher to utilize the Transtheoretical Model of Behavior Change,<sup>6</sup> and the Lean Six Sigma Change Model<sup>7</sup> with focuses on fall reduction and prevention, self-efficacy; fear of falling, and transformation of organizational systems. The fear of falling for the elderly community dwelling person can be viewed as a protective response to a very real threat especially after a fall or multiple falls have occurred. This fear of falling can interfere with the elderly person's self-efficacy, activities of daily living, and social, physical, and cognitive goals; for these reasons the fear of falling can increase the prevalence of falls.<sup>8</sup>

While implementing the project, careful consideration was given to ethical aspects of the population. Since the elderly is considered a vulnerable population, the principle of respect for all persons provides the right of the individual to choose or volunteer and have the ability to

cognitively evaluate the risks and benefits and make a decision.<sup>9</sup> Participants were ensured that all applicable Health Insurance Portability and Accountability Act (HIPPA) regulation and health information would be protected. Another important element was that of informed consent; ensuring risks were minimal; and that participants were completely informed and understood the process of the intervention.<sup>10</sup> The informed consent was written at a sixth grade level to increase the chances of each participant's ability to receive, and comprehend the information. The individual participants were made aware that the project was a quality improvement intervention. The intervention was to determine which strategies, modifications, and action plans would provide them with the best projected outcomes. The goal was to empower them with the tools to self-manage their own care in order to reduce or prevent the occurrence of falls indoors as well as outdoors.

Each participant was informed, assessed and interviewed in the privacy of their home and given the opportunity to decide whether or not to participate in the project with or without spousal or caregiver knowledge or involvement. All participants elected to include their spouse or family care giver. Each participant was informed that the project was designed to allow them to make the best informed decisions, action plan and set obtainable goals for fall reduction and prevention and to feel free of coercion.

### **Project description**

Participants were identified through review of adverse events reports, Missouri Alliance for Home Care (MAHC-10) Fall Assessment tool<sup>11</sup> located in the medical record, and through quality improvement reports. Clients that had a diagnosis of dementia, Alzheimer's disease, or any cognitive impairment were excluded. The project focused on offering health coaching and

education that would promote healthy behavioral change in coachable seniors with a sudden or longstanding issue of falls. Health coaching is skillful conversation and clinical strategies used to actively and safely engage participants in the facilitation of healthy, sustainable behavior change through motivation and through encouraging a person to listen to their own inner wisdom and individual values. The individual discovers how to transform their goals into actions of self-management of care, which improves outcomes and reduces health care cost.<sup>11</sup>

Initial contact with participants was made by telephone and verbal consent obtained to participate in the multifactorial approach and health coaching project. After obtaining verbal consent, an in home visit was made for the initial face-to-face interview where written informed consent was obtained. An observational nursing assessment of the participant, their environment, and how they functioned with-in the environment was performed to include the MAHC-10.<sup>11</sup> The participant was made aware of their MAHC-10 score and shown the core elements of where their risks for falls exist.

The MAHC-10 is a scientifically tested standardized fall assessment tool for home care use in the elderly population. The MAHC-10 fall assessment tool has ten core elements that are reviewed to determine fall risk scoring; a score of 4 or more considers an individual at risk for falls.<sup>11</sup> Core elements such as age, diagnosis, certain rationales for incontinence and visual impairments, along with certain impaired functional mobility issues, pain that affects level of functioning, and cognitive impairments cannot be modified. However, the information offered the participant with insight into the risk factors that can or have contributed to their falls and to future falls. Therefore, the focus was mainly placed on participant education and health coaching to improve functional and occupational mobility, modification of environmental hazards, review

of medications, and encouragement of participants to have an additional discussion with their primary care physician regarding concerns about falls.

Participants were then assessed for their willingness to change behaviors or make modifications to reduce or prevent further falls with this additional information and through the use of asking open ended questions utilizing the Transtheoretical Model for Behavioral Change.<sup>6</sup> A motivational interview, goal setting and a brainstorming action plan session followed. Participants were then asked questions to determine self-efficacy; findings are reported from microanalysis of enactive, vicarious, and emotive modes of treatment that supported the hypothesized relationship between perceived self-efficacy and behavioral change. Self-efficacy is the degree of confidence an individual has in his/her ability to perform behavior under several specific circumstances.<sup>12</sup> Five questions were asked in the initial face-to-face interview and then again during the final face-to-face evaluation and analyzed to determine if the participant had a positive change in self-efficacy along with making positive changes in behavior for fall reduction and prevention during the project. Telephone follow-up calls were made in the two weeks following the initial interview to ensure a structured patient-centered and relationship-centered interaction, follow-up on goal agenda, fear of falling concerns, notation of the current Transtheoretical stage of change<sup>6</sup> and a discussion of any falls or near falls during the change process. Health coaching over the phone was utilized as a patient-centered approach to increase participation in the self-selected goal, promote motivation, and encourage self-care management.<sup>13</sup> The last week of the project involved another face-to-face evaluation interview. At that time, the researcher reviewed the action plan, goal attainment, fear of falling and self-efficacy, the incidence or absence of falls during the project, behavioral and environmental modifications, and

if the participant felt the project was helpful in assisting them to make positive changes towards fall reduction and prevention and how the participant planned on sustaining the changed behavior.

## **Results**

A one-tailed test was done to provide more power in the direction of the clinical question. Each participant was provided with the same approach and intervention; to test if the intervention and education would make a positive change in the behavior of the group where falls, fear of falling, and self-confidence were concerned. The researcher wished to maximize the ability to detect improvement for this group. Factors that influenced the choice for the intervention of health coaching were its ability to be a patient-centered intervention, aid in promoting self-care management through education and awareness, encourage motivation to produce positive lifestyle changes through action planning and goal setting.

Sixteen individuals agreed to participate in the multifactorial approach and health coaching intervention project. The average age of 79.8 years ( $n = 9.78$  years); equally male and female. During the first week of the telephone stage, one male participant dropped from the project. This was determined as multiple attempts to connect the participant by telephone resulted without a return call. Therefore, after a week, the project continued with seven males (46.67 percent) and eight females (53.33 percent). Among the participants, 100 percent ( $n=15$ ) had experienced at least one or more fall(s) within the past thirty days; with an average of  $2.0 \pm 0.8088$  (95 percent confidence interval). Figure 1 demonstrates the number of falls before the intervention and the number of falls that occurred during the project.



Ninety-three percent (n=14) of participants expressed a fear of falling at some level of severity as demonstrated in Figure 2; and 100 percent of participants (n=15) had varying scores on self-efficacy during the initial face-to-face interview and then again at the final evaluation interview. Participants were asked five survey questions that are further discussed which demonstrate the survey questionnaire in figure 3. At the completion of the intervention the interview results were as follows; the average number of falls had a significant decrease to  $0.467 \pm 0.3536$  (95 percent confidence interval one-tailed t-test,  $p < 0.0005$ ). Participant (n=14) scores on fear of falling decreased in severity as demonstrated in Figure 2; self-efficacy scores increased and varied amongst participants demonstrated from the survey.

### Figure 3. Self-efficacy Scores and Questionnaire

How sure are you that you can independently perform the following activities?

**Sure**                      **Very Sure**                      **Somewhat Sure**                      **Not Sure At**

1. How sure are you that you can manage to get up from the floor or ground should you fall?

**Initial Interview:** Thirty-three percent (n=5) answered somewhat sure; sixty-seven percent (n=10) answered not sure at all.

**Final Evaluation:** Thirty-three percent (n=5) answered sure; fifty-three percent (n=8) answered somewhat sure; fourteen percent (n=2) answered not sure at all.

2. How sure are you that you can reduce or prevent any further falls?

**Initial Interview:** Fifty-three percent (n=8) answered sure; forty-seven (n=7) answered not sure at all.

**Final Evaluation:** Eighty percent (n=12) answered sure; twenty percent (n=3) answered somewhat sure.

3. How sure are you that your environment is safe and not an issue in any of your previous falls?

**Initial Interview:** Twenty percent (n=3) answered sure; twenty-seven (n=4) answered somewhat sure; fifty-three percent (n=8) answered not sure at all.

**Final Evaluation:** Forty percent (n=6) answered very sure; twenty-seven (n=4) answered sure; twenty percent (n=3) answered somewhat sure; thirteen percent (n=2) answered not sure at all.

4. How sure are you that increasing your physical activity can improve your strength and self-confidence?

**Initial Interview:** Sixty-seven percent (n=10) answered sure; seven percent (n=1) answered somewhat sure; twenty-six percent (n=4) answered not sure at all.

**Final Evaluation:** Fifty-three percent (n=8) answered very sure; forty percent (n=6) answered sure; seven percent (n=1) answered somewhat sure.

5. How sure are you that you can become increasingly steadier on your feet?

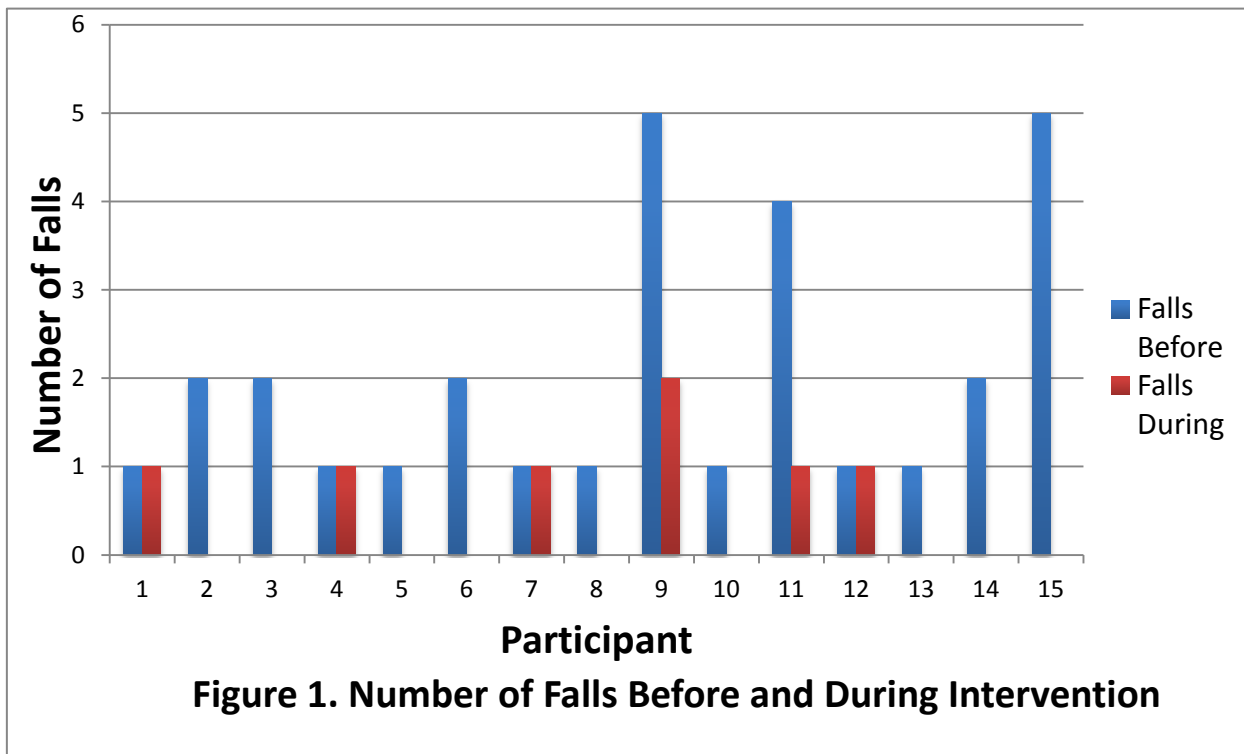
**Initial Interview:** twenty-seven percent (n=4) very sure; thirty-three percent (n=5) answered sure; seven percent (n=1) answered somewhat sure; thirty-three percent (n=5) answered not sure at all.

**Final Evaluation:** Sixty-seven percent (n=10) answered sure; thirty-three percent (n=5) answered not sure at all.

[14]

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<sup>1</sup> A Matter of Balance: Managing concerns about falls handout. Volunteer Lay Leader Model. Coach Handbook 2010. Used the **Session Survey** and adapted with permission by using the terms “how sure are you” instead of “I can”.



**Figure 2. Severity of Fear of Falling (0-10)**

	0	1	2	3	4	5	6	7	8	9	10
<b>Before Intervention</b>	1	0	0	0	0	4	0	0	2	3	5
<b>After Intervention</b>	1	0	0	5	0	3	3	3	0	0	0

## **Discussion**

The exact factors that contribute to fall risks are challenging and very complex in nature. They include co-existing medical conditions, physical decline, poor balance, other mobility issues, lack of awareness of issues that contribute to falls, poor preparation for the aging phase of life, and limited resources available for revision of environmental hazards. Limitations in the project include a shortage of human resources to form a viable team to recruit, interview, and participate in the intervention in order to recruit more participants for a more valid project. Participants did not always report to the researcher that a fall had occurred during the project. Fall occurrences were discovered through caregiver discussion or through another member of the team. Participants in the study do not usually remain on home health services for longer than a few weeks; therefore, recertification or reassessment to include the MAHC-10<sup>11</sup> would not be available for comparison and further evaluation of the project at the 60 day recertification period as initially projected. Some gaps identified during the project were that many people are ill prepared for aging and how aging affects the ability to perform activities of daily living. Many people could not fully utilize their entire home if it was multi-level; and many people in single story homes only utilized a few rooms in their homes. Some homes were over cluttered with furniture, where others were cluttered with trash, again making only parts of the home functional and contributing to the incidence of falls.

There is evidence to support that a combination of in-person and telephone-based interventions have demonstrated efficacy for individuals. Evidence-based interventions for the population are important to understand and implement properly and prepared in a way that intervenes on each participants identified needs.<sup>15</sup> The participant, family caregiver, and family

should be empowered with increased awareness and education about the fall risk factors identified in the assessment, stress and reinforce the importance of maintaining a safe environment for all members of the household, and reassess fall risk factors and offer resources for adequate help and participant supervision. Fall reduction methods include adopting an organizational culture that is committed to fall safety, engagement of participants, family, and caregivers in the process and improvement of the delivery of service.<sup>16</sup>

## **Conclusion**

Falls in the elderly population can be reduced or prevented in a large percentage through the utilization of early fall education programs, identification of patterns of risk, management of chronic illnesses, and implementing interventions that empower, motivate, and promote self-care management on an individualized basis. This pilot project may provide promising results for the population. The results of this project demonstrates that motivational interviewing, educational health coaching along with fall risk score knowledge, telephone interviews, and an evaluation interview aided in increased self-efficacy, decreased fear of falling, and decreased falls in the majority of participants. By educating each participant with information on where their fall risks exist with the use of the MACH-10 tool; assisted in aiding in the promotion of motivation and self-efficacy, goal setting, action planning, and reduced the percentage of falls among the group. By educating each participant with information on where fall risks exist with the use of the MACH-10 tool; assisted in aiding in the promotion of motivation and self-efficacy, goal setting, action planning, and reduced the percentage of falls among the group. A larger sample and additional research utilizing this tool and approach is recommended to provide a greater level of confidence among this particular population and health care setting.

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## APPENDIX A. STATEMENT OF ORIGINAL WORK

### Academic Honesty Policy

Capella University's Academic Honesty Policy (3.01.01) holds learners accountable for the integrity of work they submit, which includes but is not limited to discussion postings, assignments, comprehensive exams, and the dissertation or capstone project.

Established in the Policy are the expectations for original work, rationale for the policy, definition of terms that pertain to academic honesty and original work, and disciplinary consequences of academic dishonesty. Also stated in the Policy is the expectation that learners will follow APA rules for citing another person's ideas or works.

The following standards for original work and definition of *plagiarism* are discussed in the Policy:

Learners are expected to be the sole authors of their work and to acknowledge the authorship of others' work through proper citation and reference. Use of another person's ideas, including another learner's, without proper reference or citation constitutes plagiarism and academic dishonesty and is prohibited conduct. (p. 1)

Plagiarism is one example of academic dishonesty. Plagiarism is presenting someone else's ideas or work as your own. Plagiarism also includes copying verbatim or rephrasing ideas without properly acknowledging the source by author, date, and publication medium. (p. 2)

Capella University's Research Misconduct Policy (3.03.06) holds learners accountable for research integrity. What constitutes research misconduct is discussed in the Policy:

Research misconduct includes but is not limited to falsification, fabrication, plagiarism, misappropriation, or other practices that seriously deviate from those that are commonly accepted within the academic community for proposing, conducting, or reviewing research, or in reporting research results. (p. 1)

Learners failing to abide by these policies are subject to consequences, including but not limited to dismissal or revocation of the degree.

**Statement of Original Work and Signature**

I have read, understood, and abided by Capella University's Academic Honesty Policy (3.01.01) and Research Misconduct Policy (3.03.06), including the Policy Statements, Rationale, and Definitions.

I attest that this dissertation or capstone project is my own work. Where I have used the ideas or words of others, I have paraphrased, summarized, or used direct quotes following the guidelines set forth in the *APA Publication Manual*.

Learner name  
and date

Anniebelle Wilson 7/26/15

Mentor name  
and school

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