Summary
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Concerns about falls are a common health problem and a threat to autonomy for community-dwelling older people. These concerns are associated with adverse outcomes in psychosocial, physical and functional domains such as falls, avoidance of activity, decreased balance performance, decreased mobility, lower social participation, functional decline, low quality of life, and loss of independence. In addition to the negative consequences of concerns about falls, there is the risk of increased healthcare usage and related costs. Reviews showed that a few approaches are successful in reducing concerns about falls and potentially contributors to a better quality of life and independent living of older people. The multicomponent, cognitive behavioral group program ‘A Matter of Balance’ (AMB) is one of these few interventions that targets psychosocial, physical and functional aspects of concerns about falls and consistently shows positive effects on a broad range of outcomes. Despite its success in (cost-)effectiveness, it seems that a substantial number of eligible participants do not attend or complete the group program because of health problems. To enable these frail, community-dwelling older people to participate, a tailor-made, home-based format, named ‘A Matter of Balance at Home’ (AMB-Home) was developed and evaluated.

Chapter 1 gives an overview of the definitions of concerns about falls, theoretical models, prevalence, risk factors, consequences and developed programs. Furthermore, the three main objectives of this thesis are described, namely: 1) explore which format(s) are preferred to manage concerns about falls by community-dwelling older people; 2) study the feasibility and acceptability of a home-based, cognitive behavioral program to manage concerns about falls in frail, community-dwelling, older people; and 3) analyze whether the newly developed program is (cost-)effective with respect to the reduction of concerns about falls when compared to care as usual.

In Chapter 2 the results of a cross-sectional study among 5,755 community-dwelling older people are described. In this study the preferences regarding six different formats (in a group, at home, via telephone, via a combination of home visits and telephone consultations, via television or via internet) of a program that primarily focuses on managing concerns about falls were explored. Of the 2,498 responders, 62.7% indicated having no interest in any of the formats. The willingness to participate varied per program format and ranged from 21.5% (at home) to 9.4% (via internet). Higher levels of fall-related concerns were associated with increased preference for a program including home visits. Poor perceived health and older age (>80 years) were associated with less preference for a group program.

Chapter 3 describes the development of a home-based, cognitive behavioral program to manage concerns about falls, named ‘A Matter of Balance at Home’ (AMB-Home) and the design of a process, effect, and economic evaluation study. A group program of eight sessions was transformed to an individual format of seven sessions.
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(three home-visits and four telephone contacts). The sessions were aimed at instilling adaptive and realistic views about falls, as well as increasing activity and safe behavior. Overall, principles for behavior change and themes of the group program were maintained in AMB-Home. However, in adapting the group program to a home-based program, several adaptations were implemented. For instance, the physical exercises in the group program were replaced by ‘exposure in vivo’, motivational interviewing was incorporated to encourage internal motivation to change behavior and increase self-efficacy, and participants were encouraged to invite a significant other (e.g., a spouse, friend, or neighbor) to be present during the home visits. AMB-Home was facilitated by trained community nurses who were qualified in the field of geriatrics and worked at local home-care agencies. The program was evaluated in a randomized controlled trial. Screening for eligibility was done with a short postal questionnaire in a general older population living in the southeast of the Netherlands. Older people were included when they were 70 years of age and older; living in the community; reported at least some concerns about falls and at least some associated avoidance of activity and when they perceived their general health as fair or poor. For the effect evaluation participants received a baseline measurement and a 5-month and 12-month follow-up measurement. The primary outcome of the effect evaluation was concerns about falls. The process evaluation measured: the characteristics of the population that was reached; protocol adherence by facilitators; protocol adherence by participants (engagement in exposure and homework); opinions about the program of participants and facilitators; perceived benefits and achievements; and experienced barriers. The economic evaluation examined the impact on health-care utilization, as well as related costs.

Chapter 4 presents the findings of the process evaluation to get a better understanding of the feasibility and acceptability of the AMB-Home program. The following elements were measured: participation of the target population in the program (reach); implementation of the program as planned (fidelity); participants’ engagement in and receptivity to the program (dose received – exposure); participants’ and facilitators’ satisfaction with the program (dose received – satisfaction); and aspects of the program that need improvement prior to nationwide implementation (barriers). Data were collected from eight nurses (the facilitators of the program) and 194 program participants. Of the 194 participants, 117 (60%) completed the program (i.e., received at least five of the seven sessions). The main reason of participants for not completing was lost interest. According to the self-reports of facilitators the program was generally performed as planned. However, outcomes of audio recordings were inconsistent with these self-reports and showed that the performance according to protocol was much lower. A large majority of participants indicated that they had reached at least one personal goal and that they experienced benefits from the program in daily life. Also the performance of the facilitator was highly valued by the participants. Facilitators indicated as a barrier that more than one third of the 117 participants who completed the program should not have enrolled in the program as they considered them not the target sample, for
example because of physical limitations or not being restricted in daily activities by concerns to fall.

In *Chapter 5* the results of the effect evaluation are presented. In total, 398 participants were included in the study. The mean age was 78.3 years and of those included 70% was female. Through randomization, 195 participants were allocated to the control group, and 194 participants were included in the intervention group. Data were collected from 172 control and 139 intervention participants directly after the intervention and from 162 control and 133 intervention participants at 12 months follow-up. Main reasons for lost follow-up were similar in both groups, namely health problems and lost interest. Mixed-effects linear regression analyses showed significant lower levels of concerns about falls in the intervention group at 12 months compared with the control group. Furthermore, significant reductions in self-reported activity avoidance, restrictions in daily life and indoor falls were identified in the intervention group compared to the control group. Effect sizes were small to medium. No significant difference in total number of falls was noted between the groups.

*Chapter 6* reports on the cost-effectiveness of the program. The economic evaluation was embedded in the trial and performed from a societal perspective with a time horizon of 12 months. The main outcome measure for the cost-effectiveness (CEA) was concerns about falls and the outcome for the cost-utility analysis (CUA) was Quality Adjusted Life Years (QALY). The total societal costs for the usual care group is 8,094 Euro per person and for the intervention group 7,890 Euro per person including 716 Euro program costs per participant. Total costs and subcategories of costs were comparable between the two groups. After synthesizing the effects and costs, the probability that the program was cost-effective for concerns about falls was substantially as well as for QALYs as outcome. Additional sensitivity analyses showed that if participants received 5 or more sessions the probability that the program was cost-effective increased. When costs were taken from a healthcare perspective the probability of the cost-effectiveness of the program decreased.

In *Chapter 7* the main results of this thesis are presented and discussed. Moreover, recommendations for clinical practice, implementation, and for future research are given. Altogether, the home-based, cognitive behavioral program ‘A Matter of Balance at Home’ proved to be feasible as well as effective and cost-effective in reducing concerns about falls compared to usual care. Therefore, implementation in regular Dutch healthcare is recommended after some minor improvements.