Health-social partnership intervention program for community-dwelling older adults: a research protocol for a randomized controlled trial

Why is this research needed?

- Without a promising system and interventions, the aging population will continue to place an increasing burden on policy makers and health care professionals.
- Aging in place is an ideal concept for the aging population, but the existing services are not able to achieve desirable outcomes.
- A true health-social partnership may enable community-dwelling older adults to age in place with optimal health and independence.

Abstract

Aim. This paper aims to describe the research protocol that will be used to determine the effectiveness of a health-social partnership intervention program among community-dwelling older adults.

Background. Aging in place is a preferred option for overcoming challenges of the increasing prevalence of chronic diseases and the risk for hospitalization associated with the aging population. Nevertheless, our knowledge of how to implement this concept is limited. The integrated efforts of health and social services may help to enable older adults to live with a sense of control over their daily life and to be independent to the fullest extent possible in the community.

Design. This is a randomized, controlled trial.

Methods. Participants are community-dwelling older adults referred from a community center. Sample size calculation was based on power analysis. The intervention group will receive the program with the standard protocols guided by a comprehensive assessment-intervention-evaluation framework. Home visits and telephones follow-up will be employed as means of conducting the interventions and monitoring their progress. The customary care group will receive placebo social calls. The duration of the interventions will be 3 months.

Discussion. The results of this research are expected to enable older adults to stay in the community with optimal health and well-being. Health and social sciences are integrated into the practice in this research protocol. The scarce literature on this topic means that this study can also provide an opportunity to bridge the caring gap among older adults

Keywords: community care, older people, health promotion, self-efficacy, nursing assessment

Introduction

The aging population is a common phenomenon globally. This situation is cause for concern, since aging can be associated with the co-occurrence of physical, functional and cognitive alterations that will undoubtedly affect quality of life and increase risk for hospitalization and mortality. Many countries have tried different means to promote the good health of elderly people and shift their care to the community instead of institutions, so as to control the ever-increasing health care expenditure. Within this context, aging in place is a preferred option that enables elderly people to live independently in their own homes regardless of chronic diseases and other disabilities. There is a growing body of literature supporting aging in place by focusing on a variety of topics such as neighborhood environment reconstruction, retirement community or assisted living arrangements, chronic disease management, transportation, and the provision of tax incentives. However, there is no consensus on how these services can be incorporated into the concept of aging in place and subsequently fulfill the needs of community-dwelling older adults by giving them fuller control over their health. This research aims at testing a health-social partnership model that focuses on the needs of older adults in order to allow them to remain in their own community throughout the aging process.

Background

The proportion of older population reaches new highs every year and accounted for 11 percent of the world's population in 2012 (United Nations 2012). This figure will rise to 22 percent by 2050. With increased life expectancy, more medical consultations will inevitably be required by older persons due to chronic diseases and physical frailty. Statistics show that more than 70% of elderly suffer from at least one chronic illness (Census and Statistics Department 2009). This explains why many countries, including Hong Kong, have emphasized the need to put more effort into chronic disease management (Sau Po Center on Ageing 2011).Disease management and transitional care programs have been implemented over the decades to help reduce costs and the readmission rate of older adults. Thus far, these programs have been proven successful in reducing the length of stay in hospital, increasing the satisfaction of discharged patients and decreasing the cost of inpatient stays (Masters *et al.* 2010, Hall *et al.* 2012, Golden *et al.* 2013, Stamp *et al.* 2014, Wong *et al.* 2014). In spite of their apparent advantages, these programs are primarily hospital-based and mostly involve the medical management of one or two diseases (Richard & Shea 2011). They are targeted at elderly people with chronic diseases who are frequent users of hospital resources, and pay little attention to the needs of those living independently in the community.

The concept of aging in place supports the idea of helping older adults to stay in their own communities and promoting autonomy and independence as long as possible instead of providing institutional care in the long term (Wiles *et al.* 2011, Buys *et al.* 2012). It should be noted that this idea is not only an economic consideration, but a reflection of the preferences of older adults. Growing old in a familiar

place can provide a sense of privacy, security and connection, life satisfaction and quality of life to older people (Gilleard *et al.* 2007, Dye *et al.* 2011, Wiles *et al.* 2011, Lofqvist *et al.* 2013).

In order to age in place, several criteria such as enhancing self-efficacy, promoting community safety, acquiring knowledge of community resources and self-care, maintaining social support, managing chronic diseases, and accessing healthcare services have to be satisfied (Weierbach & Glick 2009, Dye *et al.* 2011). Although an increasing amount of research has been published to help older people to age in place with use of a variety of intervention protocols, the results of these studies are inconclusive. Kono and his colleagues (2009) developed a preventive home visit model comprising a structured needs assessment, individualized education, and care recommendations to community-dwelling older adults by community care nurses. Results showed no significant difference in functional and psychosocial status between two groups. Education that aims merely to provide knowledge without empowering older people in terms of behavioral change is not effective. The inclusion of self-efficacy in enhancing ability in translating knowledge into behavior is important (Frosch *et al.* 2008, Facchiano *et al.* 2011). Another randomized controlled trial adopted an annual assessment and health and social referrals for people aged over 75 living in their own homes. To compare, only annual assessments were provided to the control group (Thomas *et al.* 2007). By the end of the study, there were no significant differences between the two groups in perceived self-efficacy, mortality rate, caregiver burden scores, hospital use and self-rated health status. The outcomes reflected that annual assessment followed by health and social referrals alone might not be enough to benefit home-based older adults. Several chronic disease management studies have proved that multi-component approach interventions were more effective in improving physical, psychosocial and functional aspects, and saving costs when community-dwelling elderly were concerned (Brown *et al.* 2008, van Hout *et al.* 2010, Ahn *et al.* 2013). The major components of these interventions included holistic and comprehensive assessment, self-efficacy enhancement strategies, participatory approaches to decision making, and technologies such as tele-health monitoring systems or telephone follow-up (Wong *et al.* 2011, 2014).

Older people tend to face many health and social issues due to their susceptibility to physical weaknesses and multi-morbidity (Carpenter *et al.* 2007). Nurses and social workers have to work collaboratively to fulfill their health care as well as their social care needs. While nurses can be specialized in health care management such as assessing health needs and providing preventive health education, social workers are resourceful in identifying the community resources available to each individual, conducting psychosocial screening, assisting in financial problems, providing social support and care, and satisfying their basic needs such as providing meals-on-wheels services. In fact, health care and social care needs are inter-related. For instance, people in poor health may find it difficult to handle basic home care and may need help from community services. Therefore, instead of the fragmented health and social services provided by individual parties, the health-social partnership is especially critical when it comes to addressing these needs. The United Kingdom has recognized the importance of the health-social partnership and thus integrated it into current policy (Glasby *et al.* 2006).

However, the results have been reported to be poor (Petersson *et al.* 2009). Evidence suggests that the partnership in the UK remains at the level of inter-organizational discussion rather than between front-line staff. In addition, the policy focuses more on the process of partnership than on its outcomes (Glasby *et al.* 2006). At present, these health and social care needs remain unmet due to the fragmentation of services and the diversity in intervention objectives provided by the health care team and social workers. The integration of services requires initiation and commitment at the organizational level, and synergy, collaboration and communication among social workers and nurses. To fill this gap, the design proposed in this research protocol aims at building a home-based health social partnership intervention program to enable older people to age in place in the community and submitting it to empirical testing.

The Study

Aims

The present study examines the effects on functional and health outcomes, perceived well being, and institutionalization and health service utilization, of the health-social partnership program with case management. The goal is to build a health-social partnership model to promote age in place under health-social community program compared with usual care.

Design

The present study adopts a randomized controlled trial (RCT) design to examine the effectiveness of a health-social partnership program for community-dwelling older adults in Hong Kong. The RCT is considered the gold standard for testing the efficacy of health care interventions (Armstrong *et al.* 2008). The clinicaltrial.gov identifier of this study is: NCT02286375.

Study setting

The study will be carried out in Kwai Tsing District in Hong Kong. Kwai Tsing has the third largest proportion of elderly people in its population among 18 District Council districts (Census and Statistics Department 2012).

Participants

Participants will be selected from the service area between January and December 2015. All participants screened for study participation will be aged 60 or over, since the current retirement age in the Hong Kong government and most other organizations is 60 (Cheng *et al.* 2013).Older people living within the

service area and who are cognitively competent with a score of 20 or above in the Chinese version of the Mini-Mental Status Examination (Wong *et al.* 2011) will be included in the eligibility criteria. Those who are not able to communicate, cannot be reached by phone, are bed bound, have known psychiatric problems, are already engaged in other structured health or social programs, and who will not stay in Hong Kong during the study period will be excluded from the study.

The sample size calculation was based on power analysis. Power analysis adopts a hypothesis-testing method to determine sample size according to several parameters, which include pre-specified significance level, desired power level and expected effect size (Hayat 2013). Assuming a two-tailed alpha of 0.05, a probability of 0.2 for beta error (80% power), and an effect size of 0.28 after calculating with respect to the same primary outcome measure (self-efficacy) from the results of two previous research studies that provide home visit and telephone follow-up to older adults (Wong *et al.* 2011,2014), 200 participants per group are required. With reference to the 10% to 15% attrition reported in previous programs for the community-dwelling elderly, we assume a 20% drop out rate in this study, thus the total sample size needed is 240 participants per group, i.e. a total of 480 participants.

Randomization and blinding processes

In order to ensure that the numbers for both groups are equivalent, a block randomization method will be used (Friedman *et al.* 2010). Before randomization, a project team member who will not be involved in the subject recruitment and data collection will prepare a block randomization list with 240 sets of numbers, either 0 (customary care group) or 1 (intervention group), using the computer software Research Randomizer (http://www.randomizer.org/). These 240 sets of numbers will be printed out separately and sealed in each envelope. Another project team member, on successfully recruiting a participant, will open an envelope in sequence after the enrolled participants has finished the baseline assessment and is ready for the interventions. The number written in the envelope will represent the group of that particular participant.

The group assignments will remain blinded to participants throughout the study period. However, the nurse case manager who will provide care to the participants will know the group allocation. Therefore, this study is a single-blinded design. In order to minimize bias, the nurse case manager will not participate in the data collection procedure.

Duration and provider

The intervention program will last for 3 months. The first month will be the loading dose, in which an intensive arrangement will be offered. The second and third months will act as the maintenance dose, keeping the consistency and sustainability of the program effect. Within these three months, home visits and telephone follow-up will be the two main approaches used to implement the program. Home visits will be performed by the nurse case manager or community workers, supported by the district

community leader. The nurse case manager will provide the first home visit, to comprehensively assess the problems of the older adults. Guided by the nurse case manager, community workers will provide subsequent home visits and telephone follow-up in order to provide support and monitor the progress of the older adults.

Intervention group

Upon enrollment, a structured assessment will be conducted on the participants using the Omaha system. Problems will be identified in four domains: environmental, psychosocial, physiological and health-related behavior. Based on the identified problems, the nurse case manager and older adults will set contract goals and formulate an individual care plan. The nurse case manager will provide basic knowledge regarding the participants' own chronic illnesses; recognition, measurement and management of the early signs and symptoms of deterioration or exacerbation of the diseases; and the importance of health-promoting and self-care activities. A booklet will be given to the older adult for easy reference and to act as a reminder to consolidate their knowledge.

Imparting knowledge will not alone lead to adherence to self-care behavior (Frosch *et al.* 2008, Facchiano *et al.* 2011). It must be combined with self-efficacy beliefs to achieve this desired outcome. In this study, self-efficacy-enhancing interventions will be based on four hierarchical sources of Bandura's theory of self-efficacy (1997). Mastery experience will be fulfilled by examining past successful experience of clients when dealing with health-care issues and helping them to recall the effective strategies. Vicarious experience will be demonstrated through sharing newspaper clips of celebrities who have similar situations to those of the older adults and who are successfully performing self-care management. In addition, the older adults will be asked to take note of their affective and physiological status while adopting self-care behavior, to note the beneficial or stressful effects of accomplishing the tasks. Verbal encouragement will be given to the older adults by the health-social care team during home visits and telephone follow-up if they manage to comply with the management and treatment.

A referral system that is agreed by the health-social care team will also be set up in accordance with the conditions and needs of the older adults. Besides initiating social service referrals such as home-delivered meals and emergency alert response system, the nurse case manager can also provide timely health service referrals such as primary care consultation, medical transportation, and community nursing services based on the set guidelines.

In order to enhance the team climate and collaboration between the nurse and the social worker, four interventions will be adopted from Gittell's relational coordination theory: routines, information systems, meetings and a boundary spanner (Gittell & Weiss 2009). Routines pre-specify the sequence and content of elderly care and service by standardized protocols so that the team members will understand the role of each provider. Information systems such as referral forms and records can facilitate the transference of clinical information across different providers. Meetings provide valuable time for interaction among different specialties. A biweekly case conference will be held for those who have been referred by the nurse case manager in the community center. The frequency of case

conferences can be negotiated or adjusted depending on the number of new cases and the complexity of each case. Nurse case managers and social workers will discuss issues such as the progress of the cases, recommendations for possible treatment options, and requirements for modification of treatment during the conference. The boundary spanner is the nurse case manager who can provide strong leadership, helping to integrate the work of each provider and facilitating their professional relationships (Sayah *et al.* 2014). Evidence has proved that by increasing the bonding between nurses and social workers, numerous positive outcomes such as better continuity of care, improved satisfaction of older adults, and reduced likelihood of their readmission and mortality would result (Jacobson 2012). (see appendix)

Customary care group

Both the intervention and customary care groups will receive standard community services such as health talks and physical checkups from the Kwai Tsing community center. These services will be provided on an irregular, on-demand basis. In addition, the customary care group will be offered a monthly placebo social call by a research team member who will not be involved in data collection, so as to exclude possible social effects. The social questions, such as, “Where are you going tomorrow?” and “What is your favorite TV program?” will be set in the protocol. The research team member will strictly follow the protocol and suggest seeking medical help whenever the older adults express concern about their health (Wong *et al.* 2002).

Data collection

Data will be collected at three time intervals, at baseline pre-intervention (T1), three months after completion of the interventions to measure the immediate effects of the program (T2), and at six months to determine the sustainability of the program effect (T3).

Measures

Aging in place aims at enabling older adults to live in the community with some level of autonomy and independence, without the use of institutional care (Dye *et al.* 2011). Studies have shown that life satisfaction (Chippendale & Bear-Lehman 2010), quality of life (Chippendale & Bear-Lehman 2010), and physical health and well-being (Weierbach & Glick 2009) are the predictors of aging in place. This study therefore includes these key outcome variables, which will be measured by the following instruments:

<u>Functional and health outcomes (BP, BMI, blood glucose level, medication adherence, physical activity, ADL, IADL, nutritional status)</u>

Apart from routine measuring at the baseline (T1), after the intervention (T2), and 3 months after the intervention (T3), frequent blood pressure and blood glucose monitoring will be encouraged in order to continue monitoring the health status (Lubart *et al.* 2014, Thabit & Hovorka 2014). Thus, it is suggested that clients seek regular monitoring from their community center throughout the period of study. The results can be written down in the booklet and any trends in the results can then be interpreted. Blood glucose level will be measured by a standard capillary glucose meter. Blood pressure measurement will be performed after 10 minutes of sitting rest. A standard mercury sphygmomanometer will be used to measure supine blood pressure on the right arm of each candidate (unless contraindicated). BMI will be measured based on the calculation of weight and height (weight/height^2).

Medication adherence—8-item Morisky Medication Adherence Scale (MMAS-8)

The MMAS-8 (Morisky *et al.* 2008) is designed to recognize the behaviors and barriers associated with adherence to chronic medications such as anti-hypertensive and oral hypoglycemic drugs (Mann *et al.* 2009, Krousel-Wood *et al.* 2010). It has been used in many studies related to community-dwelling older adults. The good reliability and predictive validity of the scale have been demonstrated in previous studies, and it achieved a Cronbach's alpha of 0.83 in a large sample study (Krapek *et al.* 2004, Morisky *et al.* 2008).

Physical activity level—Physical Activity Level for the Elderly—Chinese (PASE-C)

Physical activity level will be measured by the Chinese version of the Physical Activity Level for the Elderly (Ngai *et al.* 2012). It consists of 12 items measuring the duration, frequency, number of physical activities undertaken, and energy spent over the previous seven days. The questionnaire has been widely used and applied in Hong Kong community-dwelling older adults, and has been proven to have good test-retest reliability (ICC=0.81) (Chan *et al.* 2012, Woo & Leung 2013, Yu *et al.* 2014). Fair to moderate correlations were also found between PASE-C and most of the subscales of the SF-36, grip strength, 10-minutes walking, single-leg-stance and five times sit-to-stand (r=0.28 to 0.55).

Activities of daily living—Modified Barthel Index—Chinese version (MBI-C)

The well-known modified Barthel index will be used to measure the self-care performance of older adults in the present study. The Chinese version has been proven to be reliable and valid (Leung *et al.* 2007).

Instrumental activities of daily living—Nottingham Extended ADL Scale (EADL)

Apart from measuring self-care ability at home, assessing IADLs is also necessary in order to monitor the activity level of older adults within the community. The Nottingham Extended ADL Scale (Nouri & Lincoln 1987), which is generally applied in both clinical and community settings, will be used to measure IADL. The 22-item scale is divided into four dimensions: domestic, kitchen, mobility and leisure activities. The scale has shown good reliability and validity. It presents high internal consistency values between 0.72-0.94, and high test-retest reliability with values between 0.81-0.90 (Lincoln *et al.* 2002).

Nutritional status—Mini Nutritional Assessment (MNA)

The MNA is useful to assess adequate dietary and protein calorie intake among older adults (Rubenstein *et al.* 2001, Vellas *et al.* 2006, Kaiser *et al.* 2009). It measures three areas, appetite, weight and activity. Good internal consistency was shown in an earlier study, with Cronbach's alpha 0.84 (Rubenstein *et al.* 2001). The sensitivity and specificity for the cut-off point of 11 were 97.9% and 100% respectively. The diagnostic accuracy was 98.7% for predicting under-nutrition (Rubenstein *et al.* 2001).

<u>Perceived well being (quality of life, self-efficacy, depression, life satisfaction)</u>

Quality of life—12-item Short Form Health Survey version 2—Chinese (HK) version (SF-12v2-HK)

Quality of life will be assessed with the SF-12, which has been shown to be useful in measuring quality of life in Chinese elderly patients (Lam *et al.* 2010). The questionnaire has 12 items organized into eight categories (physical functioning, role limitation due to emotional problems, role limitation due to physical problems, mental health scale, general health, bodily pain, social functioning and vitality), and has been validated in numerous studies (Cheak-Zamora *et al.* 2009, Fleishman *et al.* 2010, Montazeri *et al.* 2011). A previous study conducted in Hong Kong showed that the physical and mental health components of the SF-12 explained 82% and 89% of the variance of the physical and mental components of the SF-36 respectively (Lam *et al.* 2005). The Cronbach's alpha coefficient was 0.7.

Self-efficacy—General Self-Efficacy Scale—Chinese version (CGSE)

The General Self-Efficacy Scale is used to determine how people judge their ability to handle difficult situations or solve their own problems (Luszczynska *et al.* 2005), and thus can be a way to assess the effectiveness of empowerment programs. The scale has been validated among 655 Chinese adults presenting with high reliability (α=0.89) (Leung & Leung 2011).

Depression—Geriatric Depression Scale – Chinese version (GDS)

The Chinese version of the Geriatric Depression Scale will be used to detect the presence of depression in community-dwelling older adults (Woo *et al.* 1994). Good validity and reliability were reported, with criterion-related validity 0.95 and test-retest reliability 0.85 among the elderly Chinese population (Chi *et al.* 2005). Sensitivity and specificity were 96.3% and 87.5% respectively for a cut-off point of 8 (Woo *et al.* 1994).

Life Satisfaction—Global Item of Life Satisfaction

The life satisfaction of participants will be measured by the five-point Likert scale, Global Item of Life Satisfaction. It was shown to be a strong predictor of the use of tertiary care service (Wong *et al.* 2008, Zhao & Wong 2009). This one-item scale has also been proved to be highly correlated with a multi-dimensional life satisfaction scale ($r=0.75$, $p<0.001$), suggesting that this single-item scale can serve as a valid substitute for measuring life satisfaction (Zullig 2006).

Institutionalization and health service utilization

Institutionalization is defined as the change of living place from an individual's home to an elderly or nursing home. The date of admission will be documented. Health service utilization will be measured by the number and date of hospitalizations, length of stay, attendance to government out-patient clinics (GOPC) and private general practitioners, and number of unscheduled visits to the emergency department. The information can be extracted either from the hospital's clinical management system or by subjective reports from participants.

Data analysis

Descriptive analysis will be calculated using mean and standard deviation for continuous variables, percentage and frequency for categorical variables, and median and quartile range when the continuous variables are not normally distributed. Independent t-tests, the Mann-Whitney U test, the chi-squared test or Fisher's exact test will be used to compare any differences in socio-demographic data or outcome variables between groups. Significant results will be indicated if the p-value of all statistical analysis is less than 0.05 for the two-tailed test. To determine the differences or changes between the study and control groups (between-group effects), the within-group effects (time), and the interaction effects (group x time), two-way repeated measures analysis of variances (ANOVA) or co-variances (ANCOVA) will be applied when assumptions for the parametric tests are fulfilled. When the data cannot fulfill the assumptions of the parametric test, the Mann-Whitney U test will be applied to compare the differences between groups at each time interval, while the Friedman test will be used to determine the time effects within each group.

The missing data in the present study will be handled by intention-to-treat (ITT) analysis. Sensitivity analysis will be adopted to compare the results using a different missing data handling approach according to the Cochrane Handbook for Systematic Reviews of Interventions (2011). Data will be computed and analyzed with the assistance of the Statistical Package of the Social Sciences (SPSS) version 21 software (SPSS Inc., Chicago).

Ethical considerations

The study was approved by the Ethics Committee and funded by the University Research Fund of the Hong Kong Polytechnic University in September 2014. All eligible subjects will be invited to join the project after they have been informed of the significance, procedures, purposes, risks and benefits of the study. They will be reassured that they have the right to refuse participation and have full autonomy to withdraw at any time without providing an explanation. The information provided by the participants will be kept confidential and anonymous. A consent form will be prepared for the participants to sign once they have understood the whole procedure. A telephone hotline will also be provided to them if they have questions about the project. All the information will be stored in a password-secured file, which will only be accessible to research team members. The file will be deleted after the study has been completed.

Validity and reliability

All questionnaires for measuring the outcome variables in this study have demonstrated good validity and reliability. The data collector will be trained and allowed time to familiarize him/herself with these questionnaires. Nurse case managers and social workers will be trained by the research team members in order to provide consistent interventions from various professionals in the health-social care team and ensure the quality of the program. Only those nurse case managers with a community nursing background will be employed. The home visits and telephone conversations will be recorded for review and evaluation. The research team and health-social care team members will have regular meetings to discuss the cases so as to ensure that the practice is aligned with the protocols. This randomized controlled study will also strictly follow the Consolidated Standards of Reporting Trials (CONSORT) statement (Schulz *et al.* 2010).

Discussion

Community-dwelling older persons often have multiple chronic illnesses that require intensive health-social support to prevent lengthy and frequent hospitalizations. According to a systematic review of the health promotion literature, it is better to use multifaceted strategies provided by an inter-professional care team than a single intervention to improve the health-related quality of life of community-dwelling older adults and reduce their health service utilization and cost (Chase *et al.* 2012, Moyer 2012, Anton *et*

al. 2013, Markle-Reid *et al.* 2013). Studies have also shown that inter-disciplinary collaboration projects can prevent deterioration in the physiological, cognitive and social function of older adults (Rummery 2009, Arvey & Fernandez 2012). Therefore, the proposed intervention protocol is expected to improve the overall performance of these target populations by providing structured and comprehensive assessment, health information regarding self-management and health promotion, self-care empowerment skills, and coordinating different health-social services from different professions.

In fact, the present study will make important contributions, not only to community-dwelling older adults, but also to the health-social system, providers and aging in place practice. For instance, we plan to build an innovative model by adopting a coordinating theory to meet the requirements necessary for developing a successful health-social partnership. Nurse case managers and social workers are not working separately. Instead, they can facilitate access to information, expand their knowledge from each other, enhance connections and increase efficiency from working collaboratively (Concha & Villa 2013). Unlike other programs, this study focuses not only on disease management that is executed mainly by nurses, but emphasizes the importance of initiating social change by community and social workers. The addition of these social partners can also bring the issue of the program's sustainability to the fore. Community and social workers can build a supportive, trusting and meaningful relationship with previously unconnected older adults who share the same community through their interactions and conversations during the study. Existing relationships will be essential in promoting acceptance and access to community services. Most importantly, this close knit social relationship can persist even after the study has been completed, since they are both living in the same cluster.

In order to put inter-disciplinary partnership into practice, support from the organizational to the professional is vital. This study has the full support of the district council members and the staff from district hospitals and community centers. By developing and implementing a successful protocol to the existing community service system, the program can be extended to different areas and handle different groups of people, thus approaching the generalizability goal of our study. To the knowledge of the research team, this study will be one of the first to integrate health and social sciences into aging-in-place practice. The scarce literature on this topic has provided an opportunity for the present study to bridge this caring gap.

Limitations

Despite the many strengths and innovative ideas covered in this study, the researcher anticipates some limitations. As mentioned earlier in this paper, multifaceted interventions can promote the health of community-dwelling elderly people, thus this approach will make it difficult for researchers to identify the contribution of individual components to the outcomes.

Another limitation is that there are three aspects of the outcomes in this proposed protocol. The participating older adults may have to spend about half an hour to an hour to answer a total of 111 questions at each data collection time. Their compliance and patience will therefore be a concern.

Conclusion

The design of the present study is to construct a health-social partnership model that promotes aging in place. If the results show that the interventions in the program can promote functional and health outcomes and perceived well-being, and reduce the rate of institutionalization and health service utilization of the community-dwelling older adults, we can replicate the program to other districts and countries.

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Appendix

Theories	Content	Strategies
Omaha system	Problem classification scheme Intervention scheme Problem rating scale for outcomes	▪ Assess four domains: environmental, psychosocial, physiological and health-related behavior ▪ Set contract goals and formulate an individual care plan ▪ Provide knowledge of health-promoting and self-care activities
Bandura's self efficacy theory	Mastery experience	■ To explore past successful experience in handling health care issues ■ Remind them of helpful strategies
	Vicarious experience	■ Providing pictures, newspaper clips or video of celebrities who have successfully adhered to self-care behavior
	Social and verbal persuasion	■ Verbal encouragement ■ Incentives such as noodles will be given
	Physiological and affective states	■ Monitor physiological status regularly on a paper

		■ Encourage participant to state concern about their work
Gittell's relational coordination theory	Routines	❑ Standardized protocol
	Information systems	❑ Referral form and record
	Meetings	❑ Biweekly case conference (frequency can be negotiated)
	Boundary spanner	❑ The nurse case manager can provide strong leadership and help to integrate each other's work