

Original Article



Effective Communication and Stress Reduction Among Older Adults: A Semi-Experimental Study

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Abstract

Objectives: To investigate the effectiveness of health communication in reducing perceived stress and stress-coping skills among older adults.

Design: Semi-experimental design with pre-test and post-test stages.

Setting: Malekan, East Azerbaijan, Iran.

Participants: The sample consisted of 102 older people.

Outcome Measures: Pre-tests were conducted for the intervention and control groups. During six months, communication techniques were facilitated by health ambassadors in the intervention group after acquiring the necessary skills, and then post-tests were performed for both groups ($P=0.00$). Ultimately, data were collected using sociodemographic characteristics, the Perceived Stress Scale, and the Coping Inventory for Stressful Situations Questionnaire.

Results: A significant decrease in the level of perceived stress was observed in the intervention group compared to their baseline measurements, as well as in relation to the control group. However, a considerable increase in the mean of stress coping skills in the intervention group was reported in the task-oriented coping dimension and the avoidance dimension compared to before the intervention ($P=0.00$).

Conclusions: Health ambassadors, along with family members and peers, should take on a more prominent role in enhancing the relationships between older adults and others, with a focus on promoting effective communication within health programs.

Keywords: Communication, Stress, Older adults, Iran

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Introduction

Older adults experience high levels of depression, anxiety, and stress. Accordingly, it is necessary to identify effective interventions for managing stress and adopting healthier lifestyles within the realm of older adults' health care.^{1,2} Stress is defined as a real or perceived threat to physiological or psychological stability, which triggers physiological or behavioral responses.³ It occurs when there is a discrepancy between the demands of the environment and a person's capacity to manage those demands, or more broadly, when the body struggles to adjust to new or increased internal and external pressures.⁴ Stress management and social communication, along with physical activity, leisure pursuits, nutrition, and disease prevention, play an essential role in promoting a healthy lifestyle for older adults. Among these factors, the

link between social interaction and stress management is particularly pronounced.⁵ Additionally, self-efficacy has been described as the foundation of self-care and disease management.⁶

Late life is frequently accompanied by a decrease in income, the loss of loved ones, a decline in social relations, a loss of social roles, and chronic diseases. The stress caused by the aforementioned factors has a positive and significant relationship with the occurrence of depression symptoms. In addition, the stress associated with reduced social relations is linked to the manifestation of cognitive decline symptoms.⁷ Moreover, age-related physiological changes in the nervous system affect stress-coping abilities among older adults.⁸

According to research, family relationships and cultural norms significantly influence perceptions of aging and



support expectations in later life. In Japan, parents who adhere to traditional filial piety norms experience less negative impact on morale when receiving support from their children.⁹ Conversely, in the United States, adult children's views on aging are shaped by the quality of their relationship with their parents.¹⁰ Cultural differences in expectations for support are evident, as older adults in Japan tend to expect greater assistance from their children than their counterparts in the United States.¹¹ It should be noted that the presence of adult children and surviving parents increases subjective life expectancy, while emotional support and the presence of someone to rely on at the time of sickness contribute to longer perceived lifespans.¹² These findings highlight the complex interplay between culture, family relationships, and perceptions of aging, indicating the importance of considering cultural context in understanding support dynamics in later life. In addition, family conflicts are influenced by various factors, including interpersonal communication, socio-economic status, family structure, the level of previous attention from the parent, and children's standardized and motivational beliefs.¹³ Therefore, empowerment and self-care education remarkably increase hope, happiness, and quality of life among older adults.¹⁴

In this context, intergenerational programs can positively influence the quality of life of older adults and can be used as an effective method to enhance the health of older individuals by reducing the risk of social isolation and loneliness.¹⁴ Furthermore, participating in intergenerational programs is associated with a better sense of well-being, noticeably reducing depression symptoms and perceived stress among older adults while improving their mental health.^{15, 16}

This study investigated the role of self-care in mitigating stress while fostering a more positive emotional outlook on life. The intervention aimed to educate and empower a family member who met predefined literacy and eligibility criteria. Additionally, the educational component focused on the development of stress management skills, with an emphasis on effective communication techniques. Further, participants learned to apply these skills in their interactions with older adults. The study then assessed the effects of this intervention on stress management outcomes among older adult population.

Methods

Study Design and Participants

This study employed a semi-experimental, pre-post intervention design with a control group. The study population consisted of older adults from the rural area of Malekan County and their associated family health ambassadors. It should be noted that a family health ambassador was defined as a family member—specifically, an elderly relative (male or female), most commonly the adult son or daughter—aged over 30, with a minimum of a high school diploma or equivalent. This individual voluntarily assumed responsibility for their own and their family's health and agreed to participate in all

training sessions. This study sought to evaluate the effect of the program of communication skills of family health ambassadors on the stress-coping skills of older adults. A total of 102 older adults were purposefully selected based on the inclusion and exclusion criteria.

The inclusion criteria for older adults were provision of voluntary written and verbal consent, age between 60 and 70 years (selected as the “young-old” group due to their larger population, higher likelihood of participation, and accessibility), and presence of a family health ambassador in their household.

On the other hand, the exclusion criterion for older adults included a physician-diagnosed history of cognitive or mental disorders (e.g., major depression, cognitive impairment, bipolar disorder, or schizophrenia). For health ambassadors, the exclusion criterion was lack of participation in educational classes or insufficient daily or weekly communication with the older adult (Figure 1).

Sampling

Sampling was conducted through an initial simple random selection of a village, followed by cluster random sampling of study units. The sample size was determined using the Power Analysis and Sample Size software (version 2019), with a maximum of 39 individuals per group, based on the pre-training measures of 42.33 ± 5.98 , post-training measures of 22.29 ± 4.95 , and a correlation size of 0.1.¹⁷ The minimum sample size required for the paired t-test was calculated using the formula, which resulted in the inclusion of 51 participants in each group and a total of 102 participants in the study.

Procedure

In the first phase, a field study was performed focusing on rural older adults who were at risk of experiencing stress. This study considered various factors that contribute to stress, including individual, familial, and social influences, as well as financial and economic conditions and issues related to spirituality, mental health, and overall well-being. Moreover, the research targeted rural health centers with a significant incidence of non-communicable diseases or disorders (e.g., diabetes, hypertension, depression, and obesity). Two villages were then randomly selected from each center, resulting in the intervention and control groups. Questionnaires measuring perceived stress and stress coping levels were completed by both groups. The intervention, based on enhancing the communication skills of family health ambassadors, was conducted in two stages:

1. Education of communication skills for health ambassadors through training on stress management skills, emphasizing effective and supportive communication.
2. Health ambassadors, equipped with newly acquired skills, applied them within their families and in interactions with older adults, teaching and assisting them in effective communication and stress management.

The training sessions were organized based on the

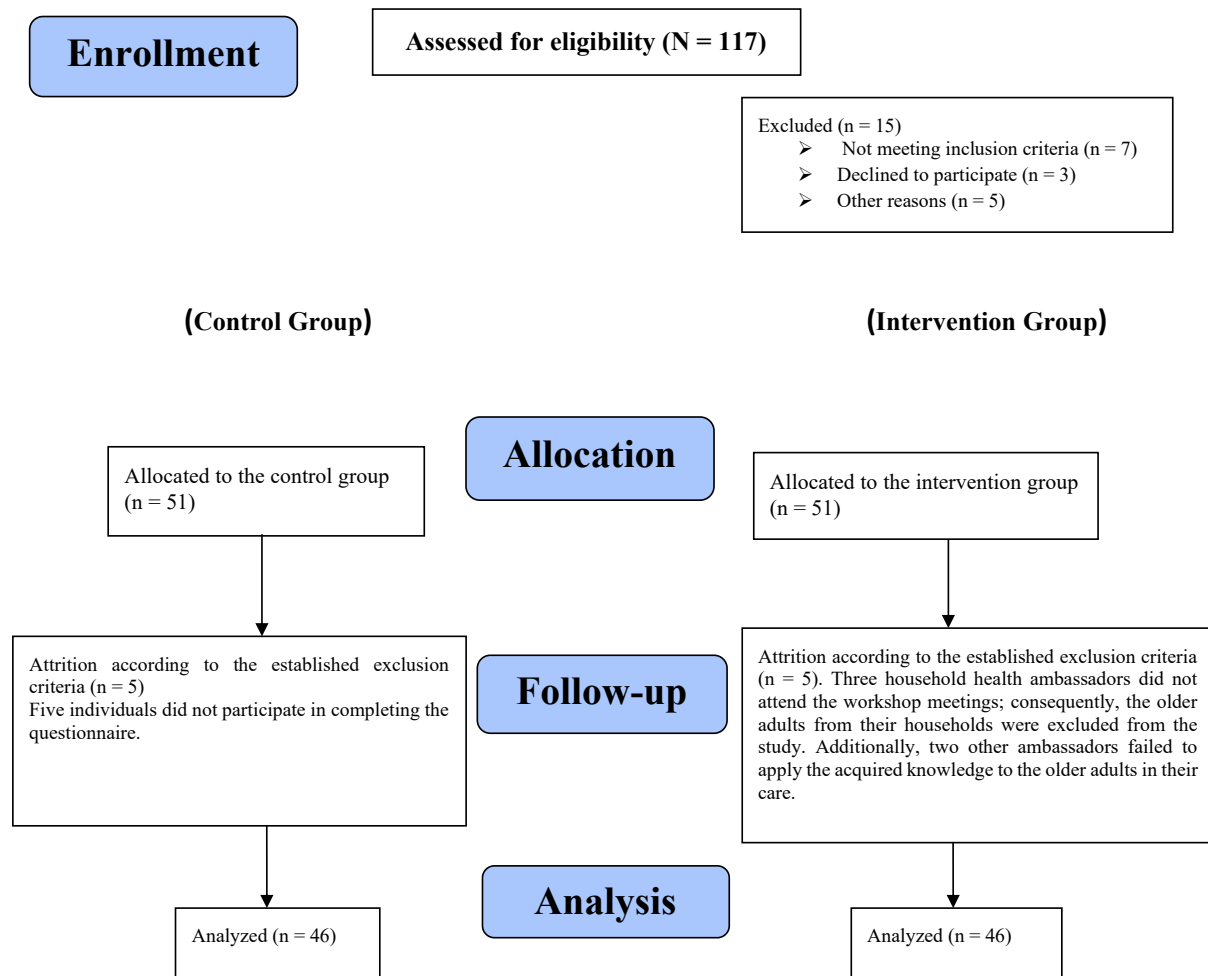


Figure 1. Consort Flow Diagram of the Study

topics identified by the psychologist and the Master of Science health education and promotion student, with the intended program schedule and training titles. During each session, assignments were assigned to the ambassadors, and feedback was collected regarding the implementation and application of the knowledge gained in relation to older adults. The educational interventions comprised seven sessions conducted over a six-month period, with their effectiveness assessed immediately following the completion of the training sessions. Moreover, the stress perception and stress management levels of the older adults were reassessed using the Cohen Perceived Stress Scale and the Coping Inventory for Stressful Situations, and compared with the pre-intervention and control group. Table 1 presents the overall structure of the stress-coping skill training program.

Data Collection

1. Demographic characteristics included age, gender, education, marital status, presence of non-communicable diseases (diabetes, hypertension, and depression), body mass index, physical activity, living with children, and smoking habits.
2. *Coping Inventory for Stressful Situations Questionnaire (Version 21)*: It is a four-factor model of human coping with adversity developed by Endler

and Parker (as cited in Averro et al, 2003). A short form of the questionnaire was modified by Calsbeek et al.¹⁸ It consists of 21 items assessing task-oriented coping, emotion-oriented coping, and avoidance coping styles. Participants rated the extent to which they use each stress-coping strategy on a 5-point Likert-type scale. The validity of this questionnaire was confirmed, and the reliability of its subscales was reported using Cronbach's alpha (task-oriented coping=0.72, emotion-oriented coping=0.77, and avoidance coping=0.74).¹⁹

3. *The Perceived Stress Scale (Cohen et al, 1983)*: Perceived stress intensity serves as an indicator of an individual's belief in the seriousness of stress. It comprises 14 items with a Likert-type scale ranging from 0 to 4, where scores from items 4, 5, 6, 7, 9, 10, and 13 are reversed (never=4, rarely=3, occasionally=2, often=1, very often=0). The questionnaire categorizes stress perception scores as low (0–18), moderate (18–36), and high (above 36). Cohen et al and Saadat et al validated this questionnaire in their research, reporting reliability above 0.70 using Cronbach's alpha.^{20, 21}

Statistical Analysis

Following the completion of the stress-coping

questionnaires by the older adults in both groups at pre-intervention and post-intervention, data were entered into a computer, and quantitative measures were constructed accordingly. Then, data were analyzed using SPSS Version 27. Prior to the main analysis, the data were prepared by screening for and controlling outliers based on the box-plot method. In addition, the normality of the data distribution for the outcome variables was confirmed using the Kolmogorov-Smirnov test.

The primary analysis was conducted using a mixed-model analysis of variance (or repeated measures analysis of variance) to account for the within-subjects factor (time: pre-test vs. post-test) and the between-subjects factor (group: intervention vs. control). This model was selected for its robustness in handling repeated measurements and its ability to control for potential confounding variables. Subgroups were constructed to be balanced and were checked to ensure they contained a sufficient sample size for comparative analysis. The results are reported as means $\pm$ standard errors (SE), and a *P*-value of less than 0.05 was considered statistically significant.

Results

This study initially enrolled 102 elderly participants, who were allocated to an intervention group ($n=52$) and a control group ($n=52$). The questionnaires were completed by all participants. Following the 6-month intervention period, a total of 10 participants were lost to follow up (5 from each group), resulting in a final sample size of 92 participants. This represents a participation rate of 90.1% and an attrition rate of 9.8% (Figure 1). The mean age of participants in the intervention and control groups was 63.54 ± 10.3 years and 64.35 ± 3.46 years, respectively. Table 2 provides the demographic

information of participants.

The results revealed a notable decrease in the perceived stress levels among older individuals in the intervention group when compared to their pre-intervention measurements. The mean $\pm$ SE perceived stress score changed from 44.92 ± 1.63 to 36.1 ± 1.74 (P of 0.00). The results demonstrated no noticeable change in the control group (43.66 ± 1.46 to 43.21 ± 1.56), implying that the change of the intervention group was significant.

Furthermore, there was a considerable increase in the average stress-coping score of the intervention group compared to before the intervention, in both dimensions of task-oriented coping (the pre-intervention score: 57.14 ± 2.44 , post-intervention score: 69.33 ± 3.07 , $P=0.00$) and avoidance coping (the pre-intervention score: 40.41 ± 1.98 , post-intervention score: 47.36 ± 2.96 , $P=0.00$). No significant changes were found in emotion-oriented coping ($P=0.84$). Moreover, compared to the control group, there was no significant change in task-oriented coping ($P=0.18$), emotion-focused coping ($P=0.39$), or avoidance ($P=0.48$) after the intervention (Table 3).

The conducted analysis, including confounding variables and the main variables with the control of intervening variables, indicated statistically significant differences in group (intervention and control), time (pre-intervention and post-intervention), and factor (age and education). The main variables included perceived stress, task-focused coping, emotion-oriented coping, and avoidance. The avoidance coping aspect was divided into social diversion and distraction subgroups (Figure 2).

Discussion

This study evaluated the effectiveness of a stress

Table 1. The Overall Structure of the Stress Coping Skill Training Program

Session	Session Objectives	Session Content	Expected Outcome	Homework Assignment	Time
1	Overview of stress awareness and coping strategies	Definition of stress, its impact on physical, mental, and social functioning, stress sources, and coping methods	Awareness of stress, its effects on the body, stress sources, and coping strategies	Identifying stress sources in the elderly and raising awareness of the consequences of stress and the importance of coping	1 hour
2	Definition of communication and its types and effective communication	Verbal and non-verbal communication, body language, signs language, clarity in verbal communication, active listening, and how to establish effective communication	Familiarity with types of communication and how to communicate with the elderly	Informing the elderly about the role of effective communication in reducing their stress	1 hour
3	Identifying communication barriers, overcoming barriers, and creating effective communication bridges	Identifying communication barriers and using communication bridges such as disarming, empathy, affection, and problem-solving	Familiarity with communication barriers and creation of communication bridges in the elderly	Identifying physical and mental limitations of the elderly and using communication bridges to establish communication	1 hour
4	Reducing family conflicts and tensions	Methods of identifying, controlling, and moderating interpersonal conflicts	Familiarity with various family conflicts and their resolution methods	Resolving family conflicts through collaborative methods, such as negotiation, problem-solving, and the like	1 hour
5	Transfer of family health ambassadors' experiences to each other	Group discussion of health ambassadors to share experiences in resolving interpersonal conflicts	Using others' experiences in resolving interpersonal conflicts	Resolving conflicts by learning from others' experiences	1 hour
6	Importance of maintaining social relationships for the elderly	The role of maintaining social relationships in improving memory and reducing stress	Improving the social relationships of the elderly	Strengthening social interactions of the elderly with peers and relatives	1 hour
7	Utilizing cooperation, support, and assistance from others in addressing the needs and concerns of the elderly	Identifying concerns, taking action to address needs and concerns, avoiding unnecessary conflicts, and addressing unnecessary concerns, medical care, and the like	Increased perceived social support in the elderly	Material, emotional, and informational support for the elderly	1 hour

management intervention for older adults, delivered through trained family health ambassadors. The primary hypothesis was that providing information through these ambassadors would positively influence stress management outcomes. Our results support this hypothesis, demonstrating a statistically significant relationship between the intervention and improved perceived stress and stress-coping skills in the intervention group compared to the control group. Specifically, among participants with a high baseline level of perceived stress, older adults whose health ambassadors regularly participated in educational programs experienced reduced perceived stress but increased scores in the majority of stress-coping dimensions over 6 months.

The findings of the study are important for several reasons. First, they confirm previous research indicating the relationship between education and stress management. In this context, the findings confirmed that the effects of such training can be observed in older adults who have family health ambassadors. This suggests that such training may be especially beneficial for families with older adults who are vulnerable or unable to attend training sessions themselves. Conversely, older adults who have better psychological adaptability or higher education levels may have more favorable health conditions, potentially resulting in less apparent benefits from such education. However, it is worth mentioning that the study sample mainly consisted of family health ambassadors from younger age groups, who likely had a limited understanding of stress during old age, while many severe health-related stressors occur during old age.²²⁻²⁴ Accordingly, stress management training for family health ambassadors may be more effective for older members with low-stress levels when new, age-

related stressors emerge in the future.

An implication of this perspective is that the observed relationship between education and perceived stress level may diminish later in life when individuals experience more physical stress due to biological aging.²⁵ In such circumstances, considering that education and family support can enhance the psychological response to stressors and provide direct biological benefits (e.g., skeletal muscle strength), we expect the health effects of education to persist on stress levels, aiding participants in coping with age-related health declines. Task-oriented coping in stress management may involve defining problems, creating different solutions, evaluating solutions according to their costs and benefits, and selecting and implementing the selected solution.^{26, 1, 27, 28}

Through educational sessions, significant changes in the avoidant coping dimension of stress were observed in the intervention group. This strategy aims to minimize or deny stressful situations, with individuals attempting to avoid confronting the problem. This leads to emotional tension related to the problem, yet no action is taken to resolve it.²⁹ This aspect was significantly altered by the educational intervention. Considering the regional culture, older individuals typically refrain from various confronting problems and issues with their children, relatives, and others. However, with education and increased knowledge in this area, they may achieve better and more useful adaptation to conditions. In other words, their lack of awareness of stress-coping methods may be attributed to this fact. This is further supported by a study, indicating adaptive and coping strategies concerning aging.³⁰

The development of age-friendly cities is based on creating environments that support the well-being of older adults by fostering key domains such as social respect, participation, and health. Nonetheless, significant barriers to social participation persist, including “lack of companionship in old age, skills and abilities, and financial status”.³¹ A community health ambassador program directly confronts these challenges by providing vital social companionship and translating complex health information into accessible terms, thereby overcoming skills gaps. This approach operationalizes the age-friendly goal of facilitating the aging process by mitigating isolation while enhancing older adults’ capacity to manage stress through supported, informed engagement.

A key factor in reducing stress in older adults is empowering them to maintain autonomy and control over their personal affairs. This is critically important as the loss of this control is a recognized source of serious psychological distress. Qualitative research reveals that a core experience for older adults facing financial abuse is the “deprivation of financial independence,” where family members make decisions on their behalf and treat their assets “as one’s own”.³² This imposed dependency and erosion of personal agency can lead to feelings of helplessness and anxiety. A family health ambassador trained in effective communication can play

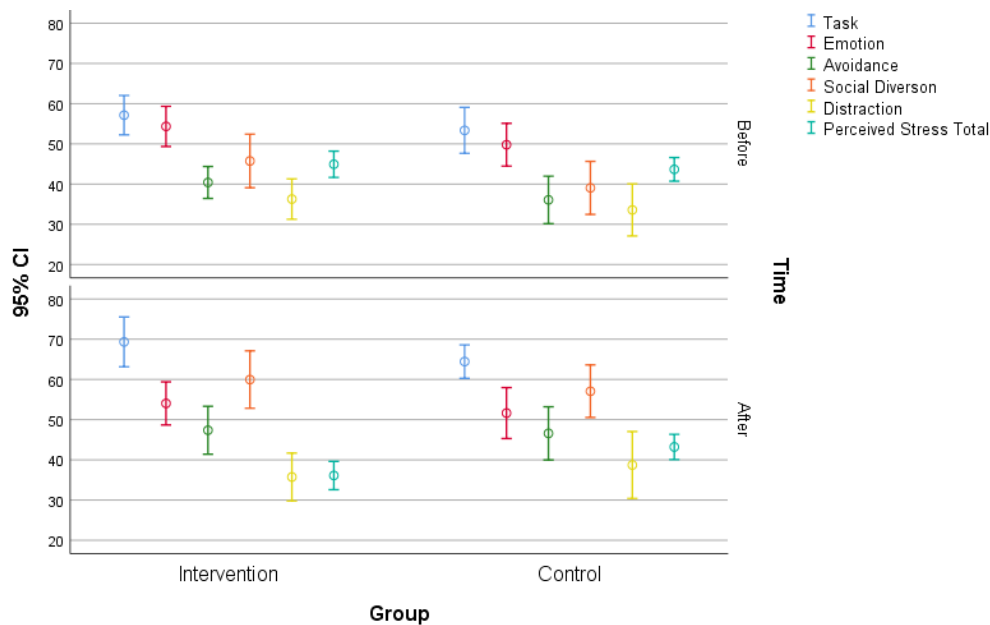
Table 2. Sociodemographic Information of Elderly Participants (n = 102)

Variables		Intervention group	Control group	P value
Education	Illiterate	41	36	0.10
	Elementary	10	15	
	Normal	14	16	
BMI	Overweight	24	21	0.15
	Fat	13	14	
Diseases	High blood pressure	48	47	0.77
	Diabetes	13	23	0.00
	Depression	4	6	0.44
Smoking	Consumers	10	11	0.72
	Non-smoker	41	40	
Living condition	Single	7	9	0.31
	Married	44	42	
	Live with children	46	36	0.00
Physical activity	Mostly	15	14	0.87
	Sometimes	26	24	0.38
	No physical activity	10	13	0.39

Note. BMI: Body mass index.

Table 3. Stress Coping Scores of the Intervention and Control Groups Before and After the Intervention

Group	Time	Task-oriented coping	Emotion-oriented coping	Avoidance coping	Avoidance coping (Social Diversion)	Avoidance coping (Distraction)	Perceived stress
Intervention	Before	57.14 ± 2.44	54.34 ± 2.49	40.41 ± 1.98	45.75 ± 3.32	36.27 ± 2.5	44.92 ± 1.63
	After	69.33 ± 3.07	54.04 ± 2.66	47.36 ± 2.96	59.96 ± 3.55	35.73 ± 2.96	36.1 ± 1.74
Control	Before	53.36 ± 2.84	49.79 ± 2.65	36.06 ± 2.94	39.05 ± 3.29	33.58 ± 3.23	43.66 ± 1.46
	After	64.44 ± 2.06	51.63 ± 3.15	46.58 ± 3.29	57.07 ± 3.25	38.72 ± 4.13	43.21 ± 1.56
P-value	Group	0.18	0.39	0.48	0.26	0.67	0.00
	Time	0.00	0.84	0.00	0.00	0.55	0.00

**Figure 2.** Changes in Perceived Stress and Different Dimensions of Coping With Stress Before and After the Intervention

a pivotal role in this context. The ambassador can help counteract this dynamic, restore a sense of self-efficacy, and mitigate associated stress through facilitating clear dialogue, helping the older adult articulate their needs and preferences, and supporting their decision-making.

A self-management educational program for older women with rheumatoid arthritis demonstrated remarkable positive outcomes. The intervention led to statistically significant improvements in functional self-efficacy and pain-coping self-efficacy, along with a notable reduction in depression levels in the intervention group. Although no significant changes were observed in pain intensity or mobility, the overall results confirmed that structured educational programs can effectively empower older adults to better manage chronic conditions. This supports the rationale for our study, as the core objective of training family health ambassadors is to relay essential health knowledge to older adults and enhance their self-management capabilities, thereby promoting active and empowered aging.³³

Addressing cognitive impairment requires a multifaceted approach that integrates early detection, community-based support, and tailored interventions. Socio-cultural factors (e.g., cultural stigmas and accessibility barriers) considerably influence the effectiveness of cognitive health initiatives, particularly in under-resourced settings.³⁴

This underscores the critical need for community-centered strategies (e.g., training family health ambassadors) to bridge gaps in healthcare access and promote equitable cognitive aging. By leveraging localized support networks and culturally sensitive education, these ambassadors can play a vital role in enhancing older adults' self-management capabilities and overall cognitive well-being.

Health ambassadors can noticeably contribute to addressing the human resource challenges in long-term care (LTC) identified in Iran. There is a considerable shortage of trained personnel and a lack of community-based care infrastructure. Through targeted training and community engagement, family ambassadors may help bridge this gap by providing essential education, supporting family caregivers, and facilitating access to LTC services. Their involvement aligns with the study's emphasis on empowering informal caregivers and leveraging community capacity to strengthen LTC systems.³⁵

Critically, our intervention targeted the elderly's social environment indirectly through ambassadors. The core components (i.e., training in communication, conflict resolution, and social support) likely reduced stress by modifying its source rather than solely changing individual coping mechanisms. By fostering a more supportive

and less conflictual family atmosphere, the intervention directly mitigated objective stressors. This is in line with the well-established stress-buffering role of social support, which can protect against the adverse effects of stressors by altering the individual's perception of their environment and enhancing their sense of belonging and resources, thereby reducing stress independent of their primary coping strategies.³⁶⁻³⁸

Therefore, the significant reduction in perceived stress remains a valid indicator of the intervention's success, highlighting the efficacy of an indirect, environment-focused model.

Strengths and Limitations

This study had several notable strengths. The multi-stage sampling method, including selecting high-risk healthcare centers, randomly choosing intervention villages, and meticulously matching control villages based on demographic and clinical characteristics, could significantly enhance the internal validity while reducing selection bias. Moreover, the use of family health ambassadors as a channel for delivering communication-based interventions represents a sustainable, community-centered approach that leverages existing social structures, increasing the potential for scalability within primary healthcare systems. Furthermore, the six-month intervention period allows for assessing the medium-term impact of the training on stress outcomes.

However, some limitations should be taken into consideration. Although the intervention and control villages were selected from those furthest apart geographically to minimize contact, the risk of contamination in a rural setting could not be entirely eliminated due to potential cross-village social or familial ties. This issue, combined with the lack of participant blinding, may have diluted the observed between-group effects, particularly for the coping strategy scores where no statistically significant difference was found compared to the control group. Additionally, the reliance on self-reported data introduced the possibility of recall bias and social desirability bias. Furthermore, the Hawthorne effect was probably present, where participants altered their behavior or responses due to their awareness of being studied. The specific cultural context of rural Iran may have limited the generalizability of the findings to urban settings or other cultural environments. Accordingly, future studies would benefit from more rigorous cluster randomization designs, objective biomarkers, and mixed-method approaches in order to better control for these biases and explore contextual factors more deeply.

Conclusions

The findings indicated that effective communication and education for older adults can reduce perceived stress while increasing stress-coping skills, particularly in the task-oriented and avoidant coping dimensions. Therefore, health programs should place a greater emphasis on the role of intermediaries (e.g., health ambassadors, family

members, or peers) in improving social relationships and establishing effective communication for older adults, prioritizing this demographic more than other age groups.

Author contributions

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Data availability statement

All data generated or analyzed during this study are included in this published article.

Ethical approval

The research was approved by the Ethics Committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1398.500). In addition, informed consent was obtained from all the people who participated in the study. Furthermore, all procedures performed in the study were in accordance with the national ethical standards.

Consent for Publication

Not applicable.

Conflict of interests

The authors declare they have no conflict of interests.

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