

Original Article

The Effect of an Intergenerational Game Program on the Social Health of Older Adults

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ABSTRACT

Background: Older adults face changing social roles and reduced social participation, which negatively affects their quality of life and social health. Despite reports of the benefits of intergenerational programs on the social health of older adults, studies are inconsistent in this regard. **Objectives:** This study aimed to examine the effect of an intergenerational program on the social health of Iranian older adults. **Methods:** A randomized controlled trial was conducted in 2019 with 40 grandparents over 60 years of age of girl students aged 8–12 years studying in a girl elementary school in Qom, Iran. Eligible subjects were conveniently enrolled and then randomly assigned to an intervention group and a control group of 20 participants each. An intergenerational game program was implemented in 6 sessions of 90 min each over 6 consecutive weeks. During the sessions, each older adult interacted and played with his/her grandchild in the form of a two-player game. The Keyes Social Health Questionnaire was used to assess the social health of older adults at baseline, at the end of the study, and 4 weeks after the end of the program. Data were analyzed using descriptive statistics, Chi-square test, Fisher's exact test, independent samples *t*-test, paired *t*-test, and repeated-measures analysis of variance. **Results:** The mean social health score of the intervention group was 106.05 ± 18.88 at baseline and changed to 129.5 ± 9.32 and 120.75 ± 10.61 at the end of the intervention and 4 weeks afterward, respectively. The mean social health score of the control group was 103.0 ± 10.61 at baseline and did not change significantly during the study. Repeated-measures analysis showed that over time, the intergenerational game program significantly increased the mean social health score in the intervention group ($F [1.58] = 17.602, P < 0.001$), whereas it did not change significantly in the control group. **Conclusions:** The intergenerational game program was effective in improving the social health of older adults. Similar programs can be used to improve the social health and vitality of older adults.

KEYWORDS: Game, Intergenerational interaction program, Older adults, Social health

INTRODUCTION

Today, life expectancy has increased and Iranian people have a life expectancy of over 72 years,^[1,2] which has accelerated the aging of the population.^[1,3] Longevity provides many opportunities to benefit from the blessings of life,^[4] but the benefits of such opportunities are highly dependent on one's health.^[5] Health also has various physical, mental, spiritual, and social dimensions.^[6]

Keyes defines social health as an individual's assessment of how s/he functions in the society and the quality of her/his relationships with other people, relatives, and

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social groups to which s/he belongs. The five factors of cohesion, social acceptance, social flourishing, participation, and social adjustment (correlation) constitute the indicators of social health.^[7]

Studies have shown that aging is associated with an increase in cognitive and psychological disorders.^[8,9] In terms of social health, older adults face changing social roles and reduced social participation, which negatively affects their perceived health^[10] and quality of life.^[11] Studies have shown that 37.7% to 60% of Iranian older adults lack adequate social participation.^[12,13] Decreased communication and social participation make older adults feel a decrease in control and social power,^[14] which in turn affects their mental health.^[10]

Factors such as the evolution of modern life, changes in family structures, technological developments, and changes in roles have weakened the amount and structure of interpersonal relationships, particularly between older adults and younger generations,^[15,16] put older adults at risk for psychosocial health problems,^[15,17,18] and decreased the vitality of both generations. These changes have also led to feelings of insecurity, dependency, and fear of the future in young people, and loneliness, anxiety, and depression in older adults.^[15] Therefore, researchers have used various methods to improve the social health of older adults. Methods such as problem-solving,^[19] problem adaptation,^[20] reminiscence,^[21,22] physical activity and sports,^[23,24] group work, and social skills training^[25] have been used to improve older adults' psychosocial health. Some researchers have also emphasized the need to build intergenerational relationships to improve the social health of older adults.^[15,17,18,26]

Intergenerational interaction programs create mechanisms for people of different generations to purposefully work together to support and nurture each other. In this collaboration, older adults, children, and youth each play specific roles designed to have a positive and mutually beneficial effect.^[15] Some studies have reported that intergenerational interaction programs that involved communication between older adults and elementary school students had the greatest impact on both groups because elementary school students do not have strong stereotypes about older adults.^[27,28] However, there are conflicting reports on the effects of such programs on the social health of older adults. Teater^[29] and Yasunaga *et al.*^[30] in two studies of the effects of intergenerational programs found that such programs can promote active aging and significantly improve the psychosocial health of older adults. However, in two other studies, Belgrave^[31] and George^[32] found no significant improvement in older adults'

psychosocial health after implementing intergenerational programs.^[31,32] Despite reports that intergenerational programs have positive effects on the psychosocial health of older adults,^[15] experience of such programs is largely limited to the United States, Japan, England, and Australia.^[33] There are reports on the development of the generation gap in Iran.^[34] Some have even reported a moderate to high generation gap among 85% of Iranians of different generations.^[35] Therefore, the need to increase social interaction between generations has been emphasized.^[17,34]

Objectives

Given the controversies on the effects of intergenerational programs and the scarcity of such studies in Iran, this study was conducted to examine the effect of an intergenerational game program on the social health of a sample of Iranian older adults.

METHODS

Design and participants

This randomized controlled pretest-posttest clinical trial was conducted in 2019. Participants included grandparents over 60 years of age of girl students aged 8–12 years studying in a selected girl elementary school in Qom, Iran. Eligible people who inclined to participate in the study were conveniently enrolled and then randomly assigned to an intervention and a control group using an online random numbers generation software.

The sample size was estimated based on the results of a former study investigating the effect of an intergenerational program on the psychosocial health of older adults. The mean posttest scores for psychosocial integrity of the intervention and control groups were 112.93 ± 14.16 and 94.07 ± 9.54 , respectively.^[35] Accordingly, using the formula of for comparing two means and with a Type I error of 0.01, a power of 0.80, a μ_1 of 112.93, a μ_2 of 94.07, a S_1 of 14.16, and S_2 of 9.54, the sample size was set at 13/group. However, considering the possibility of dropout, we recruited 20 grandparent–child pairs in each group.

$$n = \frac{(\sigma_1^2 + \sigma_2^2)(z_{1-\frac{\alpha}{2}} + z_{1-\beta})^2}{(\mu_1 - \mu_2)^2}$$

The inclusion criteria for the older adults were being the child's grandparent, having independent visual, auditory, and motor skills (with or without assistive devices), the ability to communicate verbally, inclination to participate in the study, and the absence of known cognitive impairment (according to oneself or other family members expression). The inclusion criteria for

the children were: being a student at the selected school, age of 8–12 years;^[28] interest in playing with older adults; having parental consent to their participation in the study; and having no visual, auditory, speech, or motor disorders. The exclusion criteria for the older adults were absence from more than two study sessions and the development of a specific disorder affecting their mental health or requiring hospitalization during the study.

Data collection instruments

The data collection instruments included two parts. The first part included the individual characteristics of the children (age, education level, and level of interaction with grandparents) and the older adults (age, gender, employment status, education level, financial status, comorbid diseases, marital status, history of interaction and playing with grandchildren or other children, and the level of previous communication between older adult and the child participating in this study). The second part of the instrument was the Keyes Social Health Questionnaire (KSHQ). The KSHQ consists of 33 items in 5 subscales, namely social cohesion (6 items), social acceptance (7 items), social participation (6 items), social adjustment (7 items), and social flourishing (7 items). The items are answered on a 5-point Likert scale (strongly agree = 5, agree = 4, no opinion = 3, disagree = 2, strongly disagree = 1). The total score ranges between 33 and 165, with a higher score indicating better social health.^[36] Scores between 33 and 77, 78 and 121, and 122 and 165 reflect low, moderate, and high levels of social health, respectively.^[37] Safarinia *et al.* examined the validity and reliability of the Persian version of the KSHQ on an adult population in Tehran, Iran, and reported the Cronbach's alpha coefficient of the questionnaire to be 0.76.^[38] For illiterate or low-illiterate older adults, the researcher read aloud the questionnaire items and the possible responses to them and recorded their answers in the questionnaire.

Intervention

The intergenerational game program was implemented in 6 sessions of 90 min (based on the tolerance of the older adults) for 6 consecutive weeks.^[39] During the sessions, each older adult interacted and played with his/her grandchild in the form of a two-person game. The researcher and two research assistants, who were trained for this purpose before the start of the intervention, were present as trainers (facilitators) and supervisors of the gaming sessions, coordinated and facilitated the process, helped to maintain appropriate conditions for the sessions, and answered the questions as they arose, but did not participate in or intervene in the games.

Two game lists were prepared prior to the sessions. One list included games that older adults are usually

more proficient at and that could be played during the game session (e.g., rock-paper-scissors, dot game or dot-line game, goal or nonresponse game, proverb game, poetical contest game, puzzle game). There was also a list of games in which the children are usually more proficient and it was possible to be done in the session (e.g., puzzle, pantomime, family name game, Jenga (emotional tower), mystery solving, and mastermind game). At the beginning of the first session, the older adults and children completed their demographic questionnaire. In addition, the older adults completed the KSHQ at baseline, at the end of the study, and at an additional session 4 weeks after the end of the intervention. The control group received no intervention, but this group completed the study questionnaires in the meetings that were held on different days to prevent the disclosure of information from the intervention group. The time intervals between these sessions were similar to those of the intervention group.

Ethical considerations

This study was approved by the Ethics Committee of Kashan University of Medical Sciences (Ethical code: IR.KAUMS.NUHEPM.REC.1398.042) and was registered at the Iranian Registry of Clinical Trials (code: IRCT20190918044816N1). The purpose of the study was explained to the participants. They were assured that their personal information would be kept confidential. All older adults and the children's parents signed the informed consent form at the beginning of the study.

Data analysis

Descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics were used to analyze the data. The independent samples *t*-test was used to compare two means between the two groups. The paired *t*-test was used for within-group comparisons of mean scores. Repeated-measures analysis of variance (RMAV) was used to compare changes in the social health scores over the three consecutive measurements. Chi-square and Fisher's exact tests were used to compare categorical variables between the two groups. When the data were not normally distributed, the nonparametric equivalent of the tests (i.e., Mann-Whitney *U*-test) was used instead of the *t*-test.

RESULTS

All participants completed the study. The mean age of older adults in the intervention and control groups was 64.0 ± 6.78 and 65.0 ± 3.78 years, respectively. The two groups were homogeneous regarding their personal characteristics [Table 1].

The intervention and control groups did not differ significantly in their mean baseline social health scores ($P = 0.568$) and the mean scores of both groups were at moderate level. RMAV was performed to compare changes in the social health scores over the three consecutive measurements. Mauchly's test showed that sphericity was not assumed ($\chi^2 = 36.835$,

$P = 0.003$). Therefore, the degrees of freedom were corrected using the Greenhouse–Geisser test. The results showed that over time, the intergenerational game program could significantly increase the mean social health score in the intervention group ($F [1.58] = 17.602$, [$P < 0.001$, Table 2]). Given the significant interaction between the measurement time and the type of intervention ($F [1.58] = 12.797$, $P < 0.001$), the t -test was used to conduct pairwise comparisons between the two intervention and control groups at the three measurement time points. The results showed that the mean social health score was significantly different between the two groups at the end of the intervention ($P = 0.001$) and at 1 month afterward [$P = 0.001$, Table 2].

Figure 1 shows that the mean overall social health scores in the intervention group increased over time but it did not change significantly in the control group.

DISCUSSION

In the present study, both older adults in the intervention and control groups had moderate levels of social health at baseline. According to the definition of the World Health Organization, social health is an essential

Table 1: Comparison of the characteristics of older adults and children in the intervention and control groups

Variables	Group		P
	Intervention, n (%)	Control, n (%)	
Older adults chracteristics			
Sex			
Female	16 (80)	15 (75)	0.99
Male	4 (20)	5 (25)	
Marital status			
Married	14 (70)	15 (75)	0.99
Single/widow	6 (30)	5 (25)	
Education level			
Illiterate and low literate	13 (65)	12 (60)	0.99
Secondary and high school	7 (35)	8 (40)	
Income			
Less than expenses	7 (35)	7 (35)	0.80
Sufficient income for expenses	12 (60)	10 (50)	
More income than expenses	1 (5)	3 (15)	
Comorbid disorders			
Yes	15 (75)	11w (55)	0.18
No	5 (25)	9 (45)	
Job			
Employed	2 (10)	4 (20)	0.66
Retired or unemployed	18 (90)	16 (80)	
The frequency of interaction with the grandchild			
>3 times a week	2 (10)	5 (25)	0.50
1-2 times a week	15 (75)	11 (55)	
<1 time per month	3 (15)	4 (20)	
Mean age (years)	65.0 ± 3.78	64.0 ± 6.78	0.86
Childrens chracteristics			
Grade			
7 and 8	2 (10)	1 (5)	0.78
4 and 5	9 (45)	10 (50)	
2 and 3	9 (45)	9 (45)	
Mean age (years)	9.85 ± 1.22	9.75 ± 1.55	0.82

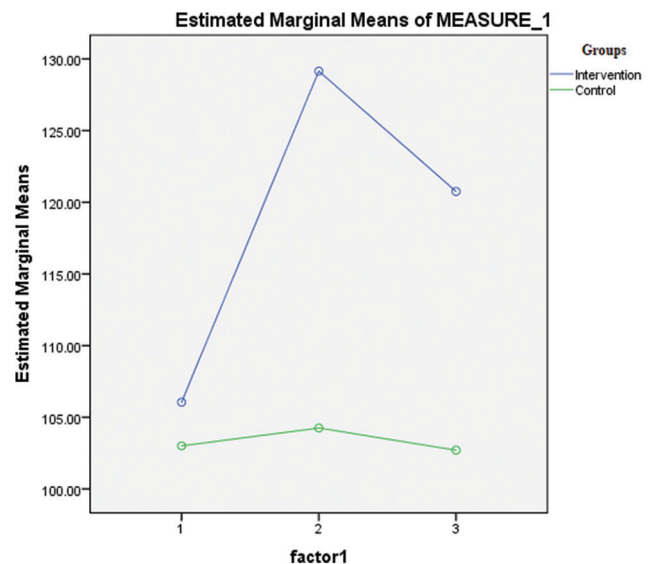


Figure 1: Variations of the overall social health scores at three measurements in the study groups

Table 2: Comparison of the mean social health scores between the intervention and control groups at the three measurement time points

Time	Group		P (t-test)	Results of repeated measures analysis	P
	Intervention	Control			
Before the intervention	106.05 ± 18.88	103.0 ± 10.61	0.568	Effect of time	<0.001
At the end of the intervention	129.5 ± 9.32	104.25 ± 12.59	<0.001	Effect of group	<0.001
One month after the intervention	120.75 ± 10.61	102.70 ± 12.50	<0.001	Time group interaction	<0.001

component of health.^[40] However, older adults face significant declines in physical and mental abilities, as well as declines in social roles, social status, and social well-being as they age.^[40] There are many studies on the physical and mental health of older adults, but their social health is neglected to some extent. Therefore, it is important to pay attention to the social health of this vulnerable population.^[41]

The present study showed that implementation of an intergenerational game program improved the social health of older adults such that in the intervention group the mean social health was at a high level at the end of the intervention, while it was still at a moderate level in the control group. One month after the intervention, the mean social health score of the intervention group was not only still higher than the baseline score, but also still significantly higher than that of the control group, confirming the continued effect of the intervention. Intergenerational social interactions in the form of relationships with family, friends, colleagues, and the community have been shown to be particularly important in maintaining and promoting psychosocial health of all people, especially older adults.^[42] Evidence shows that older adults' participation in intergenerational programs such as playing with children,^[30] recalling and talking about past experiences with pleasure,^[43] reading books, and participating in group sports activities^[44] can indirectly improve older adults' social participation and positively affect their psychosocial health. This is partly due to improvements in mediating factors such as strengthened social relationships, self-confidence, self-esteem, sense of worth, reduced social isolation, and feeling more alive.^[44,45] According to the dynamic aging theory, older adults' presence in the society and their interactions with young people and children can significantly improve their sense of life satisfaction and usefulness.^[43] In a systematic review of quantitative and qualitative studies conducted with older adults, Ronzi *et al.* reported that intergenerational interaction-based interventions can positively impact on health aspects such as depression, psychosocial health, perceived stress, and quality of life in community-residing older adults.^[45] In line with the current study, Teater reported that implementation of intergenerational art programs for older adults not only improves their psychosocial health, physical and social skills, and self-confidence but also significantly increases their clarity of thought, ability to express emotions, emotional health, and sense of connectedness to the society.^[29] Contrary to our findings, a study examined the effect of an intergenerational music therapy program on children and older adults' intergenerational interactions and

reported that ten sessions of an intergenerational music therapy program did not significantly improve the psychosocial health of older adults.^[31] The difference between the results of the current study and the latter study can be attributable to the difference in the nature of the methods used for the intergenerational interactions, the different instruments used to examine psychosocial health, and the duration of the intervention in the two studies.

Due to the nature of the intervention, it was not possible to blind participants to the intervention, but the statistical analyst did not know the study groups. The sample size of the current study was also small. Therefore, larger studies with double-blind design are recommended.

CONCLUSIONS

The intergenerational game program could improve the social health of older adults. The results of this study show that the intergenerational interaction program can not only have immediate effects on the social health of older adults, but these effects also remain at least for 1 month. Therefore, similar programs can be used as an effective way to strengthen the social health of older adults. By teaching various intergenerational programs to families, it is possible to improve the relationship between older adults and their grandchildren and promote their health.

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Conflicts of interest

There are no conflicts of interest.

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