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Improving the Health of the Elderly through Intergenerational Service Model Interventions for the Elderly: A Quasi-Experimental Study

Mejorar la salud de las personas mayores mediante intervenciones del modelo de servicio intergeneracional para las personas mayores: un estudio cuasiexperimental

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SUMMARY

Introduction: *Empowering the potential of the elderly to transform cultural values for the younger generation remains a challenge in Indonesia. The Association between generations of different ages has not been harmonious. The development of an intergenerational service model for the elderly is one approach to improve harmonization between the elderly and younger generations. Intergenerational activity is associated with positive outcomes for the elderly, including being healthier, having fewer pain complaints, and being more active. This may lead to higher energy consumption. This study aimed to determine the effect of the intergenerational service model for the elderly in improving health status, social interaction, and life satisfaction.*

Methods: *This study used a quasi-experimental design with a control group. The resulting sampling scheme comprises 68 elderly individuals from the East Jakarta and DKI Jakarta regions. Data analysis was performed using the Student T-test and Multiple Linear Regression.*

Results: *The study showed significant differences in health status, social interaction, and life satisfaction among the elderly before and after implementing the intergenerational elderly service model in the intervention group ($p < 0.05$).*

Conclusion: *The intergenerational service model has proven effective in improving health status, social interaction, and life satisfaction among the elderly; therefore, it should be replicated elsewhere, as it has not yet been developed in Indonesia.*

Keywords: *Social interaction, life satisfaction, intergenerational, elderly, health status.*

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RESUMEN

Introducción: *Potenciar el papel de las personas mayores en la transmisión de valores culturales a las generaciones más jóvenes sigue siendo un desafío en Indonesia. La vinculación entre generaciones de distintas edades no se ha establecido de manera armoniosa. El desarrollo de un modelo de servicios intergeneracionales para las personas mayores es una de las vías para mejorar la armonización entre los mayores y las generaciones jóvenes. Las actividades intergeneracionales se asocian con resultados positivos en la mejora del estado de salud de las personas mayores, lo que se traduce en que estén más sanas, presenten menos quejas de dolor y sean más activas. Esto puede aumentar el consumo de energía. El objetivo de este estudio fue determinar el efecto de un modelo de servicios intergeneracionales para personas mayores en la mejora del estado de salud, la interacción social y la satisfacción con la vida.*

Métodos: *Este estudio utilizó un diseño cuasiexperimental con grupo de control. El esquema de muestreo resultante estuvo conformado por 68 personas mayores seleccionadas en las regiones de Yakarta Oriental y en la Región Capital Especial de Yakarta (DKI Yakarta). El análisis de datos se realizó mediante la prueba t de Student y la regresión lineal múltiple.*

Resultados: *Se observaron diferencias significativas en el estado de salud, la interacción social y la satisfacción con la vida de las personas mayores antes y después de la implementación del modelo de servicios intergeneracionales en el grupo de intervención ($p < 0,05$).*

Conclusión: *El modelo de servicios intergeneracionales ha demostrado ser eficaz para mejorar el estado de salud, la interacción social y la satisfacción con la vida de las personas mayores; por lo tanto, debe replicarse en otros lugares, considerando que este modelo aún no se ha desarrollado en Indonesia.*

Palabras clave: *Interacción social, satisfacción con la vida, intergeneracional, personas mayores, estado de salud.*

INTRODUCTION

Indonesia is gradually shifting toward an aging population. In 2019, the National Socio-Economic Survey estimated 25.7 million people aged ≥60 years (9.6 % of the population), with projections rising by 10 % by 2020, 20 % by 2040, and reaching 74 million (25 %) by 2050 (1). Older adults face intersecting physical, psychological, social, spiritual, and economic challenges, many of which stem from degenerative processes and their sequelae. The National Basic Health Research (Riskesdas) 2018 reported prevalence estimates of hypertension (63.2 %), stroke (45.3 %), joint disease (18.6 %), diabetes mellitus (6 %), and heart disease (4.6 %) among individuals aged > 65 years. Health status in late life reflects both physical and mental domains and is shaped by the degenerative conditions that frequently arise (2).

Evidence from Indonesia indicates that structured exercise and mind–body routines can improve sleep, balance, strength, and function, demonstrating the modifiability of core risk factors in aging (3,4). The scale of need is amplified by Indonesia's family-centered context and rapid demographic change. Most older adults live in multigenerational households; government programs encourage families to promote healthy lifestyles, including physical activity, nutritious diets, and regular check-ups (5). Local studies highlight practical levers: menu optimization for institutionalized/community-dwelling older adults and simple monitoring (e.g., urine analysis) to flag nutritional risks (6,7). In primary care, culturally attuned, family-anchored management is pivotal; family-centered empowerment has been tested among hypertensive older adults and has been shown to support adherence and self-management (8). Yet social and organizational barriers persist. Communication gaps between generations contribute to an intergenerational divide, while cross-cultural research shows that prosocial values can be transmitted across generations, suggesting a natural bridge to reduce this divide (9). Perceptions of aging and ageism among Indonesian health workers also shape interaction quality and care uptake (10). Together, these dynamics create a nationally significant biomedical, behavioral, and social burden that is too large for single-sector responses and too nuanced for generic programs.

Chronologically, effective aging policy follows the life course from early prevention through older age, connecting to the daily settings where Indonesians live and age. Intergenerational initiatives can yield mutual gains: older adults benefit through improved healthy behaviors, self-esteem, and reduced depressive symptoms; younger participants gain positive attitudes

and self-identity (11). Indonesian experiences with structured recreational programs show encouraging psychosocial effects. On the health side, stepwise, low-cost activity packages, chair-based resistance training, the Otago program, and mind–body exercise are implementable in primary care and community venues, improving function and resilience. Program design can draw on tested activity formats (e.g., music, games, reading, reminiscence) delivered over 3 weeks with 15-30-minute sessions and up to 120 minutes, with 45 minutes often optimal for positive effects (11-13). Family roles remain central across the timeline: intergenerational support (emotional, informational, instrumental, financial) influences service use, healthy behaviors, and outcomes; family-based care and caregiver readiness in dementia underscore the household's role in ADL/IADL support (14-17). Indonesian evidence on caregiver burden further reinforces the need to scaffold families, not only patients (18).

A feasible solution is an intergenerational service model that integrates clinical, behavioral, and social components around families and youth–elder collaboration. Core elements include: 1) family-centered empowerment to build skills, confidence, and adherence in priority conditions such as hypertension; 2) long-term care functions standardized assessment, navigation, and follow-up across home, community, and primary care; 3) nutrition action menu optimization and simple risk monitoring to sustain function and prevent decline; 4) progressive physical activity modules (chair-based resistance, Otago, and mind–body) adapted to home/community settings; and 5) anti-ageism and prosocial bridging, leveraging evidence that values can be transmitted across generations to narrow gaps and enhance engagement. By aligning with Indonesia's caregiving culture and life-course needs, this model targets the problem, addresses it at the national scale, sequences interventions over time, and operationalizes a culturally grounded, resource-realistic pathway to healthier, more connected aging. The present study evaluated this model's effectiveness in improving elderly health status, social interaction, and life satisfaction, thereby extending prior Indonesian work on long-term care implementation, family-centered models, caregiver dynamics, and intergenerational engagement.

METHODS

This study used a quasi-experimental pre-post test with a control group design conducted in DKI Jakarta from February to November 2021. Older people living in communities became the study population. At the same time, the sample was elderly and met the following inclusion criteria: aged 60 years and over, living with adolescents, not on bed rest, not experiencing visual or hearing impairments, able to read and write, and willing to participate. Multistage random sampling was used to select participants in the intervention and control groups. The sample size was used to conduct an average-difference hypothesis test between the two independent groups. The number of samples obtained was 31. To account for anticipated dropouts, 10 % were added, yielding 34 samples per group (intervention and control). The total sample size was 68.

The quasi-experiment was conducted by administering the intervention to the intervention group, namely, a cross-generational elderly service model. Health status, social interaction, and life satisfaction were measured before and after the model was applied. The intergenerational Elderly Service Model is intended for older adults and youth to facilitate intergenerational interaction and communication, promote harmonization, and achieve mutual satisfaction. The development of this model was applied to the intervention group with activities: (1) training for research assistants (three people) and accompanying cadres (three people) regarding intergenerational programs that will be implemented for adolescents and the elderly, carried out for one day; 2) training for adolescents regarding the concept of the elderly, communication with the elderly, handling cognitive disorders, and pain in the elderly. This activity was conducted for 2 days, using modules; 3) the intervention was carried out for 6 weeks (once a week) through interaction and communication between adolescents and the elderly, application of cognitive stimulation, and intervention to reduce pain by adolescents according to the elderly's complaints; 4) Monitoring and evaluation was carried out by researchers, research assistants, and cadres every weekend using monitoring books to evaluate the development and obstacles experienced by adolescents in interacting with the elderly.

Meanwhile, the control group received no intervention; only leaflets on aging in older people were provided to adolescents. The interaction between adolescents and the elderly was conducted naturally, as in everyday life, over six weeks. In the control group, health status, social interaction, and life satisfaction were assessed before and after interactions between older adults and adolescents.

The health status of older people was measured using a short-form health survey comprising 12 questions scored on a Likert scale from 1 to 5 (range 12-60). The instrument for measuring social interaction was developed by the researchers and comprised 15 items on a Likert scale of 1-4 (range 15-60). The life satisfaction of older people was measured using a modified Life Satisfaction Index-SF, consisting of 12 items on a Likert scale from 1 to 5 (score range: 12-60). Family support was measured using a modified MOS Social Support Survey, which assessed emotional, informational, instrumental, and reward support and consisted of 15 items rated on a 1-4 Likert scale (range 15-60). Basic activities of daily living (BADL) were assessed using the modified Katz Index, which comprises 6 items assessing independence and dependence in daily activities, including bathing, dressing, toileting, transferring, defecation, urination, and eating. The score for each item ranged from 0 to 2, so the total score ranged from 0 to 12. IADLs were assessed using the modified Lawton Instrumental Activities of Daily Living scale, which comprises eight items assessing older adults' ability to use the telephone, shop, prepare food, organize the house, wash, use transportation, take medication, and manage finances. The score for each item ranged from 0 to 1, so the total score ranged from 0 to 8. All instruments were tested on 30 respondents, and validity and reliability results were obtained with Cronbach's alpha (health status: 0.863, social interaction: 0.884, life satisfaction: 0.935, family support: 0.915, BADL: 0.959, and IADL: 0.899).

Data were analyzed using univariate, bivariate, and multivariate analyses. The statistical tests used were a dependent t-test, an independent t-test, and a multiple linear regression. Normality tests for health status, social interaction, and life satisfaction indicated normal distributions; therefore, t-tests and multiple linear regression were used. A multiple linear regression analysis was used to assess the influence of elderly characteristics, BADL, IADL, and family support on the dependent variables of health status, social interaction, and life satisfaction.

All respondents received an explanation of the research and consented by signing a consent form. The researchers obtained research permits from the DKI Jakarta Provincial Health Office and ethical clearance from the Ethics Committee of Health Polytechnic, Ministry of Health, Jakarta III. No. KEPK- PKKJ3/044/VI/2021.

RESULTS

The analysis of elderly characteristics in the East Jakarta and DKI Jakarta regions showed that the majority were aged 60-74 years and female in both groups; most in the control group were married, whereas in the intervention group, half were widows or widowers. Most education levels were under high school level, most of the elderly were unemployed, and half experienced a long illness due to chronic diseases (hypertension, diabetes mellitus, joint disease) for < 2 years in both groups. The analysis also showed no differences in age, sex, education, employment, or duration of illness between the intervention and control groups ($p>0.05$). A significant difference was observed in participants' marital status ($p = 0.013$) (Table 1).

The results showed no differences in BADL, IADL, family support, social interaction, or life satisfaction between the intervention and control groups ($p > 0.05$). A significant difference was observed in participants' health status ($p = 0.024$) (Table 2).

The analysis results showed significant differences in health status, social interaction, and life satisfaction among the elderly in the intervention group before and after the intergenerational service model intervention (p-values <0.001, <0.001, and 0.001). In contrast, in the control group, there were no significant differences ($p = 0.397$, 0.582, and 0.516) (Table 3).

Table 1. Distribution of Elderly Characteristics by Age, Sex, Marital Status, Education, Employment, and Length of Disease in East Jakarta, DKI Jakarta Region (n=68).

Variable	Intervention Group		Control Group		Total		p-value
	N	%	N	%	N	%	
Age							
60–74 Years	24	70.60	29	85.30	53	77.90	0.144
75–90 Years	10	29.40	5	14.70	15	22.10	
Sex							
Male	8	23.50	14	41.20	22	32.30	0.120
Female	26	72.50	20	58.80	46	67.70	
Marital Status							
Married	16	47.10	26	76.50	42	61.70	0.013
Widow or Widower	18	52.90	8	23.50	26	38.30	
Education							
< Senior High School	22	64.70	27	79.40	49	72.10	0.177
≥ Senior High School	12	35.30	7	20.60	19	27.90	
Employment							
Employed	4	11.80	6	17.60	10	14.70	
Unemployed	30	88.20	28	82.40	58	85.30	
Disease duration							
< 2 Years	19	55.90	18	52.90	37	54.40	0.808
≥ 2 Years	15	44.10	16	47.10	31	45.60	

Table 2. Analysis of Equality of Variables BADL, IADL, Family Support, Health Status, Social Interaction, and Life Satisfaction of the Elderly in the Intervention Group and Control Group (n=68).

Variable	Intervention Mean±SD	Control Mean±SD	p- value
BADL	11.62±1.15	11.50±1.37	0.704
IADL	7.71±0.79	7.59±0.85	0.560
Family Support	47.94±6.39	47.15±5.60	0.588
Health Status	41.79±3.39	40.12±2.53	0.024
Social Interaction	42.00±10.34	38.82±6.99	0.143
Life Satisfaction	39.15±5.81	39.71±4.31	0.654

Table 4 shows significant differences in the elderly's health status, social interaction, and life satisfaction between the groups after the intergenerational service model intervention ($p < 0.05$). Bivariate selection using a simple linear regression test was performed to identify independent variables that met the inclusion criteria for the multivariate model, with $p<0.250$. Bivariate analysis results for the health status variable showed that 4 (four) variables (sex, marital status, employment, and family support) were eligible to be included in the multivariate model. For the dependent variable social interaction, it shows that 5 (five) independent

Table 3. Analysis of Differences in Health Status, Social Interaction, and Life Satisfaction of the Elderly Before and After Model Intervention in the Intervention and Control Group in East Jakarta, DKI Jakarta Region (n=68).

Variable	Group	Mean	SD	Mean Different	CI	P value*
Health Status	Intervention Group					
	Before	41.79	3.39	3.41	1.82-4.99	<0.001
	After	45.21	4.70			
	Control Group					
	Before	40.12	2.53	0.44	0.60-1.48	0.397
	After	40.56	2.72			
Social Interactions	Intervention Group					
	Before	42.00	10.34	7.44	3.57-11.31	<0.001
	After	49.44	6.52			
	Control Group					
	Before	39.12	7.37	0.35	0.93-1.64	0.582
	After	39.47	7.03			
Life Satisfaction	Intervention Group					
	Before	39.15	5.81	3.14	1.43-3.37	0.001
	After	42.29	5.10			
	Control Group					
	Before	39.71	4.31	0.35	0.74-1.44	0.516
	After	39.35	3.97			

*Dependent t-test

Table 4. Analysis of Differences in Health Status, Social Interaction, and Life Satisfaction of the Elderly After Model Implementation in the Intervention and Control Group (n=68).

Variable	Group	N	Mean	SD	CI	t	P-value*
Health Status	Intervention	34	45.21	4.70	1.78-6.50	4.98	<0.001
	Control	34	40.56	2.72			
Social Interactions	Intervention	34	49.44	6.52	6.68-13.25	6.05	<0.001
	Control	34	39.47	7.03			
Life Satisfaction	Intervention	34	42.29	5.10	0.72-5.15	2.64	0.010
	Control	34	39.35	3.97			

*Independent t-test.

variables (sex, marital status, employment, education, and duration of illness) were eligible to be included in the multivariate model. Meanwhile, the dependent variable, elderly life satisfaction, showed that only 2 independent variables (age and education) were eligible for inclusion in the multivariate model. The final model of the multivariate Multiple Linear Regression test is presented in Table 5.

Table 5. Final Model: Effect of Elderly Characteristics BADL, IADL, and Family Support on Health Status, Social Interaction, and Life Satisfaction in East Jakarta, DKI Jakarta Region (n=68).

Variable	β	SE	*p-value**	R Square
Health Status				
Constant	6.53	1.44	<0.001	0.15
Model	-3.12	0.91	0.001	
Social Interaction				
Constant	15.56	6.58	0.021	
Model	-6.14	1.96	0.003	
Sex	5.85	2.21	0.010	0.25
Employment	-6.54	2.88	0.027	
Life Satisfaction				
Constant	6.65	1.58	<0.001	0.16
Model	-3.50	1.00	0.001	

* Multiple Linear Regression Test.

Based on the analysis, it can be concluded that elderly characteristics do not influence health status and life satisfaction, except for the influence of intergenerational service models. Elderly characteristics (sex and employment) also affect social interaction. For elderly women, social interactions increase by 2.21 after controlling for employment variables. For elderly people who do not work, social interaction decreases by 2.88 after controlling for sex.

DISCUSSION

The results showed an improvement in the elderly's health status compared with the pre- and post-implementation periods. This is supported by adolescents' growing understanding of the elderly, enabling them to better care for them and understand their needs. With positive perceptions among adolescents, adolescents want to help the elderly apply compresses when they report pain, encourage the elderly to communicate and interact daily, and provide cognitive stimulation. The impact is that the elderly person's health improves.

Improving the health status of the elderly was associated with their ability to perform basic activities of daily living (Basic ADL) independently, including mobility, eating, toileting, dressing, and grooming (19). In addition, the ability to carry out instrumental activities of daily living (IADLs), such as shopping, cooking, washing, and housekeeping, or using public transportation (20). Participants' health status was also assessed using physical and mental health indicators. In this study, the intergenerational service model improved the health status of the elderly, where intergenerational activities are currently becoming popular, involving adolescents and the elderly in various countries. This research aligns with McNamara (2019), who examined the impact of an intergenerational program on six teenage girls aged 15-16 living in the West of Ireland (21). This study explored perceptions and changes in parents' views as well as their personal impact on the elderly. The main finding of this study was that adolescents' opinions about the elderly changed from negative to more positive after participating in the program. In society, the ages of the elderly and adolescents span a wide range, and this program can address diverse personal and community needs of the elderly (22). Intergenerational support is needed to meet the needs of basic ADL and instrumental ADL in the elderly, especially for adolescents (17). Wen et al. (2024) found that higher levels of social participation among older individuals are more likely to be classified as stable trajectories in both BADL and IADL. Increased participation in social activities among

community-dwelling elderly adults may promote healthy aging (23).

Social interactions among the elderly increased both before and after the implementation of the intergenerational elderly service model. Social interactions between the elderly and adolescents occur daily because the elderly live in the same house as the adolescents, facilitating communication. Intensive interactions have been shown to improve harmonious relationships. This was also revealed in an interview with the adolescents. After interacting with the elderly, adolescents said they were more patient with them, better understood them, and felt closer to them, so their interactions and communication improved. In line with Nuraini et al., a relationship was found between social interaction and loneliness (24). The elderly, who were active communicators, fostered good social interaction through social involvement. This gave the elderly a sense of vitality, as they had the social support they needed. The research found that the greater the increase in social interaction, the better the elderly's quality of life (25). Intergenerational programs have connected older and younger generations, facilitated social exchange and knowledge transfer, and encouraged active participation in meaningful development. Collaborative activities, such as skill development or storytelling, are key components of intergenerational programs and are associated with improved attitudes, knowledge, and well-being (26). Reciprocal relationships are essential to promoting intergenerational activities and benefit both groups involved. Intergenerational involvement, namely structured or semi-structured interactions between the elderly and younger generation, can reduce social isolation.

Social interactions play an important role in the lives of elderly people. Through interactions with family and society, the elderly can exchange health-related information and receive support to improve their health. Adolescents are a part of the family; by training them to care for the elderly at home, it is hoped that they will provide support and attention. Other studies have found that positive social interactions among the elderly can help prevent dementia. This study examines changes in social interactions and finds that positive changes can help prevent dementia. In particular, this study showed that parental involvement in social environments and intellectual activities can help prevent dementia (27). Park and Kang (28) found that social interaction factors are associated with life satisfaction across age groups. Among individuals aged 65-74, factors that significantly increased life satisfaction were meeting children and volunteering. However, in the ≥ 75-year age group, factors that statistically significantly increased life satisfaction were talking with friends, talking with children, using senior citizen community centers, and participating in hobby club activities.

The results showed an increase in life satisfaction before and after the application of the intergenerational elderly service model. In implementing the intergenerational service model, adolescents are a source of support for the elderly, where they interact and communicate with the elderly every day and always ask questions about the needs of the elderly and help with warm compresses if the elderly complain of pain, so that the elderly feel cared for and appreciated in the family. This is in accordance with the results Monika (2019), found that the source of social support was significantly related to life satisfaction ($p < 0.05$) with a medium level of relationship strength (29).

Physical health, socioeconomic status, and social involvement are essential for life satisfaction among older people (30). Elderly satisfaction is achieved when older people receive attention and interact with family and society. Based on the interviews with adolescents, it was found that daily adolescents always ask about the condition of older people, take care of older people when they complain of pain, and teach how to deal with complaints. The modules provided to adolescents are adapted for older adults to ensure they feel cared for and involved in the family; this can, in turn, increase their life satisfaction (30). Zhang et al. (31) found that emotional support was positively related to life satisfaction among older adults. For every unit increase in children's concern for their parents, the likelihood of the respondent being dissatisfied with their lives decreased by 0.23 % and the possibility of being satisfied increased by 0.51 %.

The Intergenerational Service Model Intervention for the Elderly provides adolescents with information and guidance on therapeutic

communication with the elderly. The communication pattern between adolescents and the elderly in the family is a conducive tool for increasing the elderly's life satisfaction. Social interactions among the elderly within the family and community help them form friendships, reduce loneliness, feel useful, avoid depression, and increase life satisfaction. Su's research found that participation in intergenerational activities can increase life satisfaction and self-esteem and reduce symptoms of depression in the elderly (32).

The results of the multivariate analysis showed that apart from the influence of the intergenerational service model, factors characteristic of the elderly, namely, sex and employment, also influence the social interaction of the elderly with adolescents. Depending on the culture, older males and females may be expected to play different roles in mentoring young people. Elderly women often assume essential caregiving roles in the family. Nemoto et al. (2022) found that more elderly females than males participated in intergenerational contact events. Mutual assistance during an event may have increased the norm of reciprocity among participants (33). Consistent with Baker and Robinson (34), elderly women tend to communicate more emotionally and expressively, facilitating connections with adolescent girls and conversations centered on emotions, relationships, and everyday experiences. Older adults who maintain active social relationships with adolescents and others have better mental and physical health outcomes. Their participation in family and community activities, which often include involvement with the youth, results in more frequent and positive social interactions, thereby improving their well-being.

The analysis also showed that employment influences the social interactions of elderly people with adolescents. Elderly people who continue to work often report better mental and emotional well-being, which can positively impact their interactions with the youth. More active elderly people are likely to interact more positively and with greater energy, thereby improving intergenerational relationships (35). Elderly men who are not employed experience a decline in social interactions. They may have difficulty connecting with their families, including with adolescents. When elderly people are out of work and their social networks are reduced, they may have difficulty maintaining meaningful interactions with younger generations, thereby reducing their social opportunities (35). Smith and Cooper (36) indicate that, for some older adults, the transition to retirement may lead to boredom, loneliness, or a loss of purpose. These feelings can reduce adolescents' desire or energy to interact with families, resulting in a diminished exchange of information between generations.

This research was conducted with a group of older adults collaborating with adolescents to provide an intergenerational service model intervention in accordance with applicable modelling standards. This study has several limitations, including the use of assessment instruments that must be adapted to older adults' abilities to reduce assessment time and enhance engagement.

CONCLUSION

The intergenerational service model for older adults has been shown to improve their health status, social interaction, and life satisfaction. Therefore, this model is expected to enhance intergenerational harmony, particularly between older adults and adolescents. It is necessary to conduct regular debriefings to help adolescents become more empathetic toward older adults and better understand their needs, thereby fostering a harmonious relationship. This model can be replicated in other areas by empowering cadres to facilitate interactions and communication between adolescents and older people. In addition, integrating cross-generational service models into elderly or community health programs for older adults can facilitate interactions between older adults and adolescents.

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