

Influence of community factors on formal care use among older Chinese adults

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ABSTRACT

Community plays a pivotal role in older adults' well-being and long-term care issues. This study investigates how community factors, including community support and social participation, with self-assessment of health as an intervening variable, influence the use of formal care. Further, how a community contributes to older adults' well-being has also been discussed. Data was collected from older adults (men 150, women 150, age>60 y/o) and was analyzed by using structural equation modeling (SEM). This study used health as an intervening variable to investigate community factors' influence on formal care use. The results find a significant negative influence of social participation and self-assessment of health on the use of formal care. While community support was not found to influence the use of formal care significantly, both community support and social participation could negatively influence the use of formal care by positively influencing the self-assessment of health. Cohabitation has also been found to influence community support significantly positively. In China, where formal care still needs to be more developed, reducing over-reliance on formal care follows Chinese cultural values and economic considerations. Moreover, older people living alone need to be attended to by the community.

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1. INTRODUCTION

In line with the worldwide trend in population aging, the issue of long-term care for older adults has become an important issue globally. It needs to be given high priority by governments, society, and families. China has stepped into an aging society since 2000. The outstanding features of aging, including a large proportion of the older population, rapid growth, dramatic expansion of the oldest-old, and uneven aging distribution, have put China in a unique position [1], and dramatically increasing the need for long-term care services in China [2].

As one of the primary forms of long-term care for older adults, formal care usually refers to paid care services provided by a healthcare institution or staff for older adults in need. The rapid socio-economic development and strict implementation of the revised family planning policy since 1980 have affected the structure of families in China, with a weakening of traditional family support for older adults as a result [2]. Moreover, as society develops, more and more adult children leave their families for big cities with better economic conditions [3]. Older Chinese adults, who have always had home care as the mainstream choice, increasingly rely on formal care [4]. However, overreliance on formal care may also cause problems. For instance, there are high economic costs [5], miscommunication, conflicts, risk of abuse [6], and lack of social interaction [7], as formal care is relatively under-developed, and a comprehensive long-term care insurance

system has not yet been established in China [8]. The issue of long-term care for older adults in China may also reveal the necessity and urgency of long-term care for older adults around the world [9]. Addressing these drawbacks requires a more holistic approach to elderly care that emphasizes community-based support [10], promotes aging in place with adequate support services [11], and prioritizes the dignity and autonomy of older adults [12]. This expresses both the motivation for this study to be pursued and the societal implications and contributions that were expected.

Community factors have a significant impact on the health and well-being of older adults and may promote a better life for them [13]. In this study, community factors included community support and social participation. Community support refers mainly to local healthcare information and services, while social participation refers mainly to community-based activities and social behaviors. The community provides an essential social network for older adults, providing the necessary support and enhancing the interaction between older adults and society. This alleviates isolation risk and enhances older adults' sense of belonging to the community [14]. Interaction with others also promotes the maintenance and development of cognitive abilities and slows the rate of cognitive decline [15]. Community support provides health knowledge, education, and resources for older adults. For instance, some health promotion activities could help older adults learn how to stay healthy, prevent diseases, and manage chronic conditions [16]. Safety measures in the community can reduce the risk of crime and unintentional injuries in older adults [17]. In addition, good neighborhoods can provide emergency assistance to older adults [18]. Further, the physical and mental health and well-being of older adults also influence their use of and reliance on formal care [19].

This study investigated the influence of community support and social participation in the use of formal care among older Chinese adults. It examined how these community factors influence the decision-making process regarding formal care among older adults. Additionally, the study explored potential interventions within communities aimed at reducing the dependence of older Chinese adults on formal care. Recognizing the importance of promoting healthy aging environments, this research identified strategies that communities could implement to alleviate the need for formal care among the elderly population. These interventions aimed not only to alleviate the burden on formal care systems but also to enhance the health, happiness, and overall well-being of older adults as they aged.

Previous studies have shown that community support is strongly associated with home care and health among older adults [20]–[24], and social participation has been shown to be strongly associated with health [25], [26]. Also, sufficient social support and social participation contribute to the physical and mental health and quality of life of older adults [27]–[29]. In addition, studies indicate that social participation, community support, and community belonging were positively associated [30]. Moreover, Zhang *et al.* argues that older adults with better health status are less motivated to use formal care because they have no urgent need for professional care services at the moment [31]. Furthermore, older adults living alone have worse social participation and access to community support than those living with cohabitants [32]. Thus, community support and social participation on the use of formal care are both hypothesized to significantly influence the use of formal care through the intervening variable of self-assessment of health. Considering that long-term care for older adults living alone has become an increasingly important issue in society, this study used cohabitation as a control variable, and its effect on social factors was tested. The following hypothesis was established in this study: i) Community support had a significant influence on the use of formal care and social participation; ii) Social participation has a significant influence on the use of formal care; iii) The self-assessment of health has a significant influence on the use of formal long-term care; iv) Cohabitation has a significant influence on community support, and social participation.

2. METHOD

2.1. Sample and data collection

This study recruited 300 Chinese adults (150 males and 150 females) aged 60 years or older to answer an online questionnaire in March 2022. In the current study, the sample was strictly restricted to eliminate or minimize confounding variables. First, we considered that a physician's diagnosis of health may influence the level of social engagement and use of long-term care. Therefore, all participants in this study were not suffering from a medically diagnosed chronic condition. Second, to minimize the effect of large differences in economic, medical, and long-term care systems between urban and rural areas in China, especially in rural areas where formal care services may be inadequate, all participants in this study were from urban areas in China. In addition, the experience of long-term care may also influence the motivation to use care again. Therefore, all participants in this study were able to live independently without experience in long-term care. This study was approved by the Research and Ethics Committee of the Graduate School of Information Science and Arts at Toyo University (2022-01). The respondents were notified of the purpose

and procedures of the study. They were also assured of their anonymity and confidentiality, protection of personal information, data disposal, and the freedom to withdraw from the study at any time.

Researchers select samples representing the entire population, analyze the data from the selected samples, and estimate the parameters of the entire population, making it very important to determine the appropriate sample size to answer the research question. The G*power was used to calculate the sample size in this study. Multiple linear regression analysis was selected for G*power due to its suitability for analyzing different predictor variables as well as interaction effects. With the setting of effect size $f^2=0.15$, a err prob=0.05, power (1- β err prob)=0.95, and number of predictors=4, a total sample size of 129 was calculated. To obtain more precise and convincing results in addition to this criterion, 150 men and 150 women were used as the final sample size for this study. As this survey was completed using an online questionnaire, the results may be more representative of older Chinese people who have free access to the Internet. In addition, the age groups were not evenly distributed because this study required a certain level of cognition and health.

2.2. Scale

Six items based on A, Inoue *et al.* were used to measure social participation [16], see Table 1, it includes two sub-factors. [Community contributive activities], emphasize that older people have a 'role' in society, i.e., activities that contribute to other people, and the community. [Self-enlightenment activities], emphasize activities in which older people make efforts to improve their purpose in life by doing things that interest them. In the study, the number of factors and items, as well as the naming of the social participation scale, were determined by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The fitness measures were GFI=0.992, AGFI=0.987, CFI=0.988, and RMSEA=0.026. The Cronbach coefficient for the scale was 0.78, with 0.80 for factor 1 and 0.76 for factor 2, and reliability was determined. Validity was determined by the positive correlations between the scale score and the external criteria. Including the geriatric center morale scale (PGC) (attitude toward aging, mental fluctuation, and loneliness/dissatisfaction, $r=0.24$, $p<0.01$), and frequency of going out of the home ($r=0.20$, $p<0.01$), and frequency of attending regional activities ($r=0.22$, $p<0.01$). In addition, the participants were both older people from East Asia. Therefore, this scale was considered appropriate in the current study.

Table 1. Items of social participation

Social participation	The question and options
<i>Factor1</i> <i>Community contributive activities</i>	Have you ever engaged in any of the following activities in the past?
1. Activities related to traffic safety and crime prevention.	1= Never in the past;
2. Activities related to community development or environmental beautification.	2= More than half a year ago;
3. Activities related to support for the older people.	3= Within the past six months.
<i>Factor2</i> <i>Self-enlightenment activities</i>	
4. Physical activities such as gymnastics and sports.	
5. Cultural activities such as hobby groups.	
6. Get together with friends for dinner or drinks.	

2.3. Statistical analysis

Data was analyzed using SPSS ver. 28.0. Factor analysis was conducted to confirm the reliability of social participation. SEM was conducted to assess the variables' associations and test the hypothesized model. Variables in the model included cohabitation, community support, social participation, self-assessment of health, and use of formal care. Statistical significance was defined as * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

3. RESULTS

3.1. Descriptive statistics

Table 2 shows the general characteristics of the respondents. There were equal numbers of male and female respondents. The majority of respondents were aged between "60-75 years", "had cohabitants," felt that their health was "somewhat good," and felt that they were "sometimes" able to access community support, see Table 2. Table 3 shows the descriptive statistics of social participation. The higher the mean values, the higher the degree of the corresponding independent variables for the respondents, see Table 3.

3.2. Factor analysis

The absolute factor loadings of all items are larger than 0.4, which means the reliability was well demonstrated. Results are displayed, where each domain is given factor loadings, communality values, and alpha coefficients, see Table 4. Compared to the results of the reference, the composition of the questions for the two sub-factors is consistent, but the items are not precisely in the same order. These differences may be caused by differences in respondents' nationalities, living environments, and cultural habits.

Table 2. Characteristics of Chinese respondents (n=300)

Characteristics	Categories	n (%)	SE
Gender	Male	150 (50)	0.082
	Female	150 (50)	
Age	60~64 y/o	132 (44)	0.647
	65~69 y/o	147 (49)	
	70~74 y/o	19 (6.3)	
	75~79 y/o	1 (0.3)	
	80~84 y/o	1 (0.3)	
Cohabitants	Yes	292 (97.3)	0.009
	No	8 (2.7)	
Self-assessment of health status	Bad	3 (1)	0.819
	Somewhat bad	16 (5.3)	
	Average	10 (3.3)	
	Somewhat good	159 (53)	
	Good	112 (37.3)	
Support from the community	Never	8 (2.7)	0.719
	Seldom	26 (8.7)	
	Sometimes	152 (50.7)	
	Often	114 (38)	

Table 3. Descriptive statistics of assessment variables (n=268)

Variables	Min.	Max.	Mean	SD	SE
Social participation	6	18	10	2.617	0.151

Table 4. Factor analysis of social participants (maximum likelihood method and Promax rotation)

Table 4: Factor analysis of social participants (maximum intended means and 1-factor rotation)				
Item/activity description		Factor loadings		
		Factor1	Factor2	Communality
「Community contributive activities」 (L) ($\alpha=0.75$, Cumulative contribution ratio=35.52%)				
2	Activities related to community development or environmental beautification.(O)	0.746	0.007	0.732
1	Activities related to traffic safety and crime prevention.(O)	0.604	0.036	0.521
3	Activities related to support for the older people.(O)	0.522	-0.053	0.499
「Self-enlightenment activities」 (L) ($\alpha=0.72$, Cumulative contribution ratio=45.82%)				
6	Get together with friends for dinner or drinks.(O)	0.135	0.827	0.312
4	Physical activities such as gymnastics and sports.(O)	0.116	0.494	0.561
5	Cultural activities such as hobby groups.(O)	0.282	0.418	0.594
Factor correlation				
Factor1 「Community contributive activities」			0.481	
Factor2 「Self-enlightenment activities」		0.481		

Social participation ($\alpha=0.79$)

3.3. Test of hypothesized model and parameter estimate

SEM was used to assess the associations among variables in the hypothesized model. The model fits the data well (GFI=0.995, AGFI=0.928, CFI=0.985, TLI=0.849, SRMR=0.074, and RMSEA=0.068). Community support has a significant positive influence on social participation ($\beta=8.55$, $p<.001$). Social participation significantly negatively influences the use of formal care ($\beta=-2.22$, $p=.027$). In addition, self-assessment of health as an intervening variable significantly negatively influences the use of formal care ($\beta=-2.75$, $p=.006$). Moreover, self-assessment of health is also positively influenced by health is shown to be an intervening variable between community factors and the use of formal care. Furthermore, cohabitation significantly positively influences community support ($\beta=2.99$, $p=.003$) and self-assessment of health ($\beta=2.36$, $p=.018$), respectively. However, community support was not found to influence the use of formal care significantly. Cohabitation was not found to significantly influence social participation, either, see Figure 1.

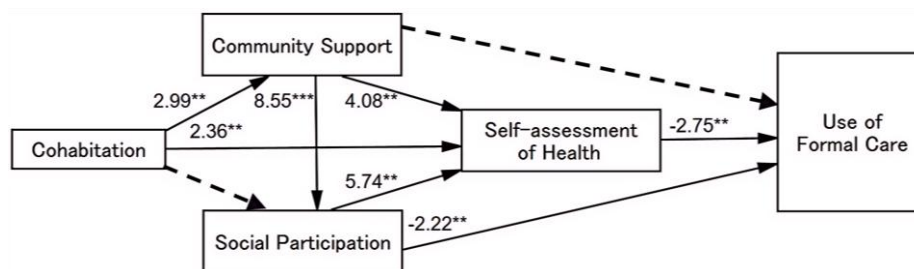


Figure 1. Tested model of this study

4. DISCUSSION

This study has illuminated the intricate interplay between community factors and their potential to attenuate reliance on formal care services among older Chinese adults. Through a nuanced examination of these dynamics, it becomes evident that community-level support mechanisms have a substantial direct and indirect influence on the utilization of formal care mediated by the self-assessment of health among elderly individuals. Notably, a key finding underscores the symbiotic relationship between community support and social participation, wherein older adults receiving greater community support are more likely to engage in social activities, thereby fostering a sense of belonging and well-being. Moreover, the presence of cohabitants emerges as a significant determinant, as individuals residing with family members tend to benefit from enhanced community support networks and exhibit superior self-assessed health status compared to those living alone. This indirect pathway underscores the pivotal role of familial cohabitation in facilitating access to community support services and promoting better health outcomes among older adults, thereby mitigating the need for formal care interventions.

It was observed that older adults who actively engage in social participation tend to exhibit a decreased reliance on formal care services and report better self-assessed health statuses. This correlation underscores the importance of social connections in older adults' lives. When an adult maintains a high level of social participation, it signifies a robust connection with the local community [33]. Instead, older people are more likely to choose autonomous living within their community facilitated by support networks forged through social engagement. These networks not only provide companionship but also offer practical assistance and emotional support, thereby fostering a sense of belonging and security. Moreover, active involvement in social activities offers opportunities for older adults to cultivate meaningful relationships and partake in fulfilling endeavors, contributing to a sense of purpose and overall life satisfaction [34]. These positive social interactions not only enhance the quality of life of older adults but also play a pivotal role in maintaining their physical and emotional well-being, ultimately promoting healthy aging.

In addition, the correlation between higher levels of community support and increased social participation coupled with improved self-assessment of health is particularly noteworthy among older Chinese adults. The provision of robust community support services plays a pivotal role in facilitating active engagement and fostering a sense of well-being among older adults [35]. By receiving ample support from their communities, older adults are empowered to participate more fully in social activities, leading to heightened life satisfaction and enhanced physical and mental health outcomes [36]. With familial caregiving resources often stretched thin, older adults increasingly rely on community-based services to address their healthcare needs and sustain their ability to live independently in their communities. Access to essential healthcare services through community support mechanisms is therefore indispensable for older adults seeking to maintain their autonomy and receive the care necessary to effectively manage their health conditions. As such, fostering robust community support networks has emerged as a critical imperative in ensuring the continued well-being and quality of life of China's aging population.

Moreover, the findings of this study underscore the pivotal role of better self-assessment of health in mitigating the utilization of formal care services among older adults. Enhanced health status correlates strongly with increased levels of independence, diminished reliance on formal care provisions, mitigated risk of emergency medical incidents, and more effective management of chronic conditions [37]. Serving as a mediating variable in this investigation, it was revealed that sufficient community support and heightened social engagement positively influence the health outcomes of older adults. This revelation underscores the primary objective of the study, emphasizing the vital role that communities play in nurturing the well-being of their residents. By fostering supportive environments and facilitating opportunities for social interactions, communities serve as catalysts for bolstering the physical and mental health of older adults, thereby reducing their dependency on formal care services.

Furthermore, the study's findings highlight a significant association between the presence of more cohabitants among older Chinese adults and enhanced levels of community support, along with better overall health outcomes, thereby contributing to reduced reliance on formal care services. It is evident that older adults living alone are more susceptible to inadequate social support, as highlighted by previous research [38]. This demographic also tends to contend with a higher prevalence of chronic illnesses and feelings of loneliness and depression compared to their counterparts who reside with family members [39]. The presence of cohabitants, often family members, confers several advantages that contribute to observed outcomes. First, the presence of cohabitants expands older adults' access to informal community networks, thereby fostering a sense of belonging and facilitating their participation in social activities. Second, in instances where an older individual requires assistance because of health concerns, cohabitants are often readily available to provide care and support, thus naturally mitigating the need for and utilization of formal care services. In essence, the presence of cohabitants serves as a protective factor, bolstering the overall well-being of older adults and enabling them to maintain their independence and quality of life within their communities while reducing strain on formal care resources.

Hence, it becomes apparent that community-level factors play a crucial role in mitigating the utilization of formal long-term care services by exerting a positive influence on the intervening factor of self-assessment of health [40]. Without robust community-based initiatives to support the health and well-being of older adults, the burden on formal care services is bound to escalate, which is further compounded by the urban-rural disparities. By strengthening community-level resources and promoting active engagement among older residents, it becomes possible to empower individuals to take charge of their health and well-being, thereby reducing strain on formal care services and fostering more sustainable models of elderly care. Ultimately, prioritizing the development of community-based support systems represents a crucial step towards ensuring the long-term health and vitality of aging populations in China and beyond.

5. CONCLUSION

The objective of this study was to investigate the influence of community factors on the utilization of formal care services among older Chinese adults, and to elucidate the role of self-assessment of health as an intervening factor in this relationship. Moreover, it aims to shed light on the unique characteristics and potential risks faced by older individuals living alone in the Chinese context. In China, where the development of formal care infrastructure lags behind, the imperative to reduce dependence on formal care services aligns with deeply ingrained cultural values and economic considerations, while simultaneously fostering community cohesion and facilitating personalized care. For instance, maintaining older adults within familiar environments not only serves to assuage feelings of loneliness and insecurity, but also fosters a heightened sense of belonging to the community. Moreover, reducing reliance on formal care services preserves the autonomy of older adults, allowing them to maintain independence, and receive care tailored to their unique backgrounds and needs. This personalized approach to care not only enhances the well-being of older adults, but also reinforces their sense of agency and dignity. This study underscores the importance of community-level factors in shaping the landscape of elder care in China and offers valuable insights into the mechanisms through which community support and social participation can attenuate reliance on formal care services among older adults.

This study presents a distinctive contribution to the field of elder care research in China by focusing on the intricate relationship between community factors, self-assessment of health, and use of formal care services among older adults. Additionally, this study's emphasis on the unique characteristics and risks faced by older individuals living alone adds depth to the analysis, highlighting the need for targeted interventions that address their specific needs and vulnerabilities. Furthermore, this study's exploration of how reducing reliance on formal care services can preserve the autonomy and dignity of older adults underscores its practical relevance in shaping policy and intervention strategies. Overall, this research not only expands our theoretical understanding of elder care dynamics, but also offers practical insights that can inform the development of more effective and culturally sensitive approaches to supporting older adults in China. While this study provides valuable insights into the relationship between community factors and the use of formal care among older Chinese adults, it is still important to recognize its limitations. One notable limitation is the grouping of certain personal factors among respondents, which could have been made more discernible. This lack of clarity may have influenced the study's outcomes. Additionally, the prevalence of certain characteristics among respondents, such as cohabitation, access to community support, and perceived good health, might have inadvertently biased the results. In the future, concerted efforts should be made to address and rectify these methodological shortcomings. This would contribute to a better understanding of the interplay between community factors and the use of formal care, ultimately leading to more effective interventions and support systems for older adults.

REFERENCES





- [1] Y. Han, Y. He, J. Lyu, C. Yu, M. Bian, and L. Lee, "Aging in China: perspectives on public health," *Global Health Journal*, vol. 4, no. 1, pp. 11–17, Mar. 2020, doi: 10.1016/j.glohj.2020.01.002.
- [2] Z. Feng *et al.*, "Long-term care system for older adults in China: policy landscape, challenges, and future prospects," *The Lancet*, vol. 396, no. 10259, pp. 1362–1372, Oct. 2020, doi: 10.1016/S0140-6736(20)32136-X.
- [3] S. Chen and C. Wang, "Impacts of the population ageing on the effects of the nationwide emission trading scheme in China," *Science of The Total Environment*, vol. 887, p. 164127, Aug. 2023, doi: 10.1016/j.scitotenv.2023.164127.
- [4] S. Liu, Y. Wang, D. Zhou, and Y. Kang, "Two-step floating catchment area model-based evaluation of community care facilities' spatial accessibility in Xi'an, China," *International Journal Environmental Research Public Health*, vol. 17, no. 14, p. 5086, Jul. 2020, doi: 10.3390/ijerph17145086.
- [5] E. Palm, "Who cares? moral obligations in formal and informal care provision in the light of ICT-based home care," *Health Care Analysis*, vol. 21, no. 2, pp. 171–188, Jun. 2013, doi: 10.1007/s10728-011-0199-3.
- [6] O. Bifárin *et al.*, "Stressors and coping mechanisms of family care-givers of older relatives living with long-term conditions in mainland China: a scoping review of the evidence," *Ageing Society*, vol. 43, no. 4, pp. 952–989, Apr. 2023, doi: 10.1017/S0144686X21000817.

- [7] A. A. Scoglio, E. D. Reilly, J. A. Gorman, and C. E. Drebing, "Use of social robots in mental health and well-being research: systematic review," *Journal Medical Internet Research*, vol. 21, no. 7, p. e13322, Jul. 2019, doi: 10.2196/13322.
- [8] K. B. Brewer *et al.*, "Formal versus informal pathways to mental health care in China," *China Journal of Social Work*, vol. 17, no. 1, pp. 3–20, Jan. 2024, doi: 10.1080/17525098.2023.2252913.
- [9] E. F. Fang *et al.*, "A research agenda for ageing in China in the 21st century (2nd edition): Focusing on basic and translational research, long-term care, policy and social networks," *Ageing Research Reviews*, vol. 64, p. 101174, Dec. 2020, doi: 10.1016/j.arr.2020.101174.
- [10] N. A. Spassiani, B. A. Meisner, M. S. Abou Chacra, T. Heller, and J. Hammel, "What is and isn't working: Factors involved in sustaining community-based health and participation initiatives for people ageing with intellectual and developmental disabilities," *Journal of Applied Research in Intellectual Disabilities*, vol. 32, no. 6, pp. 1465–1477, Nov. 2019, doi: 10.1111/jar.12640.
- [11] B. S. Fogel, "Psychological aspects of staying at home," in *Ageing in Place*, Routledge, 2019, pp. 19–28. doi: 10.4324/9781315227603-3.
- [12] K. M. Gebremariam and R. Sadana, "On the ethics of healthy ageing: setting impermissible trade-offs relating to the health and well-being of older adults on the path to universal health coverage," *International Journal Equity Health*, vol. 18, p. 140, Dec. 2019, doi: 10.1186/s12939-019-0997-z.
- [13] N. P. Gothe, D. K. Ehlers, E. A. Salerno, J. Fanning, A. F. Kramer, and E. McAuley, "Physical activity, sleep and quality of life in older adults: influence of physical, mental and social well-being," *Behavioral Sleep Medicine*, vol. 18, no. 6, pp. 797–808, Nov. 2020, doi: 10.1080/15402002.2019.1690493.
- [14] J. Li and Y. Song, "Formal and informal care," in *Encyclopedia of Gerontology and Population Aging*, Cham: Springer International Publishing, 2019, pp. 1–8. doi: 10.1007/978-3-319-69892-2_847-1.
- [15] W. LIN, "The relationship between formal and informal care among Chinese older adults: based on the 2014 CLHLS dataset," *BMC Health Serv Res*, vol. 19, p. 323, Dec. 2019, doi: 10.1186/s12913-019-4160-8.
- [16] A. Inoue, E. Tadaka, K. Shiratani, A. Arimoto, E. Itoh, and A. Okochi, "Development of a scale of social activities among community-dwelling elderly people," *Journal of Japan Academy of Community Health Nursing*, vol. 19, no. 2, pp. 4–11, 2016, doi: 10.20746/jachn.19_2_4.
- [17] B. Kennedy *et al.*, "Epidemiology of homicide in community-dwelling older adults: a systematic review and meta-analysis," *Trauma Violence Abuse*, vol. 24, no. 2, pp. 390–406, Apr. 2023, doi: 10.1177/15248380211030250.
- [18] D. R. Y. Gan, J. C. Fung, and I. S. Cho, "Neighborhood atmosphere modifies the eudaimonic impact of cohesion and friendship among older adults: A multilevel mixed-methods study," *Social Science Medicine*, vol. 270, p. 113682, Feb. 2021, doi: 10.1016/j.socscimed.2021.113682.
- [19] Y. Lee, R. Barken, and E. Gonzales, "Utilization of formal and informal home care: how do older Canadians' experiences vary by care arrangements?," *Journal of Applied Gerontology*, vol. 39, no. 2, pp. 129–140, Feb. 2020, doi: 10.1177/0733464817750274.
- [20] S. Artiga and E. Hinton, "Beyond health care: the role of social determinants in promoting health and health equity," California, 2018. Accessed: November 13, 2023. [Online]. Available: <https://files.kff.org/attachment/issue-brief-beyond-health-care>.
- [21] I. Ayano, T. Etsuko, S. Kae, A. Azusa, I. Eriko, and O. Ayako, "Development of a scale of social activities among community-dwelling elderly people," *Journal of Japan Academy of Community Health Nursing*, vol. 19, no. 2, pp. 4–11, 2016.
- [22] E. Alnazly, O. M. Khraisat, A. M. Al-Bashairah, and C. L. Bryant, "Anxiety, depression, stress, fear and social support during COVID-19 pandemic among Jordanian healthcare workers," *PLoS One*, vol. 16, no. 3, p. e0247679, Mar. 2021, doi: 10.1371/journal.pone.0247679.
- [23] M. Qi *et al.*, "The effect of social support on mental health in chinese adolescents during the outbreak of COVID-19," *Journal of Adolescent Health*, vol. 67, no. 4, pp. 514–518, Oct. 2020, doi: 10.1016/j.jadohealth.2020.07.001.
- [24] I. Hombrados-Mendieta, M. Millán-Franco, L. Gómez-Jacinto, F. Gonzalez-Castro, M. J. Martos-Méndez, and A. García-Cid, "Positive influences of social support on sense of community, life satisfaction and the health of immigrants in Spain," *Front Psychol*, vol. 10, Nov. 2019, doi: 10.3389/fpsyg.2019.02555.
- [25] A. Wanchai and D. Phrompayak, "Social participation types and benefits on health outcomes for elder people: a systematic review," *Ageing Int*, vol. 44, no. 3, pp. 223–233, Sep. 2019, doi: 10.1007/s12126-018-9338-6.
- [26] M. D. Aroogh and F. M. Shahboulaghi, "Social participation of older adults: a concept analysis," *International Journal of Community Based Nursing and Midwifery*, vol. 8, no. 1, pp. 55–72, Jan. 2020, doi: 10.30476/IJCBNM.2019.82222.1055.
- [27] E. Choi *et al.*, "Social participation and depressive symptoms in community-dwelling older adults: emotional social support as a mediator," *Journal of Psychiatric Research*, vol. 137, pp. 589–596, May 2021, doi: 10.1016/j.jpsychires.2020.10.043.
- [28] D. S. Şahin, Ö. Özer, and M. Z. Yanardağ, "Perceived social support, quality of life and satisfaction with life in elderly people," *Educational Gerontology*, vol. 45, no. 1, pp. 69–77, Jan. 2019, doi: 10.1080/03601277.2019.1585065.
- [29] L. da S. S. C. B. de Oliveira, E. C. Souza, R. A. S. Rodrigues, C. A. Fett, and A. B. Piva, "The effects of physical activity on anxiety, depression, and quality of life in elderly people living in the community," *Trends in Psychiatry and Psychotherapy*, vol. 41, no. 1, pp. 36–42, Mar. 2019, doi: 10.1590/2237-6089-2017-0129.
- [30] H. Tong, D. W. L. Lai, and C. A. Walsh, "Formal social participation and utilization of community-based services among urban elderly chinese living alone in Shanghai, China," *Journal of Social Service Research*, vol. 45, no. 4, pp. 520–529, Aug. 2019, doi: 10.1080/01488376.2018.1481172.
- [31] Z. Zhang, C. Kato, and O. Yoshiomi, "Factors influencing the preferences of older Japanese people for long-term care," *Home Health Care Management & Practice*, vol. 35, no. 4, pp. 253–261, Nov. 2023, doi: 10.1177/10848223231166114.
- [32] A. F. Bolina, M. da C. Araújo, V. J. Haas, and D. M. dos S. Tavares, "Association between living arrangement and quality of life for older adults in the community," *Revista Latino-Americana de Enfermagem*, vol. 29, p. e3401, 2021, doi: 10.1590/1518-8345.4051.3401.
- [33] C. Marston, A. Renedo, and S. Miles, "Community participation is crucial in a pandemic," *The Lancet*, vol. 395, no. 10238, pp. 1676–1678, May 2020, doi: 10.1016/S0140-6736(20)31054-0.
- [34] S. Kim, K. Choe, and K. Lee, "Depression, loneliness, social support, activities of daily living, and life satisfaction in older adults at high-risk of dementia," *International Journal of Environmental Research and Public Health*, vol. 17, no. 24, p. 9448, Dec. 2020, doi: 10.3390/ijerph17249448.
- [35] B. Macdonald and G. Hülür, "Well-being and loneliness in swiss older adults during the COVID-19 pandemic: the role of social relationships," *Gerontologist*, vol. 61, no. 2, pp. 240–250, Feb. 2021, doi: 10.1093/geront/gnaa194.
- [36] H.-Y. An, W. Chen, C.-W. Wang, H.-F. Yang, W.-T. Huang, and S.-Y. Fan, "The relationships between physical activity and life satisfaction and happiness among young, middle-aged, and older adults," *International Journal of Environmental Research and Public Health*, vol. 17, no. 13, p. 4817, Jul. 2020, doi: 10.3390/ijerph17134817.





- [37] M. Sun *et al.*, “Transition of care from hospital to home for older people with chronic diseases: a qualitative study of older patients’ and health care providers’ perspectives,” *Frontiers in Public Health*, vol. 11, Apr. 2023, doi: 10.3389/fpubh.2023.1128885.
- [38] R. Sakurai *et al.*, “Poor social network, not living alone, is associated with incidence of adverse health outcomes in older adults,” *Journal of the American Medical Directors Association*, vol. 20, no. 11, pp. 1438–1443, Nov. 2019, doi: 10.1016/j.jamda.2019.02.021.
- [39] L. Gu, M. Yu, D. Xu, Q. Wang, and W. Wang, “Depression in community-dwelling older adults living alone in China: Association of social support network and functional ability,” *Research in Gerontological Nursing*, vol. 13, no. 2, pp. 82–90, Mar. 2020, doi: 10.3928/19404921-20190930-03.
- [40] National Academies of Sciences, Engineering, and Medicine, *Social Isolation and Loneliness in Older Adults*. Washington, D.C.: National Academies Press, 2020. doi: 10.17226/25663.

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