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Collective efficacy and community readiness for dementia prevention: a spatial spillover analysis

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Abstract

Dementia represents a growing public health challenge in Taiwan, particularly within its rapidly aging population. This study employed the Community Readiness Model (CRM) to systematically assess community readiness for dementia prevention across multiple domains. It further examined whether collective efficacy, defined as shared social cohesion and a community's capacity for collective action, is associated with greater readiness for dementia-related prevention efforts. A cross-sectional survey was conducted from March to June 2021 among 3,129 community leaders in 456 communities in Taipei City. A total of 447 valid responses were analyzed, representing 288 communities (63.2% of all communities). A spatial lag regression model was conducted, and spatial spillover effects were further assessed. Spatial lag regressions revealed that willingness to intervene ($B=0.256$, $p<0.0001$), social cohesion ($B=0.375$, $p<0.0001$), and prior dementia prevention programs ($B=1.036$, $p=0.01$) were significantly associated with higher community readiness for dementia prevention. Spill-over patterns — particularly for social cohesion and prior programs — appeared to play a potential, though not fully conclusive, role in shaping readiness across neighbouring communities. Those with higher proportions of residents aged 85+ showed lower readiness, while average income was not a significant predictor. Collective efficacy and prior dementia efforts were associated with higher community readiness. Tailored, community-based strategies that foster social cohesion and proactive engagement while accounting for spatial disparities are considered essential for effective dementia prevention.

Key words: dementia prevention; community readiness; collective efficacy; spatial analysis; public health interventions; Taiwan.

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Introduction

Dementia is a leading cause of disability among older adults (Wu *et al.*, 2018). Globally, dementia-friendly communities play a critical role in preventing and managing dementia by creating environments that empower individuals with dementia and their caregivers (Shannon *et al.*, 2019; Hung *et al.*, 2021; Gan *et al.*, 2022). Their success relies on government investments, collaboration with influential community leaders and partnerships with established organizations, collectively creating supportive ecosystems (Hung *et al.*, 2021; Gan *et al.*, 2022). In Taiwan, the prevalence of dementia among community-dwelling older adults was 8.0% from 2020 to 2023, and this proportion is projected to increase (Ministry of Health and Welfare, 2024). According to a national survey conducted by the Ministry of Health and Welfare, approximately 93% of individuals with dementia live at home, and nearly 70% do not utilize long-term care services, placing substantial burdens on informal caregivers (Ministry of Health and Welfare, 2018). In response, the Ministry promotes dementia prevention through the “Dementia Care Service Plan,” encouraging local governments to establish community-based, dementia-friendly programs. These initiatives offer occupational therapy, cognitive

training, and social activities to slow disease progression and alleviate caregiver burden (Backhouse *et al.*, 2017; Paúl *et al.*, 2019). However, such programs often face challenges, including societal stigma, misconceptions that deter treatment-seeking, and insufficient resources to sustain interventions (Donnermeyer *et al.*, 1997). Community leaders' personal beliefs also influence their willingness to allocate support, shaping the broader community atmosphere in a mutually reinforcing cycle (Sanders *et al.*, 2018). In this study, “dementia prevention” is defined within a public health and socio-ecological framework as community-level efforts to build readiness, strengthen resources, and foster supportive environments for dementia-friendly communities, rather than as primary biomedical prevention.

The Community Readiness Model (CRM) assesses a community's readiness by evaluating leaders' views on community issues and guiding intervention strategies to enhance their impact (Donnermeyer *et al.*, 1997; Plested *et al.*, 1998, 2006). Successful interventions depend on understanding and integrating local customs, shared beliefs and a community's preparedness to embrace change (Kostadinov *et al.*, 2015; Ickes *et al.*, 2018). CRM measures six dimensions: i) Community efforts - the scope and effectiveness of ongoing initiatives; ii) Community knowledge of

efforts - how well the community recognizes and supports these initiatives; iii) Leadership - the commitment of influential figures; iv) Community climate - attitudes and perceptions toward the issue; v) Community knowledge of the issue - understanding of the problem's causes and effects; and vi) Resources - including funding, human capital and physical space, to sustain and scale interventions. By systematically assessing these interconnected dimensions, CRM provides valuable insights into community capacity and guides the development of tailored interventions (Kelly *et al.*, 2003; Kostadinov *et al.*, 2015).

Since its development, CRM has been applied to various public health domains, including obesity (Islam, Small, Bryant, Yang, *et al.*), child malnutrition (Gagne *et al.*, 2020), physical activity of older adults (Gansefort *et al.*, 2018), school smoke-free policies (Ickes *et al.*, 2018), suicide (Cureton *et al.*, 2020), children's mental health (Islam, Small, Bryant, Bridges, Hancock, Dickerson, 2019.), dementia-related initiatives (Millar *et al.*, 2013) and preparedness for COVID-19 (Adane *et al.*, 2021). For example, York and Hahn identified associations between tobacco control-based CRM scores and contextual factors such as education, population size, political affiliation, race, number of tobacco control officials, and smoking rates (York & Hahn, 2007). Despite its potential, the application of CRM to dementia-related issues remains limited (Moss *et al.*, 2023).

Previous studies have shown that collective efficacy is an essential factor related to how communities move from understanding a problem to taking action. The most widely recognized conceptualization of collective efficacy is that of Sampson *et al.* (1997), who identified two core components: willingness to intervene and social cohesion (Sampson, 1985; Sampson *et al.*, 1997). Willingness to intervene reflects a community's capacity to address shared problems and maintain public order by mobilizing collective action in response to local issues, such as watching over neighbours' property, caring for local children, and addressing everyday neighbourhood concerns (Sampson, 2003; Silver & Miller, 2004; Lambert *et al.*, 2012). Social cohesion, rooted in social disorganization theory, encompasses interpersonal trust, participation, and a shared sense of belonging (Markowitz *et al.*, 2001). Sampson *et al.* (1997) emphasize that these two elements must co-exist: cohesion reflects the relational glue that binds residents together, while the willingness to intervene captures the community's readiness to translate relational ties into collective action (Sampson, 1997, 2003). In other words, cohesion provides the capacity for coordination, whereas willingness to intervene provides the motivation and orientation toward action, collectively contributing to improved community health outcomes.

This distinction is crucial for understanding community readiness. Community readiness requires not only interpersonal trust and a favourable social climate but also a shared belief that coordinated action is possible, legitimate, and likely to be reciprocated. The willingness-to-intervene component of collective efficacy directly maps onto these action-oriented expectations. Communities high in willingness to intervene demonstrate stronger informal social control, faster mobilization, and greater stability in sustaining prevention or health promotion efforts. On the other hand, cohesion reinforces these processes by enabling the flow of information, strengthening mutual accountability, and building a supportive climate for collective problem-solving.

The purpose of this study is threefold. First, it applies the Community Readiness Model (CRM) to systematically evaluate community readiness for dementia prevention across multiple domains (Plested *et al.*, 1998, 2006), including knowledge of the issue, leadership, existing efforts, community climate, and avail-

able resources. Second, it examines whether collective efficacy, defined as shared social cohesion and perceived capacity for collective action, is associated with greater readiness for dementia-related prevention initiatives. Third, if evidence of spatial clustering emerges, spatial regression techniques will be applied to estimate the magnitude and direction of potential spill-over effects. This analytical strategy enables an assessment of whether enhancements in collective efficacy within a given community may elevate readiness levels in adjacent communities, thereby indicating the likelihood of future diffusion of preparedness.

Materials and Methods

Data source

Between March and June 2021, a mail survey ("Li") was conducted among 3,129 community leaders across 456 communities in 12 administrative districts of Taipei City. The respondents comprised local community leaders, government administrators, and community organization chairpersons. Once the responses were collected, individual data from each community were aggregated into a "Li" dataset for that community, serving as the primary unit of analysis.

Measures

This study utilized a self-developed questionnaire (Table 1) to assess community readiness for dementia prevention. Three experts validated the questionnaire, its factor loadings from Principal Component Analysis (PCA), and the internal reliability as reported in Table 1. The multi-item CRM questionnaire was developed in accordance with the handbook created by the CRM authors (Plested *et al.*, 1998, 2006). To measure collective efficacy in the community, the 10-item scale developed by Sampson *et al.* (1997) was adopted from the Stanford University SPARQ tools website (<https://sparqtools.org/mobility-measure/collective-efficacy-scale/>), and is also included in Table 1. The scale consists of two subscales: willingness to intervene (5 items) and social cohesion (5 items). Respondents rated items on a 5-point Likert scale (1=very unlikely, 5=very likely). Negatively worded items were reverse-coded so that higher scores indicated greater community collective efficacy. Subscale scores were calculated by summing responses, yielding scores ranging from 5 to 25 for each subscale.

Data analysis

Our analysis strategy consists of the following steps. First, Z-scores were calculated for each CRM dimension, and a composite CRM Z-score was computed for use in the regression analysis. Second, willingness to intervene, social cohesion, and relevant demographic variables were regressed against the Z-score of the total community readiness for dementia prevention. The community-level demographic covariates include the percentages of the older population aged 65-84, ≥85 years, population density and community-average income (expressed as a Z-score), calculated from income tax paid per taxpaying unit. The exploratory spatial data analysis using Moran's *I* statistic on the regression residuals was conducted to assess whether spatial autocorrelation is present, thereby justifying the application of a spatial lag model (Darmofal, 2015).

The spatial spill-over effect refers to the phenomenon in which changes in one geographic area affect outcomes in neighbouring

areas. The spatial lag regression model is commonly regarded as a spill-over model, as it relates the value of Y at a given location to the values of Y in adjacent or neighbouring locations through the spatial autoregressive parameter ρ (Anselin & Moreno, 2003). Spatial spill-over arises from the idea that geographic areas are not isolated; events, policies or changes in one area can have ripple effects on neighbouring areas. For instance, an improvement in the infrastructure of one neighbourhood might positively affect surrounding neighbourhoods. Lastly, the spill-over effect is recursive,

meaning changes propagate iteratively across the spatial system.

Statistics

The spatial lag model incorporates a spatial autoregressive structure represented by the following equation:

$$Y = \rho WY + X\beta + \epsilon \quad \text{Eq. 1}$$

where ρ denotes the spatial autoregressive parameter; W a weights

Table 1a. Items, reliability and principal component analysis (PCA) for community readiness model (CRM) dimensions.

CRM dimension		Factor loading	Cronbach's Alpha
Knowledge	Dementia is a contagious disease.	0.86	0.64
	Dementia is a disease that can be cured.	0.86	
Community climate	Community members can allow individuals with mild dementia to work as catering servers.	0.857	0.66
	Community members are willing to volunteer in community dementia care and prevention activities.	0.692	
	Community members are willing to contribute money to support initiatives aimed at preventing and slowing the progression of dementia.	0.768	
Leadership ¹	Community leaders (officials and other respected, influential community members) will participate in initiatives aimed at preventing and slowing the progression of dementia.	0.856	0.82
	Community leaders (officials and other respected, influential community members) will host initiatives to prevent and slow the progression of dementia.	0.876	
	Community leaders (officials and other respected, influential community members) will contribute money to support initiatives aimed at preventing and slowing the progression of dementia.	0.838	
Community knowledge of existing efforts	Overall, I understand the "Community Initiative for Dementia Prevention" promoted by the Health Department	NA ²	
Resources	I can find enough volunteers to promote activities to prevent dementia.	0.857	0.83
	I can get enough government funding to promote activities to support initiatives aimed at preventing and slowing the progression of dementia.	0.692	
	I can obtain enough non-governmental funds (such as clubs, foundations, non-profit organizations, etc.) to support initiatives aimed at preventing and slowing the progression of dementia.	0.768	

¹The answer format is: 1. No one; 2. A few people, 3. Some people, 4. Many people, 5. Almost everyone. ²Given that the measure consists of only a single item, factor analysis and internal consistency reliability assessment cannot be performed.

Table 1b. Items, reliability and principal component analysis (PCA) for the community collective efficacy (CCE).

CRM dimension		Factor loading	Cronbach's Alpha
Willingness to intervene or act	If an elderly person gets lost, community members will assist (for example, by dialing 110 and accompanying them).	0.923	0.89
	Community members will assist if a child is lost/alone (for example, by dialing 110, accompanying them, etc.).	0.897	
	If someone encounters a violent conflict, community members will intervene by contacting the police at 110 or by mediating to de-escalate the situation.	0.905	
	If someone causes a disturbance while intoxicated, community members will intervene, such as by contacting the police at 110 or attempting to reason with the person.	0.934	
	If someone damages the community environment (e.g., stealing public property, graffiti, urination, or littering), community members may intervene by contacting the police by dialing 110 or attempting to dissuade the person.	0.869	
Social cohesion	Community members are willing to help each other.	0.861	0.79
	Community members are closely united with each other.	0.931	
	Community members often do not get along with one another (reverse-coded).	0.670	
	Community members share similar values.	0.655	
	Community members trust each other.	0.906	

matrix expressing the spatial association among each pair of neighbourhoods; X a matrix of exogenous explanatory variables with associated regression coefficients; β, ϵ a vector of normally distributed random error terms. Solving this equation for Y and taking expectations reveals that, in equilibrium, the expected value of Y ($E(Y)$) is:

$$E(Y) = (I - \rho W)^{-1} X\beta \tag{Eq. 2}$$

which reduces to $X\beta$ only when $\rho=0$. The spatial multiplier $(I - \rho W)^{-1}$ quantifies how changes in an explanatory variable in one area recursively influence outcomes in other areas (Baller *et al.*, 2001; Anselin & Moreno, 2003; Gleditsch & Ward, 2008).

Data were analyzed using the ‘spdep’ and ‘spatialreg’ packages in R Studio (Bivand & Piras, 2015) and the ‘spregress’ modules in Stata 17 (StataCorp LLC, TX, USA). Spatial spill-over effects were visualized using line charts, with the Y-axis representing the number of communities and the X-axis the magnitude of the corresponding spill-over values. These visualizations demonstrate how a one-unit change in explanatory variables affects CRM-Z scores, capturing localized neighbourhood impacts and broader equilibrium effects throughout the study area (Gleditsch & Ward, 2008).

Results

Descriptive statistics

A total of 3,129 questionnaires were distributed to local community leaders, 504 of which were returned. After excluding responses with missing values, 447 valid questionnaires were included in the analysis. These valid responses represented 288 communities, covering 63.2% of the 456 communities across 12 districts in Taipei City. Table 1 presents the items, reliability estimates, and principal component analyses for the CRM dimensions and community collective efficacy. The factor loadings for all scales were satisfactory, and Cronbach’s alphas (Nunnally & Bernstein, 1994; Taber, 2018) indicated acceptable internal consistency across the measures (also see Chen *et al.*, 2025). Table 2 reports the coverage rates for each district. No significant differences were found between the communities included in the study and those excluded (Table 3). We mapped the descriptive spatial distributions of social cohesion, willingness to intervene, and community readiness scores across Taipei City, as shown in Figure 1.

Spatial lag model analysis

Ordinary Least Squares (OLS) regression was employed to assess the associations between willingness to intervene, social cohesion, and key sociodemographic covariates and CRM readiness z-scores. The model accounted for 28.2% of the variance ($R^2=0.282$). Using a Queen contiguity weight matrix, Moran’s I for the OLS residuals was 0.2304 ($p \leq 0.001$), indicating significant

Table 2. Study coverage rate in the administrative districts.

Administrative district	Communities (no.)	Communities analyzed (no.)	Coverage rate (%)
Shilin	51	29	56.9%
Datong	25	13	52.0%
Da’an	53	34	64.2%
Zhongshan	42	28	66.7%
Zhongzheng	31	18	58.1%
Neihu	39	29	74.4%
Wenshan	43	28	65.1%
Beitou	42	23	54.8%
Songshan	33	22	66.7%
Xinyi	41	24	58.5%
Nangang	20	14	70.0%
Wanhua	36	26	72.2%
Total	456	288	63.16%

Table 3. Comparison of demographic variables between those included and non-included in the analysis.

	Included (n=288)	Non-included (n=168)	p
Total population	5777 (2061)	5494 (1925)	0.149
Number of elderly population (aged 65-84)	978 (329)	946 (323)	0.309
Proportion of elderly population (aged 65-84)	17.29 (2.79)	17.47 (2.57)	0.502
Community average income (in thousands of NTD)	1047 (307)	1020 (283)	0.364
Land area (thousand square meters)	561 (1204)	626 (1527)	0.613
Population density (people per thousand square meters)	28 (19)	29 (19)	0.528
Whether had a community-based dementia program before (yes or no)	0.14 (0.35)	0.11 (0.31)	0.266

spatial autocorrelation and the need for a spatial lag regression model. The spatial lag regression revealed a statistically significant spatial lag coefficient ($\rho=0.132, p=0.04$). This positive coefficient indicates that higher CRM-Z scores in one community are associated with higher scores in neighbouring communities.

Willingness to intervene was positively associated with CRM-Z scores ($B=0.256, p < 0.0001$), indicating that communities with greater willingness to intervene for community issues are better prepared. Similarly, communities with stronger social cohesion are more ready to tackle dementia-related issues ($B=0.375, p < 0.0001$). The presence of a previously implemented dementia prevention program within the community was also a significant predictor ($B=1.036, p=0.010$), suggesting that prior experience with dementia initiatives is associated with greater institutional knowledge, which in turn is associated with a community's capacity to respond to dementia-related needs, as shown in Table 4.

In contrast, the proportion of residents aged 85 and over was negatively associated with CRM-Z scores ($B=-0.457, p=0.046$), indicating that communities with higher percentages of the oldest-old population demonstrate lower readiness. This highlights a

paradox where communities with a potentially greater need for dementia support services may be less prepared to provide them. Average community income did not predict community readiness levels, suggesting that financial resources alone may not determine a community's capacity to address dementia-related needs. Lastly, population density had a marginally negative effect on CRM-Z scores ($B=-0.011, p=0.107$). While not statistically significant, this trend suggests that more densely populated areas might face greater challenges in fostering community readiness.

Spill-over effects

We further analyzed the spill-over effects for three key factors: willingness to intervene/act, social cohesion, and dementia prevention programs established before the study. Figure 2 visualizes these effects by line charts, with the number of communities on the Y-axis and spill-over magnitude on the X-axis. The visualization highlights the indirect spill-over effect of these three key variables on CRM-Z through broader equilibrium effects across communities. Among the three factors examined, dementia prevention programs established prior to the study showed the largest estimated

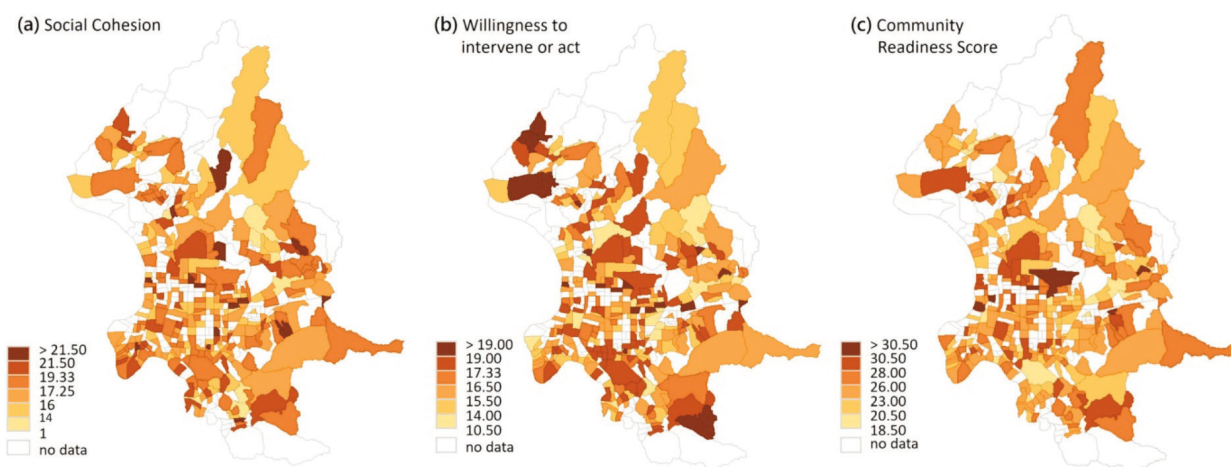


Figure 1. Spatial distributions.

Table 4. Spatial lag regression analysis on community readiness score (CRM-Z) by community collective efficacy and sociodemographic covariates.

Variable	Coefficient	SD	p
Intercept	-12.441	1.544	<0.001
Community collective efficacy			
Willingness to intervene or act	0.256	0.062	<0.0001
Social cohesion	0.375	0.062	<0.0001
Socio-demographic covariates			
Proportion aged 65-84 years	0.108	0.063	0.101
Proportion aged ≥85 years	-0.457	0.214	0.046
Had a dementia prevention program before	1.036	0.402	0.010
Average income (Z-score)	-0.029	0.137	0.831
Population density	-0.011	0.007	0.107
Spatial lag (ρ)	0.132	0.067	0.040

$R^2=0.313$, Breusch-Pagan test for heteroskedasticity random coefficients: $\chi^2 = 12.42, df = 7, p=0.09$.

spill-over coefficient ($B=0.152, p=0.13$). The distribution showed a wide range of estimated magnitudes, with some communities exhibiting higher values. However, this estimate was not statistically significant. Social cohesion showed a smaller positive coefficient ($B=0.055, p=0.08$), with most estimated values clustered at lower magnitudes. Willingness to intervene had the smallest estimated spill-over coefficient ($B=0.038, p=0.10$), and its estimated values were concentrated at lower levels.

Discussion

Using the CRM framework, this study confirmed that collective efficacy is significantly associated with a community’s readiness for dementia prevention initiatives. First, our findings echoed prior research suggesting that social cohesion is associated with greater community-level health awareness, thereby contributing to overall well-being (Chuang *et al.*, 2013; Schiefer & Van der Noll, 2017; Murayama *et al.*, 2018; Qin *et al.*, 2021). In cohesive communities, a strong sense of belonging and mutual trust is associated with greater willingness to support and participate in public health initiatives, including those related to dementia care. This aligns with findings by Kostadinov *et al.*, who suggest that community characteristics, such as socioeconomic conditions, cultural norms, social cohesion, and resource availability, substantially shape a community’s willingness and capacity to mobilize around health-related issues (Kostadinov *et al.*, 2015). Communities with robust social support systems might better coordinate efforts to implement preventive health measures or advocate for policy changes than a fragmented or resource-limited community (Kostadinov *et al.*, 2015).

The positive association between social cohesion and community readiness suggests that strengthening social ties may be a critical strategy for building greater community capacity to respond to dementia-related challenges. Prior research further indicates that interaction and mutual support among members of social networks play an essential role in meeting long-term care needs (Vassilev *et al.*, 2019). Policymakers and community leaders should prioritize

developing social networks that encourage participation and cooperation, as these networks can mobilize resources and sustain long-term dementia prevention efforts. This study also shows that communities with a greater willingness to intervene are better prepared to manage dementia-related issues. This finding supports Sampson *et al.*’s (1997) theoretical framework, which highlights collective efficacy as critical to maintaining public order and addressing communal challenges. Willingness to intervene fosters community responsibility by encouraging individuals to uphold social norms (Sampson, 1985). Rice *et al.* (2016) found that higher levels of collective efficacy were associated with greater confidence in improving the neighbourhood, indicating that when people believe they can effect change, they are more likely to contribute to local development.

Consistent with prior studies, willingness to intervene is fundamental to solving local problems and maintaining order (Jiang *et al.*, 2010; Lambert *et al.*, 2012; Groff, 2015). Its association with CRM-Z scores in this study suggests that when residents feel empowered to act, they are more likely to engage meaningfully with dementia-related issues, whether by checking on elderly neighbours or participating in community initiatives. Such proactive engagement is associated with a more supportive environment in which residents not only recognize the needs of those affected by dementia but also feel confident in helping and organizing collective responses to address them. This approach transforms community members from passive recipients into active stakeholders equipped with the knowledge and confidence to address dementia-related challenges (Minkler, 2005). Policies that foster social ties and promote collective action should thus be prioritized, especially in communities with low cohesion and weak informal social control. This study quantified the extent to which dementia prevention readiness exhibits spillover effects across communities, with some areas showing more pronounced diffusion than others. The analysis also indicates that social cohesion is associated with moderate yet consistent spatial spillover effects, whereas willingness to intervene yields more localized effects. However, neither of these spillover effects reached statistical significance. This evidence highlights how health interventions can generate broader impacts

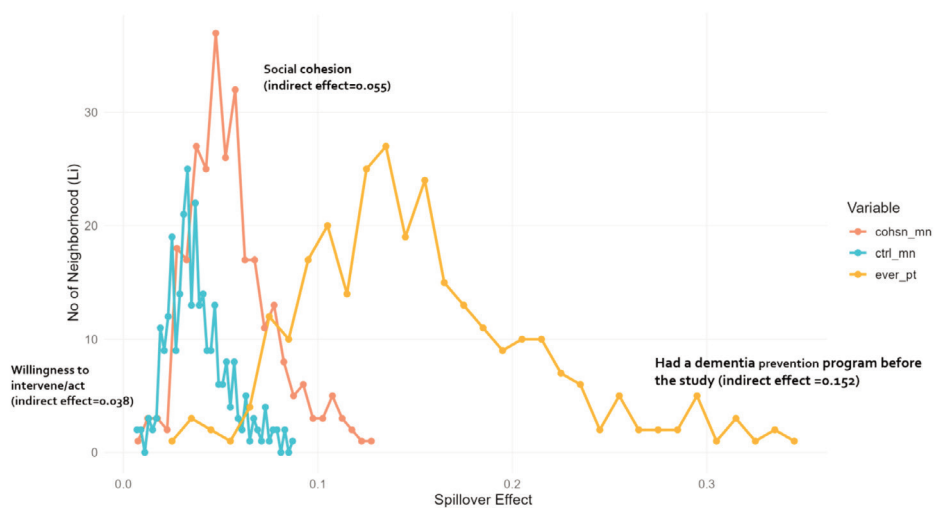


Figure 2. Spill-over patterns.

through spatial networks that extend beyond their immediate implementation sites. It emphasizes the need to broaden traditional program evaluation methods to account for these spatially distributed, far-reaching effects. This approach fills a critical gap in program evaluation literature by providing a methodological framework for assessing community health programs that account for spatial spillover effects. By emphasizing both direct and indirect benefits, it enables a more comprehensive evaluation of public health interventions and informs their design and implementation. In practice, the study's findings suggest that community development programs should prioritize not only the physical infrastructure of dementia care but also the social infrastructure that fosters collective action and mutual support. Community-based interventions are crucial for encouraging residents to collaborate and for mobilizing communities to drive meaningful change. Achieving policy goals requires careful attention to local neighbourhood conditions, such as capacity, readiness, and challenges, that can promote or hinder resident participation in these efforts (Foster-Fishman *et al.*, 2007).

Strengths and limitations

While this study offers valuable insights regarding the critical role of community collective efficacy and the unique characteristics of communities in relation to preparedness for dementia prevention, it has several limitations. The cross-sectional design restricts the ability to establish causal relationships between variables. Future research could address this by employing longitudinal designs to track changes in community readiness and evaluate the long-term effects of social cohesion, collective efficacy, and area-specific strategies on dementia prevention efforts. Additionally, as this study was conducted in Taipei City, the findings may not be fully generalizable to other regions with differing demographic and socio-economic characteristics. Although 447 valid responses were obtained — representing 288 communities and covering 63.16% of the city — the average of 1.56 community leaders per community indicates limited within-community participation, underscoring the need for broader engagement to achieve more comprehensive representation. In addition, the individual-level response rate (approximately 16%) and the variation in the number of respondents across communities may result in unequal precision of community-level estimates, with communities represented by fewer respondents potentially yielding less stable estimates. Expanding the scope to include diverse geographical areas would provide a broader understanding of the factors influencing community readiness for dementia prevention in varied contexts.

Conclusions

Communities with strong social cohesion and proactive efforts to address local challenges are better equipped to design and implement customized intervention strategies. By leveraging their distinctive strengths, these communities are more likely to implement effective, long-term dementia care initiatives.

References

- Adane D, Yeshaneh A, Wassihun B, Gasheneit A, 2021. Level of community readiness for the prevention of covid-19 pandemic and associated factors among residents of Awi Zone, Ethiopia: A community-based cross-sectional study. *Risk Manag Healthc Policy* 14:1509-24.
- Anselin L, Moreno R, 2003. Properties of tests for spatial error components. *Reg Sci Urban Econ* 33:595-618.
- Backhouse A, Ukoumunne OC, Richards DA, McCabe R, Watkins R, Dickens C, 2017. The effectiveness of community-based coordinating interventions in dementia care: A meta-analysis and subgroup analysis of intervention components. *BMC Health Serv Res* 17:717.
- Baller RD, Anselin L, Messner SF, Deane G, Hawkins DF, 2001. Structural covariates of U.S. county homicide rates: Incorporating spatial effects. *Criminology* 39:561-88.
- Bivand R, Piras G, 2015. Comparing implementations of estimation methods for spatial econometrics. *J Stat Softw* 63:1-36.
- Chen DR, Liu PH, Kuo CT, 2025. Cluster analysis of community readiness for dementia prevention in Taipei City. *Taiwan J Public Health* 44:364-80.
- Chuang YC, Chuang KY, Yang TH, 2013. Social cohesion matters in health. *Int J Equity Health* 12:87.
- Cureton JL, Clemens EV, Henninger J, Couch C, 2020. Pre-professional suicide training for counselors: Results of a readiness assessment. *Int J Ment Health Addiction* 18:27-40.
- Darmofal D, 2015. *Spatial analysis for the social sciences*. Cambridge: Cambridge University Press.
- Donnermeyer JF, Plested BA, Edwards RW, Oetting G, Littlethunder L, 1997. Community readiness and prevention programs. *J Community Dev Soc* 28:65-83.
- Gagne MH, Drapeau S, Clement ME, 2020. Community readiness for child maltreatment prevention: The challenge of a brief assessment. *J Prim Prev* 41:299-316.
- Gan DR, Chaudhury H, Mann J, Wister AV, 2022. Dementia-friendly neighborhood and the built environment: A scoping review. *Gerontologist* 62:e340-56.
- Gansefort D, Brand T, Princk C, Zeeb H, 2018. Community readiness for the promotion of physical activity in older adults—A cross-sectional comparison of rural and urban communities. *Int J Environ Res Public Health* 15:453.
- Gleditsch K, Ward MD, 2008. *Spatial regression models*. Thousand Oaks: Sage Publications.
- Groff ER, 2015. Informal social control and crime events. *J Contemp Crim Justice* 31:90-106.
- Hung L, Hudson A, Gregorio M, Jackson L, Mann J, Horne N, Berndt A, Wallsworth C, Wong L, Phinney A, 2021. Creating Dementia-Friendly Communities for Social Inclusion: A Scoping Review. *Gerontol Geriatr Med* 7:23337214 211013596.
- Ickes MJ, Wiggins A, Hahn EJ, 2018. Online readiness assessment for Smoke- and Tobacco-free campus policies. *J Am Coll Health* 66:817-20.
- Islam S, Small N, Bryant M, Bridges S, Hancock N, Dickerson J, 2019. Assessing community readiness for early intervention programmes to promote social and emotional health in children. *Health Expect* 22:575-84.
- Islam S, Small N, Bryant M, Yang T, Cronin de Chavez A, Saville F, Dickerson J, 2019. Addressing obesity in Roma communities: A community readiness approach. *Int J Hum Rights Healthc* 12:79-90.
- Jiang S, Wang J, Lambert E, 2010. Correlates of informal social control in Guangzhou, China neighborhoods. *J Crim Justice* 38:460-9.
- Kelly KJ, Edwards RW, Comello MLG, Plested BA, Thurman PJ, Slater MD, 2003. The Community Readiness Model: A Complementary Approach to Social Marketing. *Mark Theory* 3:411-26.

- Kostadinov I, Daniel M, Stanley L, Gancia A, Cargo M, 2015. A systematic review of community readiness tool applications: Implications for reporting. *Int J Environ Res Public Health* 12:3453-68.
- Lambert EG, Jaishankar K, Jiang S, Pasupuleti S, Bhimarasetty JV, 2012. Correlates of formal and informal social control on crime prevention: An exploratory study among university students, Andhra Pradesh, India. *Asian J Criminol* 7:239-50.
- Markowitz FE, Bellair PE, Liska AE, Liu J, 2001. Extending social disorganization theory: Modeling the relationships between cohesion, disorder, and fear. *Criminology* 39:293-319.
- Millar L, Robertson N, Allender S, Nichols M, Bennett C, Swinburn B, 2013. Increasing community capacity and decreasing prevalence of overweight and obesity in a community based intervention among Australian adolescents. *Prev Med* 56:379-84.
- Ministry of Health and Welfare, 2018. Dementia prevention and care policy and action plan 2.0 (2018-2025). Taipei: Ministry of Health and Welfare. Available from: <https://www.mohw.gov.tw/cp-139-541-2.html>
- Ministry of Health and Welfare, 2024. The results of the epidemiological survey on dementia in Taiwan's communities. Taipei: Ministry of Health and Welfare. Available from: <https://www.mohw.gov.tw/cp-16-78102-1.html>
- Minkler M, 2005. Community organizing and community building for health. New Brunswick: Rutgers University Press.
- Moss RH, Hussain J, Islam S, Small N, Dickerson J, 2023. Applying the community readiness model to identify and address inequity in end-of-life care in South Asian communities. *Palliat Med* 37:567-74.
- Murayama H, Sugiyama M, Inagaki H, Okamura T, Miyamae F, Ura C, Edahiro A, Motokawa K, Awata S, 2018. Is community social capital associated with subjective symptoms of dementia among older people? A cross-sectional study in Japan. *Geriatr Gerontol Int* 18:1537-42.
- Nunnally JC, Bernstein IH, 1994. *Psychometric Theory*. 3rd ed. New York: McGraw-Hill.
- Paul C, Teixeira L, Duarte N, Pires CL, Ribeiro O, 2019. Effects of a community intervention program for dementia on mental health: The importance of secondary caregivers in promoting positive aspects and reducing strain. *Community Mental Health J* 55:296-303.
- Plested BA, Edwards RW, Jumper-Thurman P, 2006. *A Handbook for Successful Change*. Fort Collins: Tri-Ethnic Center for Prevention Research.
- Plested BA, Jumper-Thurman P, Edwards RW, Oetting ER, 1998. Community readiness: A tool for effective community-based prevention. *Prev Res* 5:5-7.
- Qin W, Wang Y, Cho S, 2021. Neighborhood social cohesion, physical disorder, and daily activity limitations among community-dwelling older adults. *Arch Gerontol Geriatr* 93:104295.
- Rice LJ, Hughes B, Briggs V, Delmoo E, Jefferson M, Johnson JC, Halbert CH, 2016. Perceived efficacy and control for neighborhood change: The cross-cutting role of collective efficacy. *J Racial Ethn Health Disparities* 3:667-75. h
- Sampson RJ, 1985. Neighborhood and crime: the structural determinants of personal victimization. *J Res Crime Delinq* 22:7-40.
- Sampson RJ, 2003. The neighborhood context of well-being. *Perspect Biol Med* 46:S53-S64.
- Sampson RJ, Raudenbush SW, Earls F, 1997. Neighborhoods and violent crime: a multilevel study of collective efficacy. *Science* 277:918-24.
- Sanders ML, Stuckenschneider T, Devenney KE, Lawlor B, Schneider S, Olde Rikkert MGM, 2018. Real World Recruiting of Older Subjects with Mild Cognitive Impairment for Exercise Trials: Community Readiness is Pivotal. *J Alzheimers Dis* 62:579-81.
- Schiefer D, Van der Noll J, 2017. The essentials of social cohesion: A literature review. *Soc Indic Res* 132:579-603.
- Shannon K, Bail K, Neville S, 2019. Dementia-friendly community initiatives: An integrative review. *J Clin Nurs* 28:2035-45.
- Silver E, Miller LL, 2004. Sources of informal social control in Chicago neighborhoods. *Criminology* 42:551-84.
- Taber, KS, 2018. The use of Cronbach's alpha when developing and reporting research instruments in science education. *Res Sci Educ* 48:1273-96.
- Vassilev I, Band R, Kennedy A, James E, Rogers A, 2019. The role of collective efficacy in long-term condition management: A metasynthesis. *Health Soc Care Community* 27:e588-603.
- Wu YT, Ali GC, Guerchet M, Prina AM, Chan KY, Prince M, Brayne C, 2018. Prevalence of dementia in mainland China, Hong Kong and Taiwan: An updated systematic review and

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