

Significant Differences in Elderly Health between Urban and Rural Communities: A Literature Review

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Abstract

This study aimed to examine measures pertaining to elderly health in urban versus rural settings, and to identify differences in the health of elderly people living in urban and rural communities through a literature review. An electronic literature search was performed using PubMed for English articles published in peer-reviewed journals up to August 2018, with the following search terms: “urban”, “rural”, “comparison of community”, “elderly health”, and “comparison of community health”. A total of 35 articles were extracted for a critical full-text review, and six articles that met the inclusion criteria were subjected to analysis. Measures related to elderly health in urban and rural communities were classified into the following three categories: functional abilities, health, and health perception. Five of the six articles described functional abilities (e.g., social function) and health (e.g., mental health, depression) as categories with significant differences in elderly health between urban and rural communities. The results suggest that elderly health measures related to social function and mental health or depression are more important outcome measures of effective person-centered integrated community care systems from the perspective of community characteristics. As there were only a few articles reporting on elderly health according to differences in environment between urban and rural communities, further investigation is globally warranted.

Keywords

Aging Society, Elderly Health, Person-Centered Integrated Community Care System, Rural, Urban

1. Introduction

Japan is the world’s fastest super-aging society. In 2015, elderly people aged 65

years and older accounted for 26.6% of the entire population, and this proportion is estimated to increase to 38.0% in 2055 [1]. As other countries in the world are also facing similar social situations, aging is a global concern. While aging is natural for human beings and does not pose issues itself, the increasing need for care associated with aging is problematic. Konishi [2] suggested that a systematic community strategy would need to be developed in order to improve the quality of life (QOL) of elderly people, while recognizing the importance of living a long, healthy life in their own communities until death. It was also recommended that not only QOL but also the quality of death be considered in elderly care [3] [4]. Thus, there is a need to promote continuous care within the community from the perspectives of prevention, medical care, and caregiving.

In Japan, care needs among elderly people are expected to increase as baby boomers (born between 1947 and 1949) reach the age of 75 years or older in 2025. In order to provide uniform community services pertaining to housing, medical treatment, caregiving, prevention (including primary, secondary, and tertiary), and support in daily life across the country, the Japanese Ministry of Health, Labour and Welfare proposed in 2012 that an integrated community care system be established in each community by 2025. The “Draft Act on Amendatory Law to the Related Acts for Securing Comprehensive Medical and Long-Term Care in the Community” was enacted in 2014, in anticipation of social changes in the near future [1]. The government aims to promote the integration of medical care and long-term care in community caregiving services in a way that is tailored to the characteristics of each community. It is suggested that evidence is lacking with regard to the effectiveness of integrated community care [5]. Constructing an integrated community care system in each community would not bring about significant effects, unless it ensures the effectiveness and sustainability of community care services for the residents themselves. To this end, the sense of person-centered care and a better understanding of each residential community must be cultivated.

Kanagawa [6] suggested that “Community” was diverse. In the field of gerontology, community could be conceptualized or studied as a) something that strongly influences older adults’ well-being and QOL, b) an entity that older adults contribute to, or c) a method/methodology in and of itself [7]. Understanding one’s community will help perceive the characteristics of the residents of that community, and this, in turn, will lead to the development of an effective, person-centered, integrated community care system.

The characteristics of a community can be defined according to differences in access to health resources, or connections among people in urban versus rural settings. In urban communities, geographical conditions for accessing social support are more convenient, and although the quantity and quality of social support may be higher, the population size is greater, the population density is higher, and relationships within the community tend to be weaker compared to rural communities [8] [9]. On the other hand, in rural communities, human relationships tend to be more intimate, and informal support from relatives or

neighbors are more prevalent compared to urban communities [8] [10], although formal social support tends to be weaker and resistance against outside help and formal support is more widespread [10]. Furthermore, rural areas have higher population reduction and declining birth rates, larger elderly resident populations, and significantly higher rates of out-migration of younger adults [8] [10]. Thus, there may be some significant differences in elderly health according to differences in environment between urban and rural communities. Thus, it will be important to clarify differences in elderly health between urban and rural communities.

This study aimed to examine measures pertaining to elderly health in urban versus rural settings, and identify differences in elderly health between urban and rural communities through a literature review.

2. Method

In the current study, PubMed was used as a research database, because the academic articles related to medical, health and welfare are able to be widely over-viewed. The process of the articles search by PubMed was showed (Figure 1).

An electronic literature search was performed using PubMed for English articles published in peer-reviewed journals up to August 2018. The following two combinations of search terms were used: 1) “urban” and “rural” and “comparison of community” and “elderly health”; 2) “urban” and “rural” and “comparison of community health”. Identified articles were screened on the basis of title and abstract, and selected articles were subjected to full-text assessment and critical review according to the following inclusion criteria: studies comparing the health of elderly people between urban and rural settings, and those in which participants lived in urban or rural areas and had few disorders. Similar measures of elderly health in urban and rural areas were assessed by collecting corresponding information from each article. These data were then compared in order to identify significant differences in elderly health between the two areas.

3. Result

Six articles that met the inclusion criteria were included in the analysis (Figure 1).

In the combination of search terms: 1) “urban” and “rural” and “comparison of community” and “elderly health”, 30 articles were identified. In another combination of search terms: 2) “urban” and “rural” and “comparison of community health”, five articles were identified. 35 articles were screened. There were no duplicate articles between the 30 articles and the five articles which were identified based on the two combinations of the search key words. Among the 35 identified articles in the electric literature search, 28 articles were excluded after the titles and abstracts were reviewed. Seven articles were selected on the basis of title and abstract and were subjected to a critical review of the full text. One full text article was excluded due to elderly with limited disorders, neurological disorders, as research participants.

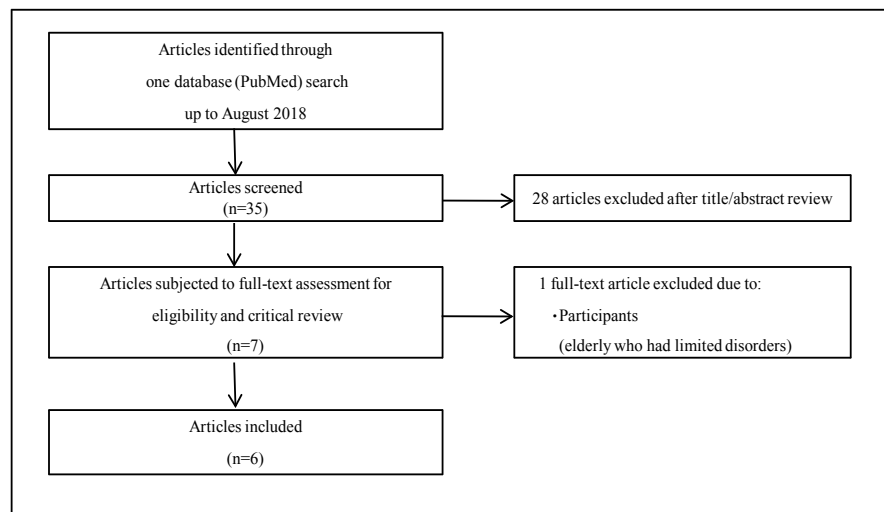


Figure 1. Flowchart of literature search.

Table 1 summarizes data extracted from the six articles. All were reports of quantitative studies conducted in the U.S. ($n = 3$): [11] [12] [13], Taiwan ($n = 2$): [14] [15], and Thailand ($n = 1$): [16]. The four articles [11] [12] [14] [15] were correlation research design with multivariate procedure. The definitions of urban and rural areas in the respective countries were provided in four articles [11] [12] [13] [15]. For instance, “urban” meant the metropolitan statistical area (MSA) or centralized area based on characteristics such as population size or population density, or environmental aspects. Two articles [14] [16] lacked clear definitions for the two types of areas. And then, three articles [12] [13] [15] explained the socio-demographic characteristics of the study in urban and rural such as age, gender, ethnic group, marital status, education, employment, living arrangement, financial, number of relatives feels close to. It was not statistically clear about the difference between urban and rural in one article [13]. The other two articles [12] [15] in common showed the significant different variable between urban and rural; Ethnic group (Race). And then, Friedman *et al.* [12] showed one significant different variable number of relatives feel close to, between urban and rural ($p = 0.022$).

Two articles [13] [14] only included female participants. Four articles [11], [12] [14] [15] targeted elderly participants aged 65 years and older, and two articles [13] [16] targeted those aged 60 years and older. The number of participants ranged from 72 (39 urban and 33 rural) to 1005 (678 urban and 327 rural). The 10 main instruments used to assess health status in the six articles were as follows: 20-item Short-Form Health Survey (SF-20), Social Class Scale, Perceived Health Scale (PHS), Exercise of Self-Care Agency Scale (ESCAS), Positive Affect Scale (PAS), Geriatric Depression Scale (GDS), Functional Disability in ADL Activities, Health Promoting Lifestyle Profile II (HPLP-II), World Health Organization Quality of Life Questionnaire (WHOQOL-BREF), and General Health Questionnaire (GHQ-28).

Table 1. Overview of data extracted from analyzed articles.

Reference	Aim	Research design	Definitions of "urban" and "rural"	Participants	Health assessment scales	Results regarding differences in elderly health between urban and rural areas
Mainous A. <i>et al.</i> , 1995	To examine and compare functional health status between rural and urban adults.	Correlation research with multiple regression analysis.	<ul style="list-style-type: none"> Rural: Town of < 2500 people based on respondents' self report of living in Kentucky, USA. (Rural area is also recognized as a part of the non-metropolitan statistical area (MSA)). Urban: Town of \geq 2500 people in the MSA and non-MSA of Kentucky, USA. 	<ul style="list-style-type: none"> 662 residents (age \geq 18 years): 406 urban and 256 rural residents. Elderly people aged \geq 65 years among the 662 participants: 47 in MSA and 79 in non-MSA. 	<ul style="list-style-type: none"> 20-item Short-Form Health Survey (SF-20). Six health concepts: a) physical functioning; b) role functioning; c) social functioning; d) general mental health; e) general health perceptions; and f) pain. 	<ul style="list-style-type: none"> MSA residents aged \geq 65 years had significantly better functioning on five health status measures compared to non-MSA residents: Physical ($p = 0.0009$), Role ($= 0.01$), Social ($p = 0.02$), Mental Health ($p = 0.01$), and Health Perception ($p = 0.007$).
Wang H. <i>et al.</i> , 2004	To examine relationships among age, social class, perceived health, self-care, and well-being in urban and rural elderly women and to validate and compare two models using these two groups.	Correlation research with path analysis.	<ul style="list-style-type: none"> No clear description (except for names of the locations: Urban area/Kaohsiung City in southern Taiwan; Rural area/Pintung County in southern Taiwan). 	<ul style="list-style-type: none"> 351 elderly women (age \geq 65 years); 159 in urban areas and 192 in rural areas. 	<ul style="list-style-type: none"> Four instruments: Social Class Scale, Perceived Health Scale (PHS), Chinese version of the Exercise of Self-Care Agency Scale (ESCAS), and Positive Affect Scale (PAS). 	<ul style="list-style-type: none"> Age was negatively associated with self-care in rural elderly women. Social class was positively associated with perceived health and self-care in urban areas. Social class was positively associated with self-care and well-being in rural areas. Perceived health was positively associated with self-care and well-being in urban and rural areas. Self-care was positively associated with well-being in urban and rural areas. The two models fit the data well.
Chiu H. <i>et al.</i> , 2005	To examine associations between depression, chronic medical conditions, and functional disability among older Taiwanese, and rural/urban differences.	Correlation research with multiple logistic regression analysis.	<ul style="list-style-type: none"> Urban: Kaohsiung City, one of the metropolitan areas in Taiwan. Rural: San-Lin town, has typical characteristics of a rural area in Taiwan (<i>i.e.</i>, residents mainly employed in farming work, relatively low education levels, and higher proportion of elderly). 	<ul style="list-style-type: none"> 1005 elderly people (age \geq 65 years); 678 in urban areas and 327 in rural areas. 	<ul style="list-style-type: none"> Depressive symptoms: The Chinese-version Geriatric Depression Scale (GDS) Sociodemographic characteristics: Age, Ethnicity, Gender, Education, Marital Status, and Urban or Rural Residence Chronic Medical Conditions: 'Have you ever been told by a doctor, nurse, therapist or medical assistant that you had (specific chronic condition)? Functional disability: Self-reporting capacity in ADL activities, including physical activities of daily living (PADL) and instrumental activities of daily living (IADL). 	<ul style="list-style-type: none"> Depressive symptoms showed significant differences between urban and rural populations. Depression was significantly associated with age, female gender, having no spouse, living in an urban area, lower education, and living alone ($p < 0.001$). In the urban sample model, the existence of chronic disease and inability to perform PADL and IADL were consistently found to be predictors of depressive disorders. Living alone (odds ratio [OR] = 2.14) was associated with a higher risk of depression, while higher education level (OR=0.34) was associated with a lower risk. In the rural model, widowhood and PADL/IADL disability were significantly associated with a higher risk of depressive disorders. In the urban sample model, one socioeconomic factor (living alone); two chronic medical conditions (cardiovascular disease and hip fracture); and limitations in toileting, shopping, housework, and handling finances were found to be predictors of depressive disorders. Hip fracture (OR = 3.55) was associated with the highest risk of depression, followed by toileting (OR = 3.10) and shopping independence (OR = 2.91).

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Friedman B. <i>et al.</i> , 2007	To determine whether factors associated with depression differ between elderly residents of rural and urban areas.	Cross-sectional observational study with multiple logistic regression analysis.	<ul style="list-style-type: none"> Urban: MSA Rural: Non-MSA (Based on the U.S. Office of Management and Budget) 	<ul style="list-style-type: none"> 926 elderly people (age ≥ 65 years); 650 in urban areas and 276 in rural areas. 	<ul style="list-style-type: none"> Sociodemographic characteristics: age, gender, education, annual household income, financial strain, and site. Social support: marital status, living arrangement, number of friends, and number of relatives. Supplemental health insurance Prior health services use Health status: self-related health status, number of 13 chronic conditions, SF-36 Physical Component Summary (PCS) score, anxiety, body mass index (BMI), number of ADL dependencies, number of IADL dependencies 	<ul style="list-style-type: none"> In the rural sample, widowed elders, stroke history, and problems with toileting and shopping were significantly associated with a higher risk of depressive disorders. For rural elderly with a stroke history, there was a 7.39 increase in likelihood of suffering from depression. Major depression (SF-36 PCS score >30) significantly differed between urban and rural areas (p = 0.007); urban elderly had major depression significantly more often than rural elderly. For urban elderly, major depression was associated with dependence in five or six ADLs (OR: 2.33) and in three or more instrumental ADLs (OR: 8.85). Having very few close friends (OR: 6.86, 95% confidence interval [CI]: 2.18 - 21.58), 2+ emergency room visits in the past 6 months (OR: 4.00, 95% CI: 1.19 - 13.43), and more financial strain (OR: 1.50, 95% CI: 1.01 - 2.23) were associated with a significantly higher likelihood of major depression in rural areas as compared with urban areas.
Lee C. <i>et al.</i> , 2009	To identify and compare Health Promotion Behaviors (HPBs) of older rural and urban community-dwelling female spousal caregivers.	Exploratory, descriptive survey design.	<ul style="list-style-type: none"> Urban: Centralized area with a population density of 1000 per square mile and at least 10,000 total. Rural: Outside the urbanized cluster or areas with rural status designation. 	<ul style="list-style-type: none"> 72 female elderly people (age ≥60 years) who are provided with care for at least 6 months at home; 39 in urban areas and 33 in rural areas. 	<ul style="list-style-type: none"> HPLP-II: 52 health-related behaviors and six subscales; health responsibility, nutrition, physical activity, spiritual growth, interpersonal relations, and stress management. PI-developed questionnaire: demographics, caregiving responsibilities, length of time in caregiving role, and amount of personal time. 	<ul style="list-style-type: none"> No significant differences existed in mean scores of the six subscales and overall HPLP-II between rural and urban sample populations.
Apidechkul T., 2011	To assess quality of life and mental and physical health among people aged 60 years and over in urban and rural areas of northern Thailand.	Cross-sectional study.	<p>(Not written clearly)</p> <ul style="list-style-type: none"> Urban: 11 villages in the Pa Kaw Dum sub-district, and the Mae Lao district were used as suburban areas. 	<ul style="list-style-type: none"> 225 elderly people (age ≥ 60 years); 116 in urban areas and 109 in rural areas. 	<ul style="list-style-type: none"> WHOQOL-BREF-THA I: 26 questions/ physical health, mental health, social relationships, and environment health. 	<ul style="list-style-type: none"> Subjects who lived in suburban areas had a higher quality of life than those who lived in rural areas in terms of physical health (p = 0.011), mental health (p = 0.025), and social relationships (p = 0.012).

Continued

- Rural: Seven villages in the Pa Tung sub-district, and the Mae Chan district were used as rural areas.
- Thai GHQ-28: 28 questions/somatic symptoms, anxiety and insomnia, social dysfunction, and depression.
- The difference in social relationships ($p = 0.011$) was significant among females.
- Social dysfunction showed a significant difference between rural and suburban areas ($p < 0.001$).
- Social dysfunction showed a significant difference between males in rural areas and those in suburban areas ($p < 0.001$).
- Social relationships showed a significant difference between males in rural areas and those in suburban areas ($p = 0.008$).

Measures pertaining to elderly health in urban and rural communities described in the six articles were classified into the following three categories: functional abilities, health, and health perception. Five [11] [12] [14] [15] [16] of the six articles noted significant differences in elderly health in terms of functional abilities, health, or health perception between urban and rural communities, whereas one article [13] found no significant difference in the above three categories.

3.1. Functional Abilities

Functional abilities included the following three elements: social function, physical function, and role function in daily life. Three articles [11] [14] [16] noted significant differences in social function between urban and rural communities. Mainous *et al.* [11] reported that urban residents aged ≥ 65 years had better social functioning compared to their rural counterparts ($p = 0.02$), and Wang *et al.* [14] reported that social class was positively associated with perceived health and self-care in urban areas. Apidechkul [16] reported that social dysfunction significantly differed between rural and suburban areas ($p < 0.001$), and that social relationships in urban areas were higher than those in rural areas ($p = 0.012$). Moreover, Friedman *et al.* [12] found that the social aspect (e.g., social relationships, having very few close friends) was a significant factor associated with mental health or depression when comparing urban versus rural communities. For instance, having very few close friends (odds ratio [OR]: 6.86; 95% confidence interval [CI]: 2.18 - 21.58) was associated with a significantly higher likelihood of major depression in rural areas compared to urban areas. The other two elements, physical function ($p = 0.0009$) and role function in daily life ($p = 0.02$), were reported to be significantly better in urban areas compared to rural areas in one article [11].

3.2. Health

The health category included the following two elements: mental health or depression and physical health. Four articles [11] [12] [15] [16] noted significant differences for mental health or depression. Among those, two articles [11] [16] found that mental health or depression in elderly people was significantly better

in urban areas than in rural areas. The other two articles [12] [15] reported that mental health or depression in elderly people significantly differed between urban and rural areas. Chiu *et al.* [15] showed significant differences between urban and rural populations ($p = 0.005$), and depression was significantly associated with living urban area (odds ratio [OR]: 0.59; 95% confidence interval [CI]: 0.40 - 0.85). Friedman *et al.* [12] found a significant difference in the incidence of major depression between urban and rural areas ($p = 0.007$), with those living in urban areas being significantly more prone to major depression.

Two articles [11] [16] noted significant differences between urban and rural settings for physical health. One article [11] found that physical health differed significantly ($p = 0.0009$) according to the SF-20 subscale, and another article [16] found that physical health in urban areas was higher compared to rural areas ($p = 0.011$).

3.3. Health Perception

Two articles [11] [14] reported on health perception with a focus on urban and rural settings. Mainous *et al.* [11] found a significant difference ($p = 0.007$) between urban and rural communities, and Wang *et al.* [14] showed a positive association between perceived health and self-care and well-being in urban and rural communities.

4. Discussion

The population composition in Japan continues to change with the increasing elderly population and decreasing birth rates. Under such social circumstances, the characteristics of a community will continue to change; like humans, the community is alive.

The Japanese government is currently promoting the construction of integrated community care systems tailored to the characteristics of each residential community by 2025. “Community” is diverse [6], and while it has been suggested to strongly influence older adults’ well-being and QOL [7], the definition of “community” in a research setting is still unclear. Therefore, the present study used “urban” and “rural” settings as characteristics of residential communities according to the literature [8] [9] [10]. And then, through a literature review of six studies including the four articles [11] [12] [14] [15] of the correlation research design with multivariate procedure, was carried out, and significant differences identified in elderly health between urban and rural communities were classified into three categories (functional abilities, health, and health perception). Five [11] [12] [14] [15] [16] of the six studies identified significant differences in elderly health relating to functional abilities and health.

Among functional abilities, social function was described in five articles [11] [12] [13] [14] [16]. In one article [16], the social aspect (e.g., social relationships, having very few close friends) was a significant factor associated with mental health or depression when comparing urban and rural areas. In particular, hav-

ing very few close friends was associated with a significantly higher likelihood of major depression among rural residents compared to urban residents. It is suggested that the important issues might be what the whole community (ie, urban or rural) understands about the life of the people, rather than the views of the actual communities that the people live in [17]. The findings in the current study suggest that social function might be a more important outcome measure of elderly health, particularly regarding mental health or depression, when considering outcome measures for effective integrated community care that takes into account the characteristics of each community.

In the health category, mental health was described in five articles [11] [12] [13] [15] [16]. Among these, four articles [11] [12] [15] [16] reported that mental health or depression in elderly people significantly differed between urban and rural communities. However, the results regarding the mental state of elderly people in urban versus rural communities were not consistent among these articles; two articles [11] [16] reported that urban elderly people had better mental health compared to rural elderly people, whereas other two articles [12] [15] found mental health in rural elderly people to be better. Thus, whether a significant difference exists in elderly mental health between urban and rural communities remains unclear. Yet, mental health or depression might be a more important measure of elderly health in effective integrated community care based on community characteristics.

Overall, the definitions of urban and rural areas in the respective countries seemed not to be enough provided. And then, through a literature review, the present study revealed that significant differences between urban and rural communities relate to aspects of social function and mental health or depression, although only a few studies reported on elderly health from the perspective of differences in environment between urban and rural communities. One article [16] showed that urban elderly people had higher QOL compared to their rural counterparts, in terms of mental health and social function. When developing an effective person-centered integrated community care system that aims to promote the QOL of residents while taking into consideration the characteristics of each community (*i.e.*, urban or rural), it will be important to recognize social aspects as well as mental health or depression as more important outcome measures. In addition to it, on this article, Chiu *et al.* [15] showed that depression was significantly associated with living urban area. One possibility is that the residential community itself such as urban and rural may be one of the factors influencing the mental health or depression.

In order to carry out further studies regarding effective integrated community elderly care that considers community characteristics in the future, the definition of the characteristics of community (e.g., urban and rural) in research settings should be clarified. And then, further studies will be needed that focus on not only elderly health but also the environmental aspects surrounding community residents (urban/rural) with intervention research design, in order to explore outcome measures for effective person-centered integrated community

care systems. In addition, it will be more important to pile the research data globally and perform a meta-analysis.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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