

Review

Addressing Health and Well-being of U.S. Chinese Older Adults through Community-Based Participatory Research: Introduction to the PINE Study

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Abstract: The Chinese older population in the U.S. is among the largest and fastest growing segment of the aging population; however, little is known regarding their health and well-being due to various research barriers. To fill in the critical void, the Population-based Study of Chinese Elderly in Chicago (the PINE study) was carried out as an epidemiological study of health and well-being amongst 3,157 community-dwelling Chinese older adults aged 60 years and older in the Greater Chicago Area. Based on the PINE study findings, this special issue is designed to examine the health status, medical conditions, and social and psychological well-being of Chinese American older adults. This editorial described the rationale of the study, methods and design, and preliminary findings. Important study implications for researchers and policy makers were also reported. In aggregate, coordinated family and community care, improved delivery of care, practice changes, and policy reform are necessary to work in concert to prepare for the diverse minority older adults who are in urgent need of the linguistically and culturally appropriate social services.

Keywords: Aging population; minority health; population-based studies

1. Introduction

This special issue is designed to advance our existing knowledge on the health status and well-being of U.S. Chinese older adults using findings from the PINE Study—the Population Study of Chinese Elderly in Chicago (松年研究, *sōng nián yán jiū*). Culturally speaking, the image of ‘pine’ (松 *sōng*) in Chinese community represents longevity, resilience, respect, and successful aging. The

PINE study is a population-based epidemiological study of 3,157 community-dwelling Chinese older adults aged 60 years and older in the Greater Chicago Area, with in-person interview data collected between July 2011 to June 2013 [1]. The study assessed many critical health indicators that are closely intertwined with Chinese older adults' cultural perception of health, aging, and help-seeking behaviors. To our knowledge, the PINE study is the largest epidemiological study of Chinese American older adults with the primary aims to examine the well-being of Chinese older adults [2,3].

The Chinese American community is the oldest and largest Asian population in the U.S. Currently, it is also amongst the fastest growing segments of older adults in the country [4]. However, setting practical public health objectives to address their needs remain challenging for a myriad of reasons. First, Chinese Americans have endured harsh racial discrimination. The Chinese Exclusion Act of 1882 outlawed all Chinese immigration to the U.S. and denied citizenship to those already settled in the U.S., making Chinese immigrants the first group to be legally barred from becoming naturalized citizens in the U.S. Although the Exclusion Act was repealed in 1943, racial tension has intensified Distrust of the Chinese community, especially among older generations. Therefore, participation rate in federal-sponsored research activities had remained low. Second, there exists great levels of diversity among Chinese population in the U.S. including cultural and linguistic differences. The term 'Chinese American' not only includes immigrants from Mainland China, Hong Kong, Macau, Taiwan, and their descendants, but also immigrants and descendants of overseas Chinese people who migrated to North America from places as diverse as Southeast Asia, Latin America, and Caribbean Countries. These diverse experiences have significantly shaped the life experiences and health needs of diverse U.S. Chinese immigrants [5,6].

In the U.S., there are an estimated 4 million Chinese, of which Chicago has one of the largest Chinese communities [7]. Limited health data suggest that U.S. Chinese populations have experienced growing health disparities in preventable disease, disabilities, as well as psychological and social distress, compared with their non-minority counterparts [8]. In addition, losing contact from their native support network may resulted in increased migratory distress [9,10], rendering this group of immigrants even more vulnerable to mental health disparities [11]. National data has suggested that older Chinese American women exhibited suicide rates 10 times higher than their white counterparts [12]. However, due to the lack of community-level sensitive data, we have a limited understanding of the pathways that may predispose Chinese older adults to greater health inequalities [13].

Consequently, in order to fill in the knowledge void, the PINE study is an academic-community collective response to the call for action. In order to conduct a population—based study representative of Chinese aging population in the greater Chicago area, we used novel strategies in its study design, recruitment procedures, field implementation, and culturally and linguistically appropriate measures.

2. Community-Based Participatory Research Approach

The PINE study is a population-based epidemiological study of the health and well-being of Chinese older adults aged 60 and over in the greater Chicago area, guided by a community-based participatory research (CBPR) design. The research team was composed of a synergistic collaboration between academic partners (Rush University Medical Center and Northwestern University) and over twenty community-based organizations and social services agencies in the

Greater Chicago area. Community-engaged research has been proven to be a paradigm shift for increasing the relevance of epidemiology studies. In addition, it is now institutionalized by the National Institutes of Health as a priority emphasis in translational research [14]. Aiming to collect a representative population sample of Chinese older adults in the Greater Chicago Area, the academic-community partnership jointly developed up-to-date scientific strategies to increase resource efficiency, cost-effectiveness, and maximize community and family outreach. Out of 3,542 eligible participants who were approached, 3,157 agreed to participate in the study, yielding a response rate of 91.9 %. The study is currently in its second wave of data collection.

3. Study Findings

This special issue is comprised of articles detailing Chinese American older adults' health status measured using different health and aging indicators, with particular emphasis on medical conditions, psychological well-being, and social well-being.

4. Medical Conditions

As one of the fastest growing subpopulation, the health status of Chinese elderly community in the U.S. remains poorly understood. As 87% Chinese older adults are foreign-born, they experience pronounced medical conditions accompanied by vastly different cultural and linguistic barriers. In our investigation, medical conditions were common among U.S. Chinese older adults in the domains of musculoskeletal and neurological symptoms [15,16]. Our results suggest that 67% of Chinese older adults reported musculoskeletal symptoms; muscle or joint pain (55.3%) and back pain (34.5%) were the most prevalent types of symptoms. Regarding demographic factors, being female ($r = 0.18$), having lower education ($r = 0.15$), and residing fewer years in their current community ($r = 0.05$) were significantly correlated with musculoskeletal symptoms. In terms of self-reported health status, having a lower overall health status ($r = 0.22$) and having a lower quality of life ($r = 0.08$) were also significantly correlated with reporting musculoskeletal symptoms. For neurological symptoms, 50.6% of study participants reported at least one symptom. Symptoms as dizziness (31.0%), numbness (19.0%), and falls (14.8%) were commonly reported.

5. Psychological Well-Being

Social isolation, stressful life events, recency of immigration, poor perceived health, and dissatisfaction with family are among the unique psychosocial stressors concerning older Asian Americans. Our study demonstrated that Chinese older adults exhibited relatively lower levels of self-mastery; "Sometimes I feel that I am being pushed around in life" was the most commonly endorsed statement (87.5%) [17]. With respect to other loss of control situations, 74.4% disagreed with feeling helpless in dealing with life problems; 62.8% disagreed with feeling there was no way to solve some of problems in their lives. Our findings call for further investigations into the development of self-mastery while taking into consideration aging processes and immigration experiences. In addition, with respect to perceived stress in life, 74% of PINE participants have felt some level of stress in their daily lives [18]. However, the levels of stress differed significantly across age and gender; participants with older age and female gender were more likely to experience perceived

stress.

Similarly, we also found that female gender was correlated with higher levels of depressive symptoms among this population [19]. Depressive symptoms were more prevalent in U.S. Chinese older women (59.2%) than in older men (48.5%). Older women were more likely to present somatic depressive symptoms and to develop moderate to severe depressive symptoms. In light of self-reported health, poorer health status ($r = 0.34, p < 0.001$), inferior quality of life ($r = 0.17, p < 0.001$) and worsening health changes over the past year ($r = 0.23, p < 0.001$) were positively correlated with any depressive symptom in older women.

6. Social Well-Being

Despite the perception that grand-parenting is a rewarding experience for many Chinese older adults, our findings suggest that it is sometimes a taxing experience for older adults in our study cohort [20]. Grand parenting burden, measured by a four-question scale, is experienced by one in five (22%) study participants with grandchildren. For the item “Felt it is a burden to take care of grandparents”, 14.8% of the participants reported ‘little’ or ‘sometimes’; and 4.3% reported “often” or “always”. Chinese older adults were more likely to experience grand-parenting burden if they were younger, lived with more people, were born in China, had a poorer overall health status, a poorer quality of life, and spent more time caring for grandchildren. On the other hand, among our study participants who are grandparents, nearly 65% did not spend any time caring for children, which is significantly more than a study among Chinese older adults in China has reported.

Contrary to conventional wisdom, elder mistreatment is an alarming issue in the Chinese community [21]. Our findings suggest that when assessing elder mistreatment using a 56-item self-reported measure, the socio-demographic characteristics associated with elder mistreatment differed by subtypes of mistreatment and by the operational definition used. Compared to the non-mistreatment group, older adults who had experienced psychological mistreatment were more likely to be higher educated, with poor overall health status, with lower quality of life, and with worsening health over the past year, regardless of the operational definition used. However, differences in other socio-demographic characteristics, including age, sex, marital status, number of children, living arrangement, years in the U.S., years in the community, and country of origin, were inconsistent between the elder mistreatment group and the non-mistreatment group through using various definitions. Therefore, prevention and intervention programs on elder mistreatment should be geared towards specific types of mistreatment [22–25]. Studies on elder mistreatment should conduct a thorough analysis to justify the operational definition used.

For the sense of community and perception toward the neighborhoods, our results suggest that Chinese older adults in this study sample reported a strong sense of community [26]. In total, 86.7% of the participants reported satisfaction with the current neighborhood, and 78.4% expressed their desire to continue living in the community as long as possible. In addition, older age ($r = 0.11$), being female ($r = 0.08$), having higher levels of income ($r = 0.08$), being unmarried ($r = -0.06$), living with fewer people ($r = -0.22$), having more children ($r = 0.11$), were significantly correlated with higher levels of the sense of community. Regarding immigration information, having been in the U.S. for more years ($r = 0.12$), longer residency in the community ($r = 0.15$) were also correlated with higher levels of the sense of community.

With respect to personality traits—important indicators of health and well-being, the

conscientiousness trait was endorsed higher among Chinese older adults in our sample compared to neuroticism [27]. Each conscientiousness item had at least 67.8% of participant endorsement, in comparison to the lowest endorsement rate of 14.3% in the neuroticism measure. Younger age (r -neuroticism = -0.06 , r -conscientiousness = -0.14) and fewer children (r -neuroticism = -0.06 , r -conscientiousness = -0.06 ,) were correlated with both traits. Future analysis should be conducted to explore the complex associations between different personality traits among Chinese aging population, as well as adverse health outcomes associated with specific personality traits among minority older adults.

Last, our findings also shed light on gambling participation and problems among U.S. Chinese older adults [28]; 14.8% of the older adults had engaged in gambling in the past twelve months and 65 (2.0%) had experienced any gambling related problems. Visiting a casino was the most commonly reported type of gambling whereas betting on Mahjong was the most frequent form of gambling activity. Being male, having lower educational levels, having higher income levels, having more children, living in the U.S. for longer periods of time, living in the community for longer periods of time, better health status, lower quality of life, and improved health over the past year were significantly correlated with participating in gambling in the past twelve months. Younger age, being male, and living with more people were correlated with experiencing any gambling related problems.

7. Research Implications

Findings from the PINE study indicate that Chinese older adults in the Greater Chicago Area are confronted with a myriad of health challenges due to multiple social, structural, cultural and linguistic barriers, as discussed throughout this special issue. In aggregate, these health challenges ranged from medical conditions, social well-being, to psychological well-being. Nevertheless, we believe that these health issues also represent tremendous opportunities for families, communities, researchers and healthcare professionals to further improve upon these priority areas. We call for an in-depth multidisciplinary research agenda to shed light on the biological, behavioral, social, and cultural factors that may predispose Chinese older adults to these health burdens. Longitudinal studies are further called for in order to design culturally and linguistically appropriate prevention and intervention studies. The prospective studies examining how the health status of these older adults changes over time will be critical to better understand the risk and protective factors associated with health conditions among U.S. Chinese older adults [29].

8. Building on Community Strengths to Address Older Adults' Health Needs

Utilizing the CBPR approach in implementing the PINE study has empowered Chinese older adults in many ways. First of all, it helped deepened their trust in federally funded research projects [14]. Benefits of this community-academic collaboration extend to increased interactions between the Chinese community and academic institutions, health care professionals, aging networks, and other community organizations [30]. Second, increased community participation not only improves the quality of data collected, but the invested interests stemming from the partnership further increases the practical relevance of epidemiological research. Last but not least, a multidisciplinary team composed of experts in health clinical practitioners, biomedicine, pathology and epidemiology is needed to further understand aging and prevalence of common medical conditions in order to

elucidate possible risk factors and causation.

9. Empowering Chinese Older Adults through Prevention and Intervention Initiatives

There is a growing knowledge gap in our understanding about the evidence-based prevention and interventions strategies among U.S. Chinese older adults. Areas in preventive health and psychosocial well-being are especially under-developed. In addition, there is a growing consensus that cultural sensitivity represents more than matching languages and geographic locations preferred by the targeted community [31]. While most epidemiological studies depend heavily on surveys for quantitative data, the instruments are typically developed under the direction of academic researchers with limited community collaboration. However, in the case of Chinese older adults, it may be challenging to document and evaluate how the research questions de facto documents the health and well-being needs of the community. Due to the importance of capturing cultural and linguistic complexity, we summoned a culturally and linguistically diverse Community Advisory Board (CAB) to help refine the scope of the project, study operations, recruitment strategies, and identify dissemination and educational initiatives [32]. Through conducting the PINE study, the research team has learned the critical importance of disease prevention and early intervention specifically tailored toward older adults [33]. The research team is currently piloting a patient navigator program with the goal to improve breast and cervical screening rates among Chinese women, as well as a suicide intervention program to promote mental health in light of the high suicidal rates amongst Chinese older adults [34,35]. This comprehensive, community-based intervention developed between established community organizations and providers have been proven to be effective in other racial/ethnic groups.

10. Cultural Humility in Sustaining Academic-Community Partnerships

With the acknowledgment of the inherent power imbalance between researchers and the disadvantaged minority older women [36]; we have gathered that a humble approach towards academic-community partnership in examining culturally and socially sensitive issues is of particular significance. Cultural humility is an ongoing process that requires researchers to enter into engaging conversations with older adults, communities, colleagues and themselves [37]. Whereas health research was traditionally set in the community without the community's active engagement in formulating research plans, the lack of cultural insights and sensitivity in approaching a community often renders research results inapplicable to health care services. Furthermore, the community is left without infrastructure to address its own needs. The humble exchange of knowledge and experiences deepens trust among community partners, researchers, and study participants from the outset in order to address the social and behavioral health of older adults. A commitment to mutual learning will enable academic and community partners to better explore, comprehend and appreciate each other's standpoint.

11. Calling for National and International Studies on Chinese Health and Aging Issues

Our study findings present implication for future national and international studies on the crucial health and aging issues facing diverse Chinese population. In particular, given the critical role

of the family support in Chinese culture, understanding intergenerational perspectives regarding filial piety cultural values will be imperative [38]. Future research should extend to assessing caregiving experiences and viewpoints of adult children and key family members [39,40]. Due to the vast diversity within the global Chinese population, we need national and international studies on diverse Chinese populations in order to provide in-depth information useful for generating meaningful comparative analyses. Furthermore, our study findings demonstrate that self-reported health status, quality of life, are often related to family relationships indicating that research should focus on the psychological, physical, and social effects of migration in global Chinese populations.

12. Policy Implications

Our study findings suggest that health burdens exist in public health issues such as elder mistreatment, preventive health use, and psychological distress—all of which require comprehensive advocacy and policy legislation efforts at the local community, city, state, and federal levels. A major gap in the field of health inequalities identified through our CBPR research project is in the realm of public policy. We need to work with policy makers on relevant national policies (e.g., Older Americans Act, Elder Justice Act, Violence Against Women Act, among others) to ensure that linguistically and culturally appropriate services are provided to protect vulnerable older adults [41]. The Older Americans Act of 1965 was designed to improve the independence of older adults. It included many specific provisions to address the well-being of older adults, including minority populations. However, the act has not been reauthorized since 2011. Its reauthorization should be a policy priority to ensure the health, security, and well-being of older adults. In addition, the Elder Justice Act may be a potential opportunity to address racial/ethnic inequalities in health and aging, as it is responsible for sponsoring and supporting training, services, reporting, and the evaluation of elder justice programs in community and long-term care settings. The full appropriation of the Elder Justice Act is critically needed due to the major gaps in funding, policy, research, education, and training in dealing with health inequalities. Lastly, the Violence Against Women Act is one of the most pertinent programs to the well-being of victimized women. This Act authorizes the attorney general to formulate grants in order to enhance training and services to end violence against women.

13. Conclusion

Despite a growing demand for CBPR studies, there exists limited empirical work on how to conduct community-based, action-oriented research with Chinese older women in the U.S. Through the PINE study, we have learned ways in which to empower minority older adults with a humble approach. Concerted family and community care, improved delivery of care, practice changes, and policy reform is needed to better prepare for the diverse minority older adults in dire need of culturally and linguistically appropriate health and social services.

Conflict of Interest

Author reported no conflict of interest.

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