論　文　概　要 (Thesis Abstract)

○論 文 題 目

Associations between Physical activity,
Social interaction, and Cognitive impairment
among elderly individuals in China
（中国の高齢者における自発的な身体活動及び社会との
関わりと認知機能の関連研究）

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Back ground

China is facing a rigorously aging society. The Chinese government has improved its pension and health care system (Jiang, et al., 2016; Li & Otani, 2017), but it is remains insufficient for the elderly afflicted with cognitive impairment. Meanwhile, there is a lack in effective treatments and poor awareness for cognitive impairment in China (Alzheimer's Association, 2010; Chen, et al., 2017; Dai, et al., 2013). Due to these conditions, the prevention of cognitive impairment has become of paramount importance. An increasing number of researchers have been focusing on ways that physical activities and social interactions can prevent cognitive impairment. Many previous studies have shown the relationship between physical activity and cognitive impairment in Chinese subjects (Kesavayuth, Liang & Zikos, 2018; Yuan et al., 2018; Grace et al., 2010). Studies conducted in Western countries have demonstrated the cognitive benefits gained from social interaction (James et al., 2011; Seeman, 2011). In contrast, there is a scarcity of scientific knowledge regarding the health benefits of social interaction on cognitive function in the elderly in China. Furthermore, the studies which focused on compressive relationship between physical activity and social interaction in preventing dementia are rare.

Purpose

This study aims to explore the relationship between cognitive functioning, social interaction and physical activity, in order to discover how physical activity and social interaction are relevant to cognitive function, and more importantly, how these findings can be used to prevent to cognitive impairment among the elderly in China.

Materials and method

The control group of participants selected for the cross-sectional study consisted of 373 individuals aged 60 and over, without clinical evidence of dementia, living in communities of Xuzhou city in China. The data was collected through interviews, during the time period spanning June to August 2016. The chosen perimeters were assessed using scales. For assessing physical activity, Physical Activity Scale for the

Elderly (PASE) was used. For social interaction assessment, Index of Social Interaction (ISI) was used. Cognitive function was assessed using Mini-Mental State Examination (MMSE). Also, Instrumental activities of Daily Living（IADL）and depression were two other factors examined as well.

Results

13.9% of the elderly obtained low scores for MMSE. Results of Chi-square test showed higher total scores for both PASE and ISI at significantly high values related to less cognitive impairment ($p < 0.01$). Furthermore, results show that higher household PASE subscale scores ($p < 0.01$)， higher subscales of independence ($p < 0.05$), higher social curiosity ($p < 0.01$) and participation in society ($p < 0.05$) indicate less cognitive impairment ($p < 0.01$). Moreover, multiple logistic analysis revealed that greater household (OR = 0.98, 95% CI: 0.97-0.99) and higher social curiosity (OR = 0.46, 95% CI: 0.31-0.67) inversely relate to cognitive impairment in Chinese elderly.

Discussion

Physical activity, such as doing some housework, was related to cognitive maintain in elderly. Previous studies suggested a significant association between housework and cognitive impairment. Housework requires attention, organization and problem solving, which could consequently serve as “cognitive training”, thus, improving cognitive performance ((Iuliano, et al., 2016). Other studies focused on Chinese subjects also mentioned that housework is beneficial for cognitive function (Colette, et al., 1995; Mortimer, et al., 2012). These results support the findings of this study and imply that doing housework is not a burden but a positive activity for the elderly in China. They explained that housework requires the ability to plan, organize and remember tasks; thus, it is beneficial for cognitive maintenance (Jiang & Xu, 2014). An excremental study also showed that doing housework gave participants a sense of accomplishment, and that such a gesture was beneficial for cognitive function (Tsuchiya, et al., 2018).

Unlike the results of previous international studies, greater leisure and occupational activity does not have a significant positive effect in relation to preventing cognitive

impairment. This inconsistency may be explained by the difference in situations of daily living of the elderly (Kesavayuth, et al., 2018; Zhang, et al, 2017). The elderly in this study tend to do sit down activities and light sports. Only a minority of them were interested in muscle strengthening, strenuous exercise or moderate sports. Moreover, some of the elderly in this study continued with their jobs even after retirement. Considering their work conditions, it is difficult for them to engage with and participate in society.

Most participants in this study experienced a positive social interaction. This finding suggests that while aging is inevitable, social interaction can be maintained by engaging in social environments, and consequently, cognitive decline could be prevented. Previous studies have shown that positive social interaction is related to the prevention of dementia (Huges, et al., 2010; Bennett 2006). And in this study, social curiosity was founded beneficial for cognitive function. This includes intellectual activities and leisure activities, such as reading and hobbies (Luck, et al., 2014; Hughes, et al., 2010). Social curiosity involves not only ways to get information but also mental activity as well as novel intellectual and cognitive stimulations, which have been proven to be effective in reducing the risk of dementia in older adults (Lin, 2007).

A significant association between age and cognitive decline was found in the current study. Recent previous studies have demonstrated that dementia risk increases with aging (Taaffe, D. R. et al., 2018). In regard to gender, some studies did not find a significant association between gender and dementia risk (Fernández, et al., 2008; Dannhauser, 2014), but others have found a significant association between them (Azad, Bugani & Loy, 2007). This study supports the result that women's risk of cognitive decline is higher than that of men.

Moreover, the study relates that there is a high risk of cognitive impairment amongst Chinese adults. Hence, it is highly recommended to explore further preventative methods and conduct future researches for the prevention of dementia.

Conclusion

The current study revealed a high potential of cognitive impairment rate amongst

Chinese elderly, detailing the relation between physical activity and social interaction with cognitive impairment. These results stipulate that active participation in physical activities and social interactions, especially mundane tasks such as house work, as well as engagement in social curiosity are strong preventive methods to cognitive impairment for Chinese elderly. Furthermore, the results of this study indicate that engaging older adults in more active physical and social interactions, such as house work and social curiosity, should be applied into the daily living of the elderly in the family, community, and facility, in order to prevent cognitive function decline.