

Preventive Psychiatry in Late Life: Studies on Depression and Dementia from the Singapore Gerontology Research Programme

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This overview summarizes the research results on depression and dementia in ethnic Chinese elderly conducted by the Gerontology Research Programme of the Yong Loo Lin School of Medicine, National University of Singapore. Health policies are dependent on information of evidence-based studies and it is of utmost importance to encourage research on preventive psychiatry. Interventional strategies in psycho-social therapy, diet and stability of chronic illnesses like diabetes mellitus and hypertension, are critical in lowering the rates of depression and dementia in late life. The challenge is how to translate research results into public policies. Preventive psychiatry is not just an endeavor from the government but should also from the private sector and non-governmental organizations (NGOs). If measures are taken collectively, it is plausible that the quiet epidemic of elderly depression and dementia this century can be averted.

Key words: prevention, depression, dementia, the elderly
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Introduction

In his erudite book, *Fighting for Mental Health*, Sartorius [1] asked a provocative question, "Why not prevent mental disorders." He enumerated four sources of action: first, mental health professionals should advocate that measures of primary prevention be applied; second,

they should continue and promote research on causes of mental disorders; third, they should ensure that undergraduate and postgraduate education in psychiatry includes a cogent description of possibilities of primary prevention in psychiatry; and fourth, they should seek alliance and provide support to those engaged in activities leading to the primary prevention of mental illness.

The recent publications on global mental health and the call for action have highlighted inequity of services and human resource around the world [2, 3] but primary prevention has not been adequately emphasized and preventive psychiatry in late life in particular is not mentioned. For more than a thousand years, ethnic Chinese families worship in their homes three deities (*Fu*, *Lu*, and *Shou*) who personify happiness, wealth, and longevity. These deities represent their collective aspirations – to live to a ripe old age, have sufficient finance, and be joyful. Such ancient wisdom is still relevant in the 21st century as many countries in the world grapple with the challenges of an ageing population and the soaring health costs confusing health economists.

Probably the most debilitating illness in late life is dementia, but an equally pressing public health issue is depression. All research data point to the fact that the prevalence of depression is higher than that of dementia, and depression has a mortality – suicide. It is no longer acceptable to relinquish moral responsibility and declare that suicide is not preventable.

Primary prevention in psychiatry is often neglected and viewed with trepidation as the Holy Grail for research. This article will discuss some paradigms of preventive psychiatry for depression and dementia in ethnic Chinese elderly which have been conducted by the Gerontology Research Programme (GRP), Yong Loo Lin School of Medicine, National University of Singapore (NUS). The GRP started in 1990 when the Department of Psychological Medicine at NUS was invited to join the World Health Organization global study of dementia. A Memory Clinic was organized at the National University Hospital and the health professionals included a psychiatrist, geriatrician, psychologist, and neurologist [4].

Depression

Depression in the elderly is a major public health concern of relevance to clinicians, administrators and policy makers. Misdiagnosis and inappropriate management have dire consequences on prognosis, healthcare cost and quality of life of the elderly [5-7]. In a community study, Kua [8] assessed a sample of 612 ethnic Chinese Singaporean elderly (aged ≥ 65 years) living in crowded accommodations in the Chinatown district using the Geriatric Mental State (GMS) [9] and found the prevalence of depression to be 5.7%. Another study of Chinese elderly in the suburbia [10] also using the GMS program showed a higher rate of 9.5%. The Chinatown elderly tended to congregate daily along the common corridors of their flats or the community centers – they belonged to the same dialect groups and there was daily social interaction. Although poorer, the social environment provided a supportive eco-system. The suburban elderly lived in more affluent flats but did not meet in the community centers as often or mixed as much with their neighbors – they were more isolated. The social eco-system of Chinatown bonded by clanship ties provided a robust support network.

A step towards primary prevention of depression is to encourage city planners to design public places that will allow elderly people to meet and avoid social isolation and loneliness. Recently, public housings are being built with environment-friendly design for elderly people and more common spaces for young and old to meet.

Cogent evidence shows that folate and vitamin B₁₂ deficiency are associated with depression [11, 12]. In a Singapore study, 669 community-living elderly aged 55 years or over were assessed using the Geriatric Depression Scale [13]; 178 of



them had depression defined as a GDS score of 5 or more. The results from statistical modeling showed that lower levels of folate and deficient levels vitamin B₁₂ are associated with a higher risk of depression [14]. Depression is linearly associated with a descending quartiles of serum folate concentration and associated with B₁₂ deficiency, independent of other risk factors [14]. These findings have important public health implications in the prevention of depression in elderly people who may be nutritionally deficient. The Health Promotion Board of the Ministry of Health in Singapore has started public health education on nutrition for elderly people and the program is also in the vernacular with booklets and public exhibitions in three (Chinese, Malay, and Indian) languages.

In planning a study on the primary prevention of depression, we are cognizance of the Goldberg and Huxley model on mental illness and help-seeking behavior [15] and draw on our own experience from the Singapore National Mental Health Survey [16]. We estimate that in the general population, about 8%-10% of people have mild depressive disorder and are seen at primary care, another 15%-20% have mild depressive symptoms but do not meet the criteria of the *Diagnostic and Statistical Manual (DSM)* of the American Psychiatric Association [17] for mental disorder and only 2%-3% with moderate-severe depression are seen in the psychiatric clinics.

In March 2013, a community mental health program for the elderly was launched in Singapore with the participation of non-governmental organizations (NGOs), private sector, and volunteers. The Jurong Ageing Study (JAS) is a project to ascertain whether psycho-social intervention through group activities together with education about healthy lifestyle, diabetes mellitus and hypertension can prevent the onset of depression and

delay the progression of dementia. The model of psychological therapy we used is based on the Brief Integrative Personal Therapy (BIPT) [18]. Understanding the cultural mores is crucial in psychological therapy and BIPT transcends the established schools of psychotherapy. Psychotherapeutic integration is motivated by a need to view beyond the restricted single-school approach to benefit the patient.

A cohort of 2,000 elderly people living around the research base called Training and Research Academy at the Jurong Point mall (TaRA@JP) will be followed up for 10 years. Every elderly person will undergo a thorough physical, mental and social assessment, including blood examination and neuropsychological tests, magnetic resonance imaging (MRI) brain scan will be done for those with mild cognitive impairment (MCI) [19] or dementia.

The first study group comprised 110 ethnic Chinese Singaporean elderly with mild depressive symptoms and they did not fulfill the *DSM* criteria for depressive disorder – they had subsyndromal depression (2-4 symptoms on the Geriatric Depression Scale). In a previous study, we reported that subsyndromal depression can affect the quality of life of elderly people, and that its prevalence among the Singapore elderly has been 9.6% (20).

All of the elderly attended group meetings once a week for a month and then fortnightly for two more months. Each meeting began with a 20-minute talk in Chinese on health issues, including stabilizing diabetes mellitus and hypertension with medications, diet, and exercise. There are many studies on the association between two chronic diseases, diabetes mellitus and hypertension, and depression [21-23]. After the talk, they were divided into four groups for art therapy, *tai-chi* exercise, mindfulness therapy and music-

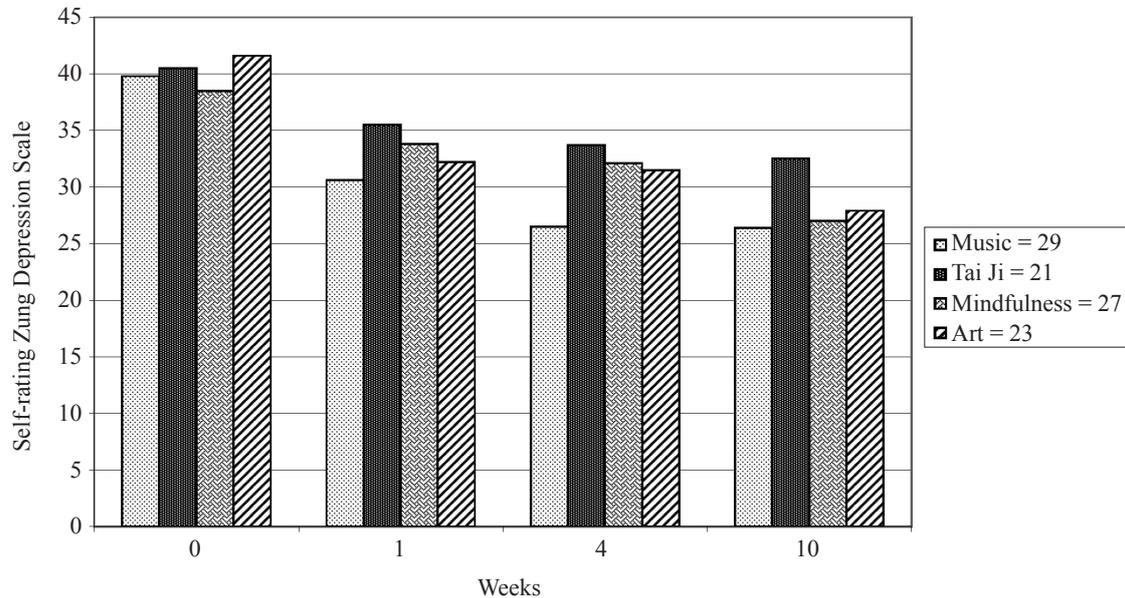


Figure 1. Depression scores of therapy groups. There were no between-group differences in the scores in Zung’s rating scale among four different modalities of therapy. The scores in four therapy groups were significant lower than the score of the elderly group without participating in therapy (data not shown).

reminiscence therapy – this session lasted 30 minutes. Those four groups were assessed at the beginning, after a month, and at the end of the third month. The method had been presented at the fourth World Congress of Asian Psychiatry on August 21, 2013 in Bangkok.

The scores for depression on the self-rating Zung Depression scale showed significant improvement in mood after three months (Figure 1). There were no significant between-group differences among the different modalities of therapy.

The result is encouraging because it shows that psychological therapy can improve the mood of elderly people with sub-syndromal depression and the group approach is acceptable to elderly people. More importantly, they enjoyed the art therapy, music-reminiscence therapy and mindfulness therapy. In Chinese culture, *tai-chi* is a popular martial art exercise among elderly people

as a method to restore the *yin-yang* equilibrium in old age – it is a lifestyle habit for the preservation and restoration of physical and mental health.

This primary prevention of depression in old age has been the successful effort of researchers from the National University of Singapore and volunteers from NGOs with financial support from the private sectors. The tri-partite approach is a new paradigm for future collaboration in the prevention of mental disorders.

Suicide

There is a significant decline in the elderly suicide rates in Singapore from 1995 to 2005 [24]. After the peak in 1995, the government began to initiate a review of national health policy to examine and address the problems of the elderly. This effort which has continued to this day, including

identifying issues related to the needs of the elderly such as housing as well as health care and community support. This holistic approach is to address the multi-faceted challenges in old age, including loneliness, healthcare cost, and caregiver's stress. More scholarships and training opportunities have been provided for healthcare professionals in the disciplines of geriatric psychiatry, geriatric medicine, occupational therapy, physiotherapy, nursing, and social work. There is governmental support for NGOs to set up day care centers and homes for the elderly. A telephone helpline was started by the Singapore Action Group of Elders (SAGE) and the training of peer counselors was organized by the Department of Psychological Medicine, National University of Singapore [25, 26]. We have also worked closely with doctors in primary care to train them in identifying the "elderly at risk." There have been regular public talks on suicide prevention and depression by doctors, psychologists, and counselors. Early detection is emphasized and healthcare providers are alerted to the at risk elderly in the community, especially those who live alone and have disabilities.

The elderly suicide rate in Hong Kong has also been seen a gradual downward trend. From 1991 to 1996, there was an expansion of psycho-geriatric teams and in the implementation of government policies on elderly welfare. The elderly suicide prevention program was established in 2002. But despite the general downward trend, a peak was seen in 2003 which could be associated with the severe acute respiratory syndrome (SARS) outbreak during that period [27, 28]. Hong Kong has campaigns promoting active and healthy aging. The Opportunities for the Elderly Project (OEP) also provides subsidies to programs that promote a sense of worthiness and foster community spirit of care for the elderly. There is

also regular engagement with primary care providers, such as seminars for general practitioners on depression and its early detection.

An important message for the community, including doctors, is that suicide is preventable. Education of the primary care doctors and healthcare workers to facilitate early diagnosis is crucial. For example, a hospital study showed that many elderly people who were admitted for drug over-dosage have been found to have depressive disorder, that they have been prescribed sleeping pills and analgesics because they complained to the doctors about insomnia and headache, but that their underlying depression has not been detected [29]. A report from Hong Kong showed that many elderly people who committed suicide had been seen a doctor a month before the tragedy [30]. Training more healthcare professionals in the specialized care of the elderly and working towards a multidisciplinary team approach with good continuity of care in the community are necessary. Finally, it is always important to emphasize preventive psychiatry by identifying and managing well the elderly at risk in the community.

Dementia

Dementia will be a major global public health issue in the coming decades. There will be more cases of dementia in Chinese elderly than any other ethnic group in the world [31]. In Taiwan, Liu et al. [32] reported a prevalence of 2.0% for elderly people aged 65 years and over; this finding is similar to that of the Singapore study by our team [6] in a community sample of 612 ethnic Chinese Singaporean elderly. The Beijing study by Li et al. [33] and Hong Kong study by Chiu et al. [34] also showed a prevalence of about 2% for people 65 years and older and rising to 10% for those 80 years or more. The study

with the largest sample size (N = 34,807) was conducted by Zhang et al. [35] and showed that the prevalence among those over 65 years has been found to be 3.5% for dementia with Alzheimer's disease and 1.1% for vascular dementia; based on this study, there are currently over 6 million dementia patients in China. It is a massive challenge for public health policy makers not only in China but also in Taiwan and Singapore. Besides planning for services, it is equally relevant to conceive preventive measures.

Multidisciplinary research has provided evidence supporting the rôle of vascular and related disorders (e.g. hypertension, diabetes mellitus, and cerebral micro-vascular lesions) as risk factors and the possible rôle of psychosocial factors (e.g., mentally stimulating activity, social engagement and exercise) as protective factors in the development of the dementia syndrome [36, 37]. Diet and nutrition (e.g. homocysteine, B vitamins, and diet pattern) are also to be promising [38, 39]. Playing *mahjong* games is popular among Chinese people; this culture-specific game requires complex ability of cognitive and psychomotor functions and there is always social interaction among the players. There is evidence suggesting that playing *mahjong* may be helpful in reducing the risk of cognitive decline [40]. Tea, a beverage which originated from China and widely consumed among Chinese people, has been reported to delay cognitive impairment in old age [41, 42].

Prevention needs good understanding of the natural history of dementia and a comprehensive understanding of factors that could be involved in the process. The information could only be derived from population-based studies with human being as the subjects. Similar with treatment, effective prevention may also have to adopt multi-targeted approaches to achieve the public health impact [43]. Longitudinal cohort studies are im-

portant to establish causal relationship between protective factors and dementia risk [44, 45].

In Singapore, the Jurong Ageing Study (JAS) at the Training and Research Academy at Jurong Point (TaRA @JP) will be following up 2,000 elderly persons for the next 10 years. All of them will be assessed thoroughly and those with mild cognitive impairment (MCI) will be invited for receiving regular psycho-social therapy including education on diet, diabetes mellitus, and hypertension as well as music-remembrance therapy, art therapy, mindfulness therapy, and *tai-chi* exercise. We hope that the intervention which is similar for depression prevention will prevent or delay the progression of dementia.

At the Memory Clinic, we emphasize to the patients and their family care-givers that stabilizing blood pressure, good diabetic control, diet, exercise and mental stimulating activities can improve the quality of life of the elderly and delay the progression of dementia. It may be possible to further extend the phase of mild dementia from the strategies suggested.

Discussion

There is a growing concern about caring for an increasing number of the frail elderly in many Asian countries including China, Taiwan, and Singapore. This concern is not only because of an increasing number of the elderly but also a diminishing number of family care-givers. Traditionally, the care-givers are the women in the family but with the social transformation of many Asian families, women who are better educated, prefer to work rather than to remain at home. Another factor contributing to the diminishing number of care-givers is the decrease in the family size. In many Asian cities, the fragmentation of the extended family has also impacted the care of the

elderly at home. Caring for dementia patients is demanding, both physically and mentally. A study in Singapore showed that about 56% of family caregivers have shown symptoms of anxiety and depression [50].

With the aging of the baby-boomers [51], there will be a phenomenal increase in the number of elderly people in this decade. The “new old” will pose an enormous challenge to health and social services if the incidences of depression and dementia are increased. The paradigms that we advocated can be extended to a larger population and if such inexpensive psycho-social activities can be implemented, the cost-saving in future years will be tremendous.

Because of the change in family structure, more Asian elderly people will be living alone in the future and cannot expect much support from close relatives. Regular group meetings and social connectivity using information technology (IT) can prevent a sense of loneliness especially for many living isolated lives in the city. The “new-old” are more familiar with IT and this can be exploited for future research on the prevention and management of depression and dementia.

Finally, it is important to heed the message in *Fighting for Mental Health* [1] and the scholarly papers published in *the New England Journal of Medicine* [2] and *the Lancet* [3] that there is a need to collaborate with NGOs and the private sector to ensure success in the campaign for preventive psychiatry. Governmental effort and enthusiasm of university are not enough. The future ethnic Chinese elderly will continue to worship three revered deities in their homes – they can be confident of longevity and will be in the cusps of happiness and prosperity if public health policies support preventive psychiatry in late life.

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