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The Relationship Between the Number of Chronic Diseases and Living Environment Among Dementia Patients

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Abstract
Aim: To understand the Relationship Between the Number of Chronic Diseases and Living Environment Among Dementia Patients. Methods: The study use the Aged Care Service Demand Questionnaire to obtain the subjects' information on activities of daily living, physical health, mental health, and social resources and economic conditions et al.. The current research use Chi-square independence test for analysis. Results: In the current study, 64.95% of the dementia patients suffer from at least one chronic disease, but for those who live at home, only 14.54% of the dementia patients suffer from one and more chronic diseases. There are statistically difference between living at home and institutions in terms of the number of chronic diseases ($P<0.0001$). Conclusion: There are closely relationship between chronic diseases and living environment, the public should realize the dementia patients could combine many chronic diseases at the same time due to their living environment.

Keywords: dementia; living environment; chronic disease

Introduction

A recent report shows that around 9.9 million newly diagnosed dementia patients in year 2015 globally (Wang, 2015). Dementia is a slowly progressive brain disease, which could not be effectively cured at present (Ke & Li, 2014). In the developed countries, dementia has become the fourth-leading cause of death, after heart disease, cancer and stroke. The proportion of people over age 65 with mild dementia is around 10%, with moderate and severe dementia is about 5% (Ke & Li, 2014; Kang et al., 2011; Tang, 1999). In China, the population of dementia is estimated as over 4 million, the consumption of medical expenses is about 20￥ billion in early 1990s due to dementia (Zhao et al., 2007). More than half of the older people dementia needs institutional care. The health expenditure due to dementia is astonishing each year, it brings a heavy burden to the society and family, therefore, it has become an important subject in gerontology research (Tang & Xiang, 2003).

More and more research argue that living environment plays an important role in the dementia patients' disease progress, the specially designed and renovated living environment could bring good effects to dementia patients. Moreover, there is a positive correlation between the incidence rate of dementia and the living environment as well as the social communication (Ke & Li, 2014; Tang & Xing, 2003; Day et al., 2000; Cohen & Weisman, 1991; Bicket et al., 2010; Wu & Meng, 1995). Besides, poor environment could accelerate the speed of dementia patients' disease progress (Reilly et al., 2006; Smith et al., 2004). Usually, the older people develop more than one disease at the same time, the aim of the current is to explore the relationship between the number of chronic diseases and the living environment of dementia old people. Study findings will add to the limited research of this area, and this may make the society to aware the importance of environment for the dementia old people.

Methods

This work used the data of year 2014 from the study which conducted in eight districts in Shanghai city by the Shanghai Health Development Research Center (SHDRC) in 2013 and 2014. The investigated districts includes three central districts and five suburban districts, which were randomly selected.

1. 1 Participants

A total of 19422 older residents were investigated in 2014, participants' age is between 52 to 105 years old, the average age is 84.28. And 1109 of them were diagnosed as dementia by doctor (male 313, female 796), there are 1106 older dementia participants' above 60 years old (include 60 years old). Information on dementia patients' health status were recorded by the investigator. The prevalence rate of dementia is 10.75% in health institutions, 12.60% in nursing homes, 1.83% in community (home residents).

1.2 Investigation methods

The Shanghai Long-Term Care Needs Assessment Questionnaire is an official tool to obtain the information from the older people. The questionnaire includes items refers to activities of daily living (ADL), body health, mental health, cognitive status, physical status, clinical diagnosis and social resources of the older people. The

questionnaire is used as an official tool by the Shanghai Municipal Government to evaluate the demands of long-term care services of the older people in Shanghai.

1.3 Statistical analysis

The Microsoft Excel 2010，SAS version 9.30 and R were used for data analysis. The associations between the number of chronic diseases and living environment of the home living dementia people were analyzed with the Chi-square independence test. Similarly, the relationship between the number of chronic diseases and their living places were analyzed with Chi-square independence test. The independence of variables could detected by Chi-square test. The significance level is 0.05.

Results

2.2 The general characters of dementia people

Table I shows the general information of people who live in Old People's Home, or Nursing home, or live at home. In this investigation, the dementia people mainly living in Old People's Home in every age group, those living at home's dementia old people accounts for the lowest proportion of the whole investigated dementia people. Most of the female dementia old people living at home and Nursing Home, and most of the male dementia old people living at Old People's Home. The age and gender has a statistically significant difference between people who live at home, Old People's Home, and Nursing Home ($P<0.05$).

Table 1 The general characters of dementia older people who live at home, Old People's Home, and Nursing Home

		Home n =209(%)	Old People's Home n=510 (%)	Nursing Home n=351 (%)	*P*-Value
Age（years old）					0.0178
	60~	10(0.93)	26(2.43)	13(1.21)	
	70~	19(1.78)	100(9.35)	59(5.51)	
	80~	118(11.03)	270(25.23)	182(17.01)	
	90~	62(5.79)	114(10.65)	97(9.07)	
Gender					0.0138
	Female	161（15.05）	165（15.42）	262（24.49）	
	Male	48（4.49）	345（32.24）	89（8.32）	

2.3 The analysis of the association between the number of chronic diseases and living environment of the home living dementia people

In the analysis of the number of chronic diseases and living environment of the dementia people, the disease group is categorized as three group, when the number of disease is 0, 1 and ⩾2. In the home environment, the differences between the number of diseases and home environment ('which floor they are living', 'do they have steps in their apartment', 'do they have washroom in their apartment', 'do they have bathing equipment') has no statically difference （$P>0.05$）.

But there are statistically difference between diseases number and the home environment ('do they have steps in their apartment', 'do they have washroom in their apartment', 'do they have bathing equipment') while the diseases is categorized as 0, 1~2, ⩾3（$P<0.05$）.

Table 2 The analysis of the association between the number of chronic diseases and living environment of the home living dementia people (Chi-square test)

	Dementia with other chronic disease (0 kind) n(%)	Dementia with other chronic disease （1kind）n(%)	Dementia with other chronic disease （≥2 kinds）n(%)	*P*-Value
Living environment				0.111
floor=1orwith elevator	33(15.94)	25(12.08)	49(23.67)	
≥2without elevator	19(9.18)	32(15.46)	49(23.67)	
Indoor steps				0.457
with	6(2.9)	5(2.42)	15(7.25)	
without	47(22.71)	52(25.12)	82(39.61)	
Indoor armrest				0.829
with	8(3.85)	11(5.29)	18(8.65)	
without	45(21.63)	46(22.12)	80(38.46)	
Washroom				0.329
dependent	38(18.36)	37(17.87)	59(28.5)	
share	8(3.86)	5(2.42)	16(7.73)	
without	7(3.38)	15(7.25)	22(10.63)	
Bath equipment				0.394
dependent	36(17.39)	37(17.87)	58(28.02)	
share	9(4.35)	5(2.42)	17(8.21)	
without	8(3.86)	15(7.25)	22(10.63)	

2.4 The Relationship Between the Number of Chronic Diseases and Living Environment Among Dementia Patients

The table 3 shows about 64.95% old dementia people has more than one chronic diseases in the institution (Old People's Home and Nursing Home) among the present study. There are only 14.54% old dementia people has more than one chronic diseases in the home environment. The statistically significant difference were found in these three different living environment（P<0.0001）.

Table 3 The relationship between the number of chronic diseases and living environment among dementia patients (Chi-square test)

	Home n (%)	Old People's Home n (%)	Nursing Home n (%)	*P*-Value
Number of chronic disease				<0.0001
0	54(5.03)	112(10.44)	54(5.03)	
1	58(5.41)	122(11.37)	117(10.9)	
≥2	98(9.13)	119(11.09)	339(31.59)	

Discussion

The present study shows that old dementia people living in the institutions, was associated with a higher risk of developing more than one chronic disease compared with those living at home. To our knowledge, it is the very first time that the association between the number of chronic diseases and living environment have been examined. The present study found that the dementia old people mainly living in the Old People's Home, the lowest proportion of dementia old people was found in the home environment.

Our findings raise two main hypotheses. Firstly, the dementia old people might lose their AD,L ability and social ability in their late stage of dementia. The family members tend to sent the dementia patient to the professional institutions due to the course of dementia is quite long and the family member themselves is lack of professional healthcare skills.

Therefore, those living at home is relatively healthier and with less chronic diseases. However, several reports have shown that the majority of the dementia old people can not receive professional healthcare, instead, the family member take care of their dementia family member (Li et al., 2015; Chen, 2015).
Our second hypothesis is, the environment of institution lead to dementia people to develop more chronic diseases. In other words, home environment might be more suitable for dementia old people, although the institution might be more professional. This hypothesis could be an explanation for our research results, which found that dementia people in institution have more than one chronic disease than those live at home environment.

However, further research should disentangle whether the dementia people develop new chronic diseases after they start living in the institution. Several reports shows that there are a close relationship between the clinical symptom and individualized care, the function of dementia patient could progressively deteriorate if without proper intervention (Tang & Xiang, 2003; Jiang et al., 2012).

Conclusion

In conclusion, the prevalence of dementia is rising in recent years, it will become a heavy burden for the society if we do not take action. Lawton believe that environment is a complex, comprehensive constitution, it includes society, psychical, individual and physical environment (Lawton, 1980). The care institution is the living place for old people, there will be no support effect if we only consider the physical environment. Bicket et al. (2010) discovered that good living environment can relieve the nervous system symptoms of dementia patients, in the mean while, could reduce the risk of falls et al. Van Mierlo and his colleague's study (2010) also suggests that more research will bring a better understanding of which welfare and care interventions are effective for specific subgroups of dementia old people.

References

Bicket MC, Samus QM, Mcnabney M, et al. The physical environment influences neuropsychiatric symptoms and other outcomes in assisted living residents [J]. *J Geriatr Psychiatry*, 2010, 25(10), 1044-1054.

Chen Yao. (2015). The influence of nursing intervention with the ability and life quality of in elderly patients with dementia [J], *China Medicine and Pharmacy*. 5(4), 105-107. [in Chinese]

Cohen U, Weisman G. *Holding on to home Designing Environments for people with Dementia* [M]. Baltimore: The Johons Hopkins University Press. 1991.

Day K, Carreon D, Stump C. The therapeutic design of environment for people with dementia: a review of the empirical research [J]. *The Gerontologist*, 2000, 40(40), 397-416.

Jiang Gaoxuan, Cui Mei, Li Mingqiu et al. (2012). Lao nian chi dai huan zhe ge xing hua hu li ji xiao guo ping jia [J], *Contemporary Medicine*. 2012,18(12), 126-127. [in Chinese]

Kang Meiyu, Gao Yumei, Huo Hongqi et al. (2011) Epidemiological features of chronic and Alzheimer's diseases in the community-based elderly living in cities and couties in Heibei province. *Chin J Epidemiol*, 32(7), 672-675. [in Chinese]

Ke Shu Fen, Li Hong. (2014) Lao nian chi dai zhao hu ji gou sheng huo huan jing ping gu liang biao de yan jiu jin zhan [J]. *Chinese Journal of Nursing*, 02:211-215. [in Chinese]

Lawton MP. *Environment and Aging* [M]. Pacific Grove: Brooks/Cole Publishing Company, 1980, 115-116.

Li Hong, Ke Shufen, Zheng Jianhuang et al. (2015). The status of therapeutic environment for dementia patients in long-term care facilities in Fujian province [J]. *Chinese Journal of Nursing*, 50(5), 526-531. [in Chinese]

Reilly S, Abendstern M, Hughes J et al. Quality in long-term care homes for people with dementia: An assessment of specialist provision [J]. *Ageing & Society*, 2006, 26(7), 649-668.

Smith M, Gerdner LA, Hall GR, et al. History, development, and future of the progressively lowered stress threshold: a conceptual model for dementia care [J]. *J Am Geriatr Soc*, 2004, 52(10), 1755-1760.

Tang Zhe, Meng Chen. (1999). Rui dian lao nian yi xue ji lao nian chi dai yan jiu xian zhuang [J]. *Chinese Journal of Geriatrics*. 3, 191. [in Chinese]

Tang Zhe, Xiang Manjun. (2003). Bei jing shi lao nian ren sheng huo zi li neng li ping jia yu xiang guan yin su fen xi. *Chinese Journal of Gerontology*, 2003, 23, 29-32. [in Chinese]

Van Mierlo LD, Van der Roest HG, Meiland FJ, et al. Personalized dementia care: proven effectiveness of psychosocial interverntions in subgroups[J]. *Ageing Res Rev*, 2010, 9, 163-183.

Wu Zhen, Meng Chen. (1995). Chi dai lao ren zai she qu zhong de sheng huo xian zhuang [J]. *Chinese Journal of Gerontology*, 322-324. [in Chinese]

Wang Xin. (2015.) Zheng que mian dui lao nian chi dai: hu li yu zhi liao bing zhong[N]. *Zhong guo zhong yi yao bao*, 2015-09-23(007). [in Chinese]

Zhao Fang, Ma Tianwen, Yu Youjuan et al. (2007). Shang hai shi nan hui qu yang lao yuan lao nian chi dai zheng liu xing bing xue diao cha [J]. *Modern Preventive Medicine*, 34(15), 2864-2866. [in Chinese]

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Cooperatives as a Tool for Coproduction: A model for stakeholder engagement to strengthen home and community care

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Abstract

With its aging and shrinking population, Japan urgently needs to address the challenge to its public health and social care system. To ease the increasing pressure, Japan's publicly funded Long-term Care Insurance (LTCI) system was recently amended to welcome the voluntary participation of citizens and community-based organizations for the lower level support needs of care recipients. The amended LTCI system depends on coproduction; a term used to describe collaborative working relationships whereby citizens, governments, and other stakeholders contribute resources to deliver public services.

Previous studies suggest that coproduction can increase the quantity and improve the quality of public services by mobilizing community strengths and resources. And by meeting the growing care needs at home and in the community, costly hospitalization and institutionalization may be mitigated, thus increasing the capacity of the public health and social service system. The concept of coproduction will be used to explore how citizen and community-based organizations are enhancing public home and community care in Japan.

As community-based, member supported and managed organizations that provide home and community care in part under the public LTCI system in Japan, cooperatives are presented as a model of institutionalized coproduction, which essentially formalize informal care. Through literature review and interviews, two exemplary case studies are presented of cooperatives that both add value to service provision through the voluntary mutual support activities of their members. The case studies illustrate that cooperatives can be a tool for coproduction, used to mobilize and sustain stakeholder engagement to strengthen home and community care.

Keywords: Cooperative, coproduction, stakeholder engagement, home and community care, public health and social service provision, Japan

Introduction and Background

Public health and social care systems are under increasing pressure from the rise of the aging population in many advanced industrialized nations. Traditional social safety nets formed through communal and familial networks have been broken, leaving a growing number of people reliant on state funded and provisioned care. Meeting the growing needs despite resource shortages will require the collective efforts of citizens, governments and community and voluntary organizations, working in collaborative partnerships towards the common goal of strengthening public health and social care systems. In light of the challenges facing public welfare systems the following research questions will be explored: 1) How can public home and community care systems safeguard the quality and quantity of care available to increasingly aged populations, despite shrinking public finances?; and 2) Are there models of service delivery that could be implemented and supported at the organizational and institutional level to strengthen home and community care systems?

Japan in particular, with its low birthrate, restrictive immigration policies and long life expectancy, is facing a hyper-aging society starting in 2025. The Japanese government is under extreme pressure to meet the growing needs, despite the shrinking pool or resources, to maintain and improve the quality and availability of publicly funded welfare services and facilities, and contain increasing medical and welfare costs. When the LTCI system was introduced in 2000 it created a quasi-market in which service users could choose between service providers, financed 90% by taxes and insurance premiums, and 10% through service user co-payment (MHLW, 2013). The system is controlled by the central government but administered by the local municipalities. But as the system strains under burgeoning care needs, there is increased pressure to reduce costs. This increased pressure on the system is reflected in the 2015 revision to the LTCI, which encourages more voluntary participation by regular citizens in the provision of lower level support needs (City of Yokohama, 2015; Tasaki & Mizuno, 2016).

One type of organization that has traditionally been successful at mobilizing the voluntary efforts of regular citizens are cooperatives (coops). With a long history of civic engagement and mobilization on behalf of issues including the environment, worker's rights, and food safety, to name a few, coops play a significant role in connecting members to each other, and to other community organizations (Kurimoto, 2015; Ozeki, Tokubo, & Kuroda, 2015). Participatory community based organizations such as coops are able to connect, motivate and mobilize the voluntary contributions of like-minded individuals and organizations in support of a common cause.

While organizational form itself has not been found to be a predictor of services quality, citizen and/or service user participation in the delivery of public services has been shown to have positive benefits on user experience (Leviten-Reid & Hoyt, 2009) (Vamstad, 2012). In pursuit of models for home and community care that can support the expanding needs of the aging population, the focus of this research is not on comparing one particular organizational form to another. Differences between public, private, nonprofit and civil society organizations are often only ideological in nature, especially in service areas such as health and social care, where the regulatory environment may constrain behavior and blur lines between organizational forms

(Leviten-Reid & Hoyt, 2009). As suggested by Joshi & Moore (2004): "Overt ideology is no longer in fashion. The dominant language is of pragmatism, pluralism, and adaptation to specific circumstances" (p. 32). In the spirit of pragmatism, this study will explore coops as a model of institutionalized coproduction.

The concept of coproduction will be explored in the Literature Review section. The Methodology section will present the data collection method; semi-structured interviews conducted to build the case studies of two exemplary coops that are delivering home and community care services. The Results and Discussion section will give an overview of the two coop case studies and will highlight the ways in which members' voluntary contributions add value to enhance service quality and quality. Additionally, the case studies illustrate how coops enhance willingness and ability to coproduce, thereby successfully engaging stakeholders and mobilizing resource contributions from their members. Finally, recommendations are proposed based on key lessons from the literature review and reinforced by the case studies, which intended to offer practically applicable ways to effectively engage stakeholders to mobilize community resources and ultimately strengthen public home and community care systems.

Literature Review

There has been an identifiable shift in public policy discourse in the last two or three decades away from both monopolistic state provision and the New Public Management agenda of privatization and commodification of public services (Joshi & Moore, 2004). Whether due to increased recognition of the value added or that some services-such as health, safety or education-cannot be successfully delivered without stakeholder engagement, or as a response to declining of state capacity, "community-based" or "community-driven" have become buzzwords in public administration discussions internationally. Diverse multi-actor and cross-sector arrangements which include state agencies, commercial enterprises, and citizens and services users, are increasingly being explored as a way to improve the quality and quantity of public service provision. Coproduction is a term used to describe such pluralistic, cooperative and participatory working relationships between citizens, governments, and other stakeholders in public service provision.

Coproduction is defined as the "mix of activities that both public service agents and citizens contribute to the provision of public services. The former are involved as professionals or 'regular producers', while 'citizen production' is based on voluntary efforts of individuals or groups to enhance the quality and/or quantity of services they receive" (Parks et al., 1981, as paraphrased by Pestoff, 2009, p. 204). Joshi & Moore (2004) describe coproduction as complex arrangements where traditional Weberian separations between public and private interests, organizations, and behavioral motivations are blurred in complex arrangements, often resulting when the public authority is weak or resources are scarce. Insufficient state resources and capacity to provide personal support services is a growing concern in many countries, especially as the proportion of the elderly population grows. Coproduction can be an effective way to improve public service provision, particularly in underserved neighborhoods and communities, when services are cut due to budget deficits, or when demand exceeds capacity.

Resources mobilized through coproduction

There is a growing body of evidence in coproduction literature that suggests that user participation can contribute to improved service quality in communities where resources are insufficient to fill service needs (Bovaird, 2007; Joshi & Moore, 2004; Pestoff, 2009). Joshi & Moore (2004) present two case studies illustrating hybrid models, which they call *institutional coproduction*, where conventional forms of service delivery has failed. The cases illustrate how institutionalized co-production can mobilize resources needed to cope with logistical challenges due to a lack of resources needed to deliver services effectively (Joshi & Moore, 2004). Other studies suggest that resources can be effectively mobilized through coproduction either by creating an incentive (Bovaird, 2007), through effective use of community resources (Bovaird, 2007; Brandsen & Honingh, 2015) or by increasing users' willingness to participate, thereby maximizing resource inputs (Pestoff, 2009; Vamstad, 2012).

Conditions for coproduction

While the conditions that encourage or discourage coproduction vary based on a variety of factors; including demography, culture and social sector; some common themes emerge in the coproduction literature that offer insight into laying the groundwork for coproduction. The creation of both private value and public goods through coproduction are explored more broadly in the study by Parrado et al. (2013). This study used a large scale survey across five European countries, in the service sectors of health, environment and safety, to investigate the behavior and attitudes of citizens towards coproduction. Their survey and regression results revealed some important lessons which could be generalized across geographic and sectoral lines.

Firstly, women and elderly citizens are more likely to engage in co-production. No significant relation was found to level of education, employment status and urban context. Secondly, the belief that citizens would make a difference, or self-efficacy, was found to be the most consistent and strongest predictor of coproduction in all five countries and all three policy areas. Thirdly, citizen coproduction appeared to be encouraged by an awareness of poor public performance on outcomes, and discouraged by good performance outcomes. For example perception of safe neighborhoods, a clean environment and good health, and satisfaction with public services lead to decreased coproduction. Fourthly, coproduction was found to be enhanced when governments provide information or engage citizens in coproduction. Lastly, the study suggested that countries with pluralistic administrative traditions, like the United Kingdom, allowed higher levels of coproduction.

The study also found that certain local conditions may have discouraged coproduction. These included lack of trust in police or the government due to history of repression, the cultural perception that the government is responsible is every problem, or the view that civic duties end at paying taxes. Additionally, communities that had historically been excluded or underserved by public services, such as disadvantaged or low income communities, had compensated for and substituted public services with their own community organizing. The service sector was also found to influence the use of coproduction. Highly professionalized services, like health, were found to invite less production because professionals were reluctant to

relinquish control and they also were found not to value the contribution of users (Parrado et al., 2013).

Incentives and motivations for coproduction

A study by Alford (2002) explores the factors which induce people to contribute time and effort to coproduction of public services. The research draws on literature on coproduction and public sector customer service literature, as well as four Australian public sector case studies. The research looked at the reasons people coproduce, on the basis of both ability and willingness.

Two methods to foster ability were proposed. The first was to make the coproduction task easier, for example by reducing the complexity of the task or through the use of technological tools and platforms for information systems and communication. The second method proposed to enhance capacity to coproduce was by offering information and training.

Willingness, or factors that motivate clients to coproduce were categorized into; sanctions; material rewards; and non-material rewards, including intrinsic motivation and solidarity incentives, and expressive values. Sanctions, or the cessation of benefits were found to be inadequate at motivating willingness of clients to coproduce. Contrarily, they were actually discourage coproduction because they are demoralizing and/or provoke opportunistic behavior. Alford's (2002) research suggests that coproduction of private value is motivated by individual intrinsic motivations, for example self-esteem and self-determination. Whereas in the case of group value creation, sociality or solidarity incentives elicited coproduction, for example neighborly policing of antisocial behavior to improve community safety. Expressive values were successfully employed to appeal to the group values. Alford (2002) further suggests that individual intrinsic motivations are insufficient to motivate coproduction of collective value, because of the probability of free riding. Thus, additional incentives must be offered, such as solidarity or expressive incentives, to appeal to a higher level of collective value creation.

Methodology

As community based organizations that are established, managed, financed and operated by members, coops offering home and community care services under the LTCI system were investigated to test the hypotheses:

H1) Coproduction can mobilize underused community resources to increase the quantity and improve the quality of public home and community care service provision.

H2) Cooperatives can be a tool for coproduction, used to mobilize and sustain stakeholder engagement to strengthen public home and community care systems.

To test the hypothesis, exploratory semi-structured interviews were held with members of the Meguro Council of Social Welfare Regional Support Division, the Japanese Health and Welfare Co-operative Federation (HeW Coop) and the Consumer Coop Institute of Japan. These initial interviews provided insight into coops that

provide public health and social services in Japan as well as the system in which coops are regulated and funded. From these initial interviews two exemplary coops, U Coop and Tokyo-Hokuto Health Cooperative Association (Hokuto Health Coop), were interviewed and case studies were built to highlight the key characteristics of the coops' governance and management, service development and delivery, as well as outcomes and costs and savings. Beyond understanding how the organizations operate and add value to their services, important lessons were draw out about how they mobilize and incentivize members to participate in the coproduction of services.

Results and Discussion

Resources mobilized and value added through coproduction

As the pool of resources available for LTCI shrinks, one way to maintain the quality and quantity of service is to mix the semi-voluntary or voluntary community resources with the LTCI funded services. Particularly when care is needed in areas which are not eligible to be covered under the formal LTCI system. By supporting organizations which essentially formalize informal care, the voluntary efforts of regular citizens can be more easily tapped into, in a way that makes volunteer participation safe and easy, and for anyone needing care to gain access to services. The case studies both exemplified ways in which the voluntary contributions of coop members were mobilized, which value to service provision. The case studies were analyzed to determine the value created and resources mobilized to address the first hypothesis: H1) Coproduction can mobilize underused community resources to increase the quantity and improve the quality of public home and community care service provision.

What differentiates coops from private or nonprofit service providers, is that coops are made up of members[1]. While the level of contribution varies among members, with some more active than others, member contributions enrich the service. In the case of U Coop, the core welfare services are delivered by certified care workers, but additional support is provided by the Members' Voluntary Livelihood Support Mutual Help Group (*Kurashi tasukeai no kai*). The semi-voluntary work of the mutual help group both adds value and fills the gap in service needs, either to fulfil needs that lie outside the LTCI system, or for those who might not be eligible for LTCI service, such as working mothers (Fujita & Sumitama, 2016). Demand for and reliance on such community based services provided by semi-voluntary workers will only increase as care needs increase and under the 2015 changes to the LTCI.

Similarly in the case of the Hokuto Health Coop, core nursing care services are delivered by certified care workers, and value is added by the members' voluntary contributions to local health promotion and wellbeing activities. Examples of member's activities include the *Han kai*, where members conduct self-monitoring, education meeting, social meetings ("salons") and special groups such as dementia prevention groups. Additionally, Hokuto Health Coop members are currently providing mutual support to other members, and are developing a system to officially

[1] All nursing care staff are required to be members of U Coop but volunteers are not. Previously service users had to be members, but it is no longer required by law.

deliver such service (Nishimura et al., 2016), similar to the Members' Voluntary Livelihood Support Mutual Help Group at U Coop.

In addition to the value added by members' voluntary efforts, both case studies exemplified the value of connections. The coop model is based in, and strengthened by connections; both between members and with other community organizations. Within Kanagawa Prefecture, there are about ten coops providing nursing care service, and about 150 coops nationwide. The coops have meetings and conferences to strengthen their ties and share lessons and experiences. U Coop also has ties with different types of coops, for example agricultural coops. Connections within and among coop members and organizations allows information and resources to be exchanged in order to work towards the common goal of building a better community.

In the case of Hokuto Health Coop, it contributes to a monthly or bi-monthly event, in collaboration with other community organizations, where residents can have informal consultations with professionals from the local community, including doctors, social works and lawyers. The organizations set up tents with tables and chairs by the nearby train station, and passersby could stop in for professional advice, to can get information about local community services or to do a health check, in a casual and informal setting.

Operationalizing coop coproduction using the logic model

The logic model is a useful tool for developing, understanding, and improving a program, focusing evaluation or communicating to stakeholders by clarifying outcomes and attributing to inputs and outputs, in light of assumptions and external factors. The following logic model, illustrating coop coproduction of home and community care in Japan, is intended to communicate the value of coop coproduction for the purpose of stakeholder engagement. By illustrating causality and the chain of value creation, the service users, community members, community and voluntary organizations citizens, and government funding and commissioning bodies can accurately assess the potential costs and benefits of entering into a similar coproduction initiatives. Mobilizing and sustaining what Ostrom (1996) calls the *synergy* between government officials and citizens, both contributing resources to the delivery of public services, is the challenge this analysis intends to address. The core components of the logic model will be presented below. See Figure 1 below for the complete logic model.

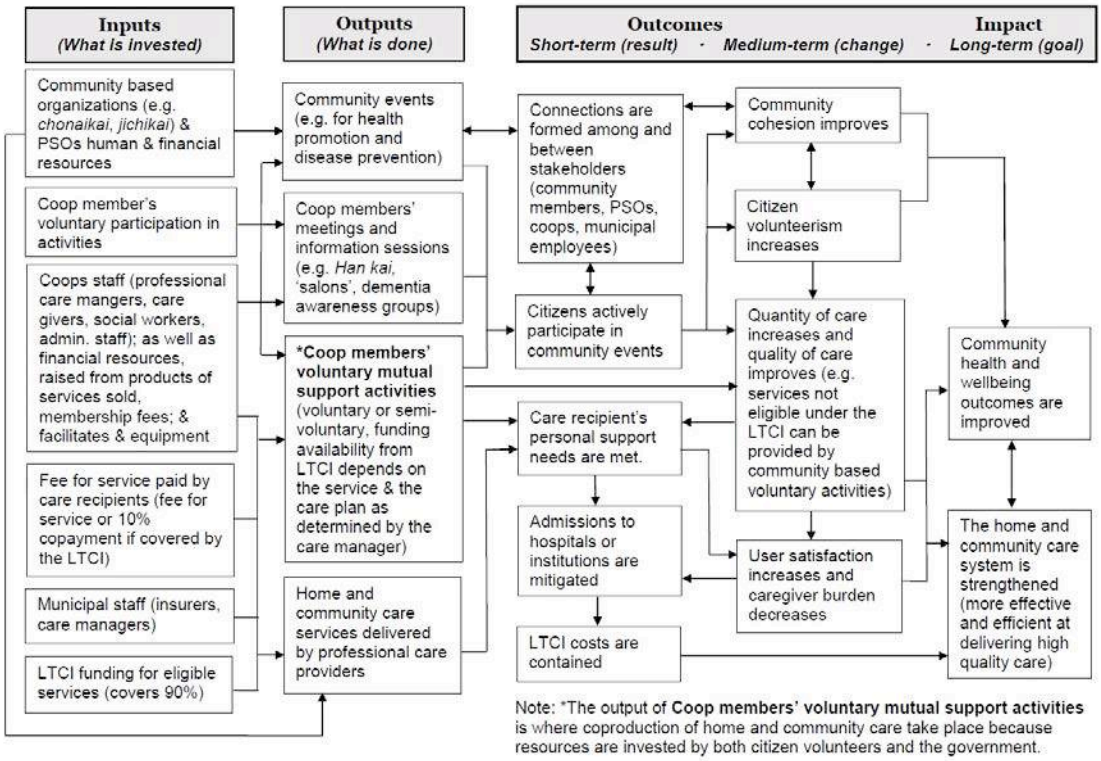

Figure 1: Logic model of home and community care in Japan
Source: Original design

How coops can enhance willingness and ability to coproduce

All coops are initiated with different objectives and offer a variety of products and/or services depending on the organization's purpose and the requests and concerns of its membership base. While not all coops are involved in coproduction, the case studies feature coops that are. The case studies will be discussed to test the second hypothesis: H2) Cooperatives can be a tool for coproduction, used to mobilize and sustain stakeholder engagement to strengthen public home and community care systems. The services and activities of U Coop and Hokuto Health Coop exemplify how coops can be a tool for coproduction, by enhancing the willingness and ability of their members to coproduce. Willingness to coproduce, through voluntary mutual help groups and other member driven activities, was achieved by appealing to a variety of incentives and motivations. Both coop case studies employ various incentives for coproduction, including: material rewards, intrinsic rewards, solidarity incentives, and expressive values.

U Coop's Voluntary Livelihood Support Mutual Help Group is semi-voluntary, meaning that participants who provide services receive a below market rate wage, which amounts to a material rewards. Currently Hokuto Health Coop provides voluntary mutual support activities, but is in the process of developing a similar semi-voluntary mutual help group. By introducing a material reward and making the currently informal voluntary service between members more official, Hokuto Health Coop can scale up and extend the reach of the service to allow make it accessible to a wider user base, including non-coop members, and potentially recruit new volunteers.

Intrinsic rewards, such as interest or feelings of self-esteem, self-determination and competence (Alford, 2002) are tapped into by providing opportunities to participate in meaningful volunteer experiences. U Coop matches willing volunteers, who are mostly retired people and students as well as some 20 and 30 year olds, to other individuals who have requested services. While volunteers have different reasons and motivations, they share the desire to effect positive change in their communities and to use their skills and capabilities. Hokuto Health Coop similarly motivates the voluntary contributions of members through its voluntary mutual support activities, and also its health checks and health promotion activities. Both activities promote a feeling of empowerment, where members can take their health into their own hands though self-monitoring, and learning sessions and also to contribute to improving the wellbeing of their communities through *Han kai*.

Because coops are made up of members and coproduction takes place through members' activities, solidarity incentives were central motivating factors in both case studies. While some of U Coop's members might join the coop or use their products and services purely for the convenience or quality, participating in voluntary member activities is driven by the sense of belonging to a community and the social rewards, both of fun and conviviality, but also sense of belonging. Hokuto Heath Coop particularly uses solidarity incentives through its *Han kai* meetings and Open-air community events where it provides information, advice and health checks. Many of the "salon" style *Han kai* offer the opportunity for members to meet informally to socialize and associate with other people in their community.

Finally, expressive values, which come from the satisfaction of contributing to a worthwhile cause (Alford, 2002) are used to motivate voluntary participation by U Coop and Hokuto Health Coop's members. The stated objective of U Coop's Voluntary Livelihood Support Mutual Help Group is to "provide a little act of kindness" to service users. Certainly the low material incentive-at 300 JPY for 30 minutes-is not the motivation behind participating, rather members are motivated by the desire to contribute to this objective, and to make small but meaningful change in the lives of their fellow community members. Hokuto Health Coop's objective is to promote the health and welling of local residents (Nishimura et al., 2016). The voluntary activities of members of health and wellness promotion and capacity building through self-monitoring and information sessions, as well as the social connections and community networks formed empower members to promote and achieve this objective.

Despite their differing core businesses, both U Coop and Hokuto Health Coop are able to mobilize and sustain stakeholder engagement to coproduce by increasing the willingness of their members to participate in a variety of activities and initiatives. By using a variety of incentives; material rewards, intrinsic rewards, solidarity incentives, and expressive values; a broader base of potential volunteers can be appealed to, and for a diverse array of coproduction activities, both simple and complex, for which the value is consumed by individuals, groups, or the wider public.

In addition to enhancing the willingness of members to coproduce, both case studies exemplified ways in which the ability of members was also enhanced. In order to ensure that the volunteer spirit will continue to be nurtured in people, U Coop offers volunteers leaning experiences. U Coop aims to have about 100 people per year apply

for volunteer work. According to U Coop, there is always a rise in volunteer spirit following great disasters in Japan; such as the January 1998 Great Hanshin earthquake *or* Kobe earthquake, the March 2011 Great East Japan or Tohoku earthquake, or the April 2016 Kumamoto earthquake. People want to help the afflicted people, and are motivated to volunteer time and offer help for social causes. But as time passes, that volunteer spirit wanes. By providing learning opportunities and guidance for volunteers and coordinators, U Coop can convey the spirit of the activity to stimulate the motivation and initiative of members and overcome the inertia and apathy that can easily set in, and reinvigorate the volunteer spirit of members.

Hokuto Health Coop similarly empowers members by creating opportunities for members to meet and exchange ideas. Salon groups and mutual support activities are happening informally between members, but Hokuto Coop has picked up on these activities and will formalize the system in order to scale up and expand, in order to increase impact. Both cases show how the coops can use their existing networks and resources to facilitate volunteering though mutual help groups. Additionally, they both offer learning opportunities to members both to build the interest and capacity of their members to engage in truly effective, and fulfilling volunteer experiences.

Recommendations

The results from the literature review and reinforced by the coop case studies confirmed the hypothesis: that coproduction can mobilize underused community resources, and that coops can be a tool for coproduction by mobilizing stakeholder engagement. In order to practically apply these findings the proposed recommendations are summarized as follows.

To promote coproduction in the home and community care sector in a way that mitigates the limitations and maximizes benefits of coproduction:

- Objectively assess the costs and benefits of coproduction in order to alleviate reluctance to engage in coproduction.

- Determine when and how coproduction could be appropriately integrated into service design and/or delivery (e.g. core or complementary activities).

While both the sustained efforts of citizens, community organizations and government officials are required in order to successfully initiate and maintain coproduction, the following recommendations suggest ways governments can support coproduction:

- Increase user choice and voice in service design and delivery. Decentralized and less standardized services systems encourage citizen participation.

- Strategically use tax subsidies, infrastructure building and resource investments and commissioning practices to incentivize coproduction. For example building community care facilities will facilitate coproduction by providing a platform for collective action.

With regards to engaging stakeholders, the following recommendations are offered for government and community and voluntary organizations to lay the groundwork for coproduction:

- Implement policies and protocols at the organizational level that increase understanding of the value of citizen participation, and provide the skills to effectively engage citizens in coproduction.

- Engage citizens at an early stage in the life of a project or program to foster the formation of positive working relationships based on mutual trust and understanding, and encourage buy-in from citizens who will feel that their opinions and efforts are truly valued and can contribute to positive change.

Besides laying the foundations at the organizational level, coproduction will require building relationships and enhancing citizen willingness and ability to coproduce. The following recommendations address the strategic use of incentives:

- Engage citizens by conveying practical intentions to address specific problems that they are personally affected by.

- Self-efficacy, the intrinsic reward that citizens get through the belief that they can actually effect positive change, is particularly effective at incentivizing coproduction. Other intrinsic rewards, including appealing to participants' interests, self-esteem, self-determination and competence, are found effectively incentivize coproduction that creates private, group or public value.

- Enhance actual or perceived ability to coproduce by making the coproduction task easier, or through capacity building initiatives such as providing information, advice and training.

Conclusion

By presenting coops as tool for coproduction, this research contributes to the theory and practice of coproduction, and more broadly to public governance. By examining the case of coops that are providing public health and social care in Japan through the analytical framework of coproduction, the model of care can be operationalized and presented in value propositions for coproduction initiatives. Having a clear estimate of the time and money one can expect to commit, as well as the social and economic value of outcomes is beneficial for governments, community and voluntary organizations and citizens.

For governments, knowing the costs and benefits will help commissioners and policy makers make better informed decisions about what programs and services to fund, and the how to direct funding or other supports in ways that will achieve the desired outcomes and impacts. For community and voluntary organizations citizens, having clearly defined target outcomes will allow service value for money to be objectively assessed. This will help temper expectations and ensure that efforts are not wasted by ineffective but well-meaning projects and programs. For citizens, this is particularly important, because there is nothing more disheartening than the feeling of futility when voluntary efforts that were given with a sincere desire for change, result in

nothing more than fuzzy feelings and a photo op. For all stakeholders, knowing the value of coproduction can increase accountability, because when the expected roles and contributions are clearly established, all members know the actions and outcomes for which they are responsible. Program monitoring can be clearly carried out, and program management action can be taken to identify parts of the system which are underperforming and need to be revised. As the population ages in many countries across the world, resulting in increased health and social care needs and shrinking resource to deliver services, resources and efforts cannot afford to be wasted or mismanaged.

Public services cannot be effectively delivered by the state alone. Citizens are not passive recipients of service and to perpetuate this pacifist approach and continue with the status quo is ineffective and counterproductive. The active participation of citizens within cross-sectoral networks with community organizations is not only more effective in delivering public services, but it is essential. Coproduction of public services is premised on an ideology that lies between paternalistic welfare provision by monolithic government control; and a New Public Management approach, where the needs of vulnerable populations are left to market forces. Successful coproduction requires a paradigm shift towards a more open and inclusive civil society that respects, encourages and supports the knowledge and contributions of citizens, who work collaboratively with governments and community and voluntary organizations to deliver public services. Predicated on forming partnerships and connections across sectoral divides, coproduction creates a more strong and resilient social safety net. Because when more individuals, communities and organizations are empowered through capacity building, and more connections formed through partnerships and networking, the more interwoven the separate strands become. And taken together, the entire system is stronger and more resilient, with less gaps through which the vulnerable can fall.

To borrow the Oscar Wilde reference from Julian LeGrand (2007), if a cynic "knows the price of everything, and the value of nothing", and a sentimentalist "sees an absurd value in everything and doesn't know the market price of any single thing" (Wilde, 1993, pg. 134), where is the middle ground? This research proposes that a pragmatist knows that the value of everything comes at a price. By presenting coops as a tool for coproduction, and operationalizing key aspects of coop coproduction to highlight the economic and social value potential, this research aspires to encourage citizens to take an active role in improving their communities through voluntary contributions, and for governments to include the lived knowledge and experience of citizens. Because only through collaborative systems approaches that mobilize the strengths and resources of individuals and organizations across public service systems and sectors can the challenge of the aging population be addressed.

References

Alford, J. (2002). Why Do Public-Sector Clients Coproduce?: Toward a Contingency Theory. *Administration & Society*, *34*(1), 32–56. http://doi.org/10.1177/0095399702034001004

Bovaird, T. (2007). Beyond Engagement and Participation: User and Community Coproduction of Public Services. *Public Administration Review*, *67*(5), 846–860. http://doi.org/10.1111/j.1540-6210.2007.00773.x

Brandsen, T., & Honingh, M. (2015). Distinguishing Different Types of Coproduction: A Conceptual Analysis Based on the Classical Definitions. *Public Administration Review*, n/a-n/a. http://doi.org/10.1111/puar.12465

City of Yokohama. (2015). *City of Yokohama Long-term Care Insurance Guide*. Retrieved from http://www.city.yokohama.lg.jp/kenko/kourei/riyousya/aramashi/pdf/english.pdf

Fujita, M., & Sumitama, M. (2016, April 19). Interview with U Coop.

Joshi, A., & Moore, M. (2004). Institutional Co-production: Unorthodox Public Service Delivery in Challenging Environments. *Journal of Development Studies*, *40*(4), 31–49. http://doi.org/10.1080/00220380410001673184

Kurimoto, A. (2015, November 20). Interview with the Consumer Co-operative Institute of Japan.

Le Grand, J. (2007). *The Other Invisible Hand: Delivering Public Servcies through Choice and Competition*. Princeton University Press.

Leviten-Reid, C., & Hoyt, A. (2009). Community-Based Home Support Agencies: Comparing the Quality of Care of Cooperative and Non-profit Organizations. *Canadian Journal on Aging*, *28*(2), 107–120. http://doi.org/10.1017/S0714980809090163

MHLW. (2013, March 7). The current situation and the future direction of the Long-term Care Insurance System in Japan. Retrieved May 3, 2016, from http://www.mhlw.go.jp/english/policy/care-welfare/care-welfare-elderly/dl/ri_130311-01.pdf

Nishimura, Oba, E., Shibata, M., Satou, Tokubo, H., & Takahashi, Y. (2016, April 26). Interview with the Tokyo-Hokuto Health Cooperative Association.
Ostrom, E. (1996). Crossing the great divide: Coproduction, synergy, and development. *World Development*, *24*(6), 1073–1087. http://doi.org/10.1016/0305-750X(96)00023-X

Ozeki, T., Tokubo, H., & Kuroda, T. (2015, November 21). Interview with the Japanese Health and Welfare Co-operative Federation (HeW Coop).

Parks, R. B., Baker, P. C., Kiser, L. L., Oakerson, R. J., Ostrom, E., Ostrom, V., … Wilson, R. K. (1981). Consumers as Coproducers of Public Services: Some Economic and Institutional Considerations. *Policy Studies Journal*, *9*(7), 1001–1011. http://doi.org/10.1111/j.1541-0072.1981.tb01208.x

Parrado, S., Ryzin, G. G. V., Bovaird, T., & Löffler, E. (2013). Correlates of Co-production: Evidence From a Five-Nation Survey of Citizens. *International Public Management Journal*, *16*(1), 85–112. http://doi.org/10.1080/10967494.2013.796260

Pestoff, V. (2009). Towards a Paradigm of Democratic Participation: Citizen Participation and Co-production of Personal Social Services in Sweden. *Annals of Public and Cooperative Economics*, *80*(2), 197–224. http://doi.org/10.1111/j.1467-8292.2009.00384.x

Tasaki, K., & Mizuno, K. (2016, April 12). Interview with the Meguro Council of Social Welfare Regional Support Division.

Vamstad, J. (2012). Co-production and Service Quality: The Case of Cooperative Childcare in Sweden. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, *23*(4), 1173–1188. http://doi.org/10.1007/s11266-012-9312-y

Wilde, O. (1993). *Lady Windermere's Fan* (Vol. III). Routledge/Thoemmes Press.

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An Internet of Things Architecture for Elderly Home Healthcare

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Abstract
Today, the "Internet of Things" (IoTs) is used in many of parts of medical technology, research and development, and worldwide industry. In this paper presents a novel approach for an IoT architecture for elderly home healthcare that IoT architecture to achieve connectivity with the patient, sensors and everything around it. The objective of this article is: 1) to design and implement an architecture for intelligence elderly home healthcare utilizing IoT, 2) to incorporate current technology platforms to optimize cost savings, 3) comprehensively spread technology and information to worldwide populations already available through IoT. The development of elderly home healthcare system to be capable of efficient operating with four layers of IoT architecture: 1) system architecture, 2) data model architecture, 3) management architecture, and 4) cloud architecture. The result suggest that an innovative solutions includes benefits of mobile, cloud computing, big data analytics, and IoTs make both the elderly life easier and the healthcare process more effective.

Keywords: IoT architecture, ICT, elderly, disable, home healthcare

Introduction

The world population is rapidly ageing: the number of people aged 60 and over as a proportion of the global population will double from 11% in 2006 to 22% by 2050. By then, there will be more old people than children (aged 0-14 years) in the population for the first time in human history (Commission of the European Communities, 2009). The population of Thailand is getting old. At the present time, just under 11% of the Thai population is over 60 years of age and the trend is rapidly rising. The proportion of older persons in the total population is expected to reach 14% in 2015, 19.8% in 2025 and nearly 30% by 2050. Driving the trend is a combination of falling fertility rates and improvements in health especially of women and infants (World Health Organization, 2012).

Information and communication technology (ICT) should be able to improve the quality of elderly life and healthcare. However, the progress is very limited comparing to other ICT related application areas, such as business, education, entertainment, etc (Steg, H. et al., 2006). There are some identified barriers based on some studies in the field of healthcare.

1) Lack of health information sharing system (Steg, H. et al., 2006).
2) Lack of sustainable monitoring and preventive management of health indicators (Cortes, Ulises et al., 2007).
3) The existing healthcare system cannot integrate the multiple needs of healthcare (Magrabi, Farah et al., 2001).
4) ICT technologies for intelligent health management are difficult to use (Kühner, Daniel., 2007).
5) Problem of security and privacy (Pinsker, M., et al., 2008).

Today, the “Internet of Things” (IoTs) is used in many of parts of medical technology, research and development, and worldwide industry. This article proposed applies a novel approach to IoT by utilizing a robust intelligence elderly home healthcare architecture. Current available technologies include the benefits of mobile, cloud computing, big data analytics, and IoT. IoT is the key element- it enhances and improves data availability and is a “force multiplier” when used in the decision-making process leading to elderly home healthcare management.

The IoT is a technological phenomenon originating from innovative developments and concepts in information and communication technology associated with: Ubiquitous communication, Pervasive computing and ambient intelligence (International Telecommunication Union., 2005). Additionally, the IoT will be a key part of the future Internet, which will be made up of the Internet of Services and the Internet of Things (A. J. Jara; M. A. Zamora and A. F. G. Skarmeta., 2009.). Based on characteristics of health care filed, healthcare IoT can be viewed from following three aspects:

a) "Things" is physical objects, that is, doctors, patients, and medical device etc.
b) "Of" can be explained as Connecting, it is information exchange. The networking standard defined objects are perceivable, can be interactive, can be controlled.
c) "Internet" is the process. The concept of IoT in healthcare must be based on standardized medical procedures. The concept of IoT must be elevated to a process.

In the traditional model of health care services, the patients are hospital-centered, while the service of doctors and nurses shall be based on information system software in the hospital (Takács, Barnabás, and Dávid Hanák., 2007). Therefore, "difficulty and costliness" has troubled the patient for a long time. Under the internet of things model, IOT-based intelligent healthcare management system focuses on the patients and the medical resources including doctors, nurses and medicines target at the patients. This innovative solutions includes benefits of mobile, cloud computing, big data analytics, and IoTs make both the elderly life easier and the healthcare process more effective.

Purposes of the study

The objectives of this study are as follows:

1. To design an architecture for elderly home healthcare utilizing IoT.
2. To incorporate current technology platforms to optimize cost savings.
3. To comprehensive spread technology and information to worldwide populations already available through IoT.

Proposed Methodology

Our experimental, including any new technologies or tools to be developed. The plan involve:

1) On-line/off-line web and smart mobile applications with image notation, include more local dialects, as well as all other major foreign languages, all with a clear understanding of differing educational levels. This has the potential to encourage people to identify and elderly home healthcare,
2) Incorporate comprehensive interoperability intelligence healthcare management development support software tools,
3) Maintain data collection from personal health data in mobile devices, e-health data in personal, family folder, treatment history, demographics, and specialization of diagnosed cases with geolocation for health officers within different health center levels,
4) Tools for exchange and transfer data from IoTs to cloud and big data analytics, and
5) Real-time data analysis with big data analytics.

New information technology and computer design comprises information analysis and design. These will be used, such as IoTs architecture of intelligence elderly home healthcare management system interoperability with object oriented design, UML and XML, new relational and non-relational database systems for data analysis utilizing current cloud computing models, and machine learning for big data analytics. We will use IoTs architecture of intelligence elderly home healthcare management which encompass system architecture, data model architecture, management architecture, and cloud architecture with four layers of interoperability and robust data analysis for data collection.

Comprehensive and efficient elderly home healthcare databases from data model architecture in cloud and existing databases that currently store all individual health information, including personal health data stored in mobile devices, e-health data stored in health centers in the area, and related data will be available. The new intelligence elderly home healthcare systems with big data analytics for elderly home healthcare in cloud including web and mobile applications, interoperability intelligence surveillance development support software tools, e-health database with geolocation, tools for exchange and transfer data, and real-time data analysis will be promised.

The next step will be involved in evaluating the performance of the first phase to improve the algorithm, more advancement in big data analytic techniques and cloud computing.

The following plan will also develop intelligence elderly home healthcare to be capable of efficient operating with four layers of IoTs of intelligence elderly home healthcare architecture: 1) system architecture: sensors and medical devices, home appliance such as mobile devices, televisions, office equipment, etc. can be used in remote diagnosis and home health care for patient and vulnerable groups to transfer data and connect to the system via the internet, 2) data model architecture: to be redesigned to accommodate data from new more system architecture, 3) management

architecture: to manage the data and complex systems is durable, flexible and connecting as well as a single system, and 4) cloud architecture: architecture on the top of the system will be involved in evaluating the performance of the first phase to improve algorithm, more advanced in big data analytic techniques and cloud computing.

Four layers of IoTs architecture for elderly home healthcare

The development of intelligent healthcare management to be capable of efficient operating with four layers of IoTs architecture for elderly home healthcare:

1) System architecture: sensors and medical devices, home appliance such as mobile devices, televisions, office equipment, etc. can be used in remote diagnosis and home health care for patient and vulnerable groups to transfer data and connect to the system via the internet,

2) Data model architecture: to be redesigned to accommodate data from new more system architecture,

3) Management architecture: to manage the data and complex systems is durable, flexible and connecting as well as a single system, and

4) Cloud architecture: architecture on the top of the system will be involved in evaluating the performance of the first phase to improve algorithm, more advanced in big data analytic techniques and cloud computing.

So that covers four layers of IoTs architecture for elderly home healthcare.

Discussion and Conclusion

In conclusion, Internet of Things is supposed to be a novel way to approach elderly home healthcare management that will involve a comprehensive development of cloud computing, data management and big data analytics. In this paper presents a novel approach for an IoT architecture for elderly home healthcare that of IoT architecture to achieve connectivity with the patient, sensors and everything around it. The development of intelligence elderly home healthcare system to be capable of efficient operating with four layers of IoTs architecture: 1) system architecture, 2) data model architecture, 3) management architecture, and 4) cloud architecture. It will also involve exchange and transfer of data to all areas, as well as new technology and access to information, comprehensive medical and health data stored in a digital cloud, which is currently stored fragmented at all levels, and in all sectors, and most importantly, using data mining algorithms to handle healthcare big data with big data analytics. This innovative solutions includes benefits of mobile, cloud computing, big data analytics, and IoTs make both the elderly life easier and the healthcare process more effective.

In the future work we will mainly work on implementing a prototype of the approach and evaluated by different methods. Some artificial intelligent techniques for diagnosis can also be used in this framework to make people home healthcare easier and more effective.

References

Commission of the European Communities. (2009). “Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions.” *Internet of Things - An action plan for Europe.* Brussels, s.n., 18 June 2009.

World Health Organization. (2012). *The health-care challenges posed by population ageing.* Bulletin of the World Health Organization Past issues Volume 90: 2012 Volume 90, Number 2, February 2012, 77-156.

Steg, H. et al. 2006. *Europe Is Facing a Demographic Challenge - Ambient Assisted Living Offers Solutions*. VDI/VDE/IT, Germany.

Cortes, Ulises et al. 2007. *Intelligent Healthcare Managing: An assistive Technology Approach*, IWANN 2007, LNCS, pp. 1045-1051.

Magrabi, Farah et al. 2001. *Home telecare: system architecture to support chronic disease management. Engineering in Medicine and Biology Society.* Proceedings of the 23rd Annual International Conference of the IEEE, Volume 4, 25-28, pp. 3559 - 3562.

Kühner, Daniel. 2007. "Internet der Dinge Telekommunikationsinfrastruktur." Edited by Seminarband: Mobile und Verteilte Systeme - Ubiquitous Computing Teil IV. Seminarband: Mobile und Verteilte Systeme - Ubiquitous Computing Teil IV. Universität Karlsruhe - Fakultät für Informatik, pp. 1-15.

Pinsker, M., et al. 2008. *"Experiences Using Mobile Phones as Patient-terminal for Telemedical Home Care and Therapy Monitoring of Patients Suffering from Chronic Diseases.*" pp. 1305-1312.

International Telecommunication Union. 2005. *"ITU Internet Reports 2005: The Internet of Things."* Geneva, s.n., http://www.itu.int/internetofthings/

A. J. Jara; M. A. Zamora and A. F. G. Skarmeta. 2009. Secure use of NFC in medical environments. 5th European Workshop on RFID Systems and Technologies.

Takács, Barnabás, and Dávid Hanák. 2007. *"A Mobile System for Assisted Living with Ambient Facial Interfaces."* International Journal on Computer Science and Information Systems, October 2007, 2 ed.: 33-50.

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Living in a Conflict Zone: Story of Aging in the Southern Part of Thailand

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Abstract
Conflict in the southern border provinces of Thailand has been reported for decades. This paper aims to explain health conditions, social well-being, and compare between Thai-Buddhists and Thai-Muslims. 302 of the elderly in Thepha, Songkla were interviewed. We found that, most of them were young old, still active, and 96.8% could perform ADL tasks, perfectly. Unfortunately, approximately 18.4% were demented. By means of cultural pluralism, The Muslims were more illiterates but the income was higher. The Buddhists participated in social and community activities more than the Muslim (1.7 times). Health inequality was also mentioned, as 30 % higher in using Universal Coverage Scheme Health Card for the Muslims , where the Buddhists were more benefits from State Enterprise Office. This means the Buddhists have more opportunities in health accessibility, health-seeking behavior, and referral system. By the way, a perception in life of the Muslims are more likely to be higher than the Buddhists, as the Buddhists has worrisome in the conflict occurring in the area. Thus, the concepts of health inequality and social security should be mentioned and more developed for social health and well-being of the elderly in this area.

Keywords: aging, elderly, ADL,social well-being, health, WHOQOLBref

Introduction

Thailand is a country that majority of the population are Buddhists. Less than five percent are reported as the Muslims and Christianity (Thailand National Statistical Office ,(2010)). This number is true for all provinces in the country except in the south of Thailand. Especially the provinces locate close to Malaysia; Pattani, Yala and Narathiwat, where are mark as a red zone or conflict area. The number of Muslims is higher, vary from 30-90%. People spend their daily life peacefully on cultural pluralism for hundreds years until the last decade that the areas have been affected by armed violence. At the same time neighborhood area, like Songkhla Province is getting fast developing in economic growth. Civilization is coming with technologies and worrisome of increasing risk conflict. With the growth of economic and technology in the surrounded area, this leads to the question of how the social well-being and health of older people are to this day.

Study Area and Method

Tepha is a district in Songkhla Province locate next to Pattani Province where the army camp has been there for security work. Elderly are found 11.4 percent of population (Thepa District Office (2015)) . The sample subjects were 302 elderly (183 Muslims, 119 Buddhists) who were on the list of household survey. All Samples were interview in the quantitative study whereas focus group was work out for a qualitative study. Social well-being were measured by WHOQOL-BREF quality of life(WHOQOL(1993)), Bartel Index of Daily life(Mahoney FI, Barthel D.(1965)),TMSE(Train the Brain Forum Committee (1993)),stress(Department of Mental Health (2011)) and Community participation activity(Kahn RL and Juster TF(2003)). Perception of life satisfaction and health, use of basic health service and their socioeconomic were included in the questionnaire. Group discussion on selected topic was done to support the quantitative result. Descriptive statistics and graph were used for the report.

Result and Discussion

Socioeconomic characteristics between Muslims and Buddhists show in figure 1-4. The composition of age group; young aging, middle aging and older aging show a bit different. Approximate 2 percent higher in young aging of Muslims and decrease to 0.5 percent in older aging. More formal education is found in Buddhists group. A higher percent of literacy in Muslims cannot indicate as low education because they have their own education from learning Arabic in their religious. However, the higher education is low in both groups. Since the area have been justified as rural, only compulsory education were provided in 50 years ago. Higher education can be found in the City. Consideration of the main source of income, there is no retirement for agriculture and farming. No different is shown in agriculture, sixty percent of them work in rubber plantation and local seasonal fruits. Farming is including lower percent in animal farming and higher percent in fishery. For those who are owners, they earn a high income as much as 90,000 baht. The employ workers are those who work as labor work in agriculture or farming. Old people with higher education do not have to work as labor but they receive monthly payment from their pension which is higher than the average income. Comparison on the percent of debt between them, the Muslims group has lower percent than Buddhists. Buddhists earn more and spend

more than they earn. Another monthly income for non-working aging is the money from welfare allowance 500-700 baht per month which is not enough to survive.

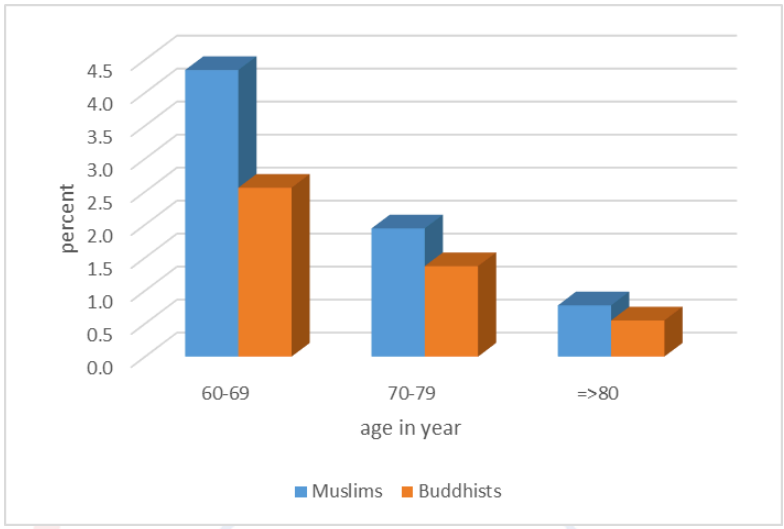


Figure 1 Age group

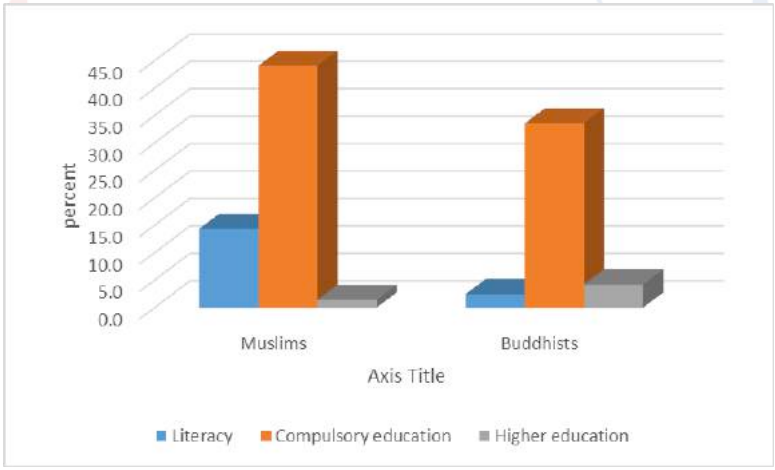


Figure 2 Education

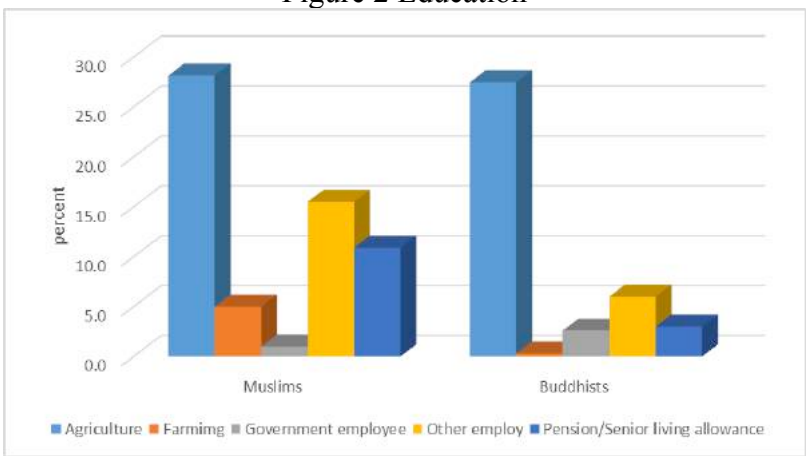
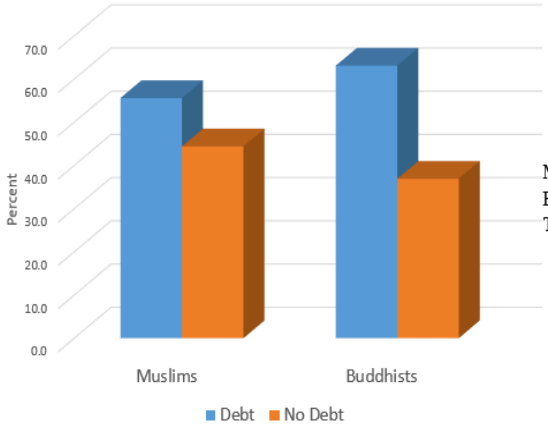


Figure 3 Source of income



Average income Baht per month

	Mean	Min	Max
Muslims	6153	500	90000
Buddhists	8797	700	50000
Total	7242	500	90000

Figure 4 Debt and income

Health is one of the main problems of elderly. As getting older, the need of caring and cure is more important. The government has concern this situation for the citizen. Thus, four main health cards are available for older people (figure 5). The highest percent used is the 30 baht gold card (Universal Coverage Scheme) which is free service for all Thai citizen who are not use state enterprise officer right or Social security. Buddhists has a higher percent in State enterprise officer which provide a better opportunity in health service. They get more choices to refer to bigger provincial hospital in the Song-kla. This right is provided only for government officers and their parents. However, there is few cases of Muslims group prefer to use health care in the neighbor country. This means some Muslims use health insurance and prefer to use the hospital in Malaysia. This can explain that some older Muslims hold their dual citizenship of Thai and Malay.

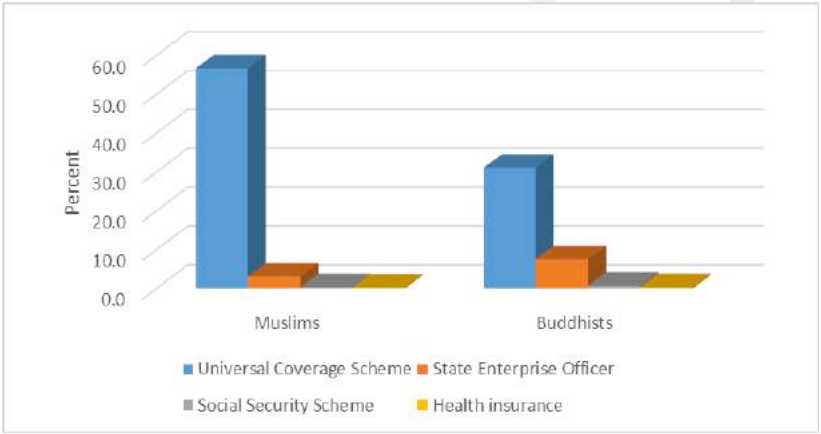


Figure 5 Health card scheme

Picture of Social welling and health are shown in figure 6-7. Though the pictures between these two groups is in the same pattern, a few different can be found. Older people have a good perception in physical health and mental. They do not perceive any problem in seeking service for tertiary care in the big city as most are satisfied in the local health service. Buddhists have lower satisfaction in life because they feel unsafe. The score reflect a small scale different but the feeling was found in a focus group. However, both have good level of life satisfaction. These old people have

been living in this area together for years before the arm violence occurred so they know each other quite well. Community participation is a good indicator of social activity in the village. There are 15 activities relate to religious and 9 activities on official holiday and cultural festival. Both participate in traditional culture day like Songkran and New Year festival. A small number of activities are found in official holidays; royal holiday and constitution day. Muslims participate more in religious activities while Buddhist enjoy participate in official holidays. Average numbers of community participate of Muslims and Buddhists are 4.2 and 7.3 from 24 activities per year. One reason to explain in this low number (<30%) in both groups is due to the feeling of unsafe. Although Buddhists have worrisome of insecure, active young aging are happy to join more frequent public activities. Ability in daily life and instrument used are good in elderly (96.8%). However, they prefer to stay in the house or neighborhood rather than going outside. The older people not only have the healthy physical but also good memory with low stress. It is found only 18.4% are demented. Finally perception of their own quality of life show the good level in all four dimensions, whereas Muslims have a bit higher perceive in a good quality of life.

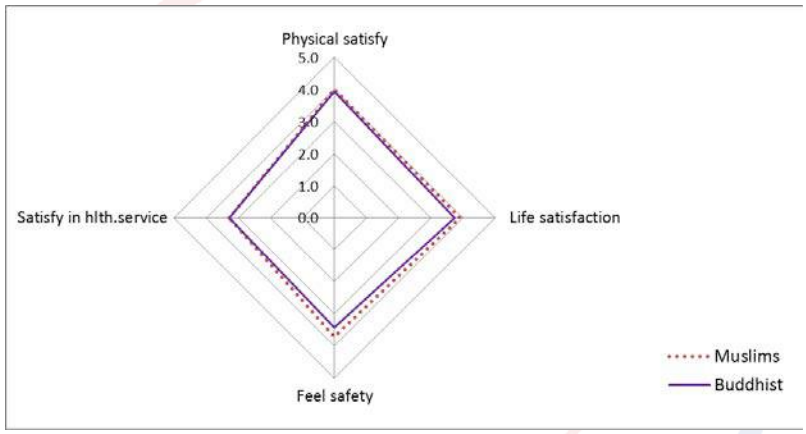


Figure 6 Self-perception in life

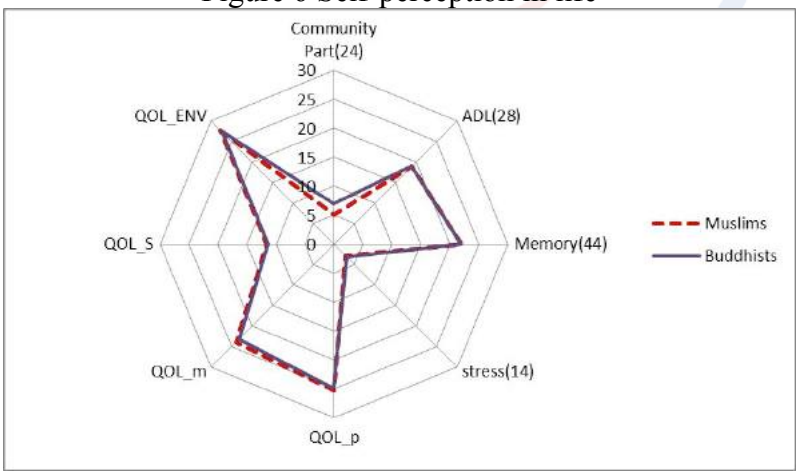


Figure 7 Social well-being and health

Conclusion

Older people of Muslims and Buddhists have similar pattern of social well-being and health. Perception in life of the Muslims is more likely to be higher than the Buddhists, as the Buddhists has worrisome in the conflict. Thus, the concepts of health inequality and social security should be mentioned and more developed for social health and well-being of the elderly in this area.

References

Thailand National Statistical Office (2015). *Preliminary Report 2010 National Population Census and Housing.* National Statistical Office .Bangkok Thailand

Thepa District Office (2016). *Annual Report* . available from (http://www.thephacity.go.th/content/informations)

Kahn RL and Juster TF(2003). Wellbeing concept and measure; in Antonucci TC et al (eds) *International Perspectives on the Well-Being of Older Adults* (228) Oxford Wiley-Blackwell

WHOQOL Group(1993). Study protocol for the World Health Organization project to develop a Quality of life assessment instrument (WHOQOL) *Qual Life Res*. 2,153–159.

Mahoney FI, Barthel D.(1965) . Functional evaluation: the Barthel Index.. *Maryland State Medical Journal* 14,56-61.

Train the Brain Forum Committee (1993) Thai Mental State Examination *Siriraj Hosp.Gaz*.,45,359-374

Depasrtment of Mental Health (2011). *Stress assessment ST5* Ministry of Public Health Thailand

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Educational Policies for Aging and Movements in Thailand: A Literature Review

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Abstract
According to the Madrid International Plan of Action on Aging (2002), social and policy movements to increase an educational opportunity among Thai elderly had also been established and implemented. The objective of this paper is to review the education policy for the elderly and its implementation. The secondary data employed from several resources, either Thai or International publications. The results indicated that educational empowerments and accessibilities for Thai older were obviously written in the 1st and 2nd Thailand National Plan for elderly (1982 – 2001; 2002-2021), including five strategies. During the year 2007-2011, there were several projects to increase the possibility for aging educations, which was supported by JICA. Focusing on an implementation of the projects, (1) government and private organizations for the olders and system for the aging education at community level had been established, (2) several publications toward health information and educations, religions and practices, news, etc. had been distributed (3) publications and information about elder rights, social securities, social protections, and appropriate occupations, had been done. Suggestion from this study includes (1) education for the elderly should not be concerned only literatures or publications, due to the elderly in community; especially rural areas had low education and having eye problems and (2) sustainability for education is life long-learning, new innovation for education, such as visual education, edutainment, educational technology, might be fit for this aged, long-term attention in printing resources or publications might not related to aging psychology for their educations.

Keywords: Thailand elderly education policy

Introduction

Thailand has been becoming an aging society from 2005. Aging are physical, psychological, and social changes. Factors affecting coping skills of elderly are social support, religion and spirituality, active engagement with life, and having an internal locus of control. Lifelong learning of older people can improve the coping skills. Therefore appropriate education policy for elderly is important in helping them to cope with stressful life events in later life. The formal, non-formal and informal education can create healthy aging (or optimal aging), which has low probability of disease or disability, with high cognitive and physical function capacity and is active engagement with life.

The World Assembly on Aging endorsed the International Plan of Action on Aging in 1982. The plan drew the attention on the diversities between countries and within countries, and between individuals. Therefore the country's national policy on aging should be carefully designed from researches within the country to obtain precise policies and plans on the elderly. National program in any country is recommended to include these topics: independence, participation, care, self-fulfillment, and dignity. According to the Independency program**,** older persons should be able to access to all facilities necessary for living, obtain supports from all parties, have a chance to work or stop working, have access to appropriate educational and training programs**,** can live in safe and happy environments, and can live at home for as long as possible.

Thailand had good 1st (1982 – 2001) and 2nd National Plans (2002 – 2021) on elderly which are from evidenced-base researches supported by JICA. The policies were aiming to serve as the instrument to the entire implementation of work on the elderly. Education policy for old people is one of the future factors and government priorities that impacting the administration of Thai education. The lifelong education for older people would create healthy aging and turns senior people to be better quality workforce. The country needs to extent retirement age of Thai workforce, in order to enable the economy to keep expanding even with increasing aging population (Ministry of Education 2015).

Objective

To review Thailand's National Policies on educational and training programs for the elderly and their implementations.

Method

This documentary research is the secondary information employed from several resources, either in Thai or international publications and data based. Content analysing was used for data conclusion.

Results

Educational empowerments and accessibilities for Thai older had been found since the 1st Thailand National Plan for elderly. Focusing on an implementation of the projects, (1) government and private organizations for aging education concept at community level had been established (Fig 1), (2) health information & health educations had been distributed (3) elder rights, social securities, social protections, and appropriate occupations, had been done by several ministries (Table 1).

Educational concept (Sajjasophon, R. (2013)) consists of: (1) Extending retirement ages and give opportunities for lifelong learning (Sungsri, S. (2009)). As the number of young work-force age is decreasing compare with the increasing number of older people, extending retirement ages can help economics and social development of the country.
(2) Encourage learning of information technology. The elderly can access to information that is useful for their physical, psychological and emotional wellbeing. They also can get better knowledge to improve efficacy of their career. They can adapt and manage better in the world that is fast changing of economics, social, politics, and business competition and complication.
(3) Development of learning media for informal education. They can be people, television, movie, radio, activities, domestic media, computer, internet, or mobile phone. They should suit the old people's education back ground and physical status.
(4) Promotion learning systems that make different age groups can learn together. It can produce unity, harmony and peaceful environment. People in the community thus will have good and friendly relationship. This can improve quality of life and useful in knowledge transferring.

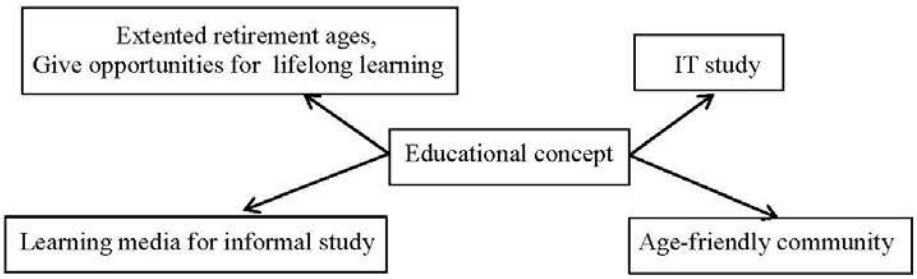

Fig 1 Educational concept.

Table 1 Ministries involve in organizing lifelong education for elderly and their responsibilities.

Ministries of	Responsibilities
Social Development and Human Security	Establishing schools for the aged in subdistricts, providing information for early preparation for aging, and creating the concept of brain bank.
Education	Promoting lifelong learning and continuous education in the form of formal, non-formal and informal education.
Public Health	Providing holistic health care for the aged.
Science and Technology	Supporting learning technology for aging population.
Ministry of Labor	Promoting of work after retirement.
Interior	Promote community learning and participation. Staff training and development to produce strong and sustainable communities.

Conclusion

1) Thai government gave the policy that non-formal and informal educational actions for old people must go to district level (Thai ampher) and subdistrict level (Thai tambon) in every provinces (76 provinces and Bangkok). Starting in the year 2015 in at least 155 subdistricts in 76 provinces. The elderly needs sustainability activities that are appropriate to their education background, their needs and physical condition (Ratana-ubon, A. et al. (2012); Semamon, W. (2014)).

Ratana-ubon, A. et al. (2012) found that most of Thailand senior education/learning best practices were learning activities and services based on the Thai way of life. They required activities to maintain healthful conditions and would like to have some ideas about effective caring systems. It can be in a form of short-term training sessions. Various geriatric clubs were expected, which can help them form partnership and collaborations. The education should be able to point out how they can enjoy solid relationship with their families and are able to happily adapt themselves to the communities and society. Personnel media acts as the main education media and learning sources. Evaluation of the course is assessed by means of observation.

The edutainment learning is very well accepted. It is the technique in which the learning at the formal education system, non-formal education system and the information education system is very well integrated. Activities should vary and are organized for multi-age learners, and learners should be able to discuss and exchange knowledge casually. The content should be applied to their daily lives, which are five aspects- sanitary, adaption to society and mental states, economy and saving, learning and the legal rights of senior citizen. Many parties should involve in managing the learning, offers some financial aids and managing all resources available in the communities.

Senior education/learning management required 4 steps of activities which are (1) the need analysis, (2) programs and activities planning, (3) program implementation, and (4) the evaluation. Each process involved experts' collaboration. The educational/learning management models could be divided into 5 main models: (1) The University of the Third Age: U3As; (2) Community Multipurpose Service Center; (3) Senior Community; (4) Senior Club; and (5) Informal Senior Group. The educational/learning guidelines consisted of 4 major guidelines which are (1) designing of curriculums/contents and activities; (2) connecting of social networks for educational/learning enhancement; (3) the setting of a learning climate and environment; and resources; and (4) developing the research and development.

2) Financial education for elderly (Suwannarong, S. (2014)) gave knowledge of pension systems. It is very important to raise awareness of the population about the necessity of money management for retirement. They have to think about the money they earn, spend, save and invest for the future.

People in rural areas they have Thailand Village Fund (TVF) for supporting microcredit scheme for villagers by collecting savings and debt replacement on a daily basis. In the future the Fund might have to plan for the benefit of old people too.

3) Law education by Chokmhor, P. et al. (2011) has found that the law for the quality of life promotion for the old age persons in Thailand does not exist. There are law about welfare management, social insurance, superannuation for the civil servants and some secondary laws that do not support or protect the quality of life of the old age persons equally and fairly. So the Government should declare law for quality of life promotion of the old age persons in the future.

Suggestions

1) There should be one central institution or department that can link educational works of all Ministries together.
2) Education for the elderly should not be concerned only literatures or publications, due to the elderly in community; especially rural areas had low education and having eye problems.
3) Sustainability for education is life long-learning, new innovation for education, such as visual education, edutainment, educational technology, might be supported their learning processes.
4) More researches are needed to find appropriated education system(s) for individual community at particular time.
5) Some researches are also needed for aging handicapped.
6) Financial education for early planning may be very important too, especially for vulnerable group.
7) More researches are needed to give positive attitude of Thai society toward old population.

References

Chokmhor, P., Sutthawate, C., Shanapai, V. and Busayabhud, K. (2011). Law for Quality of Life Promotion of the Old Age Persons in Thailand. Research Report for the National Research Council of Thailand, Budget year 2009.

JICA and Chulalongkorn University report (2011). Project on the Development of a Community Based Integrated Health Care and Social Welfare Services Model for Older Persons in the Kingdom of Thailand.

Jitapunkul, S., Wiwatvanit, S. (2009). National Policies and Programs for the Aging Population in Thailand. Aging international. 33(1):62-74.

Knodel, J., Teerawichitchainan, B., Prachuabmoh, V. and Pothisiri, W. (2015). The situation of Thailand's older population: An update based on the 2014 auecwy older persons in Thailand. Population Studies Center Research Report. pp 15-847.

Ministry of Education. (2015). Education for All 2015 National Review Report: Thailand. The Thai National Commission for UNESCO. The World Education Forum. Incheon, Republic of Korea, 19-22 May 2015.

Ratana-ubon, A. et al. (2012). The development of the supportive guidelines in education/learning management for enhancing the competencies of older adults in Thailand. Thailand Education Journal. 40: 14-28.

Sajjasophon, R. (2013). Educational Concepts for Developing Active Aging in the Elderly. Kasetsart J. (Soc. Sci) 34: 471 – 490.

Semamon, W. (2014). Study format recreational elderly Ayutthaya and Angthong. The research report to the National Research Council that was funded in the year 2014.

Sungsri, S. (2009). Lifelong learning in Thailand: Policy and implementation. ASEM Education and Research Hub for Lifelong Learning Research Network 4 "National strategies of Lifelong Learning with regard to citizens' motivation and barriers against continuing education and training" meeting in Riga, the University of Latvia**.**

Suwannarong, S. (2014). National Strategy for Financial Education: Thailand Experience. 2014 IFIE-IOSCO Global Investor Education Conference Washington, D.C., USA.

Taranindr, J. (2007). Permanent secretary of the Ministry of Education. September, 21, 2007. Bangkok Palace Hotel, Bangkok, THAILAND.

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Effective Cognitive Stimulation Therapy in the Elderly with Mild Neurocognitive Disorder: Perspectives from Participants and Interprofessional teams

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Abstract
Introduction: Cognitive stimulation therapy (CST) was effective to reduce risk of cognitive decline in patients with mild neurocognitive disorder (MND). The objective was to explore factors contributing to the effectiveness of CST for MND from perspective of interprofessional team members and participants with MDD.
Methods: After finish 6 sessions of CST, data were collected through individual face-to-face interviews with 25 elderly with MND, and interprofessional team members; 1 physician, 1 practitional nurse, 1 nurse aid, 1 psychologist, 1 physical therapist and 1 occupational therapist. All of the interviews were video recorded for nonverbal language interpretation. Conversations were fully transcribed along with field notes and an audit trail after each session, and analyzed using interpretive description methodology.
Results: The importance of CST was emphasized by all participants. Three core themes emerged from the analysis of data: (i) program with two subthemes of "training for specific brain function" and "training for improve global brain function;" (ii) activities with three subthemes of "small group activities", "interactive activities" and "effective teaching material;" (iii) home works with two subthemes of "suitable for each participant" and "adaptation in daily living;" Moreover, participants with MND mentioned accessibility to program, notification system and encourage from family members helped them to participate training and practice at home.
Conclusions: Increasing awareness of holistic factors including program, activities and home works should be emphasized in planning for CST. Not only appropriate program and activities, but also accessibility, notification systems and family members were the keys of effective training.

Keywords: cognition, dementia, training.

Introduction

The Statistical Manual of Mental Disorders - fifth edition (DSM-5) provides the new cluster of neurocognitive disorders that includes three syndromes: delirium, mild, and major neurocognitive disorders (1). Mild neurocognitive disorders (MND) is synonym for mild cognitive impairment (MCI) and is characterized by a mild acquired cognitive decline not interfering with independence in everyday activities, even though greater effort or compensatory strategies may be required (2). The estimated prevalence of mild cognitive impairment in population-based studies ranges from 10 to 20% in persons older than 65 years of age (3,4). The annual rate in which MND progresses to dementia varies between 8% and 15% per year (5), implying that it is an important condition to identify and treat (6) because dementia drastically affects daily life and personal activities and has numerous clinical complications (7).
Higher participation in mentally stimulating activities is generally known to be associated with better cognitive function and reduce risk of cognitive decline and dementia (8-12). In cognitive intervention, cognitive stimulation therapy (CST) includes a range of group activities with the aim to enhance general cognition and social functioning. This approach assumes that cognitive functions work together and should be stimulated at the same time in a social setting. CST is based on reality orientation that involves the presentation of orientation and memory information, relating, for example, to time, place, and person, in order to provide the person with a greater understanding of his/her surroundings, possibly resulting in an improved sense of control and self-esteem (13). In patients with MND, multimodal neuro-imaging studies showed consistent training-related increase in brain activity in medial temporal, prefrontal, and posterior default mode networks, as well as increase in gray matter structure in frontoparietal and entorhinal regions (14). Moreover, brain metabolic changes included Brodmann areas reported to be involved in working memory and attentive processes as well as executive functions (15). CST in MND patients can lead to significant improvements in memory function (16). In addition, Training in an Executive function, Attention, Memory and Visuospatial function (TEAM-V) Program was also effective to improve global cognitive function (17).
After being diagnosed with MND, most patients reported initiating one or more health related activities. For example, they were interested in cognitive stimulation such as taking classes and increasing general activity level (18). However, little is known of the extent to which such practical interventions for effective CST are actually implemented within the MND population. Therefore, this study aimed to explore factors that contribute to the effectiveness of CST in TEAM-V Programs for MND populations, through gaining the perspectives of participants with MND and interprofessional group facilitators.

Methods

Study Design and Subjects

With approval from the Ethics Committee Board of the Institutional Review Board of the Royal Thai Army Medical Department (IRBTA), the authors conducted semi-structured interviews with 25 elderly patients with MND at the Geriatric Clinic of Phramongkutklao Hospital between October 2013 and December 2013. A total of 25 participants were recruited through an existing cognitive stimulation group run in the Geriatric Clinic of Phramongkutklao Hospital. The group members were deemed eligible for inclusion if they met the inclusion criteria as set out in the previous

TEAM-V Program. These stipulated that elderly subjects met neurolo-psychological test criteria for MND and had some ability to communicate. The exclusion criteria comprised elderly subjects that had disability. They participated in 6 sessions of 3 hours in group-based multicomponent cognitive stimulation every 2 weeks between July 2013 and September 2013. During the first hour, participants were invited to join movement activities such as stretching and muscle exercises. During the remaining 2 hours of each session, the participants were given cognitive training for each domain that linked to problems commonly found in MCI. The summary of learnings was discussed at the end of each session. Moreover, during the weeks between sessions, participants were assigned homework to summarize what they had learned in sessions. Group facilitators were composed of interprofessional team members; 1 physician, 1 practitional nurse, 1 nurse aid, 1 psychologist, 1 physical therapist and 1 occupational therapist. After approaching the participants with MND and group facilitators, the interviewers introduced themselves. After explaining the objectives of the study, written informed consent was obtained and the participants with MND and group facilitators had an individual interview in the end of the program. All of the interviews were video recorded for nonverbal language interpretation. Conversations were fully transcribed along with field notes and an audit trail immediately after each session. After demographic data collection, participants and staffs were asked about the CST that they participated in. Two aspects were explored: characteristic of effective CST and factors to improve CST. The interview took 30 to 50 minutes each session, depending on the participant and staff.

Data Analysis

Open codes were created and analyzed using investigator triangulation method. The codes were discussed, modified and merged by the authors and final revised codes were developed afterward. Emerging concepts were extracted and analyzed using a thematic analysis approach. Themes were based on the model (Figure 1) and were described along with verbatim quotes from the participants.

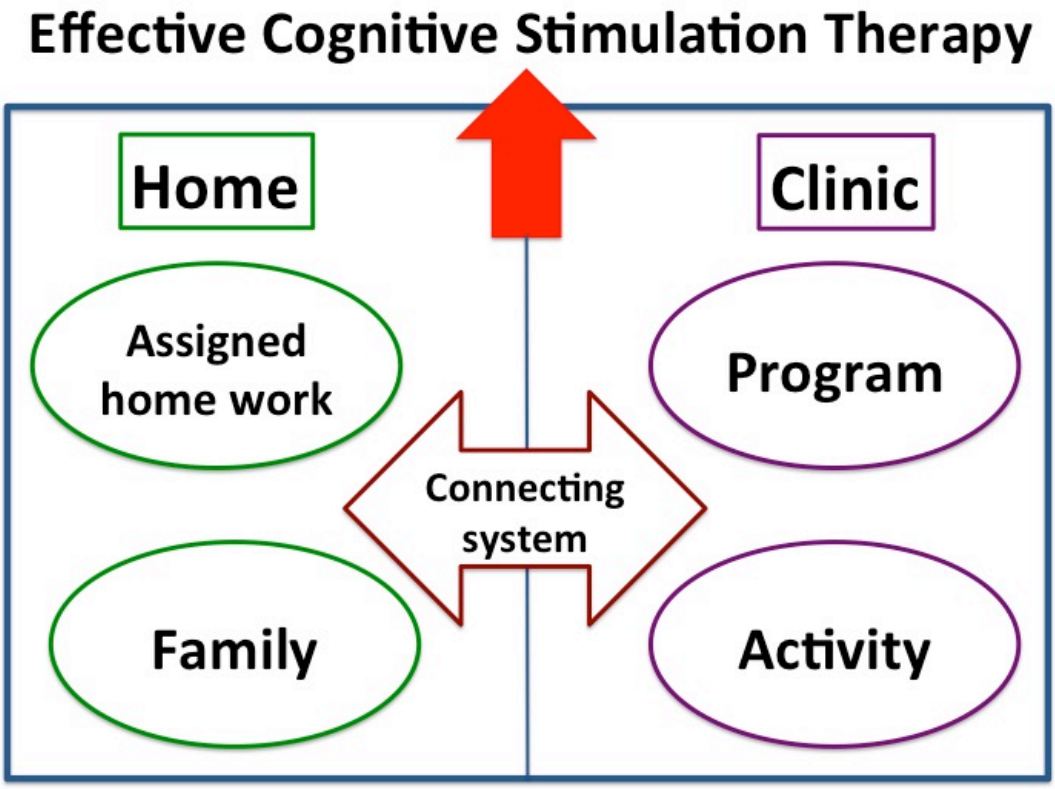

Figure 1: Factors contributing to the effectiveness of CST for MND elderly from perspective of group facilitators and participants with MND.

Results

Participant Characteristics

A total of 25 participants with MND and 6 group facilitators were eligible without exclusions (n = 0). The authors interviewed all 25 patients with MND (aged 70.5 ± 7.5 years old). In all, 18 of them had amnestic and all 6 Group facilitators (aged 43.5 ± 3.7 years old). (Table 1).

Table 1: Demographics of participants with MND and group facilitators

Characteristics	Participants with MND, N = 25	Group facilitators, N = 6
Age (years), mean +/- SD	70.5 ± 7.5	43.5 ± 3.7
Gender		
Female, n (%)	22 (88)	4 (67)
Male, n (%)	3 (12)	2 (33)
Type of MCI		
Amnestic MCI, n (%)	18 (72)	
Non-amestic MCI, n (%)	7 (28)	
Mini Mental State Examination (MMSE) , mean ± SD	26.5 ± 2.0	

Thematic Analysis

The importance of cognitive stimulation therapy was emphasized by all participants. After analyzing final codes, three main themes of perspectives from participants with MND and group facilitators, and three main themes from participants with MND. Ten subthemes emerged (Table 2).

Table 2: Themes, subthemes and codes of the participants with MND and group facilitators after the interview

Perspectives from	Themes	Sub-theme	Codes
Both participants with MND and group facilitators	Programs	Specific brain function training	-Training for each domain of brain functions -Training for common problems of specific brain functions
		Global brain function training	- Training for overall of brain function such as thinking speed
	Activities	Small group	- Friendly environment make more confident to participate
		Interactive sessions	- Draw participants attention - Group facilitators should encourage participants to do interactive activities
		Effective teaching materials	- Help participants follow the steps of training and understand - Provide to practice at participants' home
	Home works	Suitable for each participants	- Fit to each participant - Should draw participant attention to do
		Can adapt in daily living	- Can adapt to routine of daily living

Perspectives from participants with MND	Accesibility		- To provide transportation
	Notification system		- Before class notification: remind participants to attend the classes - After class notification: remind participants to do homework or practice at home
	Support from family members		- Encourage participants to do home works or practice at home - Help to access the training: transportation or financial support

Perspectives from participants with MND and group facilitators

Theme 1: Program
Subtheme: Specific brain function training
'The good program should have specific brain function training such as memory because I think forgetfulness is most common problem. Most elderly want to improve their memory.' (Participant with MND)
'The participants will be given cognitive training for each domain that linked to problems commonly found in the elderly such as memory, language, executive function and visuospatial skills.' (Group facilitator)
Subtheme: global brain function training
'The 9-square-table aerobic exercise in brain training helped me a lot to improve my balance. I found my movement is better.' (Participant with MND)
'I hope my thinking speed can be improved if I participate brain training.' (Participant with MND)
'I think global brain function training has many benefits such as improvement of quality of life, activities of daily living and reducing stress or anxiety.' (Group facilitator)

Theme 2: Activities
Subtheme: Small group
'Activities in a large class may not appropriate because participants may a bit hesitate to do or say much. A small group with friendly environment is better. It make participants a bit more confident to answer questions.' (Participant with MND)
'It would be better if participants can do small group activities outside of the clinic or hospital such as gardening.' (Group facilitator)
Subtheme: Interaction
'I don't like lecture. Brain training should have a lot of interactive activities such as

questions and answers or interactive games. It will draw participants attention.' (Participant with MND)
'The group facilitators are very important to encourage participants to do interactive activities with them.' (Group facilitator)
Subtheme: Effective teaching materials
'I think the good quality of teaching materials are very essential because brain training is very complex. Therefore, participant couldn't follow all the steps of training, but effective teaching materials will help participants to follow the steps and understand.' (Participant with MND)
'It will be better if facilitators provide CDs of activities or books, so participants can practice by themself at home'. (Group facilitator)

Theme 3: Home works
Subtheme: Suitable for each participants
'Home works should suitable for each participants because if it's too easy, it will not improve brain function. On the other hands, if it's too difficult, it may not draw participant attention to do. ' (Participant with MND)
'Because defections of each participant' brain function are different, some activities of training program should tailor made.' (Group facilitator)
Subtheme: Can adapt in daily living
'Homework is not going to be boring if it can adapt to daily life such as exercise in the morning or writing diary at night time.' (Participant with MND)
'It will be better if home works will improve brain function about activities of daily living' (Group facilitator)

Perspectives from participants with MND

Theme 4: Accesibility
'Some participants such as elderly with chronic diseases may have problems to take public transportation by themselves. Therefore, they can not participate to the brain training program.' (Participant with MND)

Theme 5: Notification system
'Notification system is very essential including before and after classes. Before class notification will remind participant to attend the classes, and after class notification will help participant to remind to do homework or practice at home.' (Participant with MND)

Theme 6: Support from family members
'Family members will support or encourage participants to do home works or practice at home' (Participant with MND)
'If participants have transportation problems or financial strain, family members will help them to reduce barriers to participate the brain training program' (Participant with MND)

Discussion
Our study contributes new evidence to inform implementation strategies for planning CST in the elderly with MND. The findings of our research, qualitatively derived from participants with MND and interdisciplinary group facilitators; provide insight on the challenges of implementing complex new CST. Despite the challenges

encountered, participants with MND and interdisciplinary group facilitators were enthusiastic about their participation in the CST.

There were six key factors for the effective CST in the elderly with MND. This phenomenon leads to several suggestions. First, group facilitators concerned about program or activity in the clinic and homework at home same as the study of methods and management of the healthy brain study that concerned about protocols and participatory training sessions (19). However, participants with MND still concerned about accessibility to the program and notification system of before and after classes. Therefore, designing of CST were not only program or activities, but also other barriers such as transportation and reminding systems. Second, supports from family members were essential in perspectives of participants with MND. The results were the same as a pilot study of couples-focused intervention for MND revealed positive trends in meaningful activity performance and maintenance of health-related outcomes, as well as high program satisfaction (20). Therefore, objectives, methods, activities and benefits of CST should be provided to family members or main caregivers before the training, so they will support about transportation or money and encourage participants to practice CST. For example, family meetings should be held before training, or some part of CST may be performed by caregivers (21). Third, the tailor made design may fit each participant. Designing of the activities in classes should have some activities to improve specific brain function for each participant. Assignment of homework should be flexible for each participant, and can adapt for each participants' daily living. Therefore, Individual CST in MND patients may gain benefit same as the study of people with dementia (22,23). Fourth, group facilitators are important factors by encouraging participants to participate and interactive with the activities. The collaboration between interdisciplinary teams may be make more effective teaching materials. Therefore, the strong collaborate between interdisciplinary teams is one of the key of successful same as the AVERT stroke rehabilitation trial (24). Finally, further research should explore the factors to promote or barriers, impacts and benefits of longer term CST from different viewpoints such as from participants, family members, group facilitators, community and policy makers.

To the authors' knowledge, this study is the first qualitative research in Thailand to explore factors contributing to the effectiveness of CST for MND in the elderly. This study was conducted under a holistic perspective. Not only perspectives from the elderly with MND, but also perspectives from interprofessional group facilitators were explored. Therefore, the results will lead to develop effective CST strategies in patients with MND in the future. However, our study had several limitations. First, the interviews were conducted in a large tertiary care hospital in the capital city. Participants' answers may differ from another setting such as secondary care hospitals, primary care units or in community due to different education and socioeconomic factors. Second, despite using semi-structured interview guidelines, they were all one-session interviews. Important issues may have been missed or not explored thoroughly. Further, mutual relationship between participants and the interviewer with multiple-session interviews may be explored thoroughly. Furthermore, many interesting emerging issues from the interviews were not explored much further because they were not the main objectives of the study. Moreover, translation bias occurred in quotations of this work. We first conducted the interviews and made audit trails in Thai. Afterwards, interviewers and a native English speaker helped to translate in English. However, this process also mistranslated English

expressions to some extent. Finally, just like other qualitative research, participants were selected and voluntary. The thoughts of nonparticipating subjects were impossible to ascertain. Such is an inevitable weakness of all qualitative (and also quantitative) research.

This study provides further evidence to support the use of CST in routine practice for people with MND and encourages program designs focusing on the six main factors that will increase the effectiveness of CST.

Disclosure statement
No potential conflicts of interest were disclosed.

References

1. Sachdev PS, Mohan A, Taylor L, Jetse DV. DSM-5 and Mental Disorder in Older Individuals: An Overview. Hav Rev Psychiatry 2015;23(5):320-8.
2. Petersen RC, Smith GE, Waring SC, Ivnik RJ, Kokmen E, Tangelos EG. Aging, memory, and mild cognitive impairment. Int Psychogeriatr 1997;9(1):65-9.
3. Plassman BL, Langa KM, Fisher GG, et al. Prevalence of cognitive impairment without dementia in the United States. Ann Intern Med 2008;148:427-34.
4. Di Carlo A, Lamassa M, Baldereschi M, et al. CIND and MCI in the Italian el derly: frequency, vascular risk factors, progression to dementia. Neurology 2007;68: 1909-16.
5. Farias ST, Mungas D, Reed BR, Harvey D, DeCarli C. Progression of mild cognitive impairment to dementia in clinic vs. community-based cohorts. Arch Neurol 2009;66:1151-7.
6. Petersen RC. Continuum (Minneap Minn) 2016;22(2):404-18.
7. Smith AD, Yaffe K. Dementia (Including Alzheimer's Disease) can be Prevented: Statement Supported by International Experts.Journal of Alzheimer's Disease 38 (2014) 699–703.
8. Martin M, Clare L, Altgassen AM, Cameron MH, Zehnder F. Cognition-based interventions for healthy older people and people with mild cognitive impairment. Cochrane Database Syst Rev 2011; (1): CD006220.
9. Valenzuela M, Sachdev P. Can cognitive exercise prevent the onset of dementia? Systematic review of randomized clinical trials with longitudinal follow-up. Am J Geriatr Psychiatry 2009; 17: 179-87.
10. Willis SL, Tennstedt SL, Marsiske M, et al. Long-term effects of cognitive training on everyday functional outcomes in older adults. JAMA 2006; 296: 2805-14.
11. Wilson RS, Scherr PA, Schneider JA, Tang Y, Bennett DA. Relation of cognitive activity to risk of developing Alzheimer disease. Neurology 2007; 69: 1911-20.
12. Knapp M, Thorgrimsen L, Patel A, et al. Cognitive stimulation therapy for people with dementia: cost-effectiveness analysis. Br J Psychiatry 2006;188:574-80.
13. Taulbee LR, Folsom JC. Reality orientation for geriatric patients. Hosp Community Psychiatry 1966;17(5):133-5. Valenzuela M, Sachdev P. Can cognitive exercise prevent the onset of dementia? Systematic review of randomized clinical trials with longitudinal follow-up. Am J Geriatr Psychiatry 2009; 17: 179-87.
14. Hosseini SM, Kramer JH, Kesler SR. Front Aging Neurosci 2014;6:231. doi: 10.3389/fnagi.2014.00231. eCollection 2014.
15. Ciarmiello A, Gaeta MC, Benso F, Del Sette M. FDG-PET in the Evaluation of Brain Metabolic Changes Induced by Cognitive Stimulation in aMCI Subjects. Curr Radiopharm 2015;8(1):69-75.
16. Cotelli M, Manenti R, Zanetti O, Miniussi C. Non-pharmacological intervention for memory decline. Front Hum Neurosci 2012;6:46. doi: 10.3389/fnhum.2012.00046. eCollection 2012.
17. Nakawiro D, Chansirikanjana S, Srisuwan P, et al. Cognitive stimulation and cognitive training program in mild cognitive impairment (MCI);16thPacific Rim College of Psychiatrists Scientific Meeting. Asia-Pacific Psychiatry 2015;7S1:23.
18. Morgan GH, Garand LI, Lingler JH. Self-initiated health behaviors following a diagnosis of mild cognitive impairment. Res Gerontol Nurs 2012;5(2):94-100.
19. Laditka SB, Corwin SJ, Laditka JN, et al. Methods and management of the healthy brain study: a large multisite qualitative research project. Gerontologist. 2009 ;49(1):S18-22.

20. Lu YY, Haase JE, Weaver M. Pilot testing a couples-focused intervention for mild cognitive impairment. J Gerontol Nurs 2013;39(5):16-23.
21. Cruz TJ, Sá SP, Lindolpho MD, Caldas CP. Cognitive stimulation for older people with Alzheimer's disease performed by the caregiver. Rev Bras Enferm 2015;68(3):510-516.
22. Yates LA, Orrell M, Spector A, Orgeta V. Service users' involvement in the development of individual Cognitive Stimulation Therapy (iCST) for dementia: a qualitative study. BMC Geriatr. 2015;15:4. doi: 10.1186/s12877-015-0004-5.
23. Orrell M, Yates LA, Burns A, et al. Individual Cognitive Stimulation Therapy for dementia (iCST): study protocol for a randomized controlled trial. Trials 2012;13:172.
24. Luker JA, Craig LE, Bennett L, Ellery F, Langhorne P, Wu O, et al. Implementing a complex rehabilitation intervention in a stroke trail: a qualitative process evaluation of AVERT. BMC Med Res Methodol 2016;16(1):52.

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