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THE RELATIONSHIP BETWEEN THE OWNERSHIP OF ELDER CARE HOMES AND
QUALITY OF CARE IN URBAN CHINA

by

YUANFENG XU

Under the Direction of Heying Jenny Zhan

ABSTRACT

Traditional familial care has been challenged due to the reduction of family size and increased mobility of the Chinese population. Institutional elder care is increasingly becoming an alternative to familial care. This study explores the relationship between ownership of elder care home and care quality, using data collected in 2010 from 157 homes in Tianjin. Two hypotheses were proposed for the study: 1) There is a difference between government and non government-owned facilities in facility characteristics; 2) Government-owned facilities have better care quality outcomes. The t-test results showed that government-owned elder care homes had advantages in economic resources, staffing and the availability of services. Government-owned facilities reported lower mortality rate compared to non government-owned facilities. Multi-variant regression analysis showed that economic resources—whether funding from the government or high payments from care-recipients in private facilities—are important factors predicting higher levels of care quality. These results indicate that the Chinese government continues to play an important role in institutional long term care; in the meantime, private market is increasing its prominence in the long term care market.

INDEX WORDS: Ownership, Elder care home, Care quality, Political economic of aging

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YUANFENG XU

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Master of Arts

in the College of Arts and Sciences

Georgia State University

2013

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CHAPTER 1 INTRODUCTION

With the increase in older population, the need for institutional long term care is growing. The quality of care and quality of life in nursing homes are important to the growing long term care needs of the elder population. In the United States, about two-thirds of nursing homes are for-profit ownership with the other one-third being non-profit owners (Grabowski & Stevenson, 2008). In the United States, long term care is designed to increase independence of older adults with chronic diseases and disabilities by providing assistance, and to provide medical care or nursing care for long periods of time (King, 2000, p.2). Long term care can be provided in many kinds of facilities, such as in a nursing home, a patient's home or a community-based facility, to help with patients' needs in their activities of daily living (ADLs) or instrumental activities of daily living (IADLs). Although long term care can include many forms of care services, the primary focus of institutional nursing care is to manage residents' major life activities, regardless of whether medical services are provided in those institutions or not (Zhan, Luo & Chen, 2012). In China, the "Yang Lao Yuan" shares some similarities to institutional care homes in America. Although some research used nursing home to directly translate Yang Lao Yuan, Yang Lao Yuan has broader meaning than nursing homes (Zhan, Luo & Chen, 2012). The Yang Lao Yuan in China encompasses all kinds of long term care facilities which could provide assistance services or place of residence or medical services, including facilities such as nursing home, assisted living facility, continuing care community, retirement home, and hospice care center (Zhan, Luo & Chen, 2012). Thus, the terms of "elder homes" or "elder care homes" that provide wider connotation are more suitable to refer to institutional care in China. Research about the relationship between ownership and quality of care may help policy makers with decisions in financing, ownership change, or seeking other options in long term care (Grabowski &

Stevenson, 2008). Furthermore, research can also inform elders who are faced with decisions about choosing institutional care. In China, the development of formal long-term-care systems is still in the early stages. Major sources for elder care had been government-owned elder homes prior to 1990s (Wu, Mao & Xu, 2008). Recently, non-government elder care homes have been increasing due to the economic transformation (Guan, Zhan & Liu, 2007); policy makers may make decisions in public funding and design better supporting policies between the two types of ownership of homes for the elderly. Furthermore, care quality may be associated with quality of life among residents in elder care homes. Thus, it is important to understand the relationship between ownership and care quality in the Chinese setting for policymaker as well as consumers of long term care services.

The purpose of this study is to examine the relationships between elder care home ownership and quality of care in the Chinese settings. The study begins by elaborating the history of Chinese elder care. Then, a literature review is designed to define quality of care by reviewing different instruments to measure this concept in previous studies. The literature review seeks to first understand a more comprehensive way of measuring quality of care than has been done previously in China. Then, a review of the literature examines existing theoretical and empirical research about the relationship between elder care home ownership and quality of care in the United States. Current research is contradictory. Some researchers have suggested that for-profit organizations may have higher-quality care (Chou, 2002); while others argued that not-for-profit organizations may provide better quality of care (Newhouse, 1970; Scanlon, 1980; Gertler, 1991). However, little is known about the relationship between elder care home ownership and quality of care in China. The aim of this research is to explore differences in quality of care among elder care homes with different types of ownership in urban China.

1.1 Background: The Development of Chinese Elder Care

1.1.1 Elder Care Pattern in China

The traditional care pattern for aging parents in China was familial care, which was mainly provided by adult children due to norms of care obligation under the Confucian doctrine of filial piety (Guan, Zhan & Liu, 2007; Zhan, 2011). Recent research showed that familial care pattern continues to be a dominant pattern of elder care in China, and Chinese elders receiving institutional care accounted for only 2-5 percent of all Chinese older population (Chu & Chi, 2008; Zhan, Liu & Guan, 2005). Filial piety or *Xiao* had been a mandatory principle in Chinese Ancient Laws since the first dynasty---the Xia. Providing care to elderly parents has been a legal requirement after the establishment of the People's Republic of China in 1949 (Guan, Zhan & Liu, 2007; Zhan, 2011). If adult children fail to perform their filial duty under the legal requirements, they could be punished by 5 years' imprisonment (Zhan, 2011). In 1996, the government promulgated the law of "*Senior Citizen's Relative Rights and interests protection*," in which adult children's legal duty to support aging parents has more specific provisions (Zhan, 2011). With the traditional *Xiao* being sanctioned by mores and legal requirements, there was no special public service for older adults who had children until 1990s. Government provided free institutional care only for childless adults before 1990s (Chen, 1996; Zhan, 2011).

The pattern of care was influenced by living arrangement and differed between urban and rural China. Most urban workers have stable pension and health care, and elders in cities tend to live independently by themselves as long as they could (Zhan, 2011). However, intergenerational co-residence is still a dominant living pattern, especially for rural families (Zeng et al., 2004). The provision of care for aging parents is different by gender roles, and sons tend to provide financial care and daughters tend to provide physical care (Zhan & Montgomery, 2003). Elders

who have multiple children often could be taken care of by children taking turns or sharing responsibilities (Zhan, 2002). In some urban families, if adult children are not available to care for elders who need daily-care, they would hire a *baomu* (nanny) or a homecare worker to meet their needs (Zhan, Feng & Luo, 2008). A *baomu* is usually a migrant from rural areas and most *baomus* are female. They provide physical care and do some housing chores (Zhan, 2011). In rural areas, sons are traditionally expected to take the major responsibility of taking care of aging parents. The patrilocal elder care is still the dominant pattern, and elders are expected to raise grandchildren in sons' families and sons' families are expected to take care of disabled elders (Zhan, 2011). However, the urbanization is challenging the traditional pattern of familial care in rural China, as large number of rural labors have migrated to urban labor market, and more and more rural families have become "empty nests" where elders and young grandchildren are left at home in rural areas (Silverstein et al., 2006). Although the middle-aged children who are employed in urban areas could provide better financial support, they were less likely to meet the needs of elders' physical care. When adult children are unable to provide disabled elders, these elders face dual difficulties of financial and physical dependency (Zhan, 2011).

1.1.2 Institutional Care Development in China

Recent research suggests that there is increasing needs for institutional care. First, elders in urban areas are becoming more financially independent, and they may choose not to live with their adult children (Xu, 1994; Zhan, 2011). In a study of urban interior China, nearly half of elders who need physical assistance in their daily lives lived by themselves or with their spouses (Zhan & Montgomery, 2003). This change of living arrangement suggests the increasing needs for institutional care. Secondly, because of longer life expectancy and the one-child policy, the only-child couples in a family are unlikely to be able to meet the needs of older generations

(Zhan, 2011). The only-child couples would have heavy duty to take care of their elderly family members from both families. Institutional care is likely to supplement familial care to help reducing familial care burden. Finally, research has shown that the only children have less willingness to sacrifice their work to take care of their elder parents (Zhan, 2004). There are some disadvantages for only-child couples to provide traditional familial care. The only-child couples lack siblings to share caregiving responsibilities. In addition, as women attain higher levels of education, they are less available to stay at home to take care of elders (Zhan, 2011). To conclude, these changes influence the current and future needs for institutional care. Consequently, older adults who need assistance may be more likely to choose institutional care than in the past.

Before social welfare reforms in the 1990s, institutional care in China was only available for childless elders who had no income and no relatives (Chen, 1996). With the reduction of family size and increasing rural to urban migration, the needs of alternatives for familial care have gradually become more important for elder care since 1980s (Guan, Zhan & Liu, 2007). After the 1990's welfare reforms, some governmental elder homes have become privatized and additional private elder homes have been opened by enterprises, organizations, and individuals (Guan, Zhan & Liu, 2007). Because of economic reforms in the 1990s, former government welfare institutions had transitioned from 100% governmental funded to partial or completely financially self-reliant organization (Guan, Zhan & Liu, 2007). Welfare homes had to find their funding resource and create income to meet their expenditures (Guan, Zhan & Liu, 2007). The private elder care home industry in China is growing fast (Guan, Zhan & Liu, 2007). For example, in the first 40 years of the people's republic of China, from 1950 to 1990 Tianjin had only six elder homes, and in the last 20 years between 1990 to 2010, it increased to 167 elder

homes (Zhan, 2011). Most of these elder care homes are non government-owned or have been privatized (Zhan, Liu, Guan & Bai, 2006).

With rapid growth of elder care facilities, quality of care has become a significant issue for both care consumers and policy makers, in the context of China where government's ownership had dominated all services just two decades ago, the correlation between diversifying ownership of care homes and quality of care deserves special attention.

CHAPTER 2 LITERATURE REVIEW

2.1 Theoretical Frame

2.1.1 *Political Economy of Aging*

To understand the quality of care and its correlation with the ownership of governmental and nongovernmental elder care facilities, the theory of political economy of aging provides an overarching theoretical framework in the Chinese text.

The political economy of aging is a macro-level theory that emphasizes the integration of politics, economy, social environment, and personal experiences of aging in constructing old age, aging, and social policy (Estes, 2001). Socioeconomic and political factors, not individual factors, primarily determine the experience of aging, mainly including the structures of age, social class, gender, and race (Estes, 2001). The theory drew from Marxist viewpoints of the complexity of capitalism and how old age was socially constructed to meet the needs of the modern economy (Estes, 1979). Estes and her colleagues (2001) state that the class structure primarily determine the socio-economic position of older people in society. Their decreasing social economic status can be explained by their decreasing social worth and productivity (Powell, 2001). Negative attitudes toward older adults are more likely to form when they withdraw from the labor market thereby reducing their income or social standing or both. Estes (1979, 2001) emphasized that the state played an important role in social provision for the aged as highlighted by the political economic theory. The state determines the allocation and distribution of scarce resources, and the allocation of retirement and pension schemes (Estes, 2001). Phillipson (1982, 1988) argues the reason that inequalities in the distribution of resources exist in the society is because capitalism leads to social marginality of older adults in key areas such as welfare. From a Marxist

perspective, inequalities refer to the distribution of resource within a society, not the variation of individual.

Political economy theory of aging aims to explain how and why social resources are unequally distributed, with a focus on how public policies reproduce existing forms of inequality. The theory helps understand the differences between government and non-government elder care homes. The pattern of elder care in China has been experiencing changes from the dominance of familial care to the increasing needs and usage of institutional care, due to the development of market economy. The elder care homes have also transited from absolute governmental ownership to co-existence of governmental and non-governmental ownership. Do inequalities exist in resource distributions for the aged by the state to elder care institutions with different ownership? If so, what kinds of inequalities lead to the different care quality and life quality among older residents? Utilizing the insight of political economy, this study examines how the change of larger social environment from a socialist (or solo government-owned welfare institutions) to a market economy may lead to the re-distribution of resources, which, in turn, may lead to the differences in quality of care, and the personal experiences of aging.

2.2 Defining Quality of Care

In the United States, the quality of care in nursing homes has been a long-standing concern of governments, the public, policymakers, and nursing homes (Arling, Job & Cooke, 2009). This issue has been studied for decades in order to establish standard of care practices in all facilities (Grabowski & Stevenson, 2008). Many instruments for assessing care quality in nursing homes have been proposed, but none of these has been universally accepted (Comondore et al., 2009). According to Donbedian (1988), care quality can be conceptualized as three components: structure, process and outcome, generally referred to as the SPO framework. The

SPO framework was a popular model that has been applied for assessment of care quality in healthcare systems (Goodson, Jang & Rantz, 2008).

Pay-for-performance (P4P) programs, which rely on performance measures and have been operating in nursing homes in some states, used the SPO framework to assess care quality in nursing homes. The pay-for-performance program is a financial incentive strategy to promote care quality in nursing homes by rewarding care performance (Arling, Job & Cooke, 2009). Arling, Job and Cooke (2009) surveyed P4P programs in nursing homes of six states by applying performance measures that referred to care quality in those P4P systems included “general areas of structure (organizational resources and input), process (care practices and treatment), and outcomes (impacts on health, function, and quality of life)” (p. 588-589).

Structure could be measured by staffing levels such as nurses’ skill levels and direct-care staffing hours; care process could be measured by evaluating available services such as dietary services; and care outcome could be measured by the impacts of the physical and mental care such as pressure sores and satisfaction with their overall care (Arling et al., 2009). Though it is widely used, the SPO framework was not regarded as a completely perfect model for measuring care quality. Atchley (1991) added a time dimension to the SPO framework. Unruh and Wan (2004) argued causal connection was lacking among structure, process and outcomes in the framework, and the link among these three components should be taken into account in the SPO framework, and structural equation modeling could be constructed to improve this model.

The Observable Indicators of Nursing Home Care Quality Instrument (OIQ) was developed by qualitative studies, and dimensions of care quality were described from consumers, providers and regulators through on-site visit (Goodson, Jang & Rantz, 2008). Rantz and his colleagues developed a comprehensive model to define care quality in nursing homes, and seven

dimensions were encompassed into the model, including “central focus of the agency is on residents, families, staff, and community; care; communication; environment; home; and family involvement” (Goodson, Jang & Rantz, 2008, p.4). Through a series of field tests in nursing homes and analyses of the test results, OIQ was proved to be a valid and reliable instrument for measuring the care quality in nursing homes (Rantz et al., 2006).

The SPO framework and OIQ instrument encompass relatively comprehensive and extensive meaning of care quality. Another approach to care quality focuses on clinical quality indicators just measuring residents’ health outcomes associated with care quality. A set of clinical quality indicators (QIs), which were developed by researchers at the Center for Health System Research and Analysis at the University of Wisconsin-Madison, has been utilized to measure the residents’ health status in a facility (Goodson, Jang & Rantz, 2008). The Clinical Quality indicators (QIs) mainly include pressure sores, physical or chemical restraints, and the decline or improvement in activities of daily living (ADLs), mental status etc. (Arling et al. 2009). Even though the QIs were widely used to differentiate levels of care quality, it was criticized for its flaws in accuracy and the validity of indicators (Harrington et al., 2001). Karon, Sainfor, and Zimmerman (1999) established the QIs ranking to provide a quantitative analysis for overall quality of nursing homes. In addition, Rantz and his colleagues (2004) established classification of care quality level based on their individual scores on QIs, and the overall classification for the facility (good, average, or poor) was determined by their individual overall scores.

Residents’ health outcome is emphasized in direct measures of care quality in the federal Medicare/Medicaid laws and state licensing laws. Under the federal Medicare/Medicaid Laws and state licensing laws, quality of care in nursing homes has emphasized on the outcomes of

residents' health, including "activities of daily living, vision and hearing, and pressure sores" (Gittler, 2008, p.267).

In some empirical studies, outcomes of residents' health or clinic quality indicators are applied to measure care quality by various items related to health status. Based on a systematic review of measures of care quality conducted by Comondore and his colleagues (2009), three types of measures are frequently used to measure health outcomes of residents, they are *pressure ulcer prevalence*, *psychoactive drug use (such as anti-anxiety, sedative, hypnotic, and antipsychotic drugs)*, and *physical restrain use*. *Pressure ulcers or bedsores* referred to as erosion of the skin caused by lack of blood supply or friction (Bowlis, 2009). The Institute of Medicine emphasized pressure ulcers as an important measure to indicate care quality (Comondore, 2009). *Physical restraints* can prevent residents from injuring, but can diminish dignity of residents and increase risk of pressure ulcers and mental illness (Comondore, 2009). "Antipsychotics are a class of medications used to treat psychosis" (Bowlis, 2009, p.12). Higher use of antipsychotics would cause negative results such as suicide and pre-mature death, and higher use of antipsychotics is associated with lower care quality (Bowlis, 2009). *Mortality* is also used as an important indicator to reflect care quality. Chou (2002) asserted that quality of care in nursing homes should be measured by negative health outcomes, but mortality was also an indicator of care quality. Zinn, Aaronson, and Rosko (1993) found that higher mortality rates are associated with lower occupancy rates of residents in nursing homes. Higher rates of all these measures were associated with lower care quality.

To conclude, the SPO framework encompasses wide dimensions of care quality, but the connections between dimensions are ignored in this framework. The clinical quality indicators can directly reflect health outcome, which is the outcome measure in the SPO framework. This

study uses the clinical quality indicators to define and measure quality of care, and then explore the relationship among ownership, and quality of care after controlling for other factors. Because the majority of existing clinical quality indicators are based on measures in United States and untested in the Chinese context, four measures—mortality, pressure ulcers, physical restraints and antipsychotics—were used to measure quality of care in this study, based on existing database. Facility characteristics associated with residents' health outcome are explored as well as the relationship between facility characteristics and care quality.

2.3 Facility Characteristics Associated with Care Quality in Nursing Homes

From the structure and process measures in the SPO framework, facility characteristics are important factors associated with quality of care could be determined. Structure measures mainly include ownership, economic resources, and residents' characteristics, and Process measures mainly include staffing and availability of services.

2.3.1 Ownership

Ownership of nursing homes in the United States has been generally divided into for-profit and not-for-profit. In some literatures, they have different names such as investor-owned and nonprofit nursing homes (O'Neill, Harrington, Kitchener & Saliba, 2003), as well as, proprietary and nonproprietary nursing homes (Harrington, Woolhandler, Mullan, Carrillo & Himmelstein, 2001). For-profit nursing homes may be owned by individuals, partnership, or corporation, and not-for-profit nursing homes may be owned by church, nonprofit corporation or governments (Grabowski & Stevenson, 2008). There are two types of ownership of nursing homes in China: government-owned and non government-owned, with nongovernment ownership having diverse types that includes community-owned, enterprise-owned, and private-owned elder care homes (Zhan et al., 2006).

In the empirical literature about the relationship between ownership and quality of care in nursing homes in the United States, there is a general understanding that non-profit nursing homes provide higher quality of care than for-profit nursing homes (Harrington et al., 2001; O'Neill et al., 2003; Grabowski & Stvenson, 2008). Harrington et al. (2001) analyzed the 1998 data from state inspections of 13,693 nursing facilities by using multivariate models and concluded that investor-owned nursing homes provided worse quality of nursing care than not-for profit. Similarly, O'Neill et al. (2003) found that proprietary homes in California had significantly lower quality of care than nonproprietary homes when examining the relationship between profit level and quality in both two types of homes. Grabowski and Stevenson (2008) examined the effects of “ownership conversions” (p. 1184) on nursing home performance and found that nursing homes converting from non-profit to for-profit showed decreases in their performances, and in contrast, nursing homes converting from for-profit to non-profit showed general improvement.

Earlier research has indicated the diversification of different types of elder care home ownership in China; however, there is a dearth of literature about the relationship between ownership and quality of care in the Chinese elder care homes system. Zhan and her colleagues (2006) surveyed 12 elder homes sites and interviewed 265 older residents in Tianjin city focusing on attitudes of the elderly toward elder care homes. They found that government-owned elder care homes had advantages in financing, staffing, and access to medical insurance. The overall quality in government-owned elder homes was evaluated to be higher than non government-owned homes. However, in this study, the quality of care in elder care homes was judged just from facility characteristics based on staffing and elders' evaluation. Quality of care such as care practice and residents' health outcome was not considered.

2.3.2 Economic Resources

Economic Resources mainly refers to organizational resources and input of nursing homes and they could be identified as one of structure measures. Financial input would ensure the operation and higher care quality of a nursing home. Financial input mainly refers to funding resources and medical insurance. Some studies found that higher proportion of Medicaid residents were negatively associated with nursing quality and staff levels (Grabowski, 2001; Harrington & Swan, 2003). However, another study did not find that the percentage of Medicaid residents negatively influenced outcome of care quality (Chesteen, Helgheim, Randall & Wardell, 2005). Furthermore, Harrington and colleagues (2001) found that the percentage of Medicare residents could indicate higher levels of care quality in nursing homes.

In the study of Zhan and her colleagues (2006), only three elder care homes, among 12 elder care homes investigated in Tianjin, China, and was found to have established association with medical insurance company, and the rest of elder care homes could not be medically insured. Elders in un-insured elder homes could not receive the reimbursement for their medical bills and hospitalization, and their access of medical services would be limited (Zhan et al., 2006). Lack of medical insurance would understandably affect quality of care.

2.3.3 Residents' Characteristics

Residents' Characteristics refer to current residents' information in each elder care home. These characteristics mainly refer to their basic demographics, including payment source, clinical and functional characteristics. In China, payment sources mainly include "out of pocket", "pensions", "and welfare recipients." Clinical characteristics refer to the prevalence of residents with illness, such as dementia, which refers to their status when residents' entered their facility. The daily functioning refers to the three aspects of activities of daily living (ADL), including

eating, toileting and transferring (Harrington et al., 2001). The proportion of residents needing assistance in ADLs could be different in different elder care homes. In the study of 2009's data from elder care homes in Nanjing city, China, Feng and his colleagues (2011) found that the level of residents' needs for assistance in ADLs and the prevalence of residents with dementia was significantly higher in non-governmental than governmental homes, and government facilities had more welfare recipients than nongovernment homes.

The functional and mental health status of residents could impact on their quality of life in homes and outcomes of care. Since it is difficult to collect clinic quality data in decline or improvement in dementia and in ADLs, the different level of needs in ADLs when residents were accepted by facilities could be utilized to predict care quality in elder care homes in this study.

2.3.4 Availability of Services

Process measures of the SPO framework refer to the care practice and treatment, including "resident rights, dietary services, and physical environment, or other services", "scope and severity of deficiencies in clinical care" (Arling et al., 2009). In the United States, the data process measures are obtained from nursing home inspection data. Lacking of the inspection data, regarding the provision of services, could lead to the deficiency of care practice and treatment. Therefore, the information of availability of services could be an important indicator of care quality. In this study, the availability of services is measured by the total number of services among seven basic services in elder care homes, including accommodation, dietary services, nursing care, recreation facility, medical services, rehabilitation services, and hospice care.

2.3.5 Staffing

Staffing was defined as overall staffing levels, number of staff per resident, and ratio of registered nurses and unlicensed staff (Havig, Skogstad, Kjekshus & Romoren, 2011). Staffing was emphasized as an important measure of structure within the SPO framework by the US Medicare/Medicaid nursing home regulations (Comondore et al., 2009). In three literature reviews of care quality in this field, researchers examined the relationship of staffing level and the effect of registered and care quality by identifying quality indicators, and found that most indicators were found to have significant positive association with staffing level and the effect of registered staff (Bostick, Rantz, Flesner & Riggs, 2006; Castle, 2008; Spilsbury, Hewitt, Stirk, Bowman, 2011). However, some studies did not find any link between staffing and care quality (Rantz et al. 2004, Winslow & Borg, 2008; Arling et al., 2007; Berlowitz et al., 1999). For example, Rantz and his colleagues (2004) investigated 92 nursing homes in Missouri and collected reliable staffing data and did not find any effect of staffing level in relation of quality of care. In this study, staffing was measured by percentage of trained caregivers, percentage of migratory care staff, and ratio of professional physician to residents, ratio of professional caregivers to residents, and staff turnover rate.

CHAPTER 3 PURPOSE AND HYPOTHESES

3.1 Purpose of Research

The purpose of the proposed research is to explore the relationship between the ownership of elder care homes and quality of care in institutional care settings of urban China. The aim of this study is to increase the understanding of ownership-related differences in quality of care in elder care homes. The four factors—economic resources, staffing, availability of services, residence characteristics—are different indicators of care quality. Quality of care can be measured by health outcomes of residents, including pressure ulcers, physical restraints, antipsychotics, and mortality. However, in this study, only mortality rate is examined. Figure one demonstrates the conceptual model of the study.

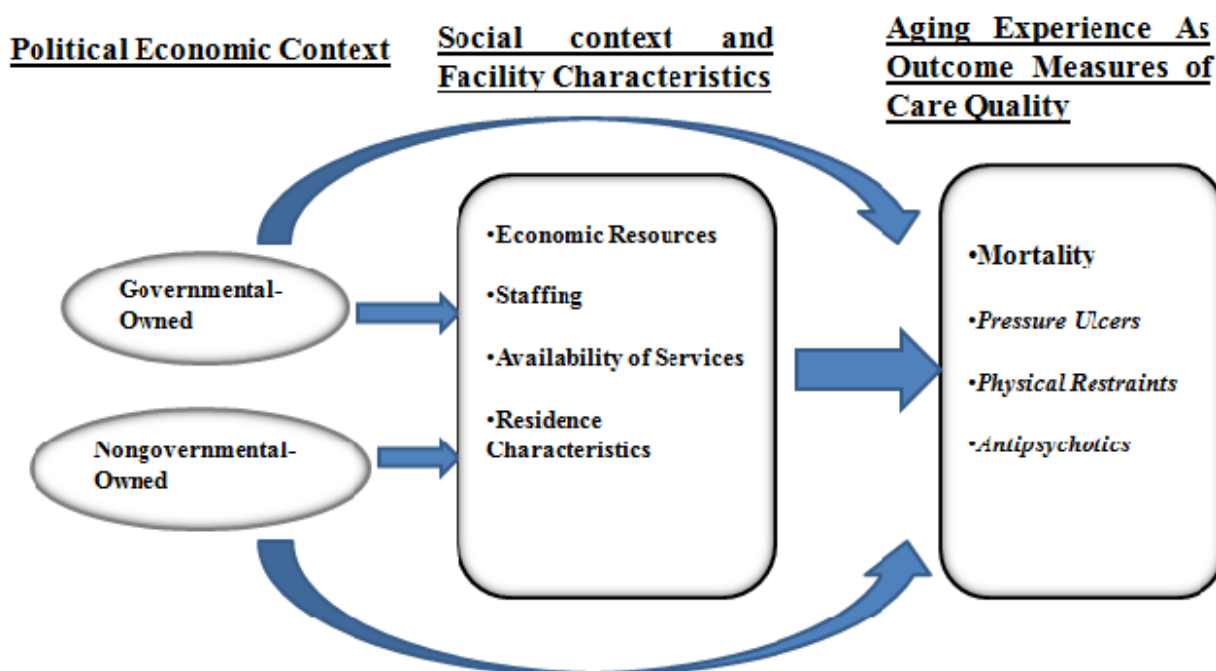


Figure 1: Conceptual Framework of Relationship between Ownership and Care Quality in Urban Chinese Context

Two research questions were raised to explore the relationship among these measurements: 1) Is there any difference in care quality between governmental-owned and non-

governmental owned elder care homes? 2) How are those factors related to the outcome measures between the two different kinds of elder care homes? Based on the literature review and the two research questions, I proposed the following hypotheses corresponding to the two questions above.

3.2 Hypotheses

Based on the two research questions, two sets of hypotheses are proposed.

Hypothesis 1: There is a difference between government and nongovernment elder care homes in measures of facility characteristics, including economic resources, staffing, the availability of services and residents' characteristics.

Hypothesis 1a: There is a difference between government and nongovernment elder care homes in economic resources: Government-owned elder care institutions are more likely to have more economic resources.

Hypothesis 1b: There is a difference in staffing between government and nongovernment elder care homes: Government-owned elder care institutions are more likely to have higher level of staffing.

Hypothesis 1c: There are differences in the availability of services between government and nongovernment elder care homes: Government-owned elder care institutions are likely to have availability of greater number of services.

Hypothesis 1d: There is a difference in residents' characteristics between government and nongovernment elder care homes.

Hypothesis 1d (i): There is a difference in ADL level of residents received by government and nongovernment elder care homes: Government-owned elder care homes are likely to have fewer residents with ADL impairments.

Hypothesis 2: There is an association between the type of elder care homes (government vs. non-government) and health outcomes of care quality.

Hypothesis 2a: Residents in government-owned facilities are more likely to report lower levels of mortality.

CHAPTER 4 DATA, SETTING AND MEASURES

4.1 Data and settings

The city selected for this research is Tianjin, a municipality directly governed by the Central Government, which is located roughly 120 kilometers east of Beijing (stats-tj.gov, n.d.). Tianjin city has 14.5% of the total population that are 60 years and over by the end of 2003 (Zhan et al., 2006). Because of lack of specific definition of elder care institution, elder care homes in this study are defined as those facilities that provide long-term elder care for older adults.

The target population is all elder care homes located in urban districts of Tianjin. The homes located in rural areas of the city are excluded. From the official listing of all registered elder care homes in Tianjin, 157 homes were eligible to be surveyed. A survey questionnaire was created according to On-line Survey Certification Automated Record (OSCAR) instrument in the United States and was adjusted to adapt to the Chinese setting (Feng et al., 2011).

4.2 Measures

4.2.1 Elder Care Home Ownership

In the survey, the ownership of elder care homes is divided into two types: government and nongovernment. Government elder care homes are divided into “City Government Owned”, “District or County Owned”, “Street or Community Owned”, “Private Running and Government Owned”. Nongovernment elder care homes are divided into “Individual Owned”, “Partnership Owned”, “Enterprise Owned”, “Work Unit Owned”, “Foreign Investment”, “Church Initiated”, “Charity Institute Owned” And “Other”. All government ownership elder care homes are non-profit. Nongovernment ownership elder care homes include for-profit and non-profit elder care

homes. Although there are many different categories within the types, this study focused exclusively on the government owned vs. non-government owned distinction.

4.2.2 Quality of Care

Quality of care was measured by the prevalence of pressure ulcer, physical restraints, and the usage rate of antipsychotics and hypnotic, and mortality rate. The prevalence of pressure ulcer is defined as the percentage of persons who suffered from pressure ulcers. The prevalence of physical restraints use is defined as the percentage of persons confined in bed or chairs to prevent injuring in each facility. The prevalence of antipsychotics is defined as the usage rate of tranquilizer (defined as the proportion of the number of residents who take tranquilizer). Mortality rate was defined as the percentage of residents who died during 2010.

4.2.3 Factors Associated with Care Quality

Factors associated with care quality were measured by economic resources, staffing, availability of services and residence characteristics. Economic resources were defined by the acquirement of funding from government, including the total investment when established and the proportion of government investment for establishment, the proportion of government's financial support for daily income, the proportion of daily income from charging residents, and the amount of governmental monthly subsidies (the amount of subsidies of every bed per month).

The staffing level that is related to quality of care was measured by the percentage of trained caregivers, percentage of migratory care staff, ratio of professional physicians to residents (defined by the number of professional physicians divided by the number of residents multiply 100), ratio of professional caregivers to residents (defined by the number of professional caregivers divided by the number of residents), and staff turnover rate (defined by the number of staff turnover divided by the number of staff in 2010).

The availability of services was measured by the provision of the number of services out of seven basic services in elder care homes. These services include accommodation, dietary services, nursing services, recreation facility, medical services, rehabilitation services, and hospice care. Furthermore, it is also measured by the number of total services.

Resident characteristics were measured by the percentage of residents with ADL disabilities including feeding, dressing as well as moving.

4.3 Performed Analysis

The data was analyzed by using descriptive statistics to identify the characteristics of elder care homes included in the study. To test the differences in the characteristics of government-owned and non government-owned elder care homes, the researcher analyzed economic resources, staffing, the availability of services, residents' characteristics and care quality measures in relation to ownership types. Chi-square and t-tests were performed to understand the differences between government and government elder care homes with these measures. Further, to understand the associations between ownership, facility characteristics, and health outcomes of care quality, a multivariate regression analysis was performed by using these variables: quality of care measured by mortality as dependent variables and characteristics of organizations as independent variables. All statistical data was analyzed by using PASW Statistics 18.

CHAPTER 5 RESULTS

5.1 Descriptive Statistics

Organizational characteristics are presented in Table 1. Among the total sample of 157 elder care homes, there were 20 government-owned elder care homes consisting approximately 12.7%. The majority (65.8%) of all elder care homes were established after the year of 2000. Among non government-owned elder care homes, 70.1% were established after 2000, compared to only 40.0 % of government ownership. However, 40% of government-owned elder care homes were established before 1990, compared with 1.7% of nongovernment. Therefore, most of non-government owned facilities were built within the last ten years. The average number of beds per home among the whole sample is 109.8, and the average occupancy rate was about 78.4%. Nineteen percent of all elder care homes are under expansion.

5.2 Statistics Results for Hypothesis 1

To understand the differences between governmental and nongovernmental elder care facilities, multiple t-tests were performed for continuous dependent variables and chi-square tests were performed for categorical dependent variables.

Hypothesis 1: There is a difference between government and nongovernment elder care homes in measures of facility characteristics, including economic resources, staffing, the availability of services and residence characteristics.

Hypothesis 1a: There is a difference between government and nongovernment elder care homes in economic resources: Government-owned elder care institutions are more likely to have more economic resources.

Table 1: Descriptive Statistics: Organizational Characteristic and Comparison of Means

	Ownership													
	Whole Sample (n=157)				Non government-owned (n=137)				Government Owned (n=20)					
	N	%	Mean	Std.	N	%	Mean	Std.	N	%	Mean	Std.	T/F Value	P.
Organization														
Year of Establishment >=2000	104	65.8			96	70.1			8	40.0			7.058	.008**
Year of Establishment 1990-1999	41	25.9			37	27.0			4	20.0			.444	.505
Year of Establishment <1990	12	7.6			4	1.7			8	40.0			33.724	.000***
Total Number of Beds			109.8	85.3			104.0	80.4			149.8	107.5	-2.270	.025*
Occupancy Rate			78.4	20.9			76.5	21.1			91.0	14.4	-3.904	.000***
Under Expansion	30	19.0			25	18.2			5	25.0			.515	.473
Owned by Government	20	12.7												
Hospital Based	11	7.0			9	6.6			2	10.0			.315	.574

Note: “N” represents frequency, “ %” represents percentage, and “std.” represents standard deviation. For continuous measure, value comes from T-test; for binary measures, value comes from Chi-square test. Ownership was coded by “0” and “1”: 0 represents Nongovernment Ownership and 1 represents Government Ownership.

To understand differences in economic resources between governmental and non-governmental elder care homes, five measures as previously mentioned were used. Table 2 displays the T-test results. As shown in Table 2, government-owned homes had more average investment funding, compared to non government-owned facilities (4.7 million RMB vs. 1.0 million RMB, $P=.000$, $p<.001$). Government-owned facilities report higher average proportion of government investment when established than non government-owned homes (83.1% vs. 3.4%, $P. =.000$, $p<.001$). In terms of the average proportion of daily income, non government-owned homes reported higher proportion from charging residents, in comparison of government-owned facilities (95.8% vs. 66.0%, $P=.000$, $p<.01$). Government-owned homes had higher proportions of government's financial support for daily income, compared to non government-owned facilities (30.2% vs. 1.9%, $P=.000$, $p <.001$). Among homes received monthly government subsidies, government-owned elder care facilities have higher average amount of subsidies of every bed per month than non government-owned homes (60.5 RMB vs. 49.3 RMB, $P=.001$, $p<.01$).

Hypothesis 1b: There is a difference in staffing between government and nongovernment elder care homes: Government-owned elder care institutions are more likely to have higher level of staffing.

To understand differences in staffing between governmental and nongovernmental organizations, five measures were used in comparative analysis. Table 3 shows the detail of the result. Government-owned facilities, however, had significantly higher ratio of professional physicians to residents and ratio of professional caregivers to residents, higher percentage of trained caregivers than non government-owned homes (1.5% vs. 0.7%, $p <.05$; 13.6% vs. 9.8%, $p <.05$; 83.1% vs. 61.6%, $p<.01$).

Table 2: Bivariate Result: Ownership VS. Economic Resources

	Ownership													
	Whole Sample (n=157)				Non government-owned (n=137)				Government Owned (n=20)					
	N	%	Mean	Std.	N	%	Mean	Std.	N	%	Mean	Std.	T/F Value	P.
Economic Resources														
Total Investment When Established (million RMB)			1.4	3.6			1.0	2.8			4.7	6.8	-3.970	.000***
Government Investment (%)			11.6	31.5			3.4	17.5			83.1	35.6	-14.628	.000***
Daily Income-----Charging from residents (%)			92.1	19.3			95.8	10.2			66.0	39.7	7.290	.000***
Daily Income-----Government's Financial Support (%)			5.4	16.4			1.9	5.8			30.2	36.2	-8.495	.000***
The Amount of Subsidies for Every Bed(RMB)							49.3	4.4			60.5	21.0	-.3.525	.001**

Note: "N" represents frequency, "%" represents percentage, and "std." represents standard deviation. For continuous measure, value comes from T-test; for binary measures, value comes from Chi-square test. Ownership was coded by "0" and "1": 0 represents Nongovernment Ownership and 1 represents Government Ownership.

Table 3: Bivariate Result: Ownership VS. Staffing level

	Ownership													
	Whole Sample (n=157)				Non government-owned (n=137)				Government Owned (n=20)				T/F Value	P.
	N	%	Mean	Std.	N	%	Mean	Std.	N	%	Mean	Std.		
Staffing Level														
Ratio of Professional Caregivers to Residents *100(%)			10.3	7.7			9.8	7.6			13.6	7.5	-2.101	.037*
Ratio of Professional Physicians to Residents *100(%)			0.8	1.5			0.7	1.2			1.5	2.2	-2.348	.020*
Trained Carers (%)			64.4	35.4			61.6	35.5			83.1	29.1	-2.983	.006**
% Migratory Care Staff			6.4	12.5			7.1	13.1			2.0	4.8	3.285	.002**
Turn-Over Rate of Staff (%)			6.3	13.7			6.8	14.5			2.7	4.6	2.527	.013*

Note: “N” represents frequency, “ %” represents percentage, and “std.” represents standard deviation. For continuous measure, value comes from T-test; for binary measures, value comes from Chi-square test. Ownership was coded by “0” and “1”: 0 represents Nongovernment Ownership and 1 represents Government Ownership.

Non government-owned facilities had slightly higher proportion of migratory direct-care staff and higher turn-over rate of staff in 2010 compared to non government-owned homes (7.1% vs. 2.0 %, $p < .01$; 6.8% vs. 2.7%, $p < .05$),

Hypothesis 1c: There are differences in the availability of services between government and nongovernment elder care homes: Government-owned elder care institutions are more likely to have higher availability of services.

Table 4 shows the measurements of available services. As shown in Table 4, all the investigated elder care homes provided accommodation and dietary services. There were no significant differences in the provision of recreation facility, medical services, rehabilitation services and hospice services between two types of facilities. More non government-owned facilities had nursing services, compared to non government-owned homes (99.3% vs.90.0%, $P = .005$, $p < .01$). Government-owned facilities had higher average number of total services than non government-owned facilities (6.1 vs. 5.6, $P = .015$, $p < .05$).

Hypothesis 1d: There is a difference in residents' characteristics between government and nongovernment elder care homes.

Hypothesis 1d (i): There is a difference in ADL level of residents received in government and nongovernment elder care homes: Government-owned elder care homes are likely to have fewer residents with ADL impairment.

The bivariate results of ownership and residents' characteristics are presented in Table 5. No significant differences are found in the percentage of residents that need help in feeding dressing and transferring between these two types of facilities. Thus, the hypothesis 1d(i) was rejected. Two measures, needing help with feeding ($P = .053$) and movement ($P = .063$), are at marginal, yet not statistically significant, levels, indicating government-owned facilities, may

have residents who were less likely to need feeding and assistance with movement. These findings deserve more attention in future research.

Table 4: Bivariate Result: Ownership VS. Availability of Services

	Ownership													
	Whole Sample (n=158)				Non government-owned (n=137)				Government Owned (n=20)				T/F Value	P.
	N	%	Mean	Std.	N	%	Mean	Std.	N	%	Mean	Std.		
Availability of Services														
Accommodation (%)	157	100			137	100			20	100				
Dietary Services (%)	157	100			137	100			20	100				
Nursing Services (%)	154	98.1			136	99.3			18	90.0			8.002	.005**
Recreation Facility (%)	139	88.5			119	86.9			20	100			2.968	.085
Medical Services (%)	76	48.4			61	44.5			15	75.0			6.904	.011*
Recovery Services (%)	86	54.8			72	52.6			14	70.0			2.144	.143
Hospice Care (%)	121	77.1			105	76.6			16	84.2			.549	.459
Number of Services							5.6	0.9			6.1	1.2	-2.468	.015*

Note: “N” represents frequency, “%” represents percentage, and “std.” represents standard deviation. For continuous measure, value comes from T-test; for binary measures, value comes from Chi-square test. Ownership was coded by “0” and “1”: 0 represents Nongovernment Ownership and 1 represents Government Ownership.

Table 5: Bivariate Result: Ownership VS. Resident Characteristics

	Ownership													
	Whole Sample (n=157)				Non government-owned (n=137)				Government Owned (n=20)					
	N	%	Mean	Std.	N	%	Mean	Std.	N	%	Mean	Std.	T/F Value	P.
Resident Characteristics														
% of Residents that Need Feeding			25.8	22.2			26.9	22.8			18.4	16.7	2.009	.053
% of Residents that Need Dressing			57.3	26.4			58.3	25.2			50.6	33.3	1.212	.228
% of Residents that Need Help with Moving			57.4	25.7			58.9	24.9			47.6	29.0	1.843	.067

Note: "N" represents frequency, "%" represents percentage, and "std." represents standard deviation. For continuous measure, value comes from T-test; for binary measures, value comes from Chi-square test. Ownership was coded by "0" and "1": 0 represents Nongovernment Ownership and 1 represents Government Ownership.

5.3 Statistics Results for Hypothesis 2

Hypothesis 2 is proposed to test the association between different types of ownership of the facility and care quality as measured by mortality rate.

A t-test was performed to understand the differences in four measures of care quality between government-owned and non government-owned facilities. As shown in Table 6, no significant difference was found in the prevalence of pressure ulcer, physical restrain use and using tranquilizer between these two types of facilities. A major difference was found in mortality rate: non government-owned homes showed significantly higher mortality rate than government-owned homes in 2010 (11.1% vs. 4.0%, Sig. =.000, $p < .001$).

To further understand the relationship between ownership and care quality, a multiple regression analysis was conducted to understand the influence of ownership on the outcome measure of care quality. Since three measures showed no statistical significance at bi-variate level, only mortality rate was selected as the dependent variable, and five groups of facility characteristics were utilized as independent variables, including organizations characteristics (ownership), economic resources, staffing, the availability of services, and residents' characteristics. Because mortality rate was a continuous variable, Ordinary Least Square (OLS) regression analysis was utilized to understand the influence of five groups of independent variables in mortality rate. Five regression models were used to assess the relationship between ownership and mortality rate. To optimize the models, variables that were not found statistically significantly in previous t-tests, were removed from further analysis in the five models of regression analysis. The remaining variables were selected and entered in five different steps in five groups to allow a conceptual understanding of how each group of variables influence mortality rate between government and non-government elder care facilities (see Table 7).

In Table 7, Model 1 showed that ownership, or government owned facilities was negatively related to mortality rate, but this correlation was not statistically significant ($R^2=.011$, $P=.434$). Model 2, 3, 4, and 5 showed that each group of variable, when entered into the equation, increased explained variance and was statistically significant. Model 2, economic resources, was shown to be the stronger predictor for mortality rate. This group of variable explained 36% of variance. In Model 5, when the percentage of residents with ADL disabilities was added into the equation, it increased the explained variation of mortality by 13% compared to Model 2. Facilities that received lower proportion of daily income from residents had lower level of mortality rate. The proportion of government's financial support for daily income (Model 5, $B=-.492$, $p < .05$) showed negative and moderate significance in association with mortality rate: the less financial support facilities receive the highest mortality rate. Facilities that receive higher levels of government support for daily income had lower mortality rate. Ownership, per se, showed no statistical significance in mortality rate in all 5 Models.

To Conclude (See Table 8), hypothesis 1 examined the difference between government and nongovernment elder care homes in measures of facility characteristics, including economic resources, staffing, availability of services and residence characteristics. Findings in this study supported hypothesis 1a, 1b and 1c, and 1d was rejected.

Hypothesis 1a hypothesized that there was a difference between government and nongovernment elder care homes in economic resources: Government-owned elder care institutions were more likely to have more economic resources. Specifically these differences are shown in total amount of investment at the time of establishment, percentage of government investment, and the percentage of government financial support as daily income. Government funded elder care home were receiving more subsidies for every bed.

Hypothesis 1b examined staffing differences between government and non-government elder care homes. It was hypothesized that there was a difference in staffing between government and nongovernment elder care homes: Government-owned elder care institutions were more likely to have higher level of staffing. Staffing was examined by five indicators, two examined staff (professional caregivers and professional physicians) and resident ratio; three examined qualitative differences in staffs, including percentage of trained staff which indicates better quality, percentage of migratory staff which suggests poor quality due to lack of training and stability, and turn-over rate which is often an indicator of quality of care. Findings revealed that overall, government funded elder care homes were more likely to have higher staff-to-resident ratio, and better quality of staffs, and lower turn-over rate. Hypothesis 1b is therefore supported.

Hypothesis 1c stated that there were differences in the availability of services between government and nongovernment elder care homes: Government-owned elder care institutions are likely to have availability of greater number of services. Findings showed that government funded elder care homes had an average of 6 services available ($p < .05$) compared to 5 in non-government funded elder care homes. This hypothesis is supported.

Hypothesis 1d examined the difference in ADL level of residents received by government and nongovernment elder care homes. It was hypothesized that government-owned elder care homes are likely to have fewer residents with ADL impairments. From previous study in China (Feng, et al., 2011), governmental elder care homes tended to have fewer residents with needs in ADLs than nongovernmental homes, which means governmental elder care homes accept healthier residents and the quality of care will be affected by the characteristics of residents. In this study, findings showed that no difference was shown in the percentage of residents that need feeding, dressing and help in moving. Therefore, hypothesis 1d is rejected.

Hypothesis 2 was designed to examine if there is an association between the type of elder care homes (government vs. non-government) and health outcomes of care quality (the prevalence of pressure ulcer, the prevalence of physical restraint use, the prevalence of taking hypnotic, the prevalence of taking tranquilizer and mortality rate). The mortality rate was used as a representative measure of health outcomes through a t-test between ownership and care quality. The relationship between ownership and mortality was examined by a regression analysis in hypothesis 2a: Residents in government-owned facilities are more likely to report lower levels of mortality. Finding showed that two variables in economic resources—the proportion of daily income from residents' fee and the proportion of government's financial support for daily income—highly predict mortality rate.

Table 6: Bivariate Result: Results Ownership VS. Care Quality

	Ownership													
	Whole Sample (n=157)				Non government-owned (n=137)				Government Owned (n=20)					
	N	%	Mean	Std.	N	%	Mean	Std.	N	%	Mean	Std.	T/F Value	P.
Care Quality														
The Prevalence of Pressure Ulcer (%)			.3	1.0			.4	1.1			.1	.3	1.983	.050
The Prevalence of Physical Restrain Use (%)			5.3	11.1			4.7	9.2			9.4	19.6	-1.787	.076
The Prevalence of Taking Tranquilizer (%)			2.3	4.8			2.4	5.0			1.9	3.1	.536	.596
Mortality Rate (%)			10.2	17.4			11.1	18.4			4.0	3.7	3.949	.000***

Note: "N" represents frequency, "%" represents percentage, and "std." represents standard deviation. For continuous measure, value comes from T-test; for binary measures, value comes from Chi-square test. Ownership was coded by "0" and "1": 0 represents Nongovernment Ownership and 1 represents Government Ownership.

Table 7: Multiple Regression Results for Variables Predicting Care Quality

Predictor Variables	Standardized Coefficients ^b				
	Model 1	Model 2	Model 3	Model 4	Model 5
Organizational Characteristics					
Ownership	-.10	-.08	-.12	-.14	-.10
Economic Resources					
The total amount of Government's Investment for Establishment		-.06	-.14	-.15	-.09
The Proportion of Government's Financial for Establishment		.02	.12	.13	.12
The Proportion of Daily Income from Residents' Fees		-.71***	-.67***	-.67***	-.76***
The Proportion of Government's Financial Support for Daily Income		-.38**	-.36*	-.35*	-.49**
The Amount of Subsidies of Per Bed		.05	.03	.03	.04
Staffing					
Percentage of Trained Caregivers				-.11	-.00
Ratio of Professional Caregivers to Residents				.23	.06
Ratio of Professional Physicians to Residents				.00	.01
Percentage of Migratory Care Staff				.01	.00
Turnover Rate				.20	.16
The Availability of Services					
The Number of Services				.04	-.02
Resident's Characteristics					
Percentage Sum of Residents with ADLs					.23
Constant	11.77	95.05	88.47	83.72	93.06
R	.10	-.60	.66	.66	.68
R Square	.01	.36	.43	.43	.46
R Square Change	.01	.35	.06	.00	.03
ANOVA P.	.434	.000	.002	.003	.002

Note: Significant levels: * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed test). Ownership was coded by "0" and "1": 0 represents Nongovernment Ownership and 1 represents Government Ownership.

Table 8: Summary of Hypotheses

Hypothesis 1: There is a difference between government and nongovernment elder care homes in measures of facility characteristics, including economic resources, staffing, availability of services and residence characteristics.				
	Measures	Mean		Findings
		NonGov.	Gov.	
Hypothesis 1a: There is a difference between government and nongovernment elder care homes in economic resources: Government-owned elder care institutions are more likely to have more economic resources.	Total Investment When Established (million RMB)	1.0	4.7	Supported(p<.001)
	Government Investment (%)	3.4	83.3	Supported(p<.001)
	Daily Income-----Government's Financial Support (%)	1.9	30.2	Supported(p<.001)
	Daily Income-----Charging from residents (%)	95.8	66.0	Supported(p<.001)
	The Amount of Subsidies of Every Bed(RMB)	49.3	60.5	Supported(p<.01)
Hypothesis 1b: There is a difference in staffing between government and nongovernment elder care homes: Government-owned elder care institutions are more likely to have higher level of staffing.	Ratio of Professional Caregivers to Residents *100(%)	9.8	13.6	Supported(p<.05)
	Ratio of Professional Physicians to Residents *100(%)	0.7	1.5	Supported(p<.01)
	Trained Carers (%)	61.6	83.1	Supported(p<.01)
	% Migratory Care Staff	7.1	2.0	Supported(p<.01)
	Turn-Over Rate of Staff (%)	6.8	2.7	Supported(p<.01)
Hypothesis 1c: There are differences in the availability of services between government and nongovernment elder care homes: Government-owned elder care institutions are likely to have availability of greater number of services.	The numbers of Seven Services	5.6	6.1	Supported(p<.05)

Hypothesis 1d: There is a difference in ADL level of residents received by government and nongovernment elder care homes: Government-owned elder care homes are likely to have fewer residents with ADL impairments.	% of Residents that Need Feeding	26.9	18.4	Rejected
	% of Residents that Need Dressing	58.3	50.6	Rejected
	% of Residents that Need Help with Moving	58.9	47.6	Rejected
Hypothesis 2: There is an association between the type of elder care homes (government vs. non-government) and health outcomes of care quality.				
	Measures	Mean		Findings
		NonGov.	Gov.	
Hypothesis 2a: Residents in government-owned facilities are more likely to report lower levels of mortality.	The Prevalence of Pressure Ulcer (%)	.4	.1	Rejected
	The Prevalence of Physical Restrain Use (%)	4.7	9.4	Rejected
	The Prevalence of Taking Hypnotic (%)	16.2	21.8	Rejected
	The Prevalence of Taking Tranquilizer (%)	2.4	1.9	Rejected
	Mortality Rate (%)	11.1	4.0	Supported(p<.01)
	Predictors			Findings
Hypothesis 2a: Residents in government-owned facilities are more likely to report lower levels of mortality.	The proportion of Daily Income from Residents' Fee			Supported
	The Proportion of Government's Financial Support for Daily Income			Supported

CHAPTER 6 DISCUSSION AND IMPLICATIONS

The main purpose of the study was to understand the relationship between ownership and care quality in elder care homes. In this section, I attempt to use political economy theory to discuss the relationship between ownership and aging within the context of Chinese political economic and social cultural contexts, and individual's aging experiences. Then, theoretical and policy implications will be presented for future studies. Finally, limitations and research implication of this study will be discussed.

6.1 Economic Resources as Important Predictors for Care Quality

From the data statistics in Table 1, government ownership was the dominant form among elder care homes before 1990. After 1990, non government-owned elder care homes have rapidly developed. Specifically, 70% of the nongovernment elder care homes were established after 2000. Non-government owned homes seem to gradually becoming the dominant form of elder care homes. However, government-owned homes as shown in earlier research have higher average number of beds and occupancy rate than non government-owned homes. In addition, government-owned elder care homes, as shown in this study, have superiority in obtaining economic resources from government, such as government's investment when established, the government's financial support for daily income, and the amount of government's subsidies for every bed. Also shown in this study, government-owned elder care homes have better staffing level in ratio of professional caregivers to residents, ratio of professional physicians to residents, and percentage of trained care staff. However, non government-owned homes have higher percentage of migratory care staff and turn-over rate. Government-owned facilities also provide more services on average for residents compared to non government-owned.

No differences was found between these two types of homes in resident characteristics, which were identified when residents entered facilities and measured by the percentage of residents with ADLs. Finally, Government-owned facilities have lower mortality rate than non-government-owned homes. But after controlling other four groups of variables, including economic resources, staffing, the availability of services, and residents' characteristics, the correlation is not statistically significant. Two variables—the proportion of daily income charged from residents and the proportion of government's financial support for daily income—were found statistically significant in predicting mortality rate.

These findings are consisted with results in previous study, in which government-owned homes have advantages in obtaining financial support and having higher staffing level, compared to non government-owned facilities (Zhan et al., 2006). Government-owned elder care homes could have enough financial support from the government for establishment and daily income. The stable financial support from the government is crucial for building good facilities, such as having the sufficient number of beds. According the study of Zhan and her colleagues (2006), elder care homes that are government-owned and government-funded tend to have better equipments for residents, such as indoor toilets, shower, and elevators. In contrast, private homes, some of which have the bed subsidies from government, tend to have simpler equipment and worse residential condition. Furthermore, the differences of availability of services between two different ownerships of homes were also influenced by government funding. Government-owned elder care homes that have enough financial support would build more types of services for residents, and non government-owned facilities that do not have enough financial support would be limited to expand services.

The inequality of economic resources, which could also influence the staffing level, might bring up the salary gap for employees between government-owned and non government-owned facilities (Zhan et al., 2006). The higher salary level would make the positions in government-owned facilities more attractive for applicants and in-service staff. Thus, non government-owned facilities, which have lower salary level, tend to have lower staffing level, which was indicated by the lower ratio of professional caregivers and physicians to residents, higher turn-over rate, and lower percentage of trained caregivers. Governmental funding would ensure the financial support for the expenses of for training caregivers, hiring sufficient number of staff, and reducing turn-over rate.

No difference was found in the three measures of residents' characteristics between these two types of elder care homes. This result does not lend support to the previous study in Nanjing which concluded that non government-owned homes have higher level of residents' needs for assistance in ADLs than governmental homes (Feng et al., 2011). In the previous study, non-government owned homes tend to accept residents with sicker and higher needs for caregiving than government-owned homes. The result in this study shared only marginal level of differences in residents' two counts of ADL activities. Further studies are needed to further explore this issue.

The sources of daily income between the two types of elder care facilities highly predicted the mortality rate after controlling for other four groups of covariates. Government-owned elder care homes, which have lower proportions of income from residents and higher proportions from government funding, tend to have lower mortality rates. From the statistical results in Table 2, 66% of government-owned facilities charged from residents, compared to 95.8% of non government-owned facilities. Only 1.9% of non government-owned facilities obtained financial support from government for daily income, compared to 30.2% of government-owned

facilities. The differences indicated that government-owned facilities have superior financial support to supplement daily income, while most non government-owned facilities could only depend on the residents' payments. One explanation for this result is that government-owned elder care homes were likely to "be reserved exclusively for the upper class or newly rich families as well as retired government cadres" (Zhan et al., 2006, p. 104). Government-owned elder care homes also accepted social-welfare recipients (Zhan et al., 2006), who was similar to Medicaid receivers in the United States. The social-welfare recipients often refers to persons with "three no", who had no income, no child and no ability to support oneself (Chen, 1996). Due to the high service charges and limited admission, most elders with physical needs may have few options for choosing government-owned facilities which provide better care.

Shown as in Table 7, whether from government support or individual fees, economic resources are important predictors for mortality. As inequality increases in China, this could mean that the rich could pay for higher quality of care. Or the powerful, such as government official, are more likely to utilize government funded elder care home. This emerging social inequality deserves more attention in future research.

6.2 Theoretical Implications

This study uses the insights from the political economical theory of aging. The variables selected for this study are informed by the SPO framework. The link among structure, process, and outcome was explored in this empirical study. This study only emphasized the relationship between ownership and other measures in SPO framework. The future studies could explore more relationship among those measures in SPO framework, such as causal correlation among measures of structure, process, and outcome.

As shown from the study, the distribution of economic resources influenced care quality, and care quality differed by ownership. According to Estes (2001), government plays an important role in distributing resources for social services. Individual aging experience is influenced by inequality of resource distribution due to social policies determined by the government. In this study, the Chinese government provides more financial support to governmental elder care homes, and the inequality of funding is shown to influence the differences in health outcomes of residents between governmental and nongovernmental elder care homes.

The pension systems and insurance scheme may further influence individual aging experiences. As more and more elders are likely to choose institutional care, elder-care facilities are likely to be in greater demand due to reduced family size and available pension. Yet, as shown, care quality in elder care homes are influenced by government funding. Combining these factors, government policies are increasing the inequalities of distribution of economic resources by first ensuring the interest of the government-owned facilities in the hierarchy. With the rapid development of economic since 1990s's reform, Chinese government seems unprepared to take over the responsibilities to corresponding reforms in social welfare systems (Chen, 1996; Chen, 2012). In the future, the Chinese government may need to minimize the inequality of resource distribution in order to maximize quality of life for most aging individuals in China.

6.3 Policy Implications

With the increasing older population in China, elder care institutions have been developing rapidly after 1990s. Quality control is also becoming an important issue. In their study, Zhan and her colleagues (2006) found rooms in some elder care homes had more than 10

beds, and residents in those rooms had to share daily activities without dignity and privacy. Quality issues in elder care homes have policy implications and deserve special attention.

First, there is no standardized approach to measure care quality in all institutions. The department of Chinese governments that manage elder care homes should support the development of quality measures and ensure the process of implementation and maintenance of quality measures. In the United States, Minimum Data Set (MDS) and Online Survey Certification and Reporting (OSCAR) are the two largest sources of nationwide data collection for measuring care quality in nursing homes, and the former at residential level, and the latter at staff level (Zhang et al., 2009). The performance of nursing homes could be improved according to the reporting and analysis of data collected through administrative data. This could be a good reference for measuring Chinese elder care in institutions.

Second, Chinese government could initiate programs that reward performances of elder care homes through financial incentives, based on standardized measures of care quality. In the United States, “pay for performance” programs, which intend to measure and reward better performance of nursing homes and maximize the value of expenditure from public and private, have been implemented in some states (Arling et al, 2009). The U.S. government had traditionally regulated care quality through fines and sanctions toward poor care in facilities (Arling et al, 2009). The approach of financial incentive such as pay-for-performance programs could strive for high-quality care and make a good reference for improving care quality in Chinese elder care homes.

Third, the results in this study raise the concern for government’s financial support for private elder care homes. To ensure care quality, government financial support to non-government facilities may need to be increased. With the opening of free market for the industry

of elder care homes, private homes have developed rapidly and become the dominant form to meet the needs of most Chinese elders. Government has recently initiated some programs to improve care quality and capacity of elder care homes, such as “Star Light Program” and “Beloved Care Engineering” (Chu & Chi, 2008). Although government has made an effort to meet the challenges of population aging in China, the aging of baby boomers could pose further challenges in order to ensure the quality of care for the large number of aging baby boomers.

Finally, facilities for long term elder care in China could not be distinguished according to provision of special care, due to the short development history of elder care industry (Zhan et al., 2006). Unlike the U.S., the distinction between assisted living facilities and nursing homes in China is missing. The lack of specification of elder care home is likely to increase the cost of caregiving and to decrease care quality.

6.4 Limitations

This research uses a secondary data set and the questionnaire for data collection was not specifically designed for this research. Thus analyses have to be performed based on available variables in the data. This limitation of data may affect the interpretation of research results.

Furthermore, this study is based on one site—Tianjin, China, a large urban area. Findings may not be representative of all cities in China due to geographic differences, level of economic development, and difference in elderly dependency ratio. Tianjin, second to Shanghai, has a very high proportion of the elderly population, and the number of elderly residing in elder care institutions may be higher than other cities, especially interior ones. Consequently, the results of this study may be more an understanding of the city itself; rather than nationally representative results. Interpretation of the data and findings should take caution. Nevertheless,

this study is one of the first to tackle the relationship between the state and the aging experiences in China. It may provide insight for policy makers both in China and the US.

Finally, the data of this study was collected by self-report at a staff level; the results might have ecological fallacy and information bias. For example, among 157 elder homes, only 19 homes reported pressure ulcer, and other homes reported the number of “0”. Pressure ulcer was an important variable to indicate care quality, especially for bed-bound residents. The report of clinic health outcomes by residents could greatly supplement the report from staff. This could indicate under reporting of various quality measures in the study.

6.5 Research Implications

Limited information is available about long term care facilities in China. Being one of the first studies about facility organizations, this study yields first hand data about long term care facilities at aggregated level. Consequently, there are several major limitations. First, this research is only a quantitative study at a facility level. Little is known about actual quality of care from the perspectives of care-recipients or family members. Future research could collect qualitative data to supplement quantitative study to allow a more in-depth understanding of quality of care from various perspectives. Furthermore, the data for this study was only collected in 2010, and a longitudinal study, or time-series study, could be designed to find differences in quality of care over a period of time among different elder care homes. The long-term investigation would yield more accurate data to allow a better understanding of the relationship between government and non-government facilities in relation to care quality. After a certain period of time, could market competition drive up the quality of care? Or quality of care continues to rely on government funding? These questions can only be answered with time through longitudinal studies. Findings to these questions will shed light not only for China, but

for other aging societies in models of long term care. Finally, because the measurements for this study were established based on the United States' setting, and some factors reflecting the relationship in Chinese setting may have been omitted. Future research could develop a set of measurements that are sensitive to the context of Chinese elder care homes.

6.6 Conclusions

This research aims to explore the inequality of the distribution of social resources for the aged in the context of different-ownership nursing homes. The results indicate that the Chinese government continues to play an important role in institutional long term care; in addition, residents' care quality and life quality is positively correlated with the government ownership of facilities. Findings provide insights for government policy makers, researchers, and other scholars for a greater understanding of factors influencing quality of care for older adults in China.

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