QUALITY ASSURANCE REGULATIONS ON NURSING HOME STAFFING ISSUE

by

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Chapter I

Introduction

1. Statement of the Problem

A nursing home in the United States is a facility with an organized nursing staff to maintain and operate organized care and services to accommodate two or more unrelated individuals over a period exceeding twenty-four hours. This facility is operated either in connection with a hospital or as a freestanding facility for the express or implied purpose of providing nursing care for individuals who are not in need of hospital care (Department of Health and Environmental Control, 2009). Since 1990, national expenditures for nursing home care have almost doubled, climbing from $53 billion to $92 billion in 2000 (General Accounting Office, 2002). Nursing home care in the United States is a part of the costliest health-care system in the world, and is a heavily regulated industry still struggling to maintain quality care across the country (Eskildsen & Price, 2009; Walshe, 2001).

Nursing homes provide a variety of services to residents, including nursing and personal care; physical, occupational, respiratory, and speech therapy; and medical social services (GAO, 2002). In nursing homes, the understanding of quality focuses on health and safety, including potential markers of poor quality such as malnutrition, bedsores, uncontrolled pain, and excessive use of hypnotics and antipsychotic medications (Rantz et al., 2004). For example, quality of care assessments include whether nursing homes assist residents with eating, whether there is adequate staffing to assist residents at

mealtime, and whether residents maintain an appropriate weight (Wiener, Freiman, & Brown, 2007). Quantitative data on the quality of nursing home care are available from several major sources (Grabowski & Price, 2009; Miller & Mor, 2008). The Centers for Medicare and Medicare Services (CMS) compiles the results of inspections by nursing home surveyors to determine compliance with the requirements for participation in the Medicaid and Medicare programs and consolidates them into the Online Survey, Certification and Reporting system (OSCAR). Key data about all nursing home residents (including private pay residents) are also collected as part of the federally mandated Minimum Data Set (MDS), which gathers functional and medical information on residents on a periodic basis. MDS data are used to construct quantitative "quality indicators" (Rantz et al., 2004; Schnelle, Bates-Jensen, Lily, & Simmons, 2004). CMS uses these quality indicators as part of the survey and certification process and makes 19 of them available to the public on its Nursing Home Compare website (Harrington, O'Meara, Collier, & Schnelle, 2003).

The quality of care in nursing home has been an important policy issue in recent decades. The concern about quality of nursing home care has been on the rise. Since early 1980s, many severe problems of resident care in nursing homes were reported by the press. These poor quality problems in nursing homes included excessive medication regimens, inappropriate use of restraints, unsanitary conditions, and physical abuse (Castle, 2001; Zimmerman, Gruber-Baldini, Hebel, Sloane, & Magaziner, 2002). In the 1990s, nursing home scandals continuously generated headlines in local and national press. Nonstandardized interviews conducted by Cohen-Masfield et al. (1995) with

residents, family members, nursing staff members, and administrators at three nursing homes in suburban Maryland, identified the most problematic areas of nursing home care, which are receiving most of the complaints: insufficient activities of daily living, unbalanced food portions, uncomfortable physical environment, and poor documentation. With poor quality of care, residents are vulnerable to illness. For example, nursing home residents contract more than 1.5 million infections per year, and each resident faces a 5% to 10% risk per year of succumbing to infection (Zimmerman et al., 2002). Among these problems, severe understaffing in nursing homes is contributing to more reports of severe pressure ulcers, malnutrition, abnormal weight loss, infection, and other problems (Parmelee, 2004; Walshe, 2001). The result of federal government studies confirmed this condition. The report “Appropriateness of Minimum Nurse Staffing Ratios in Nursing Homes”, which was from Department of Health and Human Services (DHHS) (2001), found that more than 90% of nursing homes do not provide sufficient staffing to protect residents. These reports provide a snapshot of quality problems, which exist in nursing homes nationwide.

Beside these problems, another challenge to nursing home care is the need of an increasing elder population in the new century. DHHS’s Administration on Aging (AoA) (2010) reported that the older population will burgeon between the years 2010 and 2030 when the "baby boom" after World War II (1946 to 1964) generation reaches age 65. The population 65 and over will increase from 40 million in 2010 to 55 million in 2020. By 2030, there will be about 72.1 million older persons. The growing elderly population requires sufficient long-term care resources to meet its needs (Parmelee, 2004; Wiener et

al., 2007). Nursing homes are one of the methods of long-term care. Providing high quality of care for this growing population is critical, which brings intensive pressure on nursing home care (GAO, 1999). Because nursing home residents generally require staff assistance to complete many activities of daily living, the maintenance of good quality of care is highly dependent on the care provided by nursing home staff (Burgio, Fisher, Fairchild, Scilley, & Hardin, 2004; Parmelee, 2004).

In response to the increasing concern about the quality of care in nursing homes, policymakers at federal and state level have made efforts to establish and implement various policies for quality assurance (GAO, 1999). Because of poor quality of care, neglect, abuse, and financial fraud in some nursing homes, the federal government established stringent regulations during the 1960s and 1970s to ensure that minimum standards of care would be met by all nursing homes (Troyer & Thompson, 2004). In the 1980s, due to the increasing elder population, quality of care gradually became an important public concern, which led to major reform and passage of new regulations for nursing home. In the 1980s, the Nursing Home Reform Act (NHRA), the landmark law passed under the Federal Omnibus Budget Reconciliation Act of 1987 (OBRA 87), was designed to improve staffing and training of care givers, standardize resident assessments, and ensure residents receive appropriate care (Castle, 2001; Wiener et al., 2007). In 1996, Institute of Medicine (IOM) published “Nursing Staff in Hospitals and Nursing Homes: Is It Adequate?” strongly endorsing OBRA ‘87’s standards, but also calling for more nurse staffing. In 1998, President Clinton announced a “Nursing Home Initiative” to strengthen enforcement actions for poorly performing facilities, including legislation to

require criminal background checks for workers and establish a national registry of nursing home aides (Gromley & Boccuti, 2001). He instructed federal officials to conduct more random inspections, as well as to impose more stringent penalties. In particular, officials should focus on facilities with a history of poor performance (Kane, Lum, Cutler, Degenholtz, & Tzy-Chyi, 2007). Various states also have established additional standards to supplement federal regulation (Zhao & Haley, 2011).

Because nursing home staffing plays an important role in the maintenance of good care, it is recognizable that staffing regulation is a critical part for quality assurance in the reform of nursing home regulation. How to adequately evaluate the effect of staffing regulation on staffing and quality of care, and provide valuable evidence to the regulation reform for assurance of quality has become a prominent question. To explore the relationships between staffing standards, staffing level and quality, prior studies have made lots of endeavors to clarify their association and provide research evidence for policymakers.

General agreement exists that there is a positive relationship between staffing level and quality of care (Li et al., 2010; Park & Stearns, 2009). There is some evidence that sufficient nursing staff is needed for sustain the quality of care. Konetzka, Stearns, and Park (2008) found that greater RN staffing significantly decreases the rate of pressure sores and urinary tract infections. While few studies suggest that more staff is harmful, many studies found difficulties in establishing a significant direct or positive relationship between more staff and better care. The reason is that there are various measures of both staffing and quality (Park & Stearns, 2009; Parmelee, 2004). Studies established different

models using multiple variables to examine the relationships, which attempt to reveal the essential relationships in this issue. Nursing homes are faced with the challenge of providing “acceptable” levels of staffing at low costs for assurance of care quality (Bowblis, 2011). Federal and state governments attempt to solve this dilemma between staffing level and quality by regulating the number of nursing staff. This bibliographic essay reviews literature and explores the important relationships related to this issue.

2. Purpose of the Study

The purpose of this bibliographic essay is to provide a comprehensive guide to the most significant studies on the relationships between staffing regulation, the level of staffing, and the quality of care in nursing homes in the United States. There is a large amount of literature investigating and studying the relationships between staffing regulation, the level of staffing, and the quality of care from different aspects. It is not easy for new learners who are interested to get a comprehensive understanding on this issue.

This bibliographic essay provides a framework to understand the connection between them with categories of the valuable resources, discussion about their individual merits and limitations. Instead of reviewing specific cases or defining measurements of the causal relationship between staffing and quality, this paper will look at this issue in its entirety from its roots and history, to its current standings and problems.

This paper also summarizes and compares four of the recent publicly recognized national research models analyzing national data. These models are utilized to investigate the relationship between staffing standards, the level of staffing, and quality of care in

nursing homes in the United States. It can provide readers with insights into the different research methods used in studying this issue.

Finally, this essay looks at what work should be done in the future.

3. Importance of the Study

The public of the aging nation has shifted its eyes towards the quality of care in nursing homes for more than two decades. Nursing home quality assurance regulation has become an important topic that concerns the current and future lives of the growing elder population. Current government regulations mostly concentrate on the level of staffing. Previous studies have shown that staffing standards affect the level of staffing at a nursing home, and that the level of staffing is a critical component of quality of care for the residents. Therefore, it is critical to clarify the regulation effect on quality of care for public interests and concerns.

Introduction of the roots and history of the relationships between staffing regulation, the level of staffing, and the quality of care can give readers an understanding of why there is a need for government regulation of staffing level, and how the level of staffing affects the quality of care at a nursing home. Reviews of the current standing of governmental laws and their effects can give readers insight into the existing problems of providing quality care. Additionally, this paper explores the different opinions and recommendations of medical groups regarding the nursing home staffing problem.

Overall, this paper will give readers a complete overview of the policy debate of whether staffing standards are indeed an important policy instrument towards addressing

the quality of nursing home care. It will also present readers with information of the appropriate staffing levels to ensure quality of care by examining the fundamental relationship between staffing and quality.

Chapter II

Methodology

In this study, a bibliographic essay method was used as a legitimate research tool suitable for introducing readers to the staffing issues associated with quality of care in nursing homes by categorizing the best resources, and discussing their individual merits and limitations. This bibliographic study used two methods to review the literature.

The first method combined electronic literature search results from five databases (Academic Search Complete, Alt HealthWatch, CINAHL, Health Source, Consumer Health Complete and MEDLINE). This search was restricted to research articles published from 1984-2011 in the English language. Key words of nursing homes, staffing, and quality of care were combined. The duplicates were removed automatically by the searching system. The electronic search yielded 243 citations. A manual review of citations and abstracts was performed to exclude those articles without a clear study emphasis. Inclusion criteria for the manual review included (1) publication in a peer reviewed journal; (2) a research study of staffing variables linked to quality measures; (3) full text of the article was provided. A total of 202 articles were eliminated, leaving 41 articles identified from the electronic search.

In the second method, relevant documents from CMS (Centers for Medicare & Medicaid Services), GAO (Government Accounting Office), and Institute of Medicine (IOM), which relating to staffing issue, was reviewed to identify original staffing studies that have been completed, but were not identified in the electronic search. A total of eight

government documents were identified from the hand search. This study of the relationships between staffing regulation, the level of staffing, and the quality of care in nursing homes encompassed a total of 49 citations.

Chapter III

Literature Review

1. An Overview of Minimum Staffing Standards

1.1. Factors Leading to Minimum Staffing Standards for Nursing Homes

The quality of care in nursing homes receives broad attention from public, politicians, health care administrators and experts. It is not only an important policy issue, but also a realistic problem related to common interests for the communities. Within this topic, staffing is a critical element of quality care for nursing home residents. Many studies have documented the importance of nursing staff in both the process and the outcome of nursing home care (Harrington, Swan, & Carrillo, 2007; Pearson, Hocking, Mott, & Riggs, 1993). Staffing levels in nursing homes have been consistently demonstrated to impact resident care. For example, a high staff-to-patient ratio was shown to be associated with reductions in restraint use, reductions in psychotropic drug use, and with an increase in resident activity (Castle, 2001; Kane, 2004). Higher staffing levels in nursing homes generally leads to fewer infections, fewer pressure ulcers, less skin trauma, less weight loss, decreased resistance to care, and an improvement in functional status (CMS, 2003). Therefore, when policymakers try to reform nursing home regulations, staffing standard usually receives lots of attention because of its impact on the staffing level, which would in turn lead to improvement of the quality of care.

In response to the increasing concern of the quality of nursing home care, federal and state governments have made an effort to investigate the optimal minimum staffing

standards for nursing homes.

During the 1980s, a multitude of care problems in nursing homes were reported by the press, which were later backed by various empirical studies. These reports highlighted poor quality of care in nursing homes, including excessive medication regimens, inappropriate use of restraints, unsanitary conditions, and physical abuse (Castle, 2001; Schnelle et al., 2004). With the increasing elder population in the 1980s, quality of care gradually became an important public concern, which led to major reform and passage of new regulations for nursing homes. At the time, nursing home regulation was administered by the Health Care Financing Administration (HCFA), the organization which was later renamed as the Center for Medicare and Medicaid Services (CMS). The HCFA contracted the National Academy of Sciences' IOM to study the proposed changes and their potential effect on the quality of care in nursing homes. In 1986, the IOM's landmark "Improving the Quality of Care in Nursing Homes" report was published, citing over 40 specific recommendations for reform (IOM, 1986). These powerful recommendations became the backbone of foundation of the Federal Nursing Home Reform Act (NHRA), passed under OBRA 87 (Eskildsen & Price, 2009; Harringto et al., 2003).

The landmark law NHRA is the most significant nursing home regulation in the history of health care reform that aims at improving the quality of nursing home care. As a result of OBRA 1987, federal regulations now require each nursing home to have a minimum staffing level of registered nurses (RNs) and licensed practical nurses (LPNs), and a minimum educational training for nurse aides (NAs) (IOM, 1986; Walshe, 2001;

Zhang, Unruh, Liu, & Wan, 2006). These three types of nursing staff provide direct health care to residents in nursing homes. Different staffing level of these three types of nursing staff can have a noticeable impact on the quality of care.

Nursing homes participating in Medicare or Medicaid comprise 98.5 percent of licensed facilities (Miller & Mor, 2008). The staffing standards of NHRA mandates Medicare and Medicaid certified nursing homes to have: (1) licensed nurses (RN or LPN) on duty 24 hours a day; (2) a RN on duty at least eight hours a day, seven days a week; and (3) an RN director of nursing (DON) in place; (4) a minimum of 75 hours of training and pass a competency test for NAs (Omnibus Budget Reconciliation Act of 1987, 1987). The law also authorizes the DONs to provide service as RNs on duty in facilities when nursing homes have less than 60 residents (Park & Stearns, 2009; Zhang & Grabowski, 2004). Nursing homes' obedience to this requirement for participation in the Medicare and Medicaid programs is evaluated through each state's survey process (Cohen-Mansfield, 1995; Mueller et al., 2006).

To better explain these standards, an important concept "hours per resident day" (HPRD) has been introduced in literature. The basic method to calculate HPRD follows two steps: (1) add the total nursing hours for all nurses on duty on any given day; (2) divide the total nursing hours by the number of residents at nursing home for the same period of time (Mueller et al., 2006; Zhang et al., 2006). For instance, if a nursing home, which has 20 residents, hires three RNs, and each works eight hours per day, HPRD of total RN hour could be calculated following this method: three multiplied by eight, and then divided by 20. The result equals to 1.2 nurse staffing hours per resident day. This

calculation of HPRD is convenient for researchers to convert different staffing standards or actual levels into a uniform measurement.

According to the federal requirements, the total licensed nursing (RN and LPN) requirements can be calculated, which converted to HPRD in a facility with 100 residents are around 0.30 HPRD or 30 hours per day (Zhang et al., 2006). This HPRD value is usually used to represent the federal HPRD standard.

Moreover, the NHRA requires nursing homes “to provide sufficient staff and services to attain or maintain the highest possible level of physical, mental, and psychosocial well-being of each resident” (OBRA, 1987). Although there are some earlier studies showed that the NHRA has improved quality of nursing home care, most of recent studies could not find evidence to prove it. The adequacy of the federal regulations regarding nurse staffing has long been criticized by researchers, who have advocated for better staffing by mandating specific staffing ratios for nursing facilities (Mueller et al., 2006). They found that the NHRA staffing requirements do not provide specific nurse-to-resident staffing ratios for RNs, LPNs, or NAs, and do not require any minimum level of staffing at all for NAs. “Other than the instructions to provide sufficient staff, the fact that a facility of 50 residents has basically the same staffing requirements as a facility of 200 indicates the lack of specificity and adequacy of these federal requirements” (Parmelee, 2004; Zhang et al., 2006, p. 9).

Federal staffing standards have not changed since OBRA 1987 was established. As more and more evidence showed the importance of higher levels of staffing improves the quality of nursing home care, the Institute of Medicine (IOM) (1996, 2001, 2003)

advocated the increase of federal regulatory requirements for nursing home staffing in the following reports. The report from CMS (2001) examining that the appropriateness of minimum nurse staffing ratios associated critically low ratios of nursing staff to residents with placing nursing home residents at substantially increased risk of problems related to quality. These reports recommended a higher staffing standard instead of current federal standards. In spite of these recommendations, total average nursing home staffing levels have remained relatively steady since 1994 (Harrington et al., 2007).

Various reports and research demonstrate that many nursing homes nationwide have continuing quality problems violating the OBRA standards (Park & Steans, 2009; Zhang & Grabowski, 2004). An increasing amount of evidence emerging from the research literature has consistently linked low staffing levels to poor quality of nursing home care (CMS, 2001). Evidence showed that poor care exists in nursing homes across states, which has resulted in infectious disease, urinary incontinence, pressure ulcers, pain and cognitive problems (Zhang & Wan, 2007). Bates-Jensen, Schnelle, Alessi, Al-Samarrai, and Levy-Storms (2004) reported that some California nursing home residents spend excessive time in bed partially due to understaffing. This means existing levels of staff were not sufficient to provide direct care and help residents with their daily activities. In other words, understaffing could cause residents to spend more time in bed than necessary, which can lead to detrimental outcomes (Bates-Jensen et al., 2004). They were concerned that such staffing problem also existed in other states' nursing homes. Cohen-Masfield et al. (1995) conducted nonstandardized interviews with residents, family members, nursing staff members, and administrators at three nursing homes in suburban

Maryland. These interviews also identified similar problematic areas of nursing home care. Residents complained that these nursing homes had insufficient staff to assist activities of daily living.

Besides understaffing, another condition also presents itself in recent years. Many facilities change staff skill mix to less costly alternatives which resulted in staff quality reduction. For example, substituting RNs with LPNs or licensed nurse staff with NAs can reduce hiring costs without violating the federal staff level requirement (Bowblis, 2011; Rantz et al, 2004).

Two decades after NHRA, substandard quality of care in the nation's nursing homes remains a widespread concern (Harrington et al., 2007). Nursing home residents may still live in danger due to understaffing of nurses and nursing assistants under the present economic circumstance ("ANA," 2001; Wiener et al., 2007).

1.2. Variation in Minimum Staffing Standard across States

In addition to federal standards, states have the flexibility to implement additional staffing requirements based on those in OBRA (Bowblis, 2011; Park & Steans, 2009). States reform their regulations to establish new standards to meet the higher quality demand. Because most state standards are usually more stringent than federal standards, nursing homes should also meet these requirements as well as federal regulations when participating in Medicare and Medicaid (Harrington et al., 2007; Walshe, 2001).

On the basis of review on available evidence since OBRA 1987, changes of nursing home staffing regulations at the state level can be observed. According to the statistic in Park and Stearns' research (2009), 16 states implemented or elevated minimum staffing

standards (MSS) from 1998 to 2001 for improving quality of care in nursing homes. In 2003, 36 states supplemented the federal guidelines with more stringent standards requiring either a certain number of nursing hours per resident day (HPRD) or a specified staff-to-resident or staff-to-bed ratio.

A number of states have legislated additional nurse staffing requirements for nursing facilities (Mueller et al., 2006). In 2004, 40 states had additional requirements for nursing home staff above the federal standard (Bowblis, 2011). Mueller et al. (2006) summarized the staffing standards for each of the 50 states and the District of Columbia. Only 11 states (21.5%) had no additional staffing requirements beyond the federal requirements. Of the 40 states having additional staffing requirements, 33 specified a minimum number of nursing care hours or staff-to-resident or resident-to-bed ratio for a 24-hr period. The median HPRD staffing standard requirement for the 33 states was 2.35. Florida had the highest HPRD requirement (3.60 HPRD) and Oregon had the lowest (1.76 HPRD). Zhang et al. (2006) found that fifteen states had higher RN standards, and twenty-five had higher licensed nursing standards. Eight states required an RN on duty 24 hours per day for facilities with 100 or more residents, instead of LPN. Thirty-three states required minimum staffing for NAs.

To protect nursing home residents, states that mandate new staffing standards attempt to affect staffing decisions in facilities and eventually quality of care. State staffing standards vary in terms of types of staff regulated and how standards are defined (Harrington et al., 2007; IOM, 1996). States commonly implement two types of staffing requirements: those that mandate the minimum amount of licensed staff, and those that

mandate the minimum amount of staff that provides direct care to residents (Bowblis, 2011).

Researchers advocate separating the nursing staff into categories for analysis and setting new standards for each kind of staff, which will be more reasonable for implementation. The 1996 IOM report on nursing homes confirmed the relationship between staffing levels and skill mix of licensed practical nurses and conducted that nursing assistants is good for quality of care (IOM, 1996; Park & Stearns, 2009).

While research has found that higher nursing home staffing leads to higher quality of care, identification of recommended nurse staffing levels becomes very important for policymakers (Park & Stearns, 2009; Zhang et al., 2006). One of the current difficulties is establishing evidence-based minimum staffing ratios or direct care hours per resident. A recommended staffing level in the research of Harrington et al. (2007) is 0.75 RN hour per resident day, 1.3 LPN hour per resident day, and 2.78 NA hour per resident day for the long-stay nursing home population. The study prepared for CMS recommended that 0.75 RN hours per resident day and 4.1 total nurses staffing per resident day would be necessary to prevent harm or jeopardy to residents with long stays CMS (Harrington et al., 2007). However, they found total average nursing home staffing levels have remained relatively steady since 1994, and over 90 percent of the nation’s nursing homes had staffing levels below this level. Through discussions on this issue, researchers recommended that the CMS should develop new minimum staffing levels (number and skill mix) for direct care in nursing home nationwide in order to meet increasing demands in the new century (Latimer, 1997; Zhang & Grabowski, 2004). To achieve this goal,

numerous studies (CMS, 2001; Muller et al., 2006; Park & Stearns, 2009) have been conducted to find the answer and have tried to provide reliable recommendations to policymakers in different states (Masterson, 2004).

1.3. Compliance with Minimum Staffing Standard

The states and the federal government share responsibility for oversight of the quality of care in nursing homes. Oversight includes routine and follow-up surveys to assess compliance with standards and enforcement activities to ensure that identified deficiencies are corrected and remain corrected (GAO, 1999). To monitor the condition of nursing home compliance, CMS is responsible for an annual survey implementation and certification review, by contracting with state staff following a federal inspection protocol. In particular, participation requires meeting the quality and safety standards mandated by the federal government and enforced by each state (Castle, 2001; Eskildsen & Price, 2009). States' health departments are the principal regulatory entity authorized by state legislatures to devise, and monitor provider compliance with state regulations (Miller & Mor, 2008). Nursing homes certified by the Medicare and/or Medicaid program are subject to federally mandated and state-enforced quality and safety standards (Li, Harrington, Spector, & Mukamel, 2010). Inspections are conducted by state and federal surveyors every 9 to 15 months, and then are reported on the Online Survey Certification and Reporting (OSCAR) System.

Nursing homes are subject to an annual inspection in which multidisciplinary teams of surveyors inspects a facility's compliance with a large (several hundred) number of standards and issues deficiency citations if the standards are violated; however they may

apply for and receive an exemption (Eskildsen & Price, 2009). Cited deficiencies can be followed by more severe sanctions, including monetary penalties, repeated surveys, forced change of management, and involuntary termination from the Medicare and Medicaid program. In addition, citations are available to the public through federal and state quality report cards (Castle, 2001; GAO, 2008; Park & Stearns, 2009).

The federal scope and severity rating is a 12-letter scale (with “A” being the least harmful and “L” being the most severe). Scope is based on the number of residents who are affected or could be affected by a deficiency. Severity refers to the level of harm that has occurred or is likely to occur if a deficiency is not corrected (i.e., A = isolated scope and minimal severity; L = widespread scope and immediate jeopardy). The most serious category is for a widespread deficiency that causes actual or potential for death or serious injury to residents; the least serious category is for an isolated deficiency that poses no actual harm and has potential only for minimal harm (GAO, 2002, 2008).

State citations are also classified into categories based on how seriously harmed residents either were or could have been if problems were not corrected (Harrington et al., 2003, p. 10). Involuntary termination from federal certification is an important tool used by state regulators to enforce federal quality standards. For nursing homes, termination from certification means that they cannot receive Medicare or Medicaid reimbursement, which likely leads to financial strains (Li et al., 2010). State agencies identify and categorize deficiencies and make referrals for proposed sanctions to CMS. Most homes are given a grace period, usually 30 to 60 days, to correct deficiencies. (GAO, 2002, 2008).

2. Influence of other Policy Changes on Minimum Staffing Standards

Approximately two-thirds of nursing homes are for-profit and, thus, can be assumed to make decisions designed to maximize profits given the market and regulatory constraints that they face (Li et al., 2010; Parmelee, 2004). Quality, staffing, and cost in nursing homes are common debatable topics among the public, policy makers, and researchers, when discussing the influence of Medicaid and Medicare reimbursement rates on staffing issue.

Nursing home services are largely paid for by public insurance plans and are regulated by the federal and state governments. In 2007, the annual cost of care provided to the nation's 1.6 million elderly and disabled nursing home patients was U.S. $131 billion, of which 60 percent was paid for by the Medicare and Medicaid programs (Li et al., 2010). Because most nursing homes participate in Medicaid and Medicare programs, reimbursement rates play an important role on the financial conditions of facilities, which definitely affects staffing levels (Konetzka, Yi, Norton, & Kilpatrick, 2004; Zhanlian et al., 2010). Mandated staffing levels could hurt nursing homes financially if they are not offset by increases in Medicaid and Medicare reimbursement (Grabowski & Town, 2011). In particular, if nursing homes become unprofitable because of unfunded staffing mandates, other nonmandated services could be cut and overall quality could decline (Harrington, Swan, & Carrillo 2007). Therefore, Medicare and Medicaid reimbursement rates are two potential policy tools, which could impact the minimum staffing standards in states (Konetzka et al., 2004).

Medicaid reimbursement rates have been associated with increased staffing minimum

standards in states. Several studies (Li et al., 2010; Miller & Mor, 2008; Zhanlian et al., 2010) found that there were significant positive relationships between staffing and Medicaid reimbursement rates. Higher Medicaid reimbursement rates encourage facilities to provide more nursing care (Mueller et al., 2006). Harrington et al. (2007) found that nursing home reimbursement rates were positively related to both RN and total nursing hours.

3. Empirical Models for Measuring the Relationship between Staffing and Quality of Care

3.1. Introduction

Various studies have examined the relationships between staffing regulation, staffing level and the quality of care in nursing homes. The literature review reflects a consensus on the fact that higher nursing home staffing leads to higher quality of care for residents (Park & Stearns, 2009; Zhao & Haley, 2011). With the implementation of NHRA in 1987 and changes in health care policy at state level, health care policy makers, experts and researchers developed different models to explore the effect of staffing standards or/ and staffing levels on quality assurance. Many early studies applied simple pre- and post-NHRA comparison method in relevant small geographic region of several states. These simple models will not be discussed because these cases were not representative nationwide and poorly designed to control the complicated covariates, which could potentially impact the result. The four models discussed here are selected from research in recent years which analyzed large sample data, including variables, findings, advantages and limitations. The selection criteria for model in this paper include:

(1) collecting large sample nationwide or including several comparable states; (2) using national database; (3) using normal indices for staff and quality evaluation; and (4) controlling diverse covariate.

3.2. First-different model

Zhang and Grabowski (2004) used a First-Different (FD) model to investigate the effect of NHRA on the improvement of nursing home staffing and quality. This study examined the relationship between staffing and quality of care at a federal regulation level by using this approach to fixed effects regression analyses, which exploits within home variation in the regressors and outcomes in order to control time-invariant factors that differ across nursing homes.

One unique characteristic of this study was the design of data set. The researchers collected federal certification data from the pre- and post-NHRA periods for over 5,000 facilities in 22 states, which represented a large-scale, multistate analysis of the NHRA and quality. Two major data sources were used: the 1987 Medicare/Medicaid Automated Certification System (MMACS) and the 1993 Online Survey Certification and Reporting (OSCAR) system. The MMACS is the predecessor to the OSCAR system. The MMACS and the OSCAR both contain information from state surveys of all federally certified Medicaid (nursing care) and Medicare (skilled nursing care) facilities in the United States (Zhang & Grabowski, 2004). Zhang and Grabowski also utilized two other data sources as the supplementation for the analysis. One data source was county-level demographic, socioeconomic, and health status data from the Bureau of Health Professions' Area Resource File (ARF). Another data source was state-level Medicaid reimbursement rates,

which were obtained from data collected in previous research.

Variables of quality measures contained three indices: the proportion of residents with pressure ulcers, physical restraints and catheters use. Variables of staffing measures included RN, LPN, and NA (hours/resident day). There were four control variables within the model: facility factors, resident factors, market factors, and state factors. A dummy-year approach was used to examine the effect of the NHRA on the quality measures before implementation of the FD model, controlling for facility, resident, market, and state factors. FD model focused on analyses of examining whether changes in staffing have been related to changes in quality under NHRA in 1987and 1993 with the fixed effect done in the first step.

As the result, the authors would not find a positive relationship between staffing and quality except in some cases for those nursing homes with low staffing level near or under regulatory standards. It proved that a minimum staffing standard has the potential to be an important step toward remedying quality in those facilities with substandard staffing. Additionally, the research found the possibility of a nonlinear association between staffing and quality. That means staffing may have a positive influence on quality within fixed range, when it reached certain point, the positive relationship would diminish.

The three quality indicators in this study were not efficient enough to comprehensively reflect the multidimensional construct of nursing homes. Besides this limitation, the reliability of data sources and the relative simple comparison of time period were also problematic because of the change of data system.

3.3. Logistic Regression Model

Zhang et al. (2006) established a non-linear logistic regression (LR) model to examine the relationship between a quality index measure and staffing data by skill mix at federal regulation level. This study used OSCAR system with 2002 and 2003 records as the data sources. The sample contained 14,113 nursing homes OSCAR records of fiscal year 2002 and 16,323 nursing homes OSCAR records of fiscal year 2003. The authors used 2002 data for main analysis, while the 2003 data was used to test reliability of the result.

The term “skill mix” is usually used to describe the mix of occupations in an organization. In nursing home, it can be explained as the combinations of activities or skills needed for nurse staff (Masterson, 2004). The variable of quality measure was a combination index with three indicators, which included the presence of indwelling catheters, pressure sores, and physical restraints. The advantage of this research was the five staffing measures which used in this study were RN hours per patient day, LPN/LVN hours per resident day, NA hours per resident day, total licensed staff (RN + LPN/LVN) hours per resident day, and total nurse (RN + LPN/LVN + NA + administrator) hours per resident day. The authors developed new staffing variables for the assessment.

After examining the linear relationship first, the result confirmed Zhang and Grabowski’s assumption that the relationship between quality and staffing level was non-linear. They found the linear relationship could not correctly reveal the complex association. The positive relationship between staffing level and quality of care only existed within a certain range, which could meet the minimum staffing standard and

remain effective quality at the same time. Otherwise, increasing staffing could not lead to overt improvement of quality outside this certain range. However, it was hard to define this exact range by using this model due to reliability problem of the data sources and the simple measure of quality.

3.4. Resident-Level Longitudinal Model

Konetzka et al. (2008) created a new model called “resident-level longitudinal model (RLL)” to investigate longitudinal effect of registered nurse (RN) staffing and skill mix change on nursing home resident outcomes by controlling for the potential endogeneity of staffing. This data source comes from Minimum Data Set (MDS) nursing home resident assessment of five states merged with OSCAR from 1996 through 2000, which had 399,206 resident-level observations.

The design of variables in this model was simpler than the previous two models. The outcome variables were incidence of pressure sores and urinary tract infections. The RN staffing variable was measured as the care hours per resident day and a skill mix variable was measured as RN staffing hours as a proportion of total staffing hours. Outcomes were modeled as a function of RN staffing intensity, skill mix, resident-level severity controls, time-varying facility- and market-level controls, facility-level fixed effects and time fixed effects (Konetzka et al., 2008).

The authors found greater RN staffing significantly decreases the rate of both adverse outcomes. The improvement of skill mix had limited influence on one kind of outcome: urinary tract infections. This result supported that sufficient nursing staff is needed for sustain the quality of care.

Obviously, using a large sample of consecutive nationwide data was an advantage of this study. For better examination of the true relationships, the study also focused on control the endogeneity through instrumental variables. One limitation of this model was that using long-stay residents as samples; thus the results may not be helpful for quality measure of short-term stay in nursing homes. Another limitation should be concerned because it is unable to test the mechanisms by which the outcomes may be affected by increased staffing. Therefore, the authors suggested using a broader array of instruments and a national sample would be beneficial for this kind of research regarding the staffing regulation issue.

3.5. Difference-in-Differences Model

Park and Stearns (2009) also developed a Difference-in-Differences (DD) model to investigate the relationship between staffing regulation and quality of care at state regulation level. They focused on exploring the impact of state minimum staffing standards on the level of staffing and quality of nursing home care. The design of this model aimed at the comparison of staffing change between nursing homes in those states which implemented or expanded staffing standards in excess of federal requirements and nursing homes in other states without new standards. The data sources they used were (OSCAR combined with the Area Resource File (ARF) from 1998 through 2001. They analyzed a large sample, which contained a total of 55,248 facility-year observations from 15,217 freestanding facilities nationwide.

In this model, staffing and quality of care were two key dependent variables. The level of hours per resident day (HPRD) by licensure type (RNs, LPNs, and NAs) and

total staff were combined as the staffing variables. For the other dependent variable, quality of care, they chose six quality measures by following the IOM recommendations for this model, including the rate of pressure sores, contractures, bladder incontinence, catheter use, restraint use, and the total number of facility survey deficiencies. The staffing standards were the key independent variables in this model. The authors created two dummy variables to specify two different levels of treatment effects: transition effects and steady-state effects. The former variable represented the immediate short-term response, while the later variable meant one year policy change. All facilities in their sample should be two types of data.

One advantage of this DD model is that the approach is analogous to a reduced-form model that does not estimate the effect of staffing on quality but instead estimates the effect of the overall package of reforms implemented from1998 through 2001 (Park & Stearns, 2009). The reason the model was designed was that policy changes occurred at diverse times across states; the study exploited this experiment by using a DD model with facility fixed effects to estimate the effect of staffing standard changes on staffing/quality of care with pre–post and treatment–control groups, controlling the unobserved time-invariant factors among sample nursing homes. Additionally, this study used a relatively large sample with a broad range date of American nursing homes compared to the previous studies.

As a result, their research confirmed that the staffing standard had direct association with reductions in restraint use and the number of total deficiencies at all types of facilities. However, they found the new state policy of increasing staffing

standards just led to small staffing increases for those facilities with staffing initially below or close to the new standards. Those low-staff facilities were more likely to improve their staffing level to meet new regulatory standards to avoid penalties. They drew the similar conclusion as the findings of Zhang and Grabowski's research.

The conclusion showed that mandated staffing standards affected only low-staff facilities facing potential penalties. Park and Stearns thought the effects of the new standards were small. There are several limitations existing in this model. It could not capture all the staffing regulation changes to create identified variables in order to provide the overall average effect of the full set of reforms within this long period of time. Furthermore, it could not control all the other factors that can influence the quality measurements. It is also possible that the study omitted some highly influent factors.

3.6. Summary and Comparison of Four Models

Several findings can be drawn. The relationship between quality of care and staffing regulation could be influenced by various factors. These models could be used to examine the relationships between staffing standards, and/or staffing levels, and quality of care by controlling other covariates effectively. First, these models were used to study different objectives. FD and LR models were used to examine the relationship between staffing standards and quality of care. RLL model was used to investigate the relationship between RN staffing levels and resident outcomes. DD model was used to explore the relationships between staffing standards, staffing levels and quality of care.

Second, these four models all used OSCAR as a major data source. They also collected large samples for research, which were at least more than 1000 nursing homes.

FD, LR, and DD models collected nursing home information from fifty states. The RLL model just collected five states' data.

Additionally, the similarities of model development among these models are the design of variables. the four models all used HPRD as the measure of key variable staffing levels. Instead of examining the total HPRD or RN HPRD, LR model divided all the nursing staff into categories. For the quality, DD model used the most indicators to evaluate this dependent variable. This kind of multi-indicators combination for variables was advocated by other studies (Mueller et al., 2006). For example, Castle and Engberg (2007) created one index of quality (the outcome) by combining the 14 quality indicators using exploratory factor analysis. They used regression analyses to assess the effect of the four staffing characteristics for nursing staff on this quality index.

Furthermore, because of the design of models, different result can be conducted. FD model revealed federal standards had significant positive impact on staffing level and quality of care. However, the LR model addressed that federal staffing standards had limited impact on quality of care. RLL model just examined a relative simple relationship, and then concluded that greater RN staffing significantly decreased the adverse outcomes. DD model revealed that MSS at the state level slightly affected low-staff nursing homes, which were facing penalties (Park & Stearns, 2009) It can be found that the more complex the model was, the more limited association could get.

In order to reflect the association more correctly, the subsequent researchers should realize that the different combinations of variables construct the distinctions among these models. The distinctions also would help further researchers to choose

indicators depending on the emphasis of study. How to design a great model in order to evaluate this issue would be a challenge for the further researchers.

Based on the above description and comparison, the Difference-in-Difference model is the best of these four models for examining the relationship between staffing levels and the quality of care in nursing homes. This model is a more comprehensive compared to other three models. There are several reasons for this recommendation.

Firstly, the model contains large amounts of necessary information on various aspects of nursing homes nationwide from 1998 to 2001. The sample size is large enough for such a study. The investigation is more like a census for most nursing homes in the United States during this three-year period. The model uses OSCAR combined with three reports as data sources to reduce the inaccuracy of OSCAR. It collects specific state staffing standards from two published reports: the Brown University Survey of State Policies and State Data Book on Long-Term Care Program and Market Characteristics. ARF is used to collect economic and demographic variables of nursing homes for each county (Park & Stearns, 2009). The more accurate the data is, the more it can be trusted.

Secondly, the design of variables in this model is more in-depth than other models. Instead of examining the direct relationships between staffing level or staffing standards and quality of care, this model uses staffing level and quality of care as two dependent variables and staffing standards as the key independent variable. In addition, the three variables are all designed as combinations of various factors. The more comprehensive factors the model could analyze, the more accurate relationships it would identify.

Thirdly, because of diverse conditions in nursing homes around the country,

controlling covariates also plays an important role in this model. The model controls variables relevant to changes over time in facility, market, and state characteristics in order to increase sensitivity of this model. Because of the unchanged federal regulations, it becomes more important to explore the minimum staffing standards effect for states. Each state needs to define and develop unique staffing regulations depending on its own situation.

Finally, the model is designed as a multi-level evaluation. It separates the large sample nursing homes to the low-staff and full-staff facilities for better assessment based on each state's nursing home standards. Then, it also estimates pre-post effect of the new staffing standards just like other models. The researchers established a complicated equation for this model focusing on assessing the effect of overall package of reform implementations.

In conclusion, compared to other three models, the DD model is more meaningful for evaluating the effect of staffing regulations on quality of care in nursing homes complex economic and social conditions.

4. Prior Studies Findings

To better study the current staffing regulation, a number of studies have explored the effect of staffing standards on staffing and quality of nursing home care by using different sources at federal or state level. Although researchers collect data and design variables using different combination of database, several major databases could be found in these studies. These databases are generally used as valuable sources for the purpose of

examining the relationships between staffing standards, staffing level, and quality of care.

The Online Survey Certification and Reporting (OSCAR) System is the most important data source which has been extensively used in research on nursing home issues. OSCAR is the only uniform national system available for all nursing homes that participate in the Medicare or Medicaid programs, nearly including 98% of all U.S. facilities (Kash, Hawes, & Phillips, 2007; Mueller et al., 2006). It is used to determine whether or not nursing homes are complying with federal regulations (Konetzka et al., 2008).

Most OSCAR data elements are self-reported and reflect data at the time of the survey (Zhang & Grabowski, 2004), which contains three areas of information: (a) facility characteristics, including all categories of nurse staffing; (b) resident census and conditions; and (c) deficiency measurements (Harrington et al., 2007). State inspectors collect OSCAR data every 9 to 15 months to verify nursing homes' compliance with all federal and state regulatory requirements (Zhang et al., 2006; Zhang & Wan, 2007). Research demonstrates that OSCAR measures are appropriate for research because OSCAR can provide the most comprehensive information of nursing home nationwide. It also allows for the construction of a panel dataset with a unit of the observation of the nursing facility, which is convenient for researchers to build their own databases (Bowblis, 2011; Grabowski & Town, 2011).

However, concerns exist about the accuracy of OSCAR data (Zhang & Grabowski, 2004), because certain types of facilities consistently over-report staffing levels (Kash et al., 2007; Schnelle, Bastes-Jensen, Lily, & Simmons, 2004). As a self-reporting system, it

gives nursing homes a chance to over-report their staffing level in order to avoid penalties. Furthermore, the facility-level measures of quality available in OSCAR may be insufficiently sensitive, and endogeneity of staffing and outcomes was not addressed. (Grabowski & Town, 2011; Konetzka et al., 2008). Most of studies have relied on these data sources whose accuracy and sensitivity is questionable (Kane, 2004). Despite these concerns, OSCAR is the only data source which provides the most comprehensive national source of facility-level information on the operations, resident characteristics, and regulatory compliance of nursing homes in the United States (Park & Stearns, 2009; Schnelle et al., 2004).

Another important data source is the Area Resource File (ARF). ARF, which is made available by the U.S. Bureau of Health Professions, includes information on identification indices, health professions, facilities, utilization, expenditures and geographic population, by geographic regions (Zhang & Wan, 2007). It is a publicly available dataset containing economic and demographic variables of the elders (Miller & Mor, 2008; Park & Stearns, 2009). This source is a great supplementary tool for evaluating regional variants.

In addition, Minimum Data Set (MDS) is used in some studies for accuracy of data use; it is a government-mandated data set containing assessment data on all residents in Medicare- or Medicaid-certified nursing facilities (Bowblis, 2011; Harrington et al., 2003; Konetzka et al, 2008; Schnelle et al., 2004). The information on quality generally relies on quality indicators usually derived from MDS, which generates quarterly data on all nursing home residents (Bates-Jensen et al., 2004; Grabowski & Town, 2011; Kane,

2004). Various studies use these three data sources with other sources to explore the relationships between staffing standards, staffing level, and quality of care.

4.1. Effects of Minimum Staffing Standards on staffing and quality of care

The increasing concern of setting minimum staffing standards focuses on whether these regulatory standards ultimately lead to increases in actual direct-care staffing levels, or improvement of quality of nursing home care. The primary purpose of minimum staffing standards is to maintain the sufficient staff, which provides direct care to residents. The policy is set to improve quality of care in nursing homes and protect residents.

The NHRA established minimum staffing standards at the federal level. Because of its importance, numerous studies investigate the relationship between federal staffing standards set by NHRA and nursing home quality of care. Some earlier studies showed the use of physical restraints and psychotropic medications has declined since the introduction of this legislation (Castle, 2001). But later studies suggested that we should be careful not to overestimate the effects of the NHRA. Although the use of physical restraints has declined, the NHRA has had little impact on the improvement of quality of care (Castle, 2001; Latimer, 1997).

Some earlier studies demonstrated that NHRA improve quality of care (Latimer, 1997; Wiener et al., 2007). With the development of information system and further investigation, the effect of federal staffing standards could not be proven. Zhang and Grabowski (2004) collected longitudinal OSCAR data to examine whether the Nursing Home Reform Act improved both staffing and quality of care by using a facility-level

model. The results indicated that the act significantly improved the staffing situation in nursing homes. However, they observed that staffing increases do not significantly lead to improvements in quality except in facilities that were of particularly poor quality at baseline. Another study supported this finding that minimum staffing levels achieved different levels of quality at diverse nursing homes conducted by Zhang et al. (2006) using the OSCAR database emerged for register nurse (RN) emphasis. Still, the evidence of dramatic improvements as a result of OBRA have not fully emerged yet, and further studies are needed, both to more accurately capture the improvements that have already taken place and to shed additional light on specific elements critical to the quality of care, such as nurse staffing (IOM, 1996).

Many states set higher levels than federal regulations, which aim at improve staffing level. Do these state regulations really lead to higher actual staffing levels in nursing homes? The evidence from studies does not give a very strong positive relationship between state minimum staffing standards and actual staffing standards in nursing homes. Mueller et al. (2006) reviewed staffing standards from the 50 states and the District of Columbia to explore whether these standards are related to nursing home staffing levels. They collected data from OSCAR and used a series of hierarchical linear models examined the relationships between state staffing standards and actual staffing level (total, licensed, and certified nurse aide HPRD), by controlling a number of covariates.

They found the variance in actual staffing level in nursing homes was much greater within states than between states. Nursing homes in states with high staffing standards had slightly higher staffing levels than states with no standards or low standards, whereas

staffing in states with low standards was not significantly different from that in states with no standards.

Based on the above research findings, minimum staffing standards have only partial influence on improving staffing level and quality of care. Weaker relationships are obtained than expected.

4.2. Effects of staffing on quality of care

Numerous studies examined the effect of staffing on quality of care in nursing homes. Schnelle et al. (2004) compared nursing homes in California by using different staffing statistics on quality of care. They found the highest-staffed homes performed significantly better than the lower-staffed homes. Konetzka et al. (2008) investigated the effect of RN staffing level on resident outcomes. The result showed the relationship between RN level and adverse outcome was negative. These studies tried to verify whether higher staffing level relating to better quality of care. The positive relationship between staffing level and quality of care is the essential prerequisite to research the effect of minimum staffing standards on staffing and quality of care. If this prerequisite does not exist, all the efforts that try to improve quality of care by adjusting the staffing standards will become worthless.

Therefore, a fundamental assumption in these studies was the positive relationship between staffing level and quality of care (Li et al., 2010). A cross-sectional study conducted by Bates-Jensen et al. (2004) examined the effect of staffing level on time observed in bed during the daytime in thirty-four southern California nursing homes. They suggested that staffing level has significant impacts on time in bed because

excessive in-bed time has been associated with detrimental outcomes, including pressure ulcer development, pneumonia, under nutrition, urinary incontinence, infections, and mortality. In their multivariate analysis model, the result was that the strongest predictor of observations in bed was staffing, with residents residing in lower-staffed homes being nearly six times more likely to have more than 50% observations in bed than residents residing in high-staffed homes. This study concluded that elevating staffing level has a directly positive effect on resident outcomes. GAO (2002) examined the spending and staffing for freestanding[1] nursing homes in three states—Mississippi, Ohio, and Washington—that are geographically diverse. It reported nursing homes in Ohio and Washington that provided more nursing hours per resident day, especially nurses' aide hours, were less likely than homes providing fewer nursing hours to have had repeated serious or potentially life-threatening quality problems, as measured by deficiencies detected during state surveys. The reason may be the highest-staffed nursing homes have significantly lower resident care loads on all staffing reports and provided better care than all other homes.

In order to conduct more comprehensive analysis of this issue, scholars have developed different methods, which intend to provide more persuasive evidence to prove the positive relationship between staffing level and quality of care. One method is dividing nursing staff into categories and focusing on their separate effect on quality of care, for example, exploring the effect of RN, LPN, and NA level on quality of care separately. Konetzka et al. (2008) investigated longitudinal effect of registered nurse (RN) staffing on nursing home resident outcomes using a resident-level longitudinal model.

They used data from MDS nursing home resident assessment from five states merged with OSCAR from 1996 through 2000. Outcomes studied are incidence of pressure sores and urinary tract infections. RN staffing was measured as the care hours per resident-day and skill mix was measured as RN staffing hours as a proportion of total staffing hours. They found that greater RN staffing levels significantly decreases the likelihood of both adverse outcomes. They also suggested that using a broader array of instruments and a national sample would be beneficial for this kind of research regarding staffing regulation issue (Konetzka et al., 2008). This result supported that sufficient nursing staff is needed for sustaining the quality of care.

Based on separating the staff type, another method is to create and measure a quality index by combining more quality indicators, such as: resident daily activities, pain pressure sores, physical restraint use, depressed or anxious, loss bladder or bowel control, catheter inserted and left in bladder, time in bed or in a chair, ability to move in/around room, urinary tract infection, and delirium. Castle and Engberg (2007) created one index of quality (the outcome) by combining the 14 quality indicators containing all the above indicators. They used regression analyses to assess the effect of the four staffing characteristics for nursing staff on this quality index. Staffing levels was one of the four characteristics. The independent variables are NA, LPN, and RN staffing levels, turnover rates, stability, and agency use rates. Their results indicated that RN and NA staffing levels have positive relationship with quality of care. The relationship between LPN level and quality index is not significantly positive. They found that staffing levels should be addressed simultaneously to improve the quality of nursing homes with other three staff

characteristics such as turnover, worker stability, and agency staff. The result advocated that these characteristics of staffing should be considered when policymakers try to change the current regulations.

For further adequate evaluation, Bowblis (2011) advocated that using minimum direct care staffing (MDCS) to study the impact of MDCS requirements on nurse staffing levels, nurse skill mix, and quality of care. The minimum direct care staffing (MDCS) requirements are defined as a ratio of the number of residents or beds in a facility. This research differed from earlier work by primarily focusing on MDCS requirements and the specific level of staffing mandated in those requirements. Further, this study used more quality measures and breaks them into measures related to care practices, resident outcomes, and regulatory deficiencies. By using changes in MDCS requirements across states of all OSCAR surveys from 1999 to 2004, the results revealed that higher MDCS requirements with increasing nurse staffing levels are associated with improved resident outcomes and meeting regulatory standards.

The method of multi-level analysis is also recommended. Zhang and Wan (2007) used broader data sources including OSCAR data from the fiscal years 1997 to 2001 and Area Resource File (ARF), to explore institutional mechanisms explaining the variation in nursing home quality. A two-level panel design with the national data was conducted. Structural equation modeling was employed to examine the main and interaction effects of institutional factors on nursing home quality at both facility and state levels. The findings indicate that the quality of nursing homes is more responsive to regulatory and payment constraints than to normative mechanisms. An interaction effect between the

regulatory mechanism and nurse staffing is statistically significant. The findings confirmed the importance of multi-level analysis of nursing home quality with regulation and staffing levels.

Chapter IV

Discussion

1. Research Findings

The issue of quality assurance in nursing homes has been debated for many decades. Policymakers are stilling struggling to establish regulations to maintain and improve quality of care (Eskildsen & Price, 2009). The most important quality of care assessments concentrate on evaluation of residents' health and safety in nursing homes (GAO, 2002). Staffing plays a critical role in providing high quality of care to residents. With the increasing concern of poor quality and enlarged elder population, staffing issue becomes the main focus of regulation reform in nursing homes (Zimmerman et al., 2002).

Nursing home staffing resources necessary to provide care consistent with regulatory guidelines are the subject of national debate due to emerging evidence that existing staffing resources may not be adequate (Schnelle et al., 2004). Adequate nurse staffing in nursing homes is considered to affect quality of care and life for residents (Mueller et al., 2006). CMS (2001) examined the appropriateness of minimum nurse staffing ratios, and found that low ratios of nursing staff to residents could lead to more quality problems.

Although federal and state governments have made effort to improve quality of care in nursing homes, how to establish the appropriate staffing standards is still in question. To clarify the relationships between staffing standards, staffing levels and quality of care, prior studies used various different methods to investigate this issue (Harrington et al., 2003; Park & Stearns, 2009).

According to the above review on policies and research, the relationships between staffing standards, the level of staffing, and the quality of care in nursing homes are revealed. Firstly, the effect of federal and state staffing standards on staffing level does not always work on any nursing home to improve staffing. Only nursing homes with lower staffing near or under standards, which violating staffing regulation and facing penalties, are willing to elevate their staffing level (Latimer, 1997; Park & Stearns, 2009). Troyer and Thompson (2004) found federal staffing standards did not significantly elevate the actual staffing level in nursing homes nationwide. Park and Stearns established a DD model to explore the effect of staffing standards in each state on staffing level. They also gained the similar result that mandated staffing standards slightly impact low-staff nursing homes. Because there are other factors that can impact this relationship significantly, such as Medicaid reimbursement rate, the impact of staffing standards is limited under the current complex health care system and economic environment (Konetzk et al., 2004; Latimer, 1997).

Moreover, the effect of federal and state staffing standards on quality of care also has been proved that its influence is partial on improvement of quality of care (Zhang & Wan, 2007). Nursing home staffing regulation indeed plays an important role on quality assurance. However, we cannot over amplify its impact on quality of care. There is a fairly unclear relationship between staffing standards and quality of care. Studies demonstrate that staffing standards had a significant relationship to staffing, but it was not consistently positive (Mueller et al., 2006). Zhang et al. (2006)’s model confirm this relationship. It is because some nursing homes may consider staffing minimums as the

maximum standards. They will keep the minimum staffing level to make more profit rather than increasing staffing for higher quality. Introducing a high staffing standard may increase facility staffing; however, a low standard may have no affect or even create a dampening effect (Kane, 2004; Parmelee, 2004).

Since the relationships between staffing standards and staffing level, staffing standards and quality of care are not strongly positive, the high expectation that higher nursing home staffing associated with higher quality of care is also questioned: higher level could not completely guarantee higher quality of care (Park & Stearns, 2009). Greater staffing level could significantly decrease some adverse outcomes. But there are other characteristics of staffing can impact this relationship, such as skill type, turnover, and facility culture (Burgio et al., 2004; Castle & Engberg, 2007; Rantz et al., 2004). Based on the review of those models, these factors are working together to influence on quality of care. Examining the relationship between staffing level and quality of care without other related factors would not get the right association in this issue (Schnelle, 2004).

The selected four models (Konetzka et al., 2004; Park & Stearns, 2009; Zhang & Grabowski, 2004; Zhang et al., 2006) are recommended to use for research of this issue. Because the relationship between quality of care and staffing regulation could be influenced by various factors, these models could be used to examine the relationship between staffing and quality of care by controlling other covariates effectively. According to their research, different combinations of variables for quality and staffing level are also recommended to conduct a comprehensive study, which can be created depending on the

emphasis of study.

2. Policy Implications

Whether quality is assured through the nursing home staffing standards has become an issue of concern. Reflecting these concerns, the federal and state government has made a lot of effort to explore this issue. The most important changes of staffing standard, the OBRA 1987, set a clear minimum staffing standards for nursing home nationwide (Castle, 2001; OBRA, 1987). The purpose of this act is to improve quality. It set a minimum staffing standard at the federal level in order to maintain quality of care (IOM, 1986; Miller & Mor, 2008). HPRD become a general indicator for measure of staffing level, which is also used to reflect a staffing standard (Mueller et al., 2006; Zhang et al., 2006). The federal staffing standard has not been changed from OBRA 1987, which is still 0.3 HPRD. To supplement the federal regulation, various states implement additional standards for assurance of quality (Bowblis, 2011). Studies (Mueller et al., 2006; Zhang et al., 2006) observe most states established higher standards, including more skill requirement of nursing staff. The CMS also recommend staffing standards for policymakers (CMS, 2001).

For better compliance, federal and state share responsibility for nursing home oversight (Castle, 2001; Li et al., 2010). CMS conducts annual survey to monitor the condition of nursing homes. The nursing home, which violates the regulation, will receive deficiencies on the report and face penalties. We can find federal and state government made lots of effort to improve quality of care.

However, a number of studies identified that many nursing homes still have quality of care problems (Zhang & Grabowski, 2004). The effectiveness of these recent surveying and studying changes has yet to be determined. Quality problems are still evident in some nursing homes.

State staffing standards may not be effective policy tools because they are only one of many factors that affect facility staffing levels. Setting a low minimum HPRD standard may fail to raise staffing or it may even have a dampening effect on staffing rates in facilities (IOM, 1996; Schnelle, 2004). One reason to explain these results is that there are other factors, such as resident acuity and average state Medicaid rate, also related to staffing (Mueller et al., 2006). Additionally, because of the various research methods and the data sources applied, the results of these studies are partly different, even contradictory. Besides federal regulation, state regulations vary on staffing requirements (Zhang et al., 2006). This diversity also increases the struggle for researchers to examine the regulation effect at federal and state level.

To explain those contrary results, some researchers suggested that measures of quality available in OSCAR may be insufficiently sensitive, and endogeneity of staffing and outcomes was not addressed. In order to improve the sensitivity, Li et al. (2010) suggested that the minimum level of licensed nurse hours per resident day mandated by each state should be measured as a key explanatory variable when studying the relevant policy. It would be correlated with nursing home profitability, and eventually could impact the patients' care outcome.

Research suggested that using a broader array of instruments and a national sample

would be beneficial for this kind of research regarding staffing regulation issues (Konetzka et al., 2008). Castle and Engberg (2007) created one index of quality (the outcome) by combining the 14 quality indicators using exploratory factor analysis. They used regression analyses to assess the effect of the four staffing characteristics for nursing staff on this quality index. Their results indicated that staff characteristics such as turnover, staffing levels, worker stability, and agency staff should be addressed simultaneously to improve the quality of nursing homes. Those characteristics should be considered when policymakers reform the current regulations.

Chapter V

Conclusion

1. Introduction

The purpose of this bibliographic essay was to provide a simple comprehensive understanding of the relationships between staffing regulation, the level of staffing, and the quality of care in nursing homes in the United States. After reviewing relevant literature, these relationships are getting clearer. The staffing standard and staffing have partial impact on quality of care (Park & Stearns, 2009; Zhang et al., 2006). Under the current complex health care system, their relationships involve other significant factors (Pearson et al., 1993). Research could not singly evaluate this issue without discussing other factors. Adequate nurse staffing in nursing homes is considered to affect quality of care and life for residents (Mueller et al., 2006). Staffing regulation plays an extremely important role in assuring of the quality of care in nursing homes, which impacts the residents' outcome and social well-being (Zhao & Haley, 2011). The difficulties of establishing optimal staffing standards in the current environment are identified in numerous research and reports. Obviously, federal regulations need to be amended is to account for an increasing elder population demand. However, considering unbalanced development in different areas, state regulations should receive more concern.

2. Limitations

This bibliographic essay has several limitations. The data are collected totally from

Internet search at a short period of time. The collection of data in this way is limited in that the prevalence of several reports, which do not provide full text, could be omitted in this study. Second, this analysis is a review study, so it completely depends on the result of literature. The accuracy of study could not be verified. Finally, there are still other factors impacting on this issue, which have not been discussed here.

3. Future Research

Future research is needed to provide states with guidance in determining nurse staffing standards that will lead to quality care for residents. Studies examining the relationship between nurse staffing and quality in nursing homes provides mixed and often weak evidence that the amount of nursing staff alone is the key factor contributing to quality outcomes for residents (GAO, 2002; Schnelle et al., 2004; Wiener et al., 2007). In future studies of examining the effect of federal and state staffing regulation on quality of care, researchers should realize the current situation in this field and develop advanced evaluation methods in conformance with present research trends and achievements.

For future research, improvement could be made according to the current research discussed in this paper. First of all, a more reliable nationwide database is needed. OSCAR the current nationwide database should be revised to become more dependable by collecting multi-aspects information of nursing home facilities and inspecting this report system for accuracy of data input (Cohen-Mansfield et al., 1995; Kash et al., 2007). Moreover, a combination of variables should be considered in the research nursing staff, including RN, LPN, and NA which have different duties and provide different services in

nursing homes (Bates-Jensen et al., 2004). Dividing these staff to categories and estimating each HPRD for analysis is encouraged (Harrington, 2003). Quality of care also would be evaluated using many indices. A comprehensive evaluation of quality would be helpful to explore the correct relationship.

Additionally, because a lot of factors would impact the result, effectively controlling appropriate variants is desirable. Some researchers recommended that there are some “unobserved characteristics such as the organizational cultures, practice skill of the nurse workforce, overall population health needs, and state political, regulatory, or fiscal conditions” would influence study in this issue (Park & Stearns, 2009, p. 9). Improving organizational process and increasing job satisfaction or decreasing turnover also could contribute to quality improvement (Castle, 2001). These causes should be considered when conducting research. It is not easy to establish an ideal model for such a complex issue. Further researchers could develop new approaches by consulting present studies and contribute to the reform of current regulation (Zhang & Grabowski, 2004). That would finally benefit nursing home residents and the whole society.

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