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Complaint Patterns in US Nursing Homes: 2013-2017

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Complaint Patterns in US Nursing Homes: 2013-2017

by

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A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
School of Aging Studies
College of Behavioral and Community Studies
University of South Florida

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Keywords: complaint investigation process, deficiency citation, quality of care, quality of life

DEDICATION

This work and accomplishment are dedicated to my adored God, late Sri Sri Manimohan Goswami.

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are the main strength and the constant source of support for me. This degree maybe an official

achievement for me, but unofficially, all credit goes to them; indeed, this is a "Family-PhD."

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ABSTRACT

Complaints provide valuable information to consumers about nursing homes (NHs). Complaints that are substantiated often lead to an investigation and potentially a deficiency citation. In recent years, Nursing Home Quality data show mixed results. According to some Federal reports, one of the four data sets that measure residents' quality of care in NHs, consumer complaints, suggest that residents' concerns over quality have increased. In contrast, the other three datasets, i.e., deficiencies through annual recertification surveys, staffing levels, and clinical quality measures, reveal potential improvement in NH quality of services. The purpose of this dissertation is to carry out analyses of the current NH complaint data to assess how the complaint investigation process helps provide important information to the public on the quality of services provided by NHs and to rectify the gaps in order to improve NH care. Study one aims to build upon the previous work of Stevenson (2006) and Hansen et al. (2017) by updating analyses of complaint data to assess the prevalence of complaints during 2013-2017. Study two analyzes specific sets of complaints, i.e., tracking all substantiated single allegation complaints to their conclusion, to identify the gaps in the current complaint investigation process. Study three seeks to understand the association of NH characteristics (both facility and resident characteristics, including the proportion of residents with dementia) with the prevalence of NH complaints and their substantiation as the potential indicator of quality. Using new methodological approaches, this dissertation analyzes complaint data as a potential indicator of NH quality and is expected to provide vital information regarding whether the complaint process

needs modification to improve NH quality. The findings of this dissertation could be used as a

steppingstone for future policy implication purposes.

CHAPTER ONE:

INTRODUCTION

Skilled nursing facilities or nursing homes (NHs) are licensed and state-regulated healthcare institutions providing long-term housing and around the clock care to functionally independent individuals, mostly debilitated older adults. Although NH quality measures have been improving in the last few years, residents' care needs in NHs have continued to become more complex (Castle & Ferguson, 2010). NH services are often scrutinized due to increasing concerns about the quality of life (QOL) and quality of care (QOC) from policymakers, consumers, or researchers (Harrington et al., 2001). "Quality" is a multifaceted term and influenced by a composite effect of many factors in a NH (Hansen et al., 2017). NH quality measurement is a multidimensional domain, with investigations of residents' complaints playing a vital role (McGregor, 2011). Quality of service in NHs mostly depends on the QOC the institutions provide and how much that maintains the QOL of care recipients.

Quality of Care

QOC is one of the main determinants of the standard of service provided by NHs. Therefore, it has been a major concern in public policy initiatives for a long period. The standardization of QOC began in 1965 with the implementation of Medicare and Medicaid programs to maintain good QOC to frail individuals in NHs (Walshe, 2001). However, it was found that many NHs failed to meet those care standards (Walshe, 2001). The Omnibus Budget Reconciliation Act (OBRA), 1987, was introduced to improve the QOC and thereby the QOL for

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NH residents to provide sufficient services to attain and maintain their highest practicable physical, psychological, and social wellbeing (Walshe, 2001; Walshe & Harrington, 2002). However, OBRA's fullest implementation and application remain elusive. Simultaneously, there is very little evidence to ascertain whether the benefits mentioned in the act justified the costs. Even after multiple reforms and redesigning efforts coordinated through the Senate Special Committee on Aging, the US Government Accountability Office (GAO), and other federal regulatory bodies, optimal NH care remains unfulfilled and a complex sector in healthcare (Walshe, 2001). Researchers are continually trying to identify quality indicators to help policymakers create policies to ensure that NH residents receive high-quality care.

QOC is defined as "care that consistently contributes to the improvement or maintenance of quality and/or duration of life" (American Medical Association, 1986). CMS provides information to the public concerning NH quality through its Five-Star Quality Rating System, which compares a NH against state and national averages for scores on the QOC. The ratings are based on data concerning health inspections, quality measures, and staffing (CMS, 2016). Health inspection scores are the predominant component of the Five-Star system and are based on the results of annual recertification surveys (ARS) and consumer complaint investigations (CMS, 2016). State survey agencies conduct recertification surveys of every CMS-certified NH every 9 to 15 months to assess the NH's compliance with federal standards (Hansen et al., 2017; United States General Accounting Office (US GAO), 2011). The violation of a standard often results in a deficiency citation. Additionally, state agencies investigate complaints made by consumers (e.g., NH residents, family members). Upon receipt of a complaint and after a subsequent investigation, state surveyors determine if the complaint is substantiated and whether a regulatory violation has occurred warranting a deficiency citation. Upon receiving a deficiency

citation, as a result of an ARS or complaint investigation, the concerned NH needs to develop a correction plan to remedy the noted deficiency. It may also be required to pay a fine, be terminated from the Medicare or Medicaid programs, or incur some combination of all these possibilities (Castle, 2011). For the last few decades, researchers have evaluated QOC in NHs using the proxy measure of deficiency citations a facility receives.

In the perspective of the structure-process-outcome (SPO) model, quality is associated with the system being analyzed (Donabedian, 2005). NH quality measurement is a multidimensional domain; many scholars have tried to identify the QOC indicators, as obtained from ARS, using Donabedian's structure-process-outcome (SPO) model. According to the SPO model, "structure" is considered to be the characteristics of an organization or NH, such as profit status, chain membership, the number of residents/beds, residents' reimbursement status, etc. "Process" components are considered to be the factors essential in delivering services, such as the delivery of clinical and non-clinical care by different categories of staff (e.g., medical director, nurse, nursing assistant), to the residents. "Outcomes" in the SPO model largely depend on the purpose of the study and the research question asked, such as total deficiency citations, scope and severity of deficiencies, etc., factors that reflect resident health. In addition, Donabedian (1988) argued for analyses of the relationship between care provider (NH staff) and care recipient (residents) to assess how the process (staff-to-resident interactions) influences the outcome (residents' health). Although residents' health outcomes, such as decubitus ulcers and use of catheters, feeding tubes, and restraints, are commonly used measures to evaluate the QOC, deficiency citations are also utilized as a proxy indicator to measure QOC provided by NHs.

From Donabedian's perspective, structural factors of NHs are very important that affect QOC. Some deficiency citations may be based on NH's organizational infrastructure, such as

profit status, chain membership, or many other structural factors (Castle et al., 2011) and may be difficult to change easily. Earlier studies revealed that NHs that are for-profit, members of chain-facilities (i.e., NHs that are allied with the same corporate parent body) and have higher resident occupancy receive a higher number of complaints (Stevenson, 2006). Researchers even found that regarding various quality measures, such as pressure sores, indwelling catheters, feeding tubes, and physical restraints, the NHs identified as poor-quality facilities remained in the same status over ten years, and the same was found for high-quality facilities (Grabowski & Castle, 2004). Further, NHs with a higher Medicaid funding provided better care, which suggests reimbursements should be considered as QOC factors (Grabowski & Castle, 2004). Regarding the "process" factors, NHs with a higher proportion of registered nurses (RNs) and certified nursing assistants (CNAs) in staffing patterns have been shown to provide better QOC (Bowblis & Roberts, 2018). Hyer and colleagues (2011) found that CNA staffing was an important predictor of lower aggregated deficiency scores within a NH and lowered QOC deficiency scores. While measuring QOC with staffing patterns, Castle (2008) found that about 40% of the quality indicators in NHs were significantly positively related to staffing levels. Staff skill-mix and delivery of care have a more direct impact on the QOC than the number of staff members on duty; every quality indicator has the potential to show the policymakers and practitioners its association with the QOC provided in the NHs (Castle, 2008).

Quality of Life

QOL means a state that helps individuals to remain healthy, comfortable, and able to participate in or enjoy life events. NH QOL is closely dependent on the QOC the residents receive; however, it is characterized as distinct from the clinical care they receive. Donabedian (1988) argued for further investigating the association between residents and staff to ascertain

how provider-resident interactions impact residents' health and wellbeing. Some researchers defined NH QOL indicators as parallel to residents' aggressive behaviors, functional ability, and usage of physical restraints in the facility (Castle, 2002). Many scholars found QOL indicators superior in predicting resident outcomes compared to QOC indicators as they are directly associated with residents' conditions (Kane, 2003). Although the complaint dataset and the Certification and Survey Provider Enhanced Reports (CASPER) (or the Online Survey Certification and Reporting (OSCAR)) survey dataset are not intended to measure resident QOL directly, many scholars have tried to evaluate QOL factors by evaluating proxy variables from those datasets. Castle and colleagues (2011) tried to relate some internal (operating characteristics of facilities), organizational (facility characteristics), and external (outside factors that influence facilities) factors associated with deficiency citations that influence the QOL of residents. Using the OSCAR dataset from the year 2000 through 2007, their study, on the one hand, measured the scope and severity of deficiency citations to examine the extent of potential harm for each citation likely to be associated with residents' QOL. On the other hand, this research also measured the internal, organizational, and external factors related to deficiency citations that influence the residents' QOL and QOC (Castle et al., 2011). However, the information included in those administrative datasets is primarily obtained from outside assessments, such as surveyors; instead of being directly obtained from residents.

QOL is a multidimensional concept that includes psychological, social, environmental, and functional perspectives of residents' lives (Shippee et al., 2015). Other than facility characteristics (e.g., ownership status, reimbursement status, location, staffing), resident characteristics (e.g., physical and cognitive health, duration of stay, payment source, disability status, race) also directly influence residents' QOL (Shippee et al., 2015). Furthermore,

functional abilities and an engagement with NH's social environment predict residents' QOL (Shippee et al., 2015). Resident abuse and neglect are another way to measure QOL in NHs. Also, reimbursement for care via the Medicaid program impacts the QOC in NHs, because it has been found that NHs mostly reimbursed by the Medicaid program tend to have more citations regarding resident abuse (Castle, 2011). Moreover, resident abuse in NHs affects QOL that draws greater concerns for resident outcome regarding health and safety (Castle, 2011). Castle (2011) also found that about 30% of NHs in the US were cited for resident abuse (during 1999-2000), using four abuse-related deficiency citations available in the OSCAR dataset; those abuses and neglect directly affected resident QOL, as well as life expectancy.

Many researchers found resident satisfaction as a more accurate measure of QOL (Kane, 2003). Hirschman was probably the first to present two options from the consumer's point of view; "exit," (i.e., stop buying from a firm) or "voice," against the concerned management (Hirschman, 1970; Stevenson, 2006). In the context of NHs, if dissatisfied, the resident may either move to another facility or lodge a complaint against the concerned NH (Kane, 2003). In one study, in four US states, the first option was found to be limited to only 3.3% because of the resident's poor health condition (Hirth et al., 2009). However, the other option is also not very feasible for the residents; many hesitate to report a genuine complaint because of their frail health and their apprehensive nature regarding retaliation from NH staff. Still, as regular surveys (i.e., ARS) are carried out to maintain a uniform and persistent standard of care, many consider consumers' complaints to be the best reflection of QOL and NH quality (Grabowski, 2005; Stevenson, 2006). According to Grabowski (2005), many issues undermine the potential usefulness of consumer complaints. For example, making it easier to lodge a complaint may result in a higher number of complaints in the database compared to previous years. However,

complaints are an important tool to improve resident care in NHs. Complaint investigations provide a unique opportunity for consumers to inform regulators of potential gaps in the QOC (Grabowski, 2005). In addition, complaints can generate timely alerts regarding potential problems, given that they can be made and investigated at any time, not only during an annual survey.

Purpose of the Dissertation

In recent years, Nursing Home Quality data show has shown mixed results (US GAO, 2015). According to one Federal report, one of the four data sets that measure residents' QOC in NHs, consumer complaints suggest that residents' concerns over quality have increased. In contrast the other three datasets (i.e., deficiencies through ARS) clinical quality measures, and staffing levels, reveal potential improvement in NH quality of services (US GAO, 2015). In a recent study, Peterson and colleagues (2020) found that each state received a mean of 5.2 complaints per NH and 6.5 complaints per 100 residents in 2017, which is an increased rate compared to the previous years. From 2005 to 2014, the average number of consumer complaints per NH increased by 21 percent, from 3.2 to 3.9, indicating a potential decrease in quality (US GAO, 2015). On the contrary, the number of serious deficiencies per NH, as reflected in the ARS, decreased by 41 percent, from 0.35 to 0.21, over the same period, indicating potential improvement (US GAO, 2015). However, it is evident that complaints, as a measure of deviation from federal regulations, act as a predictor for subsequent deficiency citations (Hansen et al., 2017; Stevenson, 2006). Therefore, the current process needs to be further scrutinized as to why these standard assessments do not yield similar findings. It is also crucial to examine whether any improvement in residents' QOL impacts the number of consumers' complaints.

The purpose of this dissertation is to conduct analyses of current (between 2013-2017) NH consumer complaint patterns. As a reflection of the complaint investigation process, the prevalence of complaints will help determine whether it provides important information to the public on the quality of service provided by NHs and to rectify the gaps in order to improve the QOC in NHs. This dissertation describes a detailed complaint investigation process and poses relevant research questions and hypotheses to identify flaws related to the existing process. Study one aims to build upon the previous work of Stevenson (2006) and Hansen et al. (2017) by updating analyses of complaint data to assess the prevalence of complaints during 2013-2017. Study two investigates complaint patterns by analyzing specific sets of complaints (i.e., tracking all substantiated single allegation complaints to their conclusion to identify the gaps in the current complaint investigation process). Finally, study three seeks to understand the association of NH characteristics (both facility and resident characteristics, including the proportion of residents with dementia) with the prevalence of NH complaints and their substantiation as potential indicators of QOC and QOL.

New Contributions

The current dissertation is innovative in many ways as it provides new methodological approaches to evaluate complaint patterns as a reflection of NH quality. Although complaints have significant face validity regarding NH quality (Grabowski, 2005), a limited amount of empirical research uses consumer complaints as a measure of NH quality (Troyer & Sause, 2011). Stevenson (2006) and Hansen et al. (2017) analyzed nationwide NH complaint data and their disposition following complaint investigations by state surveyors. As a contribution to this field, this study, first, will update the earlier study findings by replicating the prior analyses with the more recent data, second, will analyze specific sets of complaints (i.e., substantiated single

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allegation complaints); and third, will analyze complaints based on a specific group of residents (i.e., persons with dementia) to authenticate the overall study findings, in order to establish complaints as a strong and potential indicator of NH quality. While this dissertation is not a direct analysis of the complaint investigation process, complaint analyses could provide vital information on whether any regulatory action is necessary as a measure to improve the NH quality.

<p style="text-align:center">**CHAPTER TWO:**</p>

<p style="text-align:center">**CURRENT TRENDS OF NURSING HOME COMPLAINTS: PREVALENCE AND
VARIATION ACROSS THE CMS REGIONS**</p>

Introduction

The quality of nursing home (NH) care is influenced by various categories of individuals, such as residents, family members, NH staff, and policymakers (Davis, 1991). The Center for Medicare and Medicaid Services (CMS), an agency within the Department of Health and Human Services (HHS), provides information to the public concerning NH quality through its Five-Star system. The ratings are based on data concerning health inspections, quality measures, and staffing (CMS, 2016). Health inspection scores are based on the results of annual recertification surveys (ARS) and consumer complaint investigations (CMS, 2016). Thus, NH quality measurement is a multidimensional domain, where both standard recertification surveys and investigations of resident's complaints play a vital role (McGregor, 2011).

Nursing Home Recertification Survey Process

The Omnibus Budget Reconciliation Act (OBRA), 1987, was introduced to improve the quality of care (QOC) and quality of life (QOL) of NH residents by providing sufficient services to attain and maintain their best possible physical, psychological, and social wellbeing (Walshe, 2001). To ensure NH residents receive good quality of care (QOC), CMS set some quality standards for NHs participating in the Medicare and Medicaid programs in all 50 states and the

<p style="text-align:center">10</p>

District of Columbia (US GAO, 2011). Federal and state governments share the responsibility of oversight of NHs. CMS central office shares this responsibility with ten CMS regional offices and each state's survey agency (SSA). CMS collaborates with SSAs to conduct onsite surveys of NHs to collect data on NH quality. NH deficiencies come from two sources: The ARS process and the complaints process. SSAs conduct inspections of every CMS-certified NH every 9 to 15 months to assess the NH's compliance with Federal standards (US GAO, 2011). They also conduct complaint investigations. Noncompliance generally results in one or more deficiency citation.

SSAs enter the survey findings in a large dataset incorporating data from the Certification and Survey Provider Enhanced Reports (CASPER) and the Area Health Resource File (AHRF). Prior to 2012, the Online Survey Certification and Reporting (OSCAR) was used instead of the CASPER data, both containing data on NH characteristics (e.g., occupancy rates, ownership status), resident characteristics, and staffing levels. In addition, the AHRF includes socio-economic and provider information related to the county in which each NH is located.

Use of Nursing Home Recertification Survey Process

Findings from the ARS, on the one hand, provide information to determine which facility characteristics, such as the number of beds, occupancy rate, profit status, being part of chain facility, or location (rural/urban), influence the QOC provided by the NH. On the other hand, resident characteristics, such as percentage of residents with dementia, serious mental illness, and depression, percent of residents receiving Medicare as reimbursement, also help compare residents' QOL in NHs. These measures provide one way to track repeat deficiencies. Research has found that 5.2% of NHs had deficiency citations for restraint use on two consecutive citations and 2.3% on three consecutive inspections. Persistent poor quality in physical restraint

use in NHs is negatively associated with higher staffing levels and positively associated with higher Medicaid census and higher average activities of daily living (ADL) levels (Castle, 2002). Analyzing deficiency citations for resident abuse (including abuse and neglect) in NHs from 2000 to 2007, Castle (2008) found a high number of deficiency citations were related to QOC.

QOC in NHs is often evaluated based on the proxy measure of deficiency citations a facility receives on its ARS, including quantity and severity of the deficiencies (Castle & Ferguson, 2010). Upon receiving a citation, a NH typically must address the findings of the SSA with a concrete plan of correction for each deficiency. It may also be assessed a fine, terminated from the Medicare or Medicaid programs, or a combination of these (Castle, 2011). Each facility's required action usually depends on the scope and severity code of the assigned citation that ranges from "A" to "L." Thus, the structure, staff skill, and delivery of care substantially impact the QOC. In a study, Castle and colleagues (2011) discussed how internal (operating characteristics of facilities), organizational (facility characteristics), and external (outside factors that influence facilities) factors related to deficiency citations influence the QOL and QOC of the residents, reflecting the importance of deficiency citations for safety violations resulting from ARS. Many scholars found that staffing is an important factor in the relationship between the "process" measures, such as use of physical restraints, toileting programs, and the "outcome" measures, such as ADL decline and mobility decline (Arling et al., 2007). Castle (2008) analyzed 70 studies that had examined the impact of staffing levels on NH care. Although 302 quality indicators were used in those studies, the primary quality indicators identified were deficiency citations, decubitus ulcers, and the usage of physical restraints. It was found that the QOC variables (271) usually come under the categories of process measures or outcome measures; however, nearly 40 percent of the quality indicators examined show an association with staffing

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levels of the concerned NH. However, staff skill-mix and mode of care delivery have a more direct impact on the QOC than the number of staff members on duty. In this regard, adjustments in specific staff-types, such as social service and activities staff, could help to improve NH quality, maximizing the return on investment (Bowblis & Roberts, 2020). As nursing staff are uniquely qualified to provide direct care assistance and medical expertise, staffing levels and nurses' qualification are important to maintain NH quality (Bowblis & Roberts, 2018).

Health care quality can be improved through public reporting of quality information obtained from ARS. Werner and colleagues (2009) found that overall, both reported and unreported care improved following the public reporting initiative. However, improvements in unreported care were mostly found in high-scoring facilities or significantly, whereas facilities with low scores showed no change or worsening of their unreported QOC. The results showed that the benefits of public reporting might extend to non-targeted areas of care; also, there is a prominent gap between high- and low-quality facilities.

Nursing Home Complaint Investigations

Complaints provide important information to the public about the QOC and QOL in NHs (Grabowski, 2005; Stevenson, 2005, 2006). The complaint dataset includes information on NHs' consumer complaint investigations arising from allegations of improper care. These allegations may come from the consumers, for example, residents themselves, facility staff, family members of residents, an ombudsman, or an anonymous source (Hansen et al., 2017; US GAO, 2015). The complaint dataset includes the complainant(s), the nature of the complaint (and allegations) upon investigation, i.e., whether substantiated or not, proposed recommendation by the surveyor conducting the investigation, and the resultant deficiency citation, if any.

According to certain Federal regulations and related state policies, the SSA creates

procedures and timeframes for the investigation of complaints (US GAO, 2011). SSAs also

provide specific information about their complaint investigations to the CMS's complaint

database. The major portions of the complaints process include intake, prioritization,

investigation, and reporting of results. SSAs usually receive complaints through phones, e-mails,

or letters. Upon receipt of a complaint, an SSA staff member reviews the information submitted

by the complainant and determines the nature of the allegations. Depending on the allegation

type, the staff member assesses the severity of the complaint and assigns a priority level to

determine whether and when an investigation is required. There are eight priority levels, of

which four require onsite investigation, such as immediate jeopardy (needs investigation within

two working days), and actual harm-high (needs investigation within ten working days).

Subsequently, an unannounced investigation takes place; state surveyors carry out

document reviews, examine NH conditions, and interview witnesses, including residents. After a

subsequent investigation, state surveyors determine if the complaint is substantiated, and if so,

whether a regulatory violation has occurred warranting a deficiency citation. When the

investigation is completed, SSA notifies the complainant and the NH about the investigation

findings and enters that in the ACTS, i.e., Automated Survey Processing Environment (ASPEN)

Complaints/Incidents Tracking System dataset. As part of the Federally required inspection

process, SSAs must collect data on complaints filed and track the investigations. One complaint

may contain multiple allegations; for each allegation, the state needs to record how it was

managed from intake to closure, including key dates, type of allegation (e.g., QOC),

prioritization level, and proposed action. This includes whether a complaint allegation was

substantiated or not, whether a deficiency was found and if so, the deficiency type and scope and severity (CMS, 2016).

The dataset consists of two parts: one entered when a complaint is received by SSA and the other after the complaint's investigation. The first part of the complaint dataset contains variables related to the complaint receiving process, such as days between when the actual incidence took place and the investigation began, allegation category, intake priority code, etc. The other contains deficiency tag number, scope and severity code, and the provider information identifying the state where each NH is located. The SSA, which receives information on the complaint, assigns the allegation category and intake priority codes. The investigating state surveyors and regulators then determine the nature of allegations (substantiated or not) and the resultant deficiency citations (F-tags), respectively. Figure 2.1 reports the details of a complaint investigation process.

According to CMS complaints data, in 2009, SSA received 53,313 complaints against NHs of varied nature (US GAO, 2011). The number and types of complaints also differed from state to state. For instance, 11 states received 15 or fewer complaints per 1,000 NH residents, whereas 14 states received higher than 45. In addition, approximately 10 percent of complaints were prioritized as immediate jeopardy, requiring investigation within two working days of receipt, whereas nearly 45 percent were prioritized as actual harm-high that require investigation within ten working days of prioritization (US GAO, 2011). Although most states were able to meet many CMS standards, i.e., timely investigation of immediate jeopardy complaints and incidents and appropriate prioritization of complaints and incidents, a few showed inconsistencies following the performance standards for NH complaints set by CMS. Those occurrences have a serious impact on meeting the overall Federal goal (US GAO, 2011).

Use of Nursing Home Complaint Investigations

Whatever the service a NH provides for frail residents, it is evident that the QOC is short of meeting residents' expectations to maintain optimum QOL. Considerable research has been conducted on NH deficiencies overall as quality measures (Alexander & Madsen, 2017; Lerner et al., 2014). However, a limited number of studies have been conducted using resident complaints to measure NH quality (Hansen et al., 2017; Troyer & Sause, 2011). Stevenson (2005) was one of the first to describe NH complaints as a useful tool to estimate the quality of NH care (Grabowski, 2005). He identified the associations between complaints and deficiency citations. Analyzing data from 1998-2002, Stevenson (2006) reported that 35% of NHs throughout the country had no complaints during the study period, and 18% had five or more complaints. He found that the average yearly complaint rate was approximately 4.2 complaints per 100 residents, and 38% of complaint allegations were substantiated. In a more recent study, analyzing data from 2007-2011, Hansen et al. (2017) found that about 23% of NHs, on average, had zero complaints annually, and on average, 47.5% of facilities had five or more complaints in a year. They reported that the average annual complaint rate was 13.3 complaints per 100 residents, and the substantiation rate of complaint allegations was 43.2%. The number of complaints depends not only on the occupancy rate but also on the residents' satisfaction and cognitive status. Still, it could be assumed that the states having a higher number of NHs may yield a higher number of complaints (Hansen et al., 2017). Indeed, Peterson and colleagues (2020) found that prominent state variation in the number of complaints exists at the intake level, ranging from 0.4 to 30.4 complaints per NH in 2017.In this context, Troyer and Souse (2013) examined the association between the NH quality measures and two sources of NH complaints and found little relationship between Minimum Data Set quality indicators and complaints. Their

findings revealed differences in complaint substantiation rates between the state certification agency and the ombudsman office. Still, however, we know little about the process by which a complaint leads to a deficiency citation.

Objective

The objective of the current study is to build upon the previous work of Stevenson (2006) and Hansen et al. (2017) by replicating their analyses with more recent complaint data (in 2013-2017) and by utilizing a new approach to investigations of allegations. Earlier studies labelled "complaint allegations" as "complaints." However, one complaint may include multiple allegations; thus, it may create confusion about the exact number of complaints. This study will analyze the number of complaints, complaint allegations, and deficiency citations separately. The study will analyze complaints as a facility-level outcome (i.e., complaints per NH) to evaluate state-level variation first, then determine the CMS region-wide average from the state data. It will also analyze the prevalence of complaints, complaint allegations, and deficiencies by year during the study period to examine whether any major change has taken place in the complaint pattern. This is important as, on the one hand, it could clarify the current trend regarding what role consumers play in regulatory actions about NH quality, and on the other hand, this analysis could provide some vital information and guidance about regulatory actions to implement to improve NH quality.

Research Questions

1. What is the recent trend of NH consumer complaints across the states and ten CMS survey regions? This measure includes the prevalence rate of complaints, their rate of

substantiation, generation of deficiency citations, and the variations across the states and ten CMS survey regions during 2013-2017.

Hypotheses

Hypothesis 1a. Compared to previous years (i.e., 1998-2002 and 2007-2011) there will be a higher prevalence of total complaints, substantiated complaints, and deficiency citations across the states and ten CMS survey regions in recent years (i.e., 2013-2017). Following the trend over recent years, there will be an increasing rate of complaints, substantiated complaints, and deficiency citations in later years.

Hypothesis 1b. There will be survey region variability in the prevalence of overall complaints, substantiated complaints, and deficiency citations. This variation will be similar to the variation found in the CASPER survey dataset of deficiencies resulting from ARS, as in both cases (ARS and complaint investigations), data are collected and reported by the same category of individuals (i.e., SSA investigators).

Method

Study Design

Based on complaint investigations over five years (2013-2017), the current study evaluates the QOC received by residents in NHs across the country. This study uses complaint data that were extracted from the ASPEN Complaints/Incidents Tracking System (ACTS) that was merged from data from four other sources: The Certification and Survey Provider Enhanced Reports (CASPER), the Minimum Data Set (MDS), the Area Health Resource File (AHRF), and zip-code level rural-urban codes (RUCA).

Data Collection

The CASPER system maintains data for all certified skilled nursing facilities in the United States (approx. 15500). Facilities self-report about provider details, resident's information, and staffing patterns, while SSAs report the deficiency status based on both annual survey findings and complaint investigations (carried out at any point in time) when a NH appears to have violated federal regulatory standards. Both datasets, either generated from ARS or complaint surveys, contain a facility Medicare provider number (unique ID) that is used for merging the datasets. The Unique ID was used for the same purpose in other studies (e.g., Decker & Castle, 2011; Hansen et al., 2017; Wagner et al., 2015).

Statistical Analyses

Frequency and descriptive analyses of the number of complaints, substantiated complaints, and deficiency citations are carried out overall and by each year in NHs (facility level outcome, i.e., complaint per NH) across the country. First, all NHs that existed (i.e., unique provider numbers) in each year were identified regardless of whether they had complaints. Then, it was determined if each allegation was substantiated or not. For each unique provider number, the total number of allegations and substantiated allegations were counted for each year; if a provider number had no information in the complaint dataset but was open, then the facility is assumed to have no allegations in that particular year. Next, the intake number was used to aggregate allegations into a complaint; if any allegation is substantiated, then the complaint is also substantiated. As each intake number summarizes all the allegations in it, the number of complaints and substantiated complaints were counted. Finally, the deficiencies that are associated with the complaints were identified in the dataset for that year. To get a count of total number of deficiencies, the number of deficiencies for each provider number for that year were

counted. In this study, two more variables (binary) were created to identify whether the NH had

ever received a complaint and a substantiated complaint over the five-year study period (i.e.,

0=no complaints/substantiated complaint, 1=at least one complaint/substantiated complaint).

Finally, another variable that was created is also a binary one to identify whether a NH that

received a complaint also received a deficiency citation resultant from the complaint process

(i.e., 0=no deficiency citation, 1=deficiency citation issued). Thus, the count of the number of

total complaints, substantiated complaints, total allegations, substantiated allegations, and

deficiencies are per NH, and binary indicators of whether a NH received at least one complaint,

one substantiated complaint, one allegation, one substantiated allegation, and one deficiency are

measured. All analyses were conducted using SAS Version 9.4 (SAS Institute, Inc., Cary, NC).

Results

Table 2.1 reports descriptive results about the number of existing NHs, the prevalence of

complaints, allegations, and deficiencies, descriptions of complaints and complaint allegations,

their substantiations, and information about deficiency citations resulting from the complaint

investigation process across the country. During the entire five-year study period (i.e., 2013-

2017) all SSAs received 458,101 complaints and 949,466 complaint allegations, of which 31.9%

complaints and 20.0% complaint allegations were substantiated, respectively. Among 15,589

NHs, on average, 79.6% NHs received at least one complaint. The data reveal that, on average,

each NH received 5.9 complaints and 12.2 complaint allegations per year, which resulted in 2.0

deficiency citations per NH per year. The results show a steady increase in all the parameters

(i.e., complaints, allegations, and deficiency citations) compared to the previous years.

Tables 2.2, 2.3, and 2.4 report frequencies of complaints, allegations, and deficiency

citations, respectively, per NH across the country for the entire study period (i.e., 2013-2017).

For the study period, on average, 20.4% of NHs had no complaints, while 37.6% of NHs had five or more complaints, and 54.9% had five or more complaint allegations. Regarding the number of deficiency citations issued by the state surveyors, 54.1% NHs received no deficiency citations, while 14.5% NHs had five or more complaint deficiencies. Regarding the total number of complaints, complaint allegations, and deficiency citations, the results show a steady increase in each category compared to the previous years. Table 2.5 delineates the frequency of zero-deficiency complaints per NH by year (2013-2017). Surprisingly, 42.4% of NHs with at least one complaint received no deficiency citation.

Tables 2.6 and 2.8 provide descriptions of state-wise and CMS region-wide rates of complaints and substantiated complaints, respectively, for the study period analyzed (2013-2017). It appears that Washington has the highest rate of complaints per NH per year (25.4), whereas Hawaii (0.4), North Dakota (0.5), and South Dakota (0.7) are among the states with the lowest complaints rates. Regarding the rate of substantiation of complaints Indiana (73%) is on the top of the table, while Washington (13.5%) is at the bottom. However, regarding the number of total complaints, Texas (16,781) and California (12,821) are the top two states, with 17.0% and 47.7%, respectively, complaints substantiated, most likely due to their high number of NHs. Among the CMS regions, Seattle (13.4) has the highest number of complaints per NH per year, while Denver (1.5) has the lowest complaint rate. In this regard, Dallas (19,241) has the highest number of complaints, and San Francisco (51.5%) has the highest rate of complaints that are substantiated.

Tables 2.7 and 2.9 display rates of complaint allegations, their substantiations, and information about deficiency citations resulting from complaint investigations across the states and CMS regions, respectively, during the entire study period analyzed. Washington has the

highest rate of complaint allegation (31.5), i.e., complaints per NH per year, whereas Hawaii

(0.4), South Carolina, Alaska, Minnesota, and South Dakota (all 1.5) are among the states with

the lowest allegations rate. Regarding the rate of substantiation of complaint allegations,

Connecticut (64.3%) is at the top of the table, while Missouri (8.6%) is at the bottom. However,

regarding the number of total complaint allegations, Texas (32,794) and California (17,028) are

the top two states, with 11.0% and 47.0%, respectively, complaint allegations substantiated.

Regarding deficiency citations, Maryland (6.4) and Hawaii (0.1) are in the highest and lowest

positions, respectively. Among the CMS regions, Dallas (18.4) has the highest number of

complaints per NH per year, while Boston (5.0) has the lowest complaint rate. In this regard,

Chicago (40,618) has the highest number of complaint allegations, and San Francisco (42.5%)

has the highest rate of complaint allegations that are substantiated. Regarding deficiency

citations, Seattle (3.2) and New York (0.9) are in the highest and lowest positions, respectively.

Discussion

The result of the current study reveals an overview of the updated complaint patterns

across the country. In the entire study period (2013-2017), overall, 458,101 complaints were

identified that contain 949,466 allegations, which resulted in the issuance of 156,135 deficiency

citations in about 15,600 NHs across the country. Regarding the number of complaints,

substantiated complaints, and deficiency citations, the results show a steady increase compared

to the previous years, supporting the first hypothesis. Furthermore, there are marked differences

among the states and the ten CMS survey regions in the prevalence of overall complaints,

substantiated complaints, and deficiency citations that support our second hypothesis.

In comparison to Stevenson's (data 1998-2002) and Hansen et al.'s (data 2007-2011)

study, the current study found a lower number of NHs with zero complaints (20.4% compared to

35% and 23%, respectively), and higher number of NHs having five or more complaints (37.6% complaints and 54.9% complaint allegations compared to 18% and 47.5%, respectively; Hansen et al. classified complaint allegations as complaints). Therefore, a steady increase is evident in the number of complaints over the years. However, the average rate of substantiation of complaint allegations is showing a decreasing trend in recent years (20% compared to 38% and 43% in two earlier studies, respectively). The increase in numbers of complaints may be because people are now complaining more due to higher care expectations. Alternatively, it may be simply because of the easier complaint lodging process developed in recent years. SSAs carry out complaint investigations when a complaint is lodged. Every year, SSAs receive a large number of complaints of diverse nature, yet most of the residents and their family members are not very familiar with the proper procedures to lodge complaints against NH (McGregor, 2011; Reader et al., 2014; Stevenson, 2006). From the resident's perspective, this is a complex procedure and depends on how user-friendly and effective the concerned state complaint processes are (Stevenson, 2006). The effectiveness of complaints depends on various factors; for instance, complaints can be lodged by parties other than the residents, thus having mixed resident and proxy perspectives (Stevenson, 2006). Also, these types of complaints may not be systematic evaluations of faults, rather emotional expressions of residents' dissatisfaction from more care expectations (Reader et al., 2014), and further depend on who made the complaint and why. Therefore, the quality of complaints needs to be better assessed. As ARS are carried out to maintain a uniform and persistent standard of care, many consider the complaints to be potential indicators for NH quality of service (Grabowski, 2005; McGregor, 2011). The consumers, i.e., residents and family members, are particularly sensitive to identify various loopholes in the NH care delivery system from a different perspective, which might never be recognized by regular

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survey investigations (Reader et al., 2014). In this context, complaints could be used as part of litigation strategy for providing residents better QOC, especially in cases associated with lower staffing levels, resident abuse, and neglect (Harrington & Edelman, 2018). Earlier studies found that NHs with a higher proportion of Medicare reimbursement received a higher number of complaints than others (Stevenson, 2005, Troyer & Sause, 2011). This suggests that NHs with more short-term residents, such as residents on post-surgical care, register more complaints perhaps because they have better cognitive functions and have family members frequently visiting with higher expectations of care. Thus, from the consumers' perspective complaint dataset confers a unique vantage point compared to the standard ARS.

However, the results of the complaint processes are difficult to discern because citations resulting from complaints are not clearly identified in the NH quality data presented to the public. We need to understand the process better and understand the alignment between consumers' complaints and the regulatory actions that result from their complaints. This is important as it could clarify the role consumers play in the regulatory actions that affect the public information provided about NHs and the steps NHs would take in response to improve their quality ratings. In this context, it is also important to consider residents' satisfaction measures, so that researchers and policy makers can focus on the positive aspects of QOC.

Many studies reported an asymmetry in complaint patterns among the geographic distribution of NHs (Luppa et al., 2010; Peterson et al., 2020). The current findings also demonstrate similar results. The states markedly differ in prevalence of complaints, allegations, and deficiencies from one another, and their inclusion in different CMS regions makes the complaint pattern more complex. However, regarding the rate of complaints and substantiated complaints (i.e., number of complaints/NH/year) Dallas, San Francisco, and Seattle (CMS

regions) showed higher percentages. This prevalence of more complaints in the west half of the

country might have some association with the demographic pattern of those states. When older

adults suffer from major chronic medical conditions, they are more likely to be relocated to a NH

due to a dearth of resources in the home environment. The geographic asymmetries in the

complaint pattern may be due to the variability of resources, such as the availability of personal,

emotional, and financial supports for older adults (Luppa et al., 2010). In addition, there might be

differences in some facility characteristics, such as the proportion of Medicare/Medicaid

residents that could also affect the distribution pattern (Troyer & Sause, 2011). Medicare

residents usually stay shorter periods of time than the Medicaid residents in NHs and therefore

may have more expectations for satisfaction, which may lead them toward lodging complaints

(Stevenson, 2006; Troyer & Sause, 2011). Regarding the impacts of facility characteristics,

Stevenson (2006) found that more complaints and resulting deficiencies were associated with

for-profit facilities. It has been found that in the United States while choosing a NH, most

residents prefer to depend on those NHs which are non-profit and without chain affiliation

(Shippee et al., 2015). The chain affiliated NHs are associated with more deficiencies, higher

costs, and lower ratings than independent NHs (Blackburn et al., 2018). This trend may explain

why for-profit NHs are more associated with allegations that result in a deficiency. Therefore,

the presence of more for-profit and chain affiliated NHs in some regions may be a possible

explanation for presence of higher rate of complaints in those regions of the country.

Limitations

However, some serious concerns came out in recent reports regarding the complaint

investigation process. In 2009, 19 SSA had failed to complete the process in time (US GAO,

2011). Although SSAs mentioned that they have taken measures to improve performances in

four major domains (i.e., staffing, training and guidance, agency restructuring, and monitoring) their performances were still concerning. While many officials from SSAs stated that staff shortages to manage large volumes of complaints impacted their performance to meet CMS standards, many others pointed that inadequate staff training is an important issue. This may reflect an inaccurate number of true complaints which may impact our findings. Furthermore, a complaint may contain multiple allegations, but deficiency data do not specifically identify which allegation(s) led to a particular deficiency.

Conclusion

The current study revealed that compared to previous years, there was a higher prevalence of overall complaints, substantiated complaints, and deficiency citations across the country in recent years (i.e., 2013-2017), with state-wide and region-wide variability in the prevalence of overall complaints, substantiated complaints, and deficiency citations. Although measuring NH quality is considered a priority in both standard recertification surveys and consumer complaint investigations, the differentiation of outcomes of these two investigations is very difficult. Therefore, it is practically impossible to know which survey score is more important from the consumer's perspective. Although complaint investigations provide much-needed overall guidance regarding NH service, multiple allegations within a complaint create more confusion to precisely track the loopholes. A specific allegation in a complaint can be tracked to a deficiency citation only when the complaint contains only one allegation that is substantiated. Thus, from consumers' perspectives, we can measure which allegation categories produce a higher magnitude of deficiencies that were not rectified by ARS.
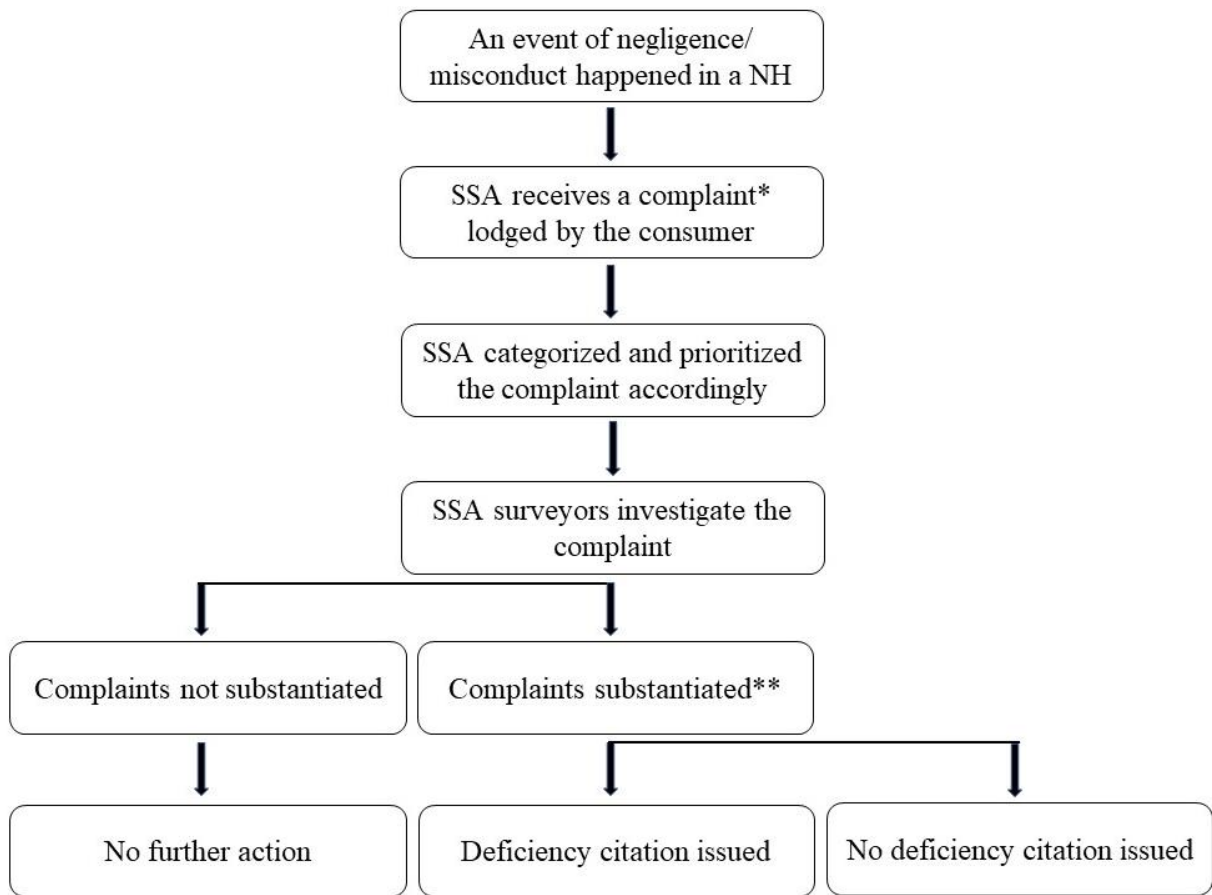
Figure 2.1. *Schematic representation of Complaint Investigation Process*

Note: SSA = state survey agency. NH = nursing home

*A single complaint may include multiple allegations.

**If any allegation is substantiated, then the complaint is substantiated.

Table 2.1. *Frequency of Complaints, Allegations, and Deficiency Citations per Nursing Home by Year (2013-2017)*

Variables	2013	2014	2015	2016	2017	All Years (total)	All Years (mean)
Nursing Homes							
Total NHs	15,634	15,619	15,540	15,567	15,583	77,943	15,589
NH with at least 1 complaint	12,440	12,253	12,220	12,537	12,609	62,059	12,412
% NH with at least 1 complaint	79.6	78.5	78.6	80.5	80.9	79.6	79.6
Complaints							
Total complaints	80,793	82,008	92,387	97,245	105,668	458,101	91,620
Complaints per NH	5.2	5.3	6.0	6.3	6.8	5.9	5.9
Total substantiated complaints	26,579	26,249	28,518	31,220	33,576	146,142	29,228
Substantiated complaints per NH	1.7	1.7	1.8	2.0	2.2	1.9	1.9
Rate of substantiation of complaints	32.9%	32.0%	30.9%	32.1%	31.8%	31.9%	31.9%
Allegations							
Total allegations	168,956	176,145	195,793	199,564	209,008	949,466	189,893
Allegations per NH	10.8	11.3	12.6	12.8	13.4	12.2	12.2
Total substantiated allegations	34,106	34,195	37,362	40,735	43,216	189,614	37,923
Substantiated allegations per NH	2.2	2.2	2.4	2.6	2.8	2.4	2.4
Rate of substantiation of allegations	20.2%	19.4%	19.1%	20.4%	20.7%	20.0%	20.0%
Deficiency Citations							
Total deficiency citations	27,735	27,179	31,078	34,181	35,962	156,135	31,227
Deficiency citations per NH	1.8	1.7	2.0	2.2	2.3	2.0	2.0

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 2.2. *Frequency (and Column Percentage) of Complaints in Number of Nursing Homes by Year (2013-2017)*

Number of Complaints	2013	2014	2015	2016	2017	All Years (mean)
0	3,194 (20.4)	3,366 (21.6)	3,320 (21.4)	3,030 (19.5)	2,974 (19.1)	3,177 (20.4)
1	2,389 (15.3)	2,381 (15.2)	2,231 (14.4)	2,228 (14.3)	2,124 (13.6)	2,271 (14.6)
2	1,853 (11.9)	1,859 (11.9)	1,749 (11.3)	1,759 (11.3)	1,656 (10.6)	1,775 (11.4)
3	1,493 (9.5)	1,478 (9.7)	1,335 (8.6)	1,420 (9.1)	1,311 (8.4)	1,407 (9.0)
4	1,172 (7.5)	1,150 (7.4)	1,121 (7.2)	1,020 (6.6)	1,053 (6.8)	1,103 (7.1)
5+	5,533 (35.4)	5,385 (34.5)	5,784 (37.2)	6,110 (39.3)	6,465 (41.5)	5,855 (37.6)
Total	15,634 (100.0)	15,619 (100.0)	15,540 (100.0)	15,567 (100.0)	15,583 (100.0)	15,589 (100.0)

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 2.3. *Frequency (and Column Percentage) of Complaint Allegations in Number of Nursing Homes by Year (2013-2017)*

Number of Allegations	2013	2014	2015	2016	2017	All Years (mean)
0	3,194 (20.4)	3,366 (21.6)	3,320 (21.4)	3,030 (19.5)	2,974 (19.1)	3,177 (20.4)
1	1,188 (7.6)	1,202 (7.8)	1,136 (7.3)	1,167 (7.5)	1,090 (7.0)	1,157 (7.4)
2	1,044 (6.7)	1,038 (6.6)	986 (6.3)	1,009 (6.5)	1,040 (6.7)	1,023 (6.6)
3	949 (6.1)	884 (5.7)	833 (5.4)	883 (5.7)	863 (5.7)	882 (5.7)
4	875 (5.6)	824 (5.3)	774 (5.0)	752 (4.8)	763 (4.9)	798 (5.1)
5+	8,384 (53.6)	8,305 (53.2)	8,491 (54.6)	8,726 (56.1)	8,853 (56.8)	8,552 (54.9)
Total	15,634 (100.0)	15,619 (100.0)	15,540 (100.0)	15,567 (100.0)	15,583 (100.0)	15,589 (100.0)

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 2.4. *Frequency (and Column Percentage) of Deficiency Citations in Number of Nursing Homes by Year (2013-2017)*

Number of Deficiency Citations	2013	2014	2015	2016	2017	All Years (mean)
0	8,726 (55.8)	8,792 (56.3)	8,435 (54.3)	8,193 (52.6)	8,041 (51.6)	8,437 (54.1)
1	2,112 (13.5)	2,010 (12.9)	1,904 (12.3)	1,906 (12.2)	1,891 (12.1)	1,965 (12.6)
2	1,410 (9.0)	1,339 (8.6)	1,295 (8.3)	1,380 (8.9)	1,350 (8.7)	1,355 (8.7)
3	850 (5.4)	897 (5.7)	954 (6.1)	960 (6.2)	947 (6.1)	922 (5.9)
4	620 (4.0)	616 (3.9)	678 (4.4)	656 (4.2)	708 (4.5)	656 (4.2)
5+	1,916 (12.2)	1,965 (12.6)	2,274 (14.6)	2,472 (15.9)	2,646 (17.0)	2,255 (14.5)
Total	15,634 (100.0)	15,619 (100.0)	15,540 (100.0)	15,567 (100.0)	15,583 (100.0)	15,589 (100.0)

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 2.5. *Frequency (and Column Percentage) of Zero-Deficiency Complaints in Number of Nursing Homes by Year (2013-2017)*

Number of Complaints	Number of Deficiencies	2013	2014	2015	2016	2017	All Years (mean)	% NHs with at least 1 complaint
At least 1 complaint	0 deficiency	5,532 (35.4)	5,426 (34.7)	5,115 (32.9)	5,163 (33.2)	5,067 (32.5)	5,261 (33.7)	42.4
	At least 1 deficiency	6,908 (44.2)	6,827 (43.7)	7,105 (45.7)	7,374 (47.4)	7,542 (48.4)	7,151 (45.9)	57.6
No complaint		3,194 (20.4)	3,366 (21.6)	3,320 (21.4)	3,030 (19.5)	2,974 (19.1)	3,177 (20.4)	-
Total		15,634 (100.0)	15,619 (100.0)	15,540 (100.0)	15,567 (100.0)	15,583 (100.0)	15,589 (100.0)	100.0

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 2.6. *State Rates of Complaints (in Decreasing Order) and Substantiated Complaints for the Study Period (2013-2017)*

STATE	Complaints (mean/year)	Substantiated Complaints (mean/year)	Nursing Homes (mean/year)	Complaints/ Nursing Home/Year	Rate of Substantiated Complaints
Washington	5,635	762	222	25.4	13.5%
Texas	16,781	2,860	1,208	13.9	17.0%
Maryland	2,792	1,076	230	12.1	38.5%
Michigan	4,935	2,352	438	11.3	47.7%
California	12,821	6,904	1,204	10.6	53.9%
Missouri	5,201	782	513	10.1	15.0%
Rhode Island	760	104	84	9.1	13.6%
Vermont	328	71	37	8.8	21.6%
Illinois	5,231	2,082	750	7.0	39.8%
Maine	718	153	104	6.9	21.3%
New York	4,085	798	628	6.5	19.5%
Arizona	811	175	146	5.5	21.5%
North Carolina	2,299	523	424	5.4	22.7%
Nebraska	981	325	216	4.5	33.1%
Tennessee	1,377	456	319	4.3	33.1%
Nevada	223	66	55	4.0	29.6%
Indiana	2,085	1,523	535	3.9	73.0%
Kansas	1,263	500	328	3.9	39.6%
Pennsylvania	2,599	959	702	3.7	36.9%
Delaware	159	70	43	3.7	44.0%
Ohio	3,500	916	963	3.6	26.2%
Wisconsin	1,353	574	382	3.5	42.5%
Iowa	1,516	650	438	3.5	42.9%
Florida	2,355	649	688	3.4	27.6%
Kentucky	957	225	288	3.3	23.5%
Oklahoma	997	314	308	3.2	31.5%
Arkansas	721	280	228	3.2	38.8%
Wyoming	110	52	35	3.1	47.8%
District of Columbia	58	18	19	3.0	30.9%

Table 2.6. (Continued)

Georgia	1,048	236	357	2.9	22.5%
New Jersey	1,019	259	365	2.8	25.4%
Oregon	369	156	139	2.7	42.4%
Connecticut	567	381	228	2.5	67.2%
Mississippi	454	160	195	2.3	35.2%
Columbia	448	248	212	2.1	55.4%
New Mexico	156	86	74	2.1	54.8%
Louisiana	587	206	279	2.1	35.2%
Massachusetts	786	201	413	1.9	25.5%
Virginia	522	290	288	1.8	55.6%
Utah	144	52	96	1.5	36.5%
West Virginia	176	66	125	1.4	37.6%
Idaho	107	64	78	1.4	59.8%
South Carolina	232	83	189	1.2	35.6%
Minnesota	443	103	377	1.2	23.2%
New Hampshire	87	42	76	1.1	48.1%
Montana	81	46	80	1.0	56.6%
Alabama	203	58	227	0.9	28.8%
Alaska	15	7	18	0.8	50.7%
South Dakota	73	35	100	0.7	48.6%
North Dakota	38	16	81	0.5	41.7%
Hawaii	17	4	47	0.4	24.7%
Guam	0	0	1	0.0	0.0%
Virgin Island	0	0	1	0.0	0.0%

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 2.7. *State Rates of Complaint Allegations (in Decreasing Order), Substantiated Complaint Allegations, and Deficiency Citations for the Study Period (2013-2017)*

STATE	Complaint Allegations (mean/year)	Substantiated Complaint Allegations (mean/year)	Nursing Homes (mean/year)	Complaint Allegations/ Nursing Home/Year	Rate of Substantiated Complaint Allegations	Deficiency Citations (mean/year)	Deficiency Citations/ Nursing Home/Year
Washington	6,991	858	222	31.5	12.3%	820	3.7
Texas	32,794	3,637	1,208	27.2	11.1%	2,955	2.4
Vermont	885	117	37	23.7	13.2%	142	3.8
Michigan	10,192	3,168	438	23.3	31.1%	1,466	3.3
Maryland	5,318	1,363	230	23.1	26.6%	1,460	6.4
Missouri	10,844	934	513	21.1	8.6%	523	1.0
Illinois	12,512	3,027	750	16.7	24.2%	2,007	2.7
North Carolina	6,328	722	424	14.9	11.4%	782	1.8
Indiana	7,683	2,450	535	14.4	31.9%	1,394	2.6
California	17,028	7,946	1,204	14.1	46.7%	3,138	2.6
Arizona	1,798	205	146	12.3	11.4%	239	1.6
Maine	1,227	184	104	11.8	15.0%	152	1.5
New York	7,095	1,061	628	11.3	15.0%	642	1.0
Pennsylvania	7,357	1,334	702	10.5	18.1%	1,306	1.9
Nevada	566	88	55	10.2	15.6%	104	1.9
Delaware	428	106	43	10.0	24.7%	137	3.2
Rhode Island	832	105	84	9.9	12.7%	32	0.4
Georgia	3,305	348	357	9.2	10.5%	311	0.9
Nebraska	1,915	420	216	8.9	21.9%	489	2.3
Oklahoma	2,594	459	308	8.4	17.7%	820	2.7
Ohio	7,842	1,165	963	8.1	14.9%	1,557	1.6
Florida	5,584	892	688	8.1	16.0%	973	1.4
Colorado	1,709	461	212	8.1	27.0%	392	1.8
Wyoming	268	76	35	7.6	28.2%	85	2.4
Iowa	3,168	933	438	7.2	29.5%	995	2.3
Tennessee	2,290	515	319	7.2	22.5%	343	1.1
Arkansas	1,607	369	228	7.0	23.0%	387	1.7

Table 2.7. (Continued)

Kansas	2,268	628	328	6.9	27.7%	1,473	4.5
District of Columbia	130	23	19	6.8	17.4%	32	1.7
Virginia	1,829	479	288	6.3	26.2%	612	2.1
New Jersey	2,191	490	365	6.0	22.4%	258	0.7
Utah	562	93	96	5.9	16.6%	205	2.1
Louisiana	1,496	295	279	5.4	19.7%	432	1.5
West Virginia	667	129	125	5.3	19.4%	234	1.9
Idaho	407	122	78	5.2	29.9%	189	2.4
Kentucky	1,407	249	288	4.9	17.7%	537	1.9
Oregon	668	207	139	4.8	31.0%	456	3.3
Wisconsin	1,823	623	382	4.8	34.2%	773	2.0
Montana	247	92	80	3.1	37.2%	109	1.4
Mississippi	518	173	195	2.7	33.5%	163	0.8
Connecticut	604	389	228	2.6	64.3%	656	2.9
Massachusetts	1,083	218	413	2.6	20.1%	301	0.7
New Mexico	162	89	74	2.2	54.6%	231	3.1
Alabama	463	75	227	2.0	16.1%	238	1.1
New Hampshire	128	47	76	1.7	36.9%	25	0.3
North Dakota	132	32	81	1.6	23.9%	93	1.1
South Dakota	152	58	100	1.5	37.9%	92	0.9
Minnesota	567	134	377	1.5	23.6%	163	0.4
Alaska	26	9	18	1.5	35.9%	13	0.7
South Carolina	274	85	189	1.5	31.0%	277	1.5
Hawaii	27	7	47	0.6	27.4%	6	0.1
Guam	0	0	1	0.3	0%	0	0.0
Virgin Island	0	0	1	0.0	0%	0	0.0

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 2.8. *CMS Region-wise Rates of Complaints (in Decreasing Order) and Substantiated Complaints during 2013-2017*

CMS Regions	Number of States	Complaints (mean/year)	Substantiated Complaints (mean/year)	Nursing Homes (mean/year)	Complaints/ Nursing Home/Year	Rate of Substantiated Complaints
Seattle	4	6,126	990	457	13.4	16.2%
San Francisco	4	13,873	7,149	1,453	9.6	51.5%
Dallas	5	19,241	3,746	2,097	9.2	19.5%
Kansas City	4	8,961	2,258	1,495	6.0	25.2%
New York	2	5,104	1,057	993	5.1	20.7%
Chicago	6	17,547	7,550	3,444	5.1	43.0%
Philadelphia	6	6,306	2,479	1,407	4.5	39.3%
Boston	6	3,247	951	944	3.4	29.3%
Atlanta	8	8,925	2,390	2,687	3.3	26.8%
Denver	6	893	450	604	1.5	50.4%

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 2.9. *CMS Region-wise Rates of Complaint Allegations (in Decreasing Order), Substantiated Complaint Allegations, and Deficiency Citations for the Study Period (2013-2017)*

CMS Regions	Complaint Allegations (mean/year)	Substantiated Complaint Allegations (mean/year)	Nursing Homes (mean/year)	Complaint Allegations/ Nursing Home/Year	Rate of Substantiated Complaint Allegations	Deficiency Citations (mean/year)	Deficiency Citations/ Nursing Home/Year
Dallas	38,653	4,848	2,097	18.4	12.5%	4,825	2.3
Seattle	8,092	1,196	457	17.7	14.8%	1,479	3.2
San Francisco	19,419	8,247	1,453	13.4	42.5%	3,487	2.4
Kansas City	18,195	2,915	1,495	12.2	16.0%	3,481	2.3
Chicago	40,618	10,568	3,444	11.8	26.0%	7,361	2.1
Philadelphia	15,729	3,434	1,407	11.2	21.8%	3,783	2.7
New York	9,285	1,551	993	9.4	16.7%	900	0.9
Atlanta	20,169	3,059	2,687	7.5	15.2%	3,625	1.3
Denver	3,072	812	604	5.1	26.4%	977	1.6
Boston	4,759	1,060	944	5.0	22.3%	1,308	1.4

Note. Data for table derived from the complaint investigation and CASPER survey datasets.
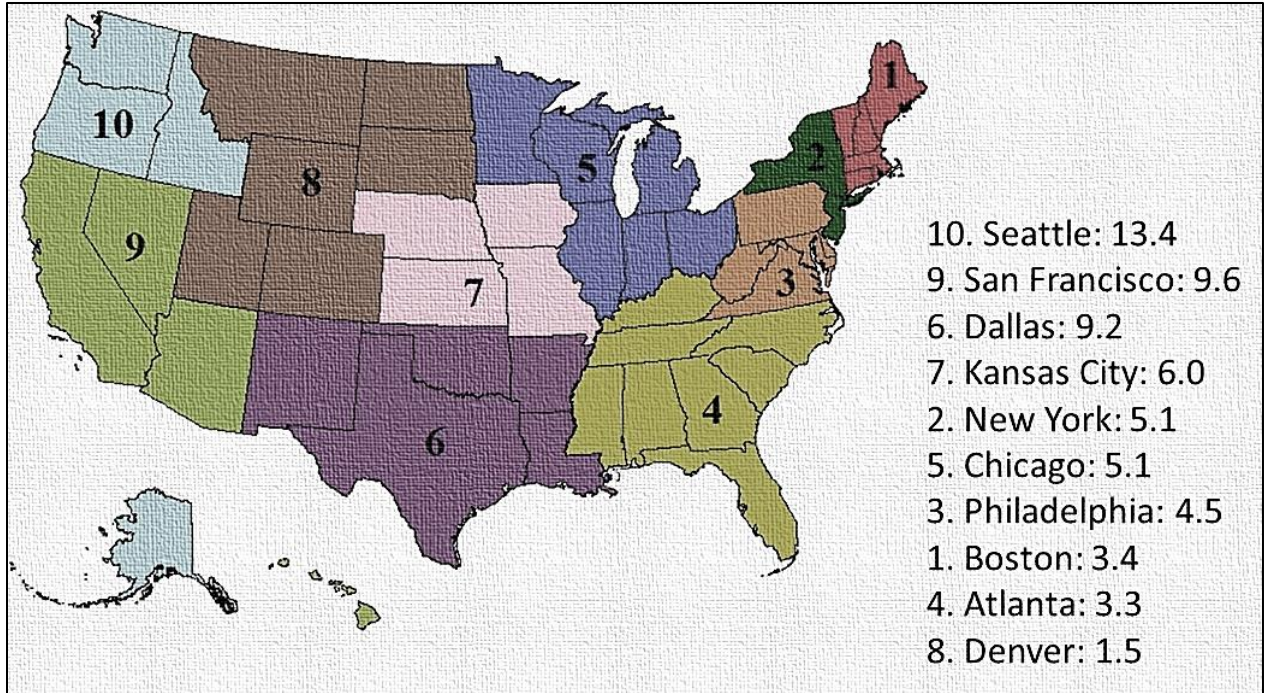
Figure 2.2. *Map of CMS Region-wise Rates of Complaints (in Decreasing Order)*

Note. Data derived from the complaint investigation and CASPER survey datasets.

CHAPTER THREE:

CONSUMER COMPLAINTS IN NURSING HOMES: ANALYZING SUBSTANTIATED SINGLE ALLEGATION COMPLAINTS TO DEFICIENCY CITATIONS

Introduction

The Centers for Medicare and Medicaid Services (CMS) provide information to the public concerning nursing home (NH) quality through its Five-Star Rating System. The ratings are based on data concerning health inspections, quality measures, and staffing (CMS, 2016). Health inspection scores are based on the results of annual recertification surveys (ARSs) conducted routinely for all NHs every 9 to 15 months, and consumer complaint investigations conducted in response to complaints made against NHs.

Complaints provide important information to the public about NH quality of care (QOC) and quality of life (QOL). They represent the unique perspectives of residents, family members, and other patient representatives who can use the process to alert regulators to deficits in care during the months between the annual surveys (Grabowski, 2005; Stevenson, 2005; Stevenson, 2006). However, the results of this process are difficult for consumers to fully comprehend because deficiency citations resulting from complaints are not clearly identified in the NH quality data presented to the public. The Five-Star data provide one overall health inspection score, which does not differentiate between deficiencies resulting from ARS and those resulting from complaint investigations.

Background

NH deficiencies come from two sources. One, state survey agencies (SSAs) conduct regular inspections of every CMS-certified NH to assess the NH's compliance with federal standards. Noncompliance generally results in one or more deficiency citations. Two, upon receipt of a complaint and after a subsequent investigation, state surveyors determine if the complaint is substantiated, and if so, whether a regulatory violation has occurred warranting a deficiency citation. Considerable research has been conducted on NH deficiencies overall as quality measures (Alexander & Madsen, 2017; Harrington et al., 2015; Lerner et al., 2013). However, a limited number of studies have been conducted using resident complaints as a measure of NH quality (Hansen et al., 2017; Troyer & Sause, 2011). Stevenson (2005) was one of the first to describe NH complaints as a useful tool to estimate the quality of NH care (Grabowski, 2005). He identified the associations between complaints and deficiency citations. Analyzing data from 1998-2002, Stevenson (2006) reported that 35% of NHs, throughout the country, had no complaints during the study period, and 18% had five or more complaints. He found that the average yearly complaint rate was nearly 4.2 complaints per 100 residents, and 38% of complaint allegations were substantiated. In a more recent study, analyzing data from 2007-2011, Hansen et al. (2017) found that about 23% of NHs, on average, had zero complaints annually, and on average, 47.5% of facilities had five or more complaints in a given year. They reported that the average annual complaint rate was 13.3 complaints per 100 residents, and the substantiation rate of complaint allegations was 43.2%. Furthermore, a significant amount of variability in complaints was noted among the CMS survey regions (Hansen et al., 2017). However, we know very little about the process by which a complaint leads to a deficiency citation.

Objective

Therefore, the aim of this study is to track a set of substantiated complaints to the conclusion of the process at which regulators determine whether the complaint involved a violation of federal standards and the extent of the violation. This approach makes it possible to examine the relationships between complaints and the possible resulting deficiency citation. In addition, how complaints varied by the states and the CMS regions across the country will also be examined. The current study will help us better understand the complaint process and the alignment between consumers' complaints and the regulatory actions that result from their complaints. This is important as it could clarify the role consumers play in the regulatory actions that affect the public information provided about NHs and the steps NHs should take in response to improve their quality ratings. Overall, the results could provide guidance on the use of consumer complaints to improve NH quality in a unique way.

Research Questions

1. What is the relationship between substantiated complaints and deficiency citations?

2. Is there any variation in complaint processes by the states and the CMS survey regions?

3. What is the prevalence of zero-deficiency complaints?

Hypotheses

Hypothesis 1. It is hypothesized that a single complaint can lead to a substantial regulatory response; however, there will be significant discrepancies in the number of

complaints, substantiated complaints, and deficiency citations, suggesting the existence of flaws in the current complaint investigation process.

Hypothesis 2. Due to absence of uniform complaint processes across the country there will be a state and survey region variability in the complaint dataset. This variation will be similar to the CASPER survey dataset, as in both cases, data are collected and reported by the same category of individuals (i.e., SSA investigators).

Hypothesis 3. There will be a substantial number of zero-deficiency complaints, indirectly signifying limitations, such as inconsistency in the intake process, in the complaint investigation process.

Method

Study Design

This study used the ASPEN Complaints/Incidents Tracking System (ACTS) dataset as the source of information of complaints. As part of the federally required inspection process, SSA must collect data on complaints filed and track the investigations. One complaint may contain multiple allegations; for each allegation, the state needs to record how it was managed from intake to closure, including key dates, type of allegation (e.g., QOC), prioritization level, and proposed action. This includes whether a complaint allegation was substantiated or not, whether a deficiency was found and if so, the deficiency type and scope and severity (CMS, 2016). The ACTS data used in this analysis are part of a larger dataset incorporating data from the Certification and Survey Provider Enhanced Reports (CASPER) and the Area Health Resource File (AHRF). CASPER dataset maintains record on NH characteristics (e.g., occupancy rates, ownership status), resident characteristics, and staffing levels. The AHRF

contains socioeconomic and provider information related to the county where each NH is located.

The sample for this study were drawn from the information about allegations and complaints that were filed between November 28, 2016, and November 27, 2017. These dates reflect the study's focus on the complaint process before CMS's execution of significant changes to regulatory standards on November 28, 2017. The sample is further restricted to complaints filed for free-standing NHs across the US that did not have missing or erroneous data for describing the NHs.

The current study analyzes a subset of complaints consisting of only one allegation that was substantiated. This is necessary because a single complaint may include multiple specific allegations, with each allegation assigned its own category (e.g., QOC, residents' rights) and priority code (e.g., immediate jeopardy). During the investigation, one or more of the allegations may be substantiated and deemed to warrant a deficiency citation; however, the data do not link the allegation to the deficiency. For example, state surveyors investigating a complaint with three allegations may find that one is substantiated and warrants a deficiency citation or possibly multiple deficiency citations, but the data will not identify which of the allegations led to citation(s). Therefore, the study includes only complaints with a single allegation that was substantiated (allegations that are not substantiated are not assessed to determine whether a deficiency citation is warranted). This approach enables us to link each deficiency citation back to the allegation that initiated the investigation (See Figure 2.1 in the study 1 for a description of the complaint investigation process).

Measures

The current study uses multiple variables from the complaint dataset (ACTS). The dataset consists of two parts: one entered when a complaint is received by the SSA and the other after the completion of the complaint investigation. The first part of the complaint dataset contains variables related to the complaint receiving process, such as days when the complaint investigation began, allegation category, intake priority code, etc. The other contains deficiency tag number, and scope and severity code, as well as the provider information concerning the state where the NH is located. The SSA, which receives information on the complaint, assigns the allegation category and intakes priority codes. On the other hand, the investigating state surveyors and regulators determine the nature of allegations (substantiated or not) and the resultant deficiency citations (F-tags), respectively.

To perform the necessary analyses, first, the data was sorted out for missing deficiency tag numbers from the second set. Then the two datasets were merged using provider identification numbers. To evaluate the substantiated complaints, two more variables were generated merging the two datasets. First, a categorical variable denoting the deficiency tag types was sorted out from the tag numbers that were generated against each substantiated allegation. Second, a new categorical variable was created identifying the CMS regions corresponding to the location of the NHs.

Statistical Analyses

Frequency and descriptive analyses of single substantiated complaints were carried out for NHs across the ten CMS survey regions in 2017. Initially, the allegation categories were identified. Next, given that allegations resulted in varied numbers of deficiencies, we calculated

the number of allegations that resulted in only one deficiency or multiple deficiencies up to five or more. We then identified each deficiency type to analyze the numbers of deficiencies by type, with each grouped by the category of the initial allegation. This study further sought to understand decisions made concerning allegation and deficiency severity. Therefore, we then analyzed deficiency scope and severity codes against intake priority codes. Every "immediate jeopardy" allegation that resulted in a deficiency citation was closely examined. Further, we analyzed the 130 allegations that led to no deficiencies. Finally, the study analyzed the allegation types as they were distributed among the ten CMS survey regions to better understand geographical variability. All analyses were performed using SAS Version 9.4 (SAS Institute, Inc., Cary, NC).

Results

Overall, most of the complaint allegations in our sample (N=369) were categorized as quality of care (31.7%), resident abuse (17.3%), or resident neglect (14.1%). Table 3.1 reports the numbers of allegations by allegation category. Two-thirds (N=239, 64.8%) of these allegations generated one or more deficiency citation. For example, 38 of the quality-of-care allegations led to one deficiency citation, while 6 of these allegations resulted in five or more citations. Seven of the allegations categorized as resident abuse resulted in five or more deficiency citations and five of the allegations categorized as resident neglect resulted in five or more deficiencies. Of all the allegations in our sample that resulted in deficiencies, nearly 30% resulted in three or more, and more than 10% resulted in five or more indicating the power of complaints to call attention to deficient practices. However, more than one-third (N=130, 35.2%) of these allegations led to no deficiency citations. The Chi Square coefficient between allegation category and number of deficiencies (using 5 categories): $\chi2$ (40) = 45.33, p=.26.

Table 3.2 shows the frequency of the deficiencies that resulted from the allegations in our sample, categorized by the five most common allegation types (both in frequency and percentage) and other. Of the 585 deficiencies (determined by the F-tags), 27.9% were categorized as quality of care (N=163); 19.5% were in the category of resident behavior and facility practices (N=114), and resident assessment was the third most frequent category (N=67, 11.5%). The Chi Square coefficient between allegation category (using 5 most common categories and other) and number of deficiencies: $\chi2$ (65) = 286.62, p=<.0001.

Table 3.3 shows the frequency of deficiencies categorized by type and their associated scope and severity codes in relation to the allegation intake priority codes (N=239). Among all the major deficiency categories and overall, the highest number of deficiencies were in the category of minimal harm/potential for actual harm. Similarly, the highest numbers of intake priority codes were in the less extreme categories (i.e., non-immediate jeopardy high [non-IJ high] and non-IJ medium). However, a considerable number of allegations initially coded as "immediate jeopardy" (n=75) received deficiencies of a lesser scope and severity (i.e., minimal harm/potential for actual harm). Table 3.4 reports the intake priority codes for allegations (by type) that did not result in deficiencies. A fifth of these allegations (N=25, 19.2%) categorized as "immediate jeopardy" at intake did not result in any deficiency citations; 68% were allegations related to resident abuse, neglect, or life safety.

The study also found variation in allegations by CMS regions. Table 3.6 (also see Table 3.5 and Figure 3.1) shows that across the 10 CMS survey regions, Chicago (19.7%) yields the highest number of allegations that led to at least one deficiency, followed by Boston and Atlanta (16.3% in each), compared to much lower numbers of allegations in the Seattle and New York regions (2.9% and 3.4% respectively). Among the allegation categories, the study found the

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highest number of allegations related to resident abuse in the Chicago region (40%); resident neglect was the most prevalent in the Kansas City region (41%). In contrast, Boston and Atlanta had more allegations related to the quality of care (nearly 50% in each).

Discussion

Complaints that are substantiated often lead to a regulatory investigation and potentially issuance of a deficiency citation. The current study attempted to track consumer complaints to better understand the relationship between compliant allegations and deficiency citations. We followed single substantiated allegations through the complaint investigation process in 2017. The findings show that most of the substantiated single-allegation complaints were categorized as quality of care, resident abuse, and resident neglect. Two-thirds of the substantiated complaints resulted in one or more deficiency citations, with a majority of the quality of care, abuse and neglect allegations leading to multiple deficiencies each. This suggests that the complaints process is effective in alerting regulators to deficient practices. However, nearly one-third of the allegations in our sample, all of which had been substantiated, received no deficiencies, and 69 of these (more than 18% of all substantiated allegations in our sample) were categorized as quality of care, neglect or abuse. Furthermore, 81 complaint allegations (nearly 22% of allegations in our sample) were categorized as "immediate jeopardy" at intake but did not result in any deficiency citations. The findings suggest that the compliant investigation process warrants better oversight and further examination concerning what appears to be a disjunction between the complaint intake and investigation processes.

Prior research suggests there is a lack of homogeneity in U.S. state regulations concerning complaint filing and investigation processes, potentially including the process of issuing deficiency citations (Peterson et al., 2020). This has potentially created confusion among

staff at the intake point and surveyors, as well as among care providers across states. There is no discernable process to link substantiated allegations with deficiencies. Compounding the difficulty are the differences between allegation and deficiency citation categories. Overall, we found it was extremely difficult to understand with any precision how well the complaint process works to identify poor quality practices and to inform the public about nursing home quality.

Concerning serious allegations that resulted in no deficiency citations, Stevenson (2006) found the number of days between when the incident takes place and when investigation occurs exerts a significant impact. This delay might be an explanation why this study found many substantiated abuse and neglect allegations and allegations categorized as "immediate jeopardy" resulted in no deficiency citations.

The current study reported an asymmetry in complaint patterns among the geographic distribution of NHs. We found that QOC was the highest in number among allegations categorized in the Atlanta and Boston CMS regions. Our study found resident abuse as the highest among allegation types in the Chicago region, whereas resident neglect was the highest in Kansas City and Dallas. When older adults suffer from major chronic medical conditions, they are more likely to be relocated to a NH due to a dearth of resources in the home environment (Luppa et al., 2010). The current geographic asymmetries may be due to the variability of resources, such as the availability of personal, emotional, and financial supports for older adults (Luppa et al., 2010). In addition, there might be differences in some facility characteristics, such as the proportion of Medicare/Medicaid residents (Troyer & Sause, 2011), that could also affect the distribution pattern. Medicare residents usually stay shorter than the Medicaid residents in NHs; therefore, they have more expectations for satisfaction that motivate them toward lodging complaints (Troyer & Sause, 2011). Stevenson (2006) pointed toward a similar pattern that

corroborates our study findings. Earlier studies also found that healthcare disparities in the US

follow a common pattern regarding NH care (Rahman & Foster, 2015). Therefore, racial

distribution in the surrounding area might also be associated with the complaint pattern of NHs

in a particular area. Future research is necessary to understand the reasons for the variation in

patterns of complaints and deficiency citations across the geographic distribution of NHs.

Regarding the impacts of ownership status, Stevenson (2006) found that more complaints

and resulting deficiencies were associated with for-profit facilities. Our study also found a

similar association between the number of deficiencies and the ownership status of NHs. For-

profit NHs had a higher number of deficiencies. In contrast, we found a comparatively higher

proportion of government NHs receive allegations that resulted in no deficiencies. Earlier studies

found that while choosing a NH in the United States, most residents prefer to choose those that

are non-profit and without chain affiliation (Shippee et al., 2015). There might be some pre-

mindset about the NH, where a resident is going to stay. Chain-affiliated NHs were associated

with more deficiencies, higher costs, and lower ratings as compared to independent NHs

(Blackburn et al., 2018). This trend may explain our study findings that for-profit NHs were

more associated with allegations that resulted in deficiency.

Even though most older adults prefer to stay in their own homes, about 1.4 million

residents occupied one of the 1.7 million beds in the 15,600 NHs in the US (Harris-Kojetin et al.,

2019). However, measuring the quality of NHs is a real challenge (Castle & Ferguson, 2010).

Policymakers, consumers, and researchers often criticize NHs due to concerns about the quality

of service (Harrington et al., 2001). However, it should be noted that complaints are not

necessarily an objective evaluation of faults, instead, an emotional expression of resident's

dissatisfaction with living in a NH. Nevertheless, if adequately scrutinized, complaints are

potential indicators for NH quality of service and often provide an excellent resource for the consumers to identify their residential options.

Limitations

Although the current study opens up a new horizon regarding the current complaint patterns of the US NHs, it has some limitations. The CASPER dataset only provides quantitative statistics on staffing status. It does not provide qualitative details about the staff, i.e., experience and training (only mentions their degrees) that may be relevant to measure the quality of NH care indirectly. Additionally, in the CASPER dataset, facilities self-report about provider details, resident information, and staffing status, and there could be inaccuracies in reporting. However, we considered this data the best available data and reliable enough for our evaluation purpose. Finally, we included only complaints with a single allegation that was substantiated (allegations that are not substantiated are not assessed to determine whether a deficiency citation is warranted). We took this approach because a single complaint may include multiple allegations and one or more of the allegations may be substantiated and then deemed to warrant a deficiency citation. However, the data do not link allegations to deficiencies. While our approach limited the size of our sample, it enabled us to link each deficiency citation back to the allegation that initiated the investigation. Further longitudinal analysis is required to authenticate our findings.

Conclusions

The current study sketches a basic guideline about how consumers' complaints are intimately associated with the quality ratings of the NHs. The relationship between substantiated complaints and deficiency citations points toward the lack of optimal quality services provided by the NHs. Moreover, the categorization of the complaints at intake suggests that the compliant

investigation process warrants better and rigorous patient complaint management systems,

including staff training. Future research is necessary to understand the policy and practice

implications of the entire complaint process, including an urgent need for a more uniform

complaint investigation process across the country.

Table 3.1. S*tate CMS process of handling allegation types against nursing homes (N=239) in the year 2017*

Allegation Category	Number (and Column Percentage) of Deficiencies					
	1	**2**	**3**	**4**	**5/more**	**Total**
Quality of Care	38 (32.5)	21 (41.2)	10 (38.5)	9 (45.0)	6 (24.0)	84 (35.2)
Resident Abuse	22 (18.8)	13 (25.5)	1 (3.8)	4 (20.0)	7 (28.0)	47 (19.7)
Resident Neglect	15 (12.8)	5 (9.8)	6 (23.1)	2 (10.0)	5 (20.0)	33 (13.8)
Accident	13 (11.1)	3 (5.9)	1 (3.8)	2 (10.0)	0 (0.0)	19 (7.9)
Misappropriation	3 (2.6)	2 (3.9)	2 (7.7)	1 (5.0)	1 (4.0)	9 (3.8)
Adm./Trans./Disc. Right	2 (1.7)	2 (3.9)	0 (0.0)	0 (0.0)	2 (8.0)	6 (0.0)
Resident Right	4 (3.4)	0 (0.0)	2 (7.7)	0 (0.0)	0 (0.0)	6 (0.0)
Dietary	4 (3.4)	1 (2.0)	0 (0.0)	0 (0.0)	0 (0.0)	5 (0.0)
Nursing	4 (3.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	4 (0.0)
Injury unknown	0 (0.0)	0 (0.0)	1 (3.8)	1 (5.0)	2 (8.0)	4 (0.0)
Other	12 (10.3)	4 (7.8)	3 (11.5)	1 (5.0)	2 (8.0)	22 (9.2)
Total (Frequency)	117	51	26	20	25	239
Total (Percentage)	49.0	21.3	10.9	8.4	10.4	100

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

$\chi2$ (40) = 45.33, p=.26

Table 3.2. *Five most common allegation types (frequency and column percentage) per deficiency tag type in the year 2017*

Deficiency Tag Type	Allegation Category						
	Quality of Care	Resident Abuse	Resident Neglect	Accident	Injury unknown	Other	Total
Quality of Care	78 (38.8)	13 (11.3)	38 (40.0)	15 (50.0)	7 (23.3)	12 (10.5)	163 (27.9)
Resident Behavior and Facility Practices	14 (7.0)	65 (56.5)	15 (15.8)	0 (0.0)	6 (20.0)	14 (12.3)	114 (19.5)
Resident Assessment	33 (16.4)	7 (6.1)	11 (11.6)	2 (6.7)	7 (23.3)	7 (6.1)	67 (11.5)
Administration	7 (3.5)	4 (3.5)	10 (10.5)	3 (10.0)	3 (10.0)	8 (7.0)	35 (6.0)
Resident Rights	11 (5.5)	5 (4.4)	4 (4.2)	2 (6.7)	2 (6.7)	8 (7.0)	32 (5.5)
Quality of Life	11 (5.5)	6 (5.2)	4 (4.2)	1 (3.3)	2 (6.7)	5 (4.4)	28 (4.8)
Dietary Services	3 (1.5)	4 (3.5)	4 (4.2)	2 (6.7)	1 (3.3)	4 (3.5)	18 (3.0)
Pharmacy Services	5 (2.5)	4 (3.5)	1 (1.1)	1 (3.3)	0 (0.0)	6 (5.3)	17 (2.9)
Adm./Trans./Disc. Rights	5 (2.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	7 (6.1)	12 (2.0)
Infection Control	3 (1.5)	2 (1.7)	2 (2.1)	0 (0.0)	1 (3.3)	4 (3.5)	12 (2.0)
Nursing Services	6 (3.0)	0 (0.0)	3 (3.1)	0 (0.0)	0 (0.0)	1 (1.0)	10 (1.7)
Physical Environment	3 (1.5)	1 (1.0)	2 (2.1)	1 (3.3)	0 (0.0)	1 (1.0)	8 (1.4)
Dental Services	0 (0.0)	1 (1.0)	0 (0.0)	0 (0.0)	1 (3.3)	0 (0.0)	2 (0.3)
Other	22 (10.9)	3 (2.6)	1 (1.1)	3 (10.0)	0 (0.0)	38 (33.3)	67 (11.5)
Total (Frequency)	201	115	95	30	30	114	585
Total (Percentage)	34.4	19.7	16.2	5.1	5.1	19.5	100

Note. Data for table derived from the complaint investigation and CASPER survey datasets. $\chi2$ (65) = 286.62, p=<.0001

Table 3.3. *Relation of codes issued at intake point with the top five resultant deficiency tags (frequency and column percentage) and scope and severity codes under those deficiency tags in the year 2017 in nursing homes with at least one deficiency (N=239)*

Deficiency Tag	Scope and Severity Code	Intake Priority Code				
		IJ	Non-IJ High	Non-IJ Medium	Non-IJ Low	Total
Quality of Care		**22 (21.0)**	**88 (33.0)**	**46 (25.1)**	**7 (23.3)**	**163 (27.9)**
	Immediate jeopardy	9 (40.9)	7 (8.0)	0 (0.0)	0 (0.0)	16 (9.8)
	Actual harm	3 (13.6)	24 (27.3)	13 (28.3)	3 (42.9)	43 (26.4)
	Minimal harm/potential for actual harm	10 (45.5)	57 (64.8)	33 (71.7)	4 (57.1)	83 (50.9)
	Potential for minimal harm	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Resident Behavior and Facility Practices		**28 (26.7)**	**61 (22.9)**	**21 (11.5)**	**4 (13.3)**	**114 (19.5)**
	Immediate jeopardy	2 (7.1)	5 (8.2)	1 (4.8)	0 (0.0)	8 (7.0)
	Actual harm	3 (10.7)	17 (27.9)	1 (4.8)	1 (25.0)	22 (19.3)
	Minimal harm/potential for actual harm	23 (82.1)	39 (63.9)	19 (90.5)	3 (75.0)	84 (73.7)
	Potential for minimal harm	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Resident Assessment		**12 (11.4)**	**38 (14.2)**	**16 (8.7)**	**1 (3.3)**	**67 (11.5)**
	Immediate jeopardy	3 (25.0)	5 (13.1)	0 (0.0)	0 (0.0)	8 (11.9)
	Actual harm	2 (16.7)	4 (10.5)	2 (12.5)	0 (0.0)	8 (11.9)
	Minimal harm/potential for actual harm	7 (58.3)	29 (76.3)	14 (87.5)	1 (100.0)	51 (76.1)
	Potential for minimal harm	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Administration		**14 (13.3)**	**10 (3.8)**	**10 (5.5)**	**1 (3.3)**	**35 (6.0)**
	Immediate jeopardy	4 (28.6)	1 (10.0)	0 (0.0)	0 (0.0)	5 (14.3)
	Actual harm	0 (0.0)	1 (10.0)	0 (0.0)	0 (0.0)	1 (2.9)
	Minimal harm/potential for actual harm	10 (71.4)	8 (80.0)	9 (90.0)	1 (100.0)	28 (80.0)
	Potential for minimal harm	0 (0.0)	0 (0.0)	1 (10.0)	0 (0.0)	1 (2.9)
Resident Rights		**5 (4.8)**	**17 (6.4)**	**8 (4.4)**	**2 (6.7)**	**32 (5.5)**
	Immediate jeopardy	0 (0.0)	2 (11.8)	0 (0.0)	0 (0.0)	2 (6.3)
	Actual harm	1 (20.0)	3 (17.6)	0 (0.0)	0 (0.0)	4 (12.5)

Table 3.3. (Continued)

	Minimal harm/potential for actual harm	4 (80.0)	8 (47.0)	8 (100.0)	2 (100.0)	22 (68.8)
	Potential for minimal harm	0 (0.0)	4 (23.5)	0 (0.0)	0 (0.0)	4 (12.5)
Others		**24 (22.9)**	**53 (19.9)**	**82 (44.8)**	**15 (50.0)**	**174 (29.7)**
	Immediate jeopardy	3 (12.5)	1 (1.9)	4 (4.9)	1 (6.7)	9 (5.1)
	Actual harm	0 (0.0)	5 (9.4)	4 (4.9)	1 (6.7)	10 (5.7)
	Minimal harm/potential for actual harm	21 (87.5)	47 (88.7)	72 (87.8)	13 (86.7)	153 (87.9)
	Potential for minimal harm	0 (0.0)	0 (0.0)	2 (2.4)	0 (0.0)	2 (1.1)
Total (Frequency)		**105**	**267**	**183**	**30**	**585**
	Immediate jeopardy	21 (20.0)	21 (7.9)	5 (2.7)	1 (3.3)	48 (8.2)
	Actual harm	9 (8.6)	54 (20.2)	20 (10.9)	5 (16.7)	88 (15.0)
	Minimal harm/potential for actual harm	75 (71.4)	188 (70.4)	155 (84.7)	24 (80.0)	442 (75.6)
	Potential for minimal harm	0 (0.0)	4 (1.5)	3 (1.61)	0 (0.0)	7 (1.2)
Total (Percentage)		**18**	**45.6**	**31.3**	**5.1**	**100**

Note: IJ = Immediate jeopardy. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 3.4. *Allegation types (in frequency and column percentage) generated against intake priority codes in the year 2017 in nursing homes having no deficiency (N=130)*

Allegation Category	Intake Priority Code				
	IJ	Non-IJ High	Non-IJ Medium	Non-IJ Low	Total
Quality of Care	3 (2.3)	18 (13.9)	12 (9.2)	0 (0)	33 (25.4)
Resident Neglect	5 (3.9)	8 (6.1)	3 (2.3)	3 (2.3)	19 (14.6)
Resident Abuse	6 (4.6)	8 (6.1)	3 (2.3)	0 (0)	17 (13.1)
Physical Environment	2 (1.5)	3 (2.3)	4 (3.1)	0 (0)	9 (6.9)
Life Safety	6 (4.6)	1 (0.8)	1 (0.8)	0 (0)	8 (6.1)
Misappropriation	0 (0)	3 (2.3)	4 (3.1)	0 (0)	7 (5.4)
Accident	0 (0)	4 (3.1)	2 (1.5)	1 (0.8)	7 (5.4)
Injury Unknown	1 (0.8)	1 (0.8)	3 (2.3)	0 (0)	5 (3.6)
Resident Right	0 (0)	2 (1.5)	2 (1.5)	1 (0.8)	5 (3.6)
Adm./trans./disc. Right	0 (0)	2 (1.5)	3 (2.3)	0 (0)	5 (3.6)
Others	2 (1.5)	6 (4.6)	4 (3.1)	3 (2.3)	15 (11.5)
Total	25 (19.2)	56 (43.1)	41 (31.6)	8 (6.1)	130 (100)

Note: IJ = Immediate jeopardy. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 3.5. *Frequency and column percentage of allegation types in 10 CMS regions in the year 2017 (N=369)*

Allegation Types	CMS Regions										
	Boston	**New York**	**Philadelphia**	**Atlanta**	**Chicago**	**Dallas**	**Kansas City**	**Denver**	**San Francisco**	**Seattle**	**Total**
Quality of Care	24 (44.4)	4 (30.8)	11 (39.3)	27 (35.5)	15 (20.0)	6 (20.0)	8 (21.0)	4 (30.7)	12 (34.3)	6 (85.7)	117 (31.7)
Resident Abuse	10 (18.5)	5 (38.5)	0 (0.0)	10 (13.1)	24 (32.0)	5 (16.7)	4 (10.5)	2 (15.4)	4 (11.4)	0 (0.0)	64 (17.3)
Resident Neglect	5 (9.3)	0 (0.0)	3 (10.7)	5 (6.6)	10 (13.3)	12 (40.0)	14 (36.8)	0 (0.0)	2 (5.7)	1 (14.3)	52 (14.1)
Accident	7 (13.0)	1 (7.7)	2 (7.1)	5 (6.6)	3 (4.0)	10 (33.3)	1 (2.6)	2 (15.4)	5 (14.3)	0 (0.0)	26 (7.0)
Misappropriation	5 (9.3)	1 (7.7)	0 (0.0)	4 (5.3)	4 (5.3)	0 (0.0)	2 (5.3)	0 (0.0)	0 (0.0)	0 (0.0)	16 (4.3)
Resident Right	0 (0.0)	0 (0.0)	2 (7.1)	1 (1.3)	3 (4.0)	1 (3.3)	2 (5.3)	0 (0.0)	2 (5.7)	0 (0.0)	11 (3.0)
Adm./tr./disc. Rt.	0 (0.0)	1 (7.7)	1 (3.6)	3 (3.9)	2 (2.7)	1 (3.3)	1 (2.6)	1 (7.7)	1 (2.9)	0 (0.0)	11 (3.0)
Physical Env.	0 (0.0)	0 (0.0)	1 (3.6)	1 (1.3)	6 (8.0)	0 (0.0)	0 (0.0)	0 (0.0)	3 (8.6)	0 (0.0)	11 (3.0)
Injury Unknown	0 (0.0)	0 (0.0)	1 (3.6)	3 (3.9)	1 (1.3)	2 (6.7)	0 (0.0)	0 (0.0)	2 (5.7)	0 (0.0)	9 (2.4)
Life Safety	1 (1.9)	0 (0.0)	0 (0.0)	7 (9.2)	1 (1.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	9 (2.4)
Other	2 (3.7)	1 (7.7)	7 (25.0)	10 (13.1)	6 (8.0)	3 (10.0)	6 (15.8)	4 (30.7)	4 (11.4)	0 (0.0)	43 (11.7)
Total (Frequency)	54	13	28	76	75	30	38	13	35	7	369
Total (Percent)	14.63	3.52	7.59	20.6	20.33	8.13	10.3	3.52	9.49	1.9	100

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

Table 3.6. *Frequency and column percentage of allegation types in 10 CMS regions in NH having **at least one deficiency** (N=239)*

Allegation Types	CMS Regions										
	Boston	**New York**	**Philadel phia**	**Atlanta**	**Chicago**	**Dallas**	**Kansas City**	**Denver**	**San Francis co**	**Seattle**	**Total**
Quality of Care	20 (51.3)	3 (37.5)	6 (35.3)	19 (48.7)	10 (21.3)	4 (16.7)	7 (21.9)	3 (37.5)	6 (33.3)	6 (85.7)	84 (35.2)
Resident Abuse	8 (20.5)	1 (12.5)	0 (0.0)	7 (19.9)	19 (40.4)	5 (20.8)	3 (9.4)	1 (12.5)	3 (16.7)	0 (0.0)	47 (19.7)
Resident Neglect	1 (2.6)	0 (0.0)	2 (11.8)	1 (2.6)	4 (8.5)	9 (37.5)	13 (40.6)	0 (0.0)	2 (11.1)	1 (14.3)	33 (13.8)
Accident	6 (15.4)	1 (12.5)	2 (11.8)	2 (5.1)	3 (6.4)	0 (0.0)	1 (3.1)	2 (25.0)	2 (11.1)	0 (0.0)	19 (7.9)
Misappropriation	3 (7.7)	1 (12.5)	0 (0.0)	3 (7.7)	2 (4.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	9 (3.8)
Resident right	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.6)	3 (6.4)	0 (0.0)	1 (3.1)	0 (0.0)	1 (5.6)	0 (0.0)	6 (2.5)
Adm./trf./dis. Rt.	0 (0.0)	1 (12.5)	0 (0.0)	0 (0.0)	1 (2.1)	1 (4.1)	1 (3.1)	1 (12.5)	1 (5.6)	0 (0.0)	6 (2.5)
Dietary	0 (0.0)	0 (0.0)	2 (11.8)	0 (0.0)	1 (2.1)	1 (4.1)	1 (3.1)	0 (0.0)	0 (0.0)	0 (0.0)	5 (2.1)
Injury unknown	0 (0.0)	0 (0.0)	0 (0.0)	1 (2.6)	0 (0.0)	2 (8.3)	0 (0.0)	0 (0.0)	1 (5.6)	0 (0.0)	4 (1.7)
Nursing	1 (2.6)	1 (12.5)	1 (5.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (5.6)	0 (0.0)	4 (1.7)
Others	0 (0.0)	0 (0.0)	4 (23.5)	5 (12.8)	4 (8.5)	2 (8.3)	5 (15.6)	1 (12.5)	1 (5.6)	0 (0.0)	22 (9.2)
Total (Frequency)	39	8	17	39	47	24	32	8	18	7	239
Total (Percent)	16.3	3.4	7.1	16.3	19.7	10.1	13.4	3.4	7.5	2.9	100

Note. Data for table derived from the complaint investigation and CASPER survey datasets.

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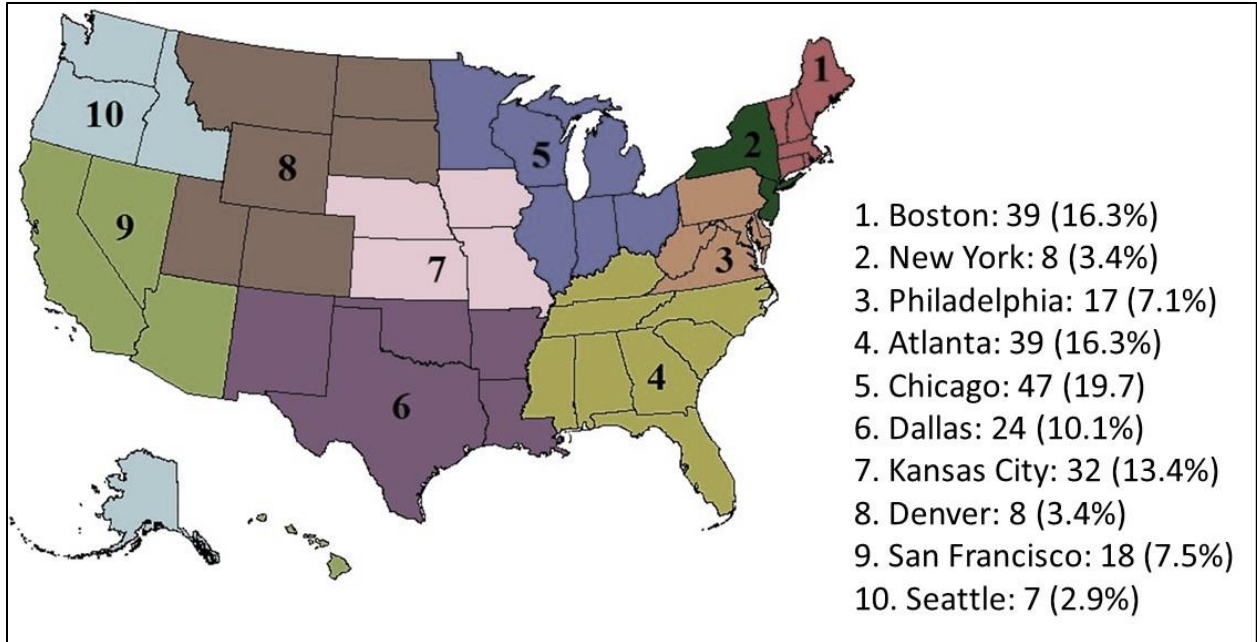**Figure 3.1.** *Map of ten CMS regions with nursing homes having at least one deficiency (N=239)*

Note. Data derived from the complaint investigation and CASPER survey datasets.

1. Boston: 39 (16.3%)
2. New York: 8 (3.4%)
3. Philadelphia: 17 (7.1%)
4. Atlanta: 39 (16.3%)
5. Chicago: 47 (19.7)
6. Dallas: 24 (10.1%)
7. Kansas City: 32 (13.4%)
8. Denver: 8 (3.4%)
9. San Francisco: 18 (7.5%)
10. Seattle: 7 (2.9%)

CHAPTER FOUR:

**DO NURSING HOMES WITH A HIGHER PROPORTION OF RESIDENTS WITH
DEMENTIA HAVE FEWER COMPLAINTS?**

Introduction

Despite most older adults wanting to stay in their own homes, approximately 1.4 million

residents occupied one of the 1.7 million beds in more than 15,000 nursing homes (NHs) in the

United States (Harris-Kojetin et al., 2019). NH residents are usually debilitated, whose capacity

to direct their daily routine changes often deteriorates due to many chronic conditions, such as

dementia (Blackburn et al., 2018). Those NH residents with dementia are often unable to

communicate their needs and complaints (Banovic et al., 2018). For most residents, the quality of

life (QOL) is greatly influenced by the quality of care (QOC) (Harrington et al., 2001). NH

quality measurement, i.e., the services provided by the NH to maintain QOC and QOL of the

residents, is a multidimensional domain. Various categories of individuals, such as residents,

their family members, NH staff, and even policymakers, influence the quality of NH care (Davis,

1991). As per the Center for Medicare and Medicaid Service's (CMS) five-star rating system,

overall NH quality can be evaluated by scores generated from health inspections, quality

measures, and staffing (Hansen et al., 2017).

Maintaining the QOL for residents having dementia is challenging (Gaugler et al., 2014).

Most NH residents have some cognitive impairment, such as Alzheimer's disease and related

dementia (Gaugler et al., 2014). According to the CMS, in 2014, 36.6% of NH residents had

severe cognitive impairment, 24.8% had moderate, and 38.7% had mild or no cognitive impairment (CMS, 2015). While some NHs provide care for a large number of residents with dementia, others serve a few (Gaugler et al., 2014).

NH residents with dementia gradually become functionally dependent due to severe memory loss. A decline in multiple cognitive domains in persons with dementia often restricts their communication (Jootun & McGhee, 2011). Dementia affects the ability to communicate needs and grievances as it is often associated with language difficulties, such as dysarthria, aphasia, or apraxia (Banovic et al., 2018). It also severely restricts the ability to direct or monitor one's own care in NHs due to reductions in insight related to declining executive functioning (Banovic et al., 2018). Because of this, abuse and neglect may be commonplace with cognitively impaired residents in NHs (Castle, 2011).

This prior research highlights the need for staff in NHs who have the knowledge and skills and concerned motivation to apply them specifically to the clinical and social needs of residents (Cadigan et al., 2012). Mitchell and colleagues (2010), in their large prospective cohort study of NH residents with dementia (CASCADE study), found that residents whose caregivers understand the clinical complications expected in later stages of dementia were less likely to have burdensome interventions, such as hospitalization, tube feeding, than residents whose caregivers did not have such realizations. In the last few decades, many NHs have created dementia special care units (SCU), which are specially designed to provide dementia-specific services (Cadigan et al., 2012; Reimer et al., 2004). Clarifying the possible enhanced role of SCU-dementia in NHs having a high number of dementia residents (i.e., high-dementia group) will also help us to understand the determinants of quality of NH care for those with dementia.

Although many NH residents have psychiatric and behavioral problems, most residents who need specific mental health assistance do not receive them (Bartels et al., 2002). The President's New Freedom Commission on Mental Health was established to examine the quality and effectiveness of the nation's mental health service delivery system, to determine the needs and barriers to services, and to provide necessary recommendations to improve the mental health system. Bartels and colleagues (2002) reviewed the extrinsic mental health services in NHs and found that the routine presence of qualified mental health clinicians in the NH, and interdisciplinary and multidimensional services were the preferred practices in NHs. The best effective interventions need to combine innovative approaches to training and education with consultation and feedback on clinical practices (Bartels et al., 2002). It is also essential to carry out well-designed interventions and research to identify which psychiatric treatments are most effective in the NHs and how they should be individualized to increase consumers' satisfaction, reducing the number of consumer complaints.

Several studies on residents' QOL found that facility-level factors, such as profit status, chain-affiliation, location e.g., urban/rural, demarcate high- and low-quality facilities depending on residents' self-reports (Kane et al., 2004). The distribution of dementia residents across NHs varies by type of ownership (for-profit, not-for-profit, and government), size (number of beds), and many other factors (Blackburn et al., 2018; Gaugler et al., 2014). Staffing levels are generally associated with higher NH quality (Hyer et al., 2011) and thus may be linked to quality concerns in high-dementia NHs. This quality measure would help identify whether NHs differ in their staffing levels, such as registered nurse (RNs), license practical nurse (LPNs), and certified nursing assistant (CNAs), which affects the number of complaints received by NHs. Increasing

the number of nursing staff in NHs might directly improve residents' health outcomes, and NHs are more likely to meet regulatory standards (Bowblis, 2011).

Furthermore, during the mid-2000s, the risk of antipsychotic use was evident; it was established that unnecessary antipsychotic use could enhance the risk of mortality and other serious adverse effects in residents, especially in persons with dementia (Lucas & Bowblis, 2017). The introduction of multidimensional strategies from CMS, during the period 2012-13, to reduce unnecessary antipsychotic medications in NHs, especially their extensive use to manage behavioral symptoms of dementia, was a pioneer initiative in maintaining residents' QOL. Using the CASPER dataset, Lucas and Bowblis (2017) examined whether any changes took place, after CMS's antipsychotic initiative, regarding the number of deficiency citations issued and the prevalence of antipsychotic use associated with the CMS strategies. It was evident that those strategies were associated with a satisfactory and significant reduction in antipsychotic usage among NH residents (Lucas & Bowblis, 2017). The authors also found that the proportion of inspections resulting in deficiency citations for unnecessary antipsychotic use (F329) was apparently unchanged in the initial period of the study. However, it showed a dramatic drop of 1.62 percentage points following the partnership launched. It was also evident that the reduction in antipsychotic use was higher in NHs with a higher proportion of residents with dementia (i.e., high-dementia facilities) compared to that with a lower proportion of residents with dementia (i.e., low-dementia facilities). However, it should be noted that earlier studies also found that healthcare disparities in the US follow a common pattern regarding NH care (Rahman & Foster, 2015). Therefore, racial distribution in the surrounding area might also be associated with the complaint pattern of NHs in a particular area.

Investigations of resident complaints play a crucial role in understanding NH quality (McGregor, 2011). These health inspections are evaluated based on scores depending on deficiency citations generated either from regular survey investigations done by government surveyors or anytime complaint-based surveys reported by the consumers (Hansen et al., 2017). Further, the effectiveness of complaints depends on multiple factors; for instance, complaints can be lodged by parties other than the residents, especially for the residents with dementia. Therefore, they may contain mixed resident and proxy perspectives (Stevenson, 2006). However, as regular recertification surveys are carried out to maintain a uniform and consistent standard of care, many scholars and policymakers consider complaints to be an important alternate indicator of NH quality (Grabowski, 2005; McGregor, 2011). Quality of NH care is determined based on both the quantity and quality of survey-related deficiencies (Arling et al., 2007; Castle, 2011). When a deficiency is identified, a NH receives a citation and needs to respond accordingly to correct it (Castle, 2011). The consumers, i.e., residents and family members, are particularly sensitive to identify different gaps in NH care delivery systems from a different perspective, which may not be recognized by regular survey investigations (Levtzion-Korach, 2010; Reader et al., 2014).

Objective

In summary, the majority of NH residents have Alzheimer's disease and related dementia. However, the relationship between dementia prevalence and the quality of NH care is unclear. In addition, there is a dearth of studies investigating the resident complaint pattern based on the proportion of dementia residents in the NHs. The current study compares the characteristics of NHs having a higher proportion of residents with dementia (i.e., high-dementia NHs) with those characteristics of NHs having a lower proportion of residents with dementia

(i.e., low-dementia NHs) to identify the factors responsible for maintaining QOL indicated by complaint patterns from consumers' perspectives. The objective of the current study is to understand the association of NH characteristics (both facility and resident characteristics, including the proportion of residents with dementia) with the prevalence of NH complaints and substantiated complaints as an indicator of residents' QOC and QOL. Based on the proportion of residents with dementia, this study will identify the highest and lowest deciles of NHs across ten CMS regions and compare the complaint pattern as a unique way to assess quality in these NHs.

Research Questions

1. Does the proportion of residents with dementia (e.g., high-dementia vs. low-dementia NHs) impact the number of complaints and substantiated complaints while controlling for covariates (i.e., facility characteristics, staffing, and other resident characteristics of NHs)?

Hypotheses

Hypothesis 1. After controlling for covariates, NHs with a lower proportion of residents with dementia (i.e., low-dementia NHs) will have higher numbers of total complaints and substantiated complaints than NHs with a higher proportion of residents with dementia (i.e., high-dementia NHs), because residents with dementia are unable to communicate their needs and complaints.

Hypothesis 2a. Consistent with prior studies, a higher number of complaints and substantiated complaints will be associated with other facility characteristics, such as for-profit status, chain affiliation, being part of CCRC, higher occupancy, not having SCU-dementia, and having a higher proportion of Medicare residents, because NHs with those characteristics tend to have more complaints compared to other NHs.

Hypothesis 2b. Less staffing per resident will be associated with a higher number of complaints and a higher number of substantiated complaints, as a higher staffing level is associated with less resident complaints.

Hypothesis 2c. Other resident characteristics, such as admission demographics (racial composition: Black/Hispanic/Asian), will be associated with a higher number of complaints and substantiated complaints, because a higher number of ethnic residents are associated with a higher number of complaints.

Method

Study Design

Based on complaint investigations in 2017 (between November 28, 2016, and November 27, 2017), the current study evaluates the QOC received by the residents in NHs nationwide. Complaint data was extracted from the ASPEN Complaints/Incidents Tracking System (ACTS) and merged with data from four other sources: The Certification and Survey Provider Enhanced Reports (CASPER), the Minimum Data Set (MDS), the Area Health Resource File (AHRF), and zip-code level rural-urban codes (RUCA) in 2017. This study uses the CASPER dataset generated from the routine annual surveys combined with data generated from the complaint surveys conducted by the state survey agencies. The present study examines the facility and resident characteristics of high vs. low dementia NHs related to complaints (facility level aggregated outcome).

Data Collection

The CASPER dataset maintains records of all certified skilled nursing facilities in the US (approx. 15,500). Facilities self-report about provider details, resident's information, and staffing

status. However, state survey agencies report the deficiency status based on both annual survey findings (carried out every 9 to 15 months) and complaint investigations (conducted at any point in time). Both the datasets, either generated from the routine annual surveys or the complaint surveys, contain a facility Medicare provider number (unique ID) that will be used for merging the datasets. The Unique ID was used for the similar purpose in other studies also (for example, Decker & Castle, 2011; Hansen et al., 2017; Wagner et al., 2015).

Dependent Variable

The number of complaints and substantiated complaints (facility level outcome as count variable).

Key Independent Variable

High and Low-dementia Nursing Homes. The current study uses the proportion of residents with dementia as the independent variable. As part of defining NHs having different proportions of residents with dementia, this study calculated the percentage of residents identified in CASPER as having dementia (F111 from CMS Form 672) divided by the total number of residents (F78 from CMS Form 672). The residents diagnosed as having dementia included Lewy-Body, vascular or multi-infarct, mixed, frontotemporal such as Pick's disease, and dementia related to Parkinson's or Creutzfeldt-Jakob diseases, or Alzheimer's disease. Residents having other mental disorders, such as depression or behavioral healthcare needs, were not included. The study then demarcated NHs in the top and bottom deciles based on the proportion of residents with dementia as "high-dementia" (>66.67%) and "low-dementia" (≤23.23%) NHs, respectively.

Covariates

Facility-level covariates included facility size (# beds), profit status (for-profit, not for-profit, or government), chain membership status (yes/no), whether part of a continuing care retirement community, i.e., CCRC (yes/no), occupancy rate (the total number of resident census divided by the total number of beds), having dementia special care unit (yes/no), payers' mix status (Medicare, Medicaid, and other), staffing levels (full-time, part-time, or contract-based staff of various categories including nursing [RNs, LPNs, CNAs, and director of nursing], social services [social workers and other social services combined], and activities staff [therapeutic recreation and activities staff combined]), and medical team structure (medical director, full medical team, physician extender). Staffing levels were measured by HPRD, i.e., assuming each full-time equivalent staff (including part-time and contract staff) worked 70 hours per 14-day period (or 5 hours per day x 14 days) and dividing by total number of residents (Konetzka et al., 2008). Resident-level covariates included the admission demographics, i.e., the racial/ethnic composition (e.g., Black, Hispanic, or Asian) of residents.

Statistical Analyses

Frequency and descriptive analyses were performed for NHs across the country; summary statistics and bivariate statistical tests were used to compare high and low-dementia NHs on facility characteristics and complaint patterns. Next, a negative binomial regression model was carried out. This study analyzed whether the complaint patterns (the dependent variable), i.e., number of complaints and substantiated complaints (in the year 2017), were associated with the proportion of residents with dementia in NHs, i.e., high/low dementia NHs (independent variables), while controlling for covariates (facility- and resident-characteristics). As complaints are a nonnegative count variable, a Poisson regression model might have been

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useful; however, the analysis may have yielded a substantial number of zeros and right skewness

of the distribution. In this analysis, a negative binomial regression model was used to examine

the relationship between the number of complaints and the proportion of residents with dementia.

A negative binomial model was used because of the overdispersion of complaints data (whose

sample variance exceeds the sample mean). A zero-inflated negative binomial regression (ZINB)

was useful to overcome problems associated with zero-inflated data in the above model. We

reported average marginal effects (AME) and 95% confidence intervals (CI). All analyses were

carried out using SAS Version 9.4 (SAS Institute, Inc., Cary, NC).

Results

Distribution of Dementia

First, we excluded the NHs (n=254) having no dementia residents, which resulted in

15,245 NHs remaining in the final dataset. NHs were categorized, including one group whose

proportion of residents with dementia was in the top decile, i.e., high-dementia NHs (N = 1,473)

and another group whose proportion of dementia residents was in the lowest decile (i.e., low-

dementia NHs (N=1,524). NHs categorized under the first/lowest decile contained ≤23.23%

dementia residents and those in the tenth/top decile contained >66.67% dementia residents. Just a

small percentage of NHs (0.28%; n = 43) reported 100% of their residents as having dementia.

Figure 4.1 represents two histograms showing the skewed distribution of dementia in

NHs with different SCU statuses (yes=1, no=0); the x-axis represents the proportion of residents

with dementia, and the y-axis represents the number of NHs. Most NHs report that between 23%

to 66% of their residents have dementia. The low-dementia group (n = 1,524) is almost

uniformly distributed irrespective of SCU status, from having very few residents with dementia

to approximately 23% of residents with dementia. However, among the skewed high-dementia group (n = 1,473), most NHs reported 66-80% of their residents as having dementia, and the NHs with SCU show more skewness than those without SCU, indicating a possible positive association of SCU-dementia with residents having dementia. Figure 2 shows the distribution pattern of low- and high-dementia NHs across ten CMS regions. The findings suggest that majority of the low-dementia NHs were distributed in San Francisco, Chicago, and Atlanta regions. In contrast, the majority of the high-dementia NHs were distributed in Chicago, Dallas, and the Atlanta region.

Facility Characteristics of Low- and High-dementia Facilities

Table 4.1 shows descriptive statistics for all NHs, including low-dementia and high-dementia groups. Regarding organizational structure variables that are found to be statistically different, high-dementia NHs were more likely to be for-profit, part of a CCRC, have a SCU-dementia, and less likely to be part of a chain facility. Among the payer-mix pattern, high-dementia NHs consisted of a more substantial proportion of Medicaid-paying and Private- (and other) paying residents but had a lesser proportion of Medicare-paying residents. High-dementia NHs revealed lower staffing levels for administrative nurses, RNs, LPNs, and social workers, while they had higher staffing levels for CNAs and activities staff. Furthermore, regarding medical team structure, high-dementia NHs had a higher percentage in the category of the medical director only, but a lesser proportion of full medical teams. Table 4.1 also displays the racial composition of admitted residents. High-dementia NHs were associated with a lesser proportion of Black, Hispanic, and Asian population.

Table 4.1 also reports the descriptive statistics regarding complaint patterns. High-dementia NHs show a lesser percentage in both the total number of complaints and number of

complaints with at least one substantiated allegation in 3 consecutive years, i.e., 2017, 2016, and 2015. Table 4.2 shows the complaint pattern based on the presence of SCU for dementia over three consecutive years (2015-17). Though the prevalence of complaints showed an increasing trend over the years, the current study found a significantly lower percentage of complaints in high-dementia NHs. In addition, the proportion of complaints in both high- and low-dementia NHs was higher in those having SCU-dementia compared to those without SCU-dementia.

Table 4.3 shows the results of the negative binomial regression model, where the complaint patterns, i.e., number of complaints and substantiated complaints (in the year 2017), were used as the dependent variable. We analyzed the association of complaint count with the proportion of residents with dementia in NHs (facility characteristics), i.e., high/low dementia NHs (independent variables), while controlling for other variables. Using NHs in the middle deciles as reference, the negative binomial regression model revealed a significant association between having a low proportion of dementia residents and higher numbers of total complaints (p<.001) and substantiated complaints (p<.001). The result indicated that low-dementia NHs had both a higher number of complaints (AME = 0.18; 95% CI: 0.11, 0.24) and substantiated complaints (AME = 0.27; 95% CI: 0.19, 0.36). Therefore, low-dementia NHs have a probability of having complaints that is about 11-24% higher and substantiated complaints that is about 19-36% higher than the NHs in the middle deciles. In contrast, high-dementia NH had (p=.001) a lower number of substantiated complaints (AME = -0.14; 95% CI: -0.23, -0.06), but there was no difference in the number of total complaints (AME = -0.06; 95% CI: -0.13, 0.01). Therefore, high-dementia NHs have a probability of having substantiated complaints that is about 6-23% lower than the NHs in the middle deciles.

The results also revealed that a higher proportion of Black, Hispanic, and Asian residents, higher number of Medicaid-paying residents, the presence of the full medical team, and lower staffing levels for RNs were statistically significant predictors for both the higher number of complaints and substantiated complaints, whereas lower staffing levels for CNAs and activity staff and a higher staffing level of LPNs predicted a higher number of complaints and a higher staffing level of activities staff predicts a higher number of substantiated complaints. Moreover, organizational characteristics, such as for-profit status, being part of chain facility, having a higher number of beds, and lower occupancy rate were found as statistically significant predictors for both the higher number of complaints and substantiated complaints. However, the presence of SCU-dementia was weakly associated with the number of substantiated complaints and not associated with the number of total complaints.

Discussion

The current study compares the facility characteristics, staffing, and complaint pattern of the top and bottom deciles of NHs based on the percentage of residents having dementia across the country. In support of hypothesis 1, low-dementia NHs were found to have a significantly higher probability of having complaints and substantiated complaints than the NHs in the middle deciles (i.e., NHs with a higher proportion of residents with dementia). Also, the current study found that having an SCU-dementia was associated with a higher number of residents' complaints compared to not having an SCU; however, the number of complaints was significantly lower in high-dementia NHs. In at least partial support of hypotheses 2a, 2b, 2c, the findings suggest that top decile, i.e., high-dementia NHs, reveal lower QOC on some metrics. High-dementia NHs were found to have a higher Medicaid-paying resident census, were more likely to be not-for-profit and government, and have an SCU for dementia, and were less likely

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to be part of a chain. In most of the parameters, staffing was found to be lower across the high-dementia NHs. Regarding the racial pattern of admitted residents, the Black, Hispanic, and Asian populations were found to be smaller in high-dementia NH compared to low-dementia NHs.

Bivariate results revealed that high-dementia NHs had a higher percentage of Medicaid-paying residents, were less likely to be for-profit and chain-affiliated and had lower staffing hours. Lack of homogeneity in the state regulations defining SCUs has created confusion among care providers. Therefore, it is still unclear whether NHs equipped with SCUs are providing optimum care in maintaining the QOL of residents with dementia (Blackburn et al., 2018). Furthermore, the majority of NHs in the US are chain-affiliated (Blackburn et al., 2018). Our findings suggest high-dementia NHs had a higher number of SCUs for dementia; however, a lower number of high-dementia NHs were identified as a chain facility organization. As chain affiliated NHs share the same organizational policies, they may be better able to provide consistent, high-quality care, compared to independent NHs. Maintaining inter-organizational quality in independent NHs may be more difficult because there is less opportunity to compare facilities sharing similar characteristics and to share resources. On the other hand, earlier studies revealed that chain affiliated NHs were associated with more deficiencies, higher costs, and lower ratings as compared to independent NHs (Blackburn et al., 2018; You et al., 2016). The current findings suggest that most low-dementia NHs are chain-affiliated, thereby providing one possible explanation for why low-dementia NHs have a higher number of complaints.

High-dementia NHs had a significantly higher number of activities staff. This result corroborates a similar finding revealed in a study by Bowblis and Roberts (2020) showing adjustments in activities and other ancillary staff to be beneficial for improving NH quality. However, in other staffing parameters, the current study found that high-dementia NHs had

lower staffing hours. As lower staffing hours were usually associated with a higher number of complaints (Cadigan et al., 2012; Hyer et al., 2011), in this context, the current finding seems inherently contradictory. However, it is possible that debilitating cognitive functional status is associated with the lower number of complaints found in the NHs with higher number of residents with dementia. Cognitively impaired residents may be unable to organize their thinking/behavior in a way to systematically register complaints, which may be a possible explanation of why the current study found high-dementia NHs to have lesser number of complaints than low-dementia NHs.

Our study also found that the high-dementia NHs had a lower number of ethnic, i.e., Black, Hispanic, and Asian, population. While choosing a NH, many residents prefer to associate with residents of their same race (Rahman & Foster, 2015). It is well documented that disparities in healthcare in the United States follow a common pattern regarding NH care (Rahman & Foster, 2015). Some studies also revealed that Blacks are more likely to receive more mediocre QOC because of the unavailability of better resources (Rahman & Foster, 2015). This trend may be an explanation of our study findings that revealed the association of minority populations with low-dementia NHs which had higher number of complaints (both total and substantiated).

The current study also reported a specific geographic distribution of high and low dementia NHs suggesting that high-dementia NHs concentrate in the Eastern half of the United States, especially in Chicago, Atlanta, and Dallas CMS regions (see Figure 4.2). On the other hand, low-dementia NHs were scattered nationwide without having any specific concentration pattern. When older adults suffer from moderate to severe cognitive impairment/dementia, they are more likely to be relocated to a NH because of a dearth of resources in the home environment (Luppa et al., 2010). We assume that the above geographic variations may be due to the

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availability of informal caregivers, formal home and community-based services accessible for older adults having dementia (Luppa et al., 2010), or differences in Medicaid shortfalls (American Health Care Association, 2018). There might be some other factors such as low self-rated health status, prior NH placement, and a high number of prescriptions (Luppa et al., 2010) that could affect the distribution pattern. Future research is necessary to understand the reasons for the distribution pattern of high-dementia NHs in certain CMS regions in the United States.

Person-centered care (PCC) is a relatively new approach to care that requires the involvement of care partners on the one hand and active participation of the residents themselves on the other. In PCC, personal autonomy, choice, comfort and dignity, and purposeful living are foregrounded (Desai et al., 2017; Fazio et al., 2018). As a result, the capacity of residents with dementia to direct their daily routine is significantly reduced. Also, every individual is different in their physical characters, in behavioral and psychological symptoms, and the family and social environments where they lived (Molony et al., 2018). Therefore, the evaluation of every resident is unique, and the care approach should be individualized depending on the person's needs and living environment to provide a good QOC (Takeda et al., 2012). Though in a practical scenario, individualized care is not always possible, rather to be more specific, not maintained, in many NHs. However, to allow NHs to better understand the needs of residents with dementia to provide better care, some changes in policies need to be made at the state and federal level. These changes may include higher Medicaid reimbursement, incentives to increase direct-care staffing, and awareness generation among the general population. Recently, CMS enacted new regulations to increase PCC approaches, with more focus on behavioral health services to improve NH's QOC (§483.40 Behavioral Health Services; CMS, 2017). Furthermore, NHs also

need to develop regular and continuous training programs, competency-based assessments of staff with monitoring to provide improved QOC for the residents with dementia.

Limitations

Although the current study uncovers a new horizon regarding the quality comparison of NHs, it has some limitations. First, the CASPER dataset only contains quantitative information on staffing status and does not display any qualitative information about the staff, i.e., experience and training (except degree), which may be relevant to measure the quality of NH care. Second, we set our cut-off values for low-dementia and high-dementia NHs on our own without guidance from the limited literature. However, analyses using the 25th percentile as cut-offs for high- and low-dementia NHs and using the proportion of residents with dementia as a continuous measure found similar results. Third, in the CASPER dataset, facilities self-report about provider details, staffing patterns, and resident's information; there could be a mistake in reporting. However, we considered the data reliable enough during our analysis. Finally, for logistic regression purposes, we dichotomized all the variables arbitrarily, which may affect our findings.

Conclusions

The current study examined how the number of complaints is related to both residents' cognitive impairment and facility characteristics and how the proportion of residents having dementia in NHs is significantly associated with the quality and characteristics of NHs. Although it could possibly be related to the fact that low-dementia NHs are made up of residents more likely to be able to register complaints, the association of low-dementia NHs with a higher number of complaints also suggests there may be a lack of quality on some metrics for these NHs. The association of having a high proportion of residents with dementia and lower quality in

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some aspects also suggests there is a need for a high-quality dementia-care workforce in NHs,

especially in respect to the presence of a dementia-SCU. Future research is necessary to

understand the policy and practice implications, including the need for a more uniform complaint
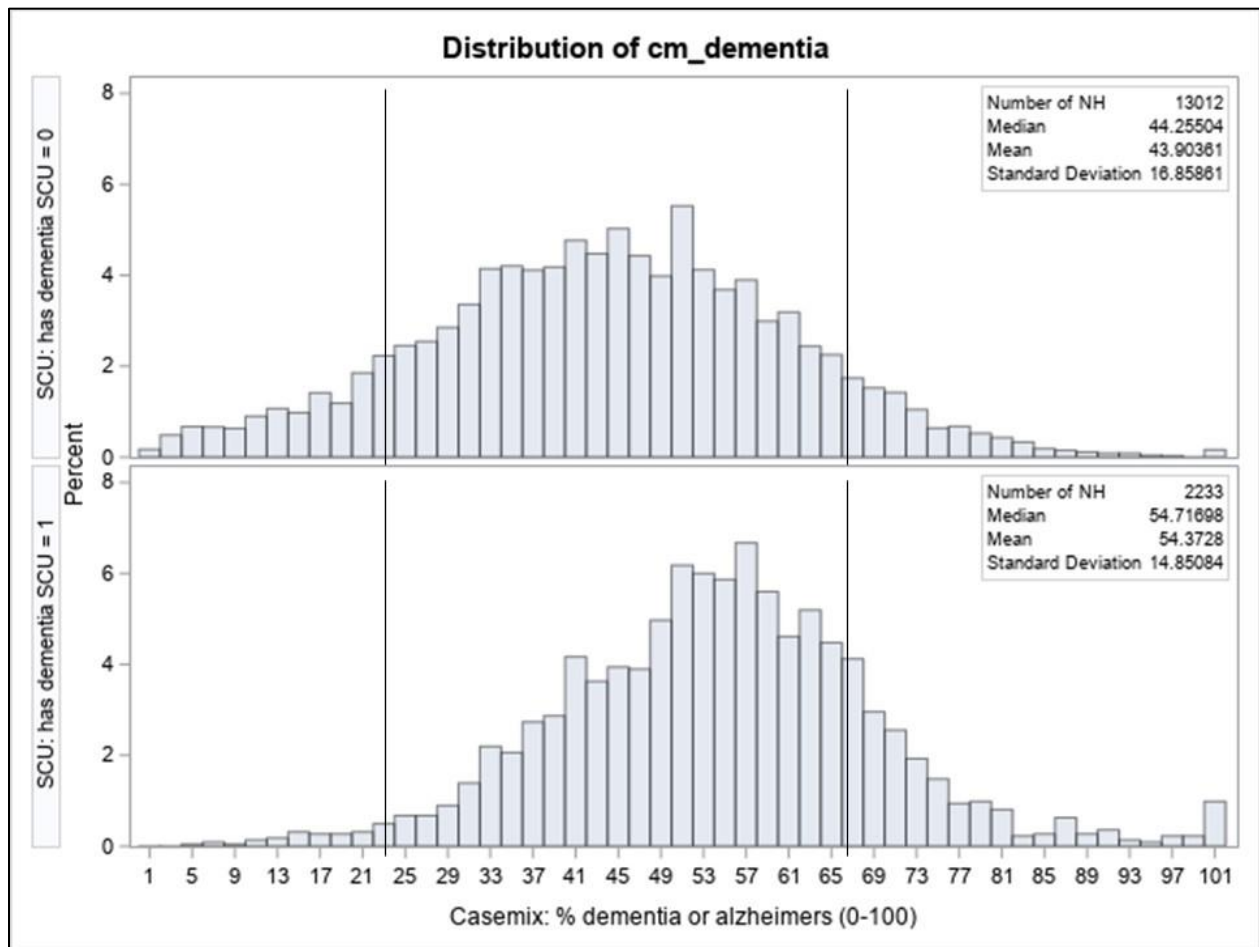
investigation process across the country.

Figure 4.1. *Histogram showing the proportion of dementia residents in NHs with different SCU*
status

Note. N = 15,245. Low-dementia = ~23.23%. High-dementia = ~66.67%. There are 50 bins
(bars), each representing 2% from 0% to 100%. Low-dementia and high-dementia NHs
are to the left and right of the two black vertical lines, respectively.

Table 4.1. *Facility characteristics of US nursing homes by low- and high-dementia status (2017)*

	All Facilities (N=15,245)	Low-dementia Facilities (≤23.23%; N=1,524)	High-dementia Facilities (>66.67%; N=1,473)
Organizational Structure (Yes/No)			
For-Profit Facility	70.06%	75.52%	60.76% ***
Not-For-Profit Facility	23.09%	20.21%	28.11% ***
Government Facility	6.85%	4.27%	11.13% *
Chain-Facility	58.35%	60.37%	51.19% ***
Part of a CCRC	10.50%	7.87%	11.34% ***
Size (# beds)	103.54 (62.41)	94.43 (54.48)	109.32 (61.62) ***
Occupancy Rate (% out of 100)	79.60% (15.81)	77.89% (17.49)	81.28% (16.22) ***
Dementia Special Care Unit	14.65%	2.56%	26.41% ***
Payer-Mix (% Residents)			
Medicare	13.93% (13.59)	26.51% (25.53)	8.17% (7.88) ***
Medicaid	59.57% (23.37)	47.78% (33.39)	63.69% (22.18) ***
Private Pay and Other	26.50% (18.93)	25.71% (20.34)	28.14% (21.42) ***
Staffing Characteristics (HPRD)			
Administrative registered nurses	0.35 (0.72)	0.44 (0.34)	0.32 (0.20) ***
Registered nurses	0.50 (0.63)	0.85 (1.06)	0.43 (0.32) ***
Licensed practical nurses	0.88 (0.98)	1.04 (1.05)	0.83 (0.41) ***
Certified nursing assistants	2.42 (1.22)	2.32 (1.31)	2.46 (1.02) ***
Social worker	0.08 (0.18)	0.10 (0.13)	0.07 (0.10) ***
Activities staff	0.20 (0.27)	0.19 (0.19)	0.23 (0.17) ***
Medical Team Structure (Yes/No)			
Medical Director Only	23.95%	22.72%	26.00%
Physician Extender Only	1.90%	1.51%	1.90%
Full Medical Team	67.02%	67.52%	63.20%
No Medical Team	8.36%	7.02%	8.89%
Admission (% racial pattern)			
Black	11.73 (17.97)	14.52 (19.43)	8.54 (15.18) ***
Hispanic	4.54 (10.82)	6.24 (11.00)	6.12 (15.13) ***
Asian	1.58 (6.53)	2.25 (5.84)	1.96 (9.79) ***
Complaint pattern			
Number of complaints (2017)	6.76 (10.01)	7.70 (12.40)	5.86 (9.08) ***
Number of complaints (2017) with at least one substantiated allegation	2.11 (4.00)	2.75 (5.74)	1.70 (4.40) ***

Note. * p < .05; ** p < .01; *** p < .001 (level of statistical significance between low-dementia and high-dementia facilities).

HPRD = hours per resident per day.

Values indicate mean (standard deviation) unless otherwise indicated.

Table 4.2. *Complaint pattern of US nursing homes by low- and high-dementia status based on SCU in 2017*

Number of Complaints	All Facilities (N=15,245)		Low-dementia Facilities (≤23.23%; N=1,524)		High-dementia Facilities (>66.67%; N=1,473)	
	with SCU-D (n=2,233)	No SCU-D (n=13,012)	with SCU-D (n=39)	No SCU-D (n=1,485)	with SCU-D (n=389)	No SCU-D (n=1,084)
Complaints (2017)	6.74 (9.98)	6.77 (10.02)	12.46 (17.93)	7.57 (12.22)	5.90 (9.89)*	5.85 (9.64)*
Complaints (2016)	6.29 (8.97)	6.27 (9.14)	11.08 (13.34)	7.06 (11.20)	5.38 (9.03)*	5.28 (8.72)*
Complaints (2015)	6.06 (9.48)	6.15 (9.89)	10.51 (12.45)	6.80 (11.92)	5.23 (5.59)*	4.98 97.83)*
Complaints (2017) with at least one substantiated allegation	2.21 (4.14)	2.10 (3.98)	5.38 (9.26)	2.69 (5.61)	2.09 (5.12)*	1.56 (4.11)*
Complaints (2016) with at least one substantiated allegation	2.09 (3.67)	2.00 (3.89)	4.23 (6.62)	2.52 (5.81)	2.07 (4.83)*	1.46 (4.22)*
Complaints (2015) with at least one substantiated allegation	1.95 (3.63)	1.86 (3.60)	4.00 (5.27)	2.21 (7.46)	1.97 (5.22)*	1.34 (2.77)*

Note. * indicates statistically significant associations at $p < .001$ between low- and High-dementia facilities.

Table 4.3. *Negative binomial regression model showing associations between the number of complaints and the number of complaints with at least one substantiated allegation (2017) and facility characteristics (N=15,245)*

Variables	No. of complaints (2017)		No. of complaints with at least one subst. allegation (2017)	
	AME (SE)	95% CI	AME (SE)	95% CI
Organizational Structure (Yes/No)				
High-dementia NHs	-0.06 (0.03)	(-0.13, 0.01)	-0.14 (0.04)**	(-0.23, -0.06)
Low-dementia NHs	0.18 (0.03)***	(0.11, 0.24)	0.27 (0.04)***	(0.19, 0.36)
For-Profit Facility	0.29 (0.04)***	(0.21, 0.37)	0.19 (0.05)***	(0.09, 0.29)
Not For-Profit Facility	-0.26 (0.04)***	(-0.35, -0.17)	-0.32 (0.06)***	(-0.43, -0.21)
Chain-Facility	0.17 (0.02)***	(0.13, 0.21)	0.15 (0.03)***	(0.10, 0.20)
Part of a CCRC	0.08 (0.04)*	(0.01, 0.16)	0.12 (0.05)*	(0.02, 0.21)
Size (# beds)	0.01 (0.00)***	(0.01, 0.01)	0.00 (0.00)***	(0.00, 0.01)
Occupancy Rate (% out of 100)	-0.01 (0.00)***	(-0.01, 0.00)	0.00 (0.00)***	(-0.01, 0.00)
Dementia Special Care Unit	0.03 (0.03)	(-0.02, 0.09)	0.09 (0.04)*	(0.02, 0.17)
Payer-Mix (% Residents)				
Medicaid	0.00 (0.00)***	(0.00, 0.01)	0.01 (0.00)***	(0.00, 0.01)
Medicare	0.00 (0.00)	(-0.01, 0.00)	0.00 (0.00)	(-0.01, 0.00)
Staffing Characteristics (HPRD)				
Administrative registered nurses	0.02 (0.03)	(-0.04, 0.09)	-0.02 (0.03)	(-0.08, 0.05)
Registered nurses	-0.23 (0.03)***	(-0.28, -0.18)	-0.22 (0.04)***	(-0.29, -0.15)
Licensed practical nurses	0.08 (0.02)***	(0.04, 0.11)	0.05 (0.02)*	(0.01, 0.09)
Certified nursing assistants	-0.03 (0.01)**	(-0.05, -0.01)	-0.02 (0.01)	(-0.05, 0.00)
Social worker	0.21 (0.14)	(-0.06, 0.48)	-0.50 (0.16)**	(-0.81, -0.19)
Activities staff	-0.20 (0.07)**	(-0.33, -0.07)	0.56 (0.09)***	(0.38, 0.75)
Medical Team Structure (Yes/No)				
Medical Director Only	0.01 (0.04)	(-0.06, 0.09)	0.02 (0.05)	(-0.08, 0.13)
Full Medical Team	0.14 (0.04)***	(0.07, 0.21)	0.13 (0.05)**	(0.03, 0.22)
Physician Extender Only	0.03 (0.08)	(-0.13, 0.18)	0.00 (0.10)	(-0.20, 0.20)
Admission (% racial pattern)				
Black	0.01 (0.00)***	(0.00, 0.01)	0.01 (0.00)***	(0.00, 0.01)
Hispanic	0.02 (0.00)***	(0.02, 0.02)	0.02 (0.00)***	(0.01, 0.02)
Asian	0.01 (0.00)***	(0.00, 0.01)	0.02 (0.00)***	(0.02, 0.03)

Note. AME = average marginal effect; SE = standard error; CI = confidence interval; HPRD = hours per resident per day.

*p<.05; **p<.01; ***p<.001.

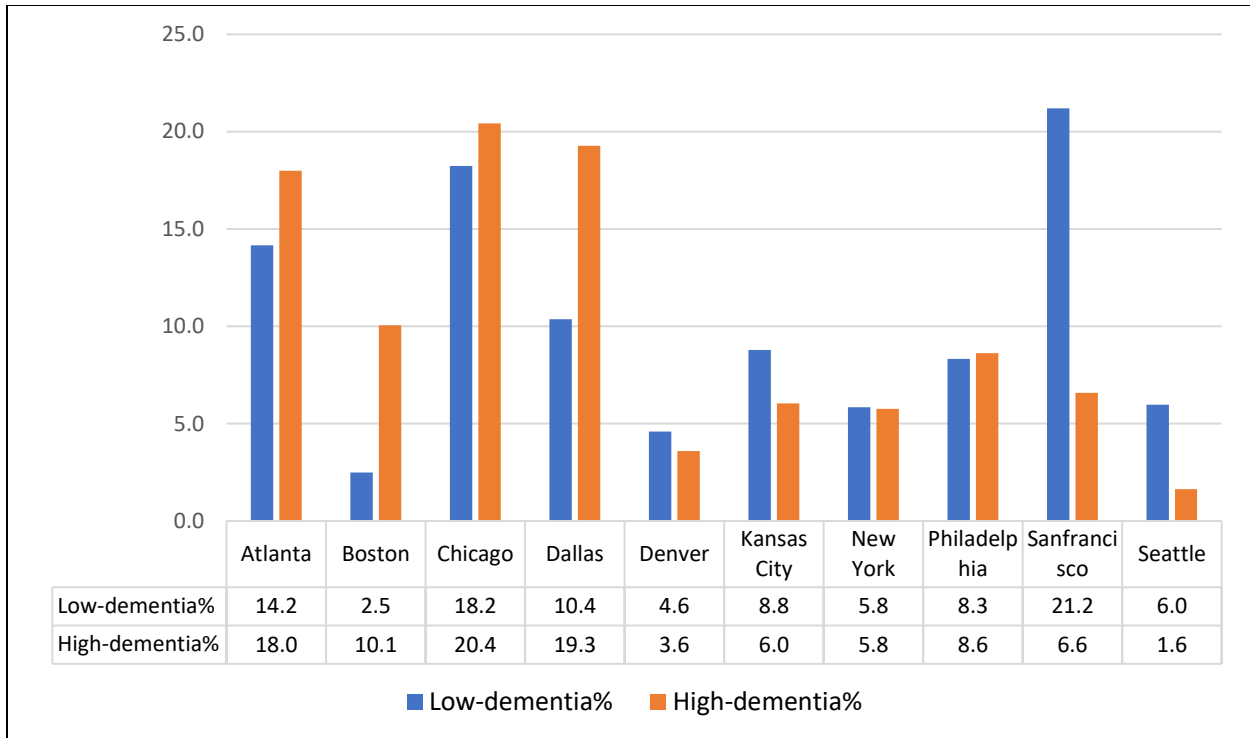|	Atlanta	Boston	Chicago	Dallas	Denver	Kansas City	New York	Philadelphia	Sanfrancisco	Seattle
Low-dementia%	14.2	2.5	18.2	10.4	4.6	8.8	5.8	8.3	21.2	6.0
High-dementia%	18.0	10.1	20.4	19.3	3.6	6.0	5.8	8.6	6.6	1.6

■ Low-dementia%   ■ High-dementia%

Figure 4.2. *Distribution of Low- and High-dementia NHs across ten CMS regions*

CHAPTER FIVE:

DISCUSSION

The current studies revealed some vital understanding related to the current nursing home (NH) complaint process that may impact quality of care (QOC). Consistent with our hypotheses, the first study revealed that compared to previous years (1998-2002 and 2007-2011), there was a higher prevalence of overall complaints, substantiated complaints, allegations, and deficiency citations in recent years (i.e., 2013-2017), with a state-wide and the Center for Medicare and Medicaid Services (CMS) region-wide variability in the prevalence of overall complaints, substantiated complaints, allegations, and deficiency citations. Consistent with our hypotheses, the second study found that two-thirds of the substantiated complaints generated at least one deficiency citation, and a fifth of substantiated complaints generated four or more deficiency citations. Of the deficiency citations resulting from complaints, most were categorized as either the QOC or within the category of resident behavior and facility practices that includes abuse and neglect. However, one-third of substantiated complaints led to no citations, many of which were substantiated abuse and neglect complaints. Most importantly, one-fifth of complaints categorized as "immediate jeopardy" at intake resulted in no deficiency citations. The third study revealed that high-dementia NHs had higher percentages of Medicaid-paying residents, were less likely to be for-profit and chain-affiliated, had lower staffing hours and lower percentages of ethnic, i.e., Black, Hispanic, and Asian, residents. Consistent with our hypothesis, this study also found that having a low proportion of dementia residents was significantly associated with

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higher numbers of total complaints and substantiated complaints. On the contrary, a high

proportion of dementia residents was significantly associated with lower numbers of

substantiated complaints.

The current study evaluated consumer complaints as the voice of individuals that point

out certain neglected areas of assuring QOC in NHs. The study evaluated the current pattern of

NH complaints, why it matters, and what allegation leads to deficiency and why it is important.

Substantiated complaints often result in a subsequent investigation and potentially receive a

deficiency citation. This is the first study to estimate the prevalence of consumer complaints,

complaint allegations, their rates of substantiation, and deficiency citations over five years

period. Although our first study provided an updated information on the rising prevalence of

consumer complaints, multiple allegations within a complaint create more confusion to precisely

track the gaps in the NH care. Despite a significant increase in the number of consumer

complaints in recent years (Liu et al., 2019), limited studies have been conducted evaluating

resident complaints thoroughly. Also, none of them focused on assessing which allegation, at the

point of intake, gives rise to which deficiency. However, the alignment of consumers'

perspectives with inspectors' findings allows us to better understand the NH care.

As a steppingstone, the first study's outcome leads to the objectives of our second study.

A specific allegation in a complaint can be tracked to a deficiency citation only when the

complaint contains only one allegation that is substantiated. This is the first study to track single

substantiated allegation complaints to deficiency citations. This knowledge is also necessary in

holding NHs accountable for their quality of service to make sure the QOC provided is ongoing,

standard, and the best possible one. Therefore, complaint investigation unveils more about the

process; however, it should be uniform throughout the investigation process to maintain federal

standards across the country. Our second study provided guidance on the association of substantiated complaints and deficiency citations that points toward the lack of optimal quality of services provided by NHs. Considering the outcome of the second study as a steppingstone, our third study assessed the relations between the number of complaints and the facility and resident characteristics in a NH to evaluate what matters for residents in choosing a living option for maintaining a good quality of life (QOL). Because most NHs accommodate a large number of residents with dementia, the third study compared the QOC provided in NHs having different proportions of residents with dementia.

Stevenson (2006) reported that 35% of NHs, across the country, had no complaints during the study period (1998-2002), and in a more recent study, Hansen et al. (2017) found that about 23% of NHs had zero complaints annually, on average, during the study period (2007-2012). These results show the reducing trend of NHs that remain complaint-free. Although zero-complaint may be a sign of good QOC, it may raise many questions on the complaint process. As complaints are a proxy measure to investigate NH quality, their absence does not guarantee good QOC. While examining low-complaint NHs, Stevenson (2006) found that other than zero-complaint NHs, half had ≤1 complaint, two-thirds had ≤2, and four-fifths had ≤5 in a specified survey period. In this context, our study found an even lower number of NHs with zero complaints (20%). However, this can also bring challenges to determine the actual number of complaints. In many instances, either consumers do not lodge complaints even though dissatisfied, or SSAs underreport complaints. Scholars have identified several reasons, including a general high level of satisfaction with the QOC, a lack of consumers' ignorance about the complex complaint process, inability to complain due to cognitive decline, fear of retaliation from staff (Grabowski, 2005).

Stevenson (2005) suggested that restricting complaints information to only deficiencies might provide essential information; however, some useful information might be lost by looking only at complaint deficiencies. Using all consumer complaints rather than only filtered ones ensures that data are not lost to possible changes or shortcomings in these mechanisms, which may reveal guidelines for changing state practices. The Nursing Home Compare (NHC) currently includes only the complaint investigations that leads to deficiency citations; moreover, as state standards for substantiation may vary, only analyzing substantiated complaints also does not necessarily provide a complete picture. To compare facility characteristics of NHs receiving no complaints, following Stevenson (2005), the current study included all consumers' complaints to avoid bias and performed the necessary analyses creating extra variables upon merging the two datasets.

Regarding the number of total complaints and complaint allegations, Texas and California are the top two states, also having the largest number of NHs. However, their rates of substantiated complaints and substantiated complaint allegations showed a great variance. This clearly suggests that some state-level factors may impact the QOC delivered within NHs that may affect consumers' decisions. The current findings also showed the CMS survey region variability regarding the rates of substantiation of investigated complaints and allegations. It is also clear that some survey regions have a higher number of nursing facilities than others; however, the complaint patterns, i.e., the number of complaints, complaint allegations, and their rates of substantiation do not follow a common pattern based on the number of facilities. The same is true regarding the rate of deficiency citations in CMS survey regions. This variability warrants further investigation.

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Although the current trend in the number of consumer complaints registered shows an increasing trend (US Government Accountability Office (GAO) investigated between 2005 and 2014), it is still unclear how far this impacts a true change in QOC because of state variation in recording complaints (US GAO, 2015). For example, more user-friendly complaint lodging options may reflect a higher number of complaints in this database compared to previous years. This may be a possible explanation of why NH complaints are increasing over time. On the other hand, although the average number of deficiencies found per NH shows a decreasing trend, multiple survey types and challenges faced by the state survey agencies (SSA) pose a big concern about the accuracy of extracting NH quality measures from this data. For instance, allegations leading to no deficiencies indicate that the compliant process warrants further investigation and improvement including staff training. It is evident from the current findings that many complaints allegations are related to QOC, resident abuse, and neglect. Moreover, a substantial number of them led to no deficiencies, even though they were prioritized as immediate jeopardy at intake. This inconsistency points towards the possibility of failure of timely investigation of complaints that helps NHs to hide the concerned issue that could led a deficiency. These findings may explain why high-dementia NHs were associated with a lower number of substantiated complaints and deficiency citations, even after having complaints from consumers. Furthermore, as the staffing and clinical quality measures are self-reported by the NHs, it may also explain the possible inaccuracies found in those self-reported data to measure actual quality (US GAO, 2015).

In the last few years, CMS has made several modifications to its NH oversight activities; however, it failed to monitor the impact of those on NH quality oversight. New oversight activities have been added, and some existing activities have been reduced. Although CMS

clarified that most of these exclusion measures of oversight activities are taken in response to a recent rise in oversight responsibilities and limited availability of human and financial resources, CMS has not assessed how these steps might impact its ability to evaluate NH quality. In the last three decades, CMS and SSA have conducted several steps to oversee NH quality. Some potential improvements in NH quality are evidenced in recent years, for instance, a reduction in deficiencies. Moreover, CMS has found improvements in specific NH clinical measures like reductions in the number of pressure ulcers as a measure of improved QOC. Still, it is a matter of concern whether this indicates a true improvement (US GAO, 2003). Recently, CMS has introduced Federal monitoring surveys and special focus surveys (SFS) for NHs with a history of continuous poor performances (surveys in at least once every six months) (US GAO, 2015). Policymakers, consumers, and researchers often criticize NHs due to concerns about the quality of service (Harrington et al., 2001). However, many times, complaints are not the systematic evaluation of faults, instead, an emotional expression of resident's dissatisfaction. If adequately scrutinized, the complaints are potential indicators for NH quality of service and often provide an excellent resource for the consumers to meet their health choice.

Limitations

Although the complaint dataset and the CASPER survey dataset are useful in evaluating quality, they are not free from limitations. While many studies established the validity of the CASPER survey dataset, comparatively fewer studies used the complaint dataset. As the same surveyors collect both data sets' information, it could be argued that the limitations present in the CASPER survey data are similar to the complaint data. Moreover, the survey regions' variability would be similar in both datasets (Castle, 2008). Although there are specific Federal standards

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for investigating complaints, some additional state flexibilities add more variation in the complaint dataset (Stevenson, 2006).

Most importantly, depending on when a complaint is lodged, the investigating complaint may show a dual nature. When a consumer files a complaint, the surveyors may include that complaint within the annual recertification survey (ARS) if the corresponding time falls close enough to the next standard survey date. This may be a reason for the underrepresentation of complaints based only on deficiency citations to judge NH quality. As per the complaint dataset, the deficiency citations issued against a NH are only those that occurred outside of ARS. Therefore, this dual process may reflect biases in the complaint data. In ARS, state surveyors investigate the allegations complained about during a complaint investigation as part of an extensive facility survey instead of investigating specific conduct. Indeed, some scholars have recommended that complaints and complaint investigations should only be used as supplemental information to other quality care measures in NHs due to the data's incomplete nature in this dataset (Stevenson, 2006).

Deficiencies regarding QOC identified during either annual surveys or complaint investigations are categorized into 12 groups according to their scope (the number of residents potentially affected) and their severity (potential danger). SSA must document the entire information about surveys and complaint investigations, including the scope and severity of deficiencies identified, in the CMS database. During the investigation, many inconsistencies have been found in different SSA's data entering processes. The main limitations found were: First, state surveyors' continuous understating serious deficiencies that caused actual harm or placed residents in immediate jeopardy (IJ). Second, deficiencies are often poorly investigated and documented. Third, despite states' considerable effort in reviewing proposed actual harm

deficiencies, many do not consider quality assurance processes. Finally, many surveys' timings remain predictable, providing NHs a chance to conceal deficiencies makes it difficult to maintain reliabilities in the ARS (US GAO, 2003).

It is already evidenced that CMS's oversight of SSAs' complaint investigation processes is often impeded by data reliability issues; inadequacy and inconsistency in prioritization of complaints, scheduling and carrying on investigations and documenting every deficiency are considered vital factors responsible for declining SSA performances. Also, as CMS changed their scoring methodologies over time, it is not apparent from scores whether SSAs' performance improved or worsened. Furthermore, some performance scores were based on inadequate sample sizes, and varying interpretations by CMS reviewers also underscores the data reliability issues. It has been evidenced that CMS does not use the entire available data in the complaints database to monitor facility performance. As the correction plans are not always conducted in a timely manner, they may also impact the underlying causes of performance issues. All these issues have a compound effect on the data monitoring system, increasing the limitations of the CMS complaint database. The current findings corroborate the above.

Finally, the ombudsmen and the SSA have different functions and respond to the complaints differently; for example, SSA issue deficiency citations which need plans of correction while the ombudsmen investigate resident rights. Troyer and Sause (2011) found that the substantiation rates of complaints investigated by two agencies were different, but in both cases, most complaints were lodged on QOC. Among others, abuse and neglect, administration, and residents' rights were also frequent. The authors concluded that although the investigation processes of the two agencies were different and indicated no duplication of the investigatory process, ultimate goals were focused on the quality measure indicators.

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Policy Implications

Based on the current study findings, some recommendations for changes are necessary related to the QOC in US NHs that may positively impact the complaint process:

1. Finalize specific timeframes, track progress, and develop a uniform and standardized survey methodology across all states to maintain consistency. While acknowledging that considerations of federal versus state control must be addressed, increased control of CMS over SSAs is recommended regarding data quality and reliability, including strict monitoring on investigation standards and consistent documentation of deficiencies, including a quality assurance process.

2. Increase the responsibility of SSAs in the management of complaint investigation processes and ensure state surveyors' understanding on the investigation of serious deficiencies that cause actual harm or place residents in immediate jeopardy. A delayed investigation may provide chances to conceal deficiencies by the NH staff, leading to zero-deficiency complaint. Therefore, a timely investigation is required at least for some specific categories of complaints. In this context, CMS should receive necessary multiyear funding.

3. SSAs should focus on implementing accurate documentation of timely investigated complaints, prioritizing complaints (at intake) for investigation, particularly those alleging harm to residents to maintain a standard complaint process across the country.

4. More focus should be given on auditing to ensure the reliability of self-reported data by NHs, such as payroll-based staffing to verify staffing information.

5. Ensure proper training/guidelines for the staff members associated with health inspection and ensure retaining the trained staff. Staff training is vital to provide more clarification to states and the CMS survey regions.

6. Implement simple, uniform, and strict complaint processes across the country, including a federalized consumer-friendly complaint lodging system.

7. Modify and update annual state performance reviews to distinguish the scope and severity of problems, with strict monitoring for abuse and neglect. Implement CMS's proposed plans to publish state performance standard scores (on recording, investigating, and resolving complaints).

8. Implement policies to increase collaboration between the SSAs and the ombudsman office. For example, CMS should consider including information on all ombudsman complaints against NHs into NHC data to complement currently available NH quality measures (Troyer and Sause, 2013).

9. Encourage SSAs to follow substantiated single allegation complaints to track which deficiency citations are commonly not substantiated. In this context, categorizing deficiency citations based on the alleged conduct may help surveyors by providing a better understanding on more prevalent allegations or deficiency citations that may further help in education and training programs for SSA staff.

10. Include more consumers' voices, other than complaints, to better reflect consumers' choices, such as satisfaction scores. In this regard, family members' views could be integrated with those of residents themselves to reflect resident satisfaction from a broader consumer perspective.

Future Research

The current study shows various limitations in the current compliant investigation process that needs to be improved to precisely identify the facets of enhancing NH's QOC and thereby improve residents' QOL. Although new methodological approaches to analyze complaint patterns provide clarity about NH quality improvement concerns, several limitations remain.

Several studies on residents' QOL found that facility-level factors, such as profit status, chain-affiliation, location, e.g., urban/rural, demarcate high- and low-quality facilities depending on residents' self-reports (Kane et al., 2004). Increasing the number of nursing staff in NHs might directly affect residents' health outcomes, and thereby be more likely to meet regulatory standards (Bowblis, 2011). CMS has tried to make some alterations in the Minimum Data Set (MDS) to obtain information on care delivered to NH residents to evaluate resident preferences about QOL in NHs. Two states (Minnesota and Ohio) conducted surveys with care and services in NHs to measure QOL. However, these were not uniform processes. Earlier research found that many NHs with a Five-Star rating in NHC had very low consumer scores, whereas some NHs with a 1-star rating had very high consumer satisfaction (Williams et al., 2016). Therefore, it could be assumed that though better scores on health inspections, quality measures, and staffing might predict consumer satisfaction, those measures did not substitute for consumer input. Besides an updated representation of the descriptive statistics on the complaint investigation data, the current study's focus was also to examine the limitations in the current NH complaint investigation process. Therefore, understanding the consumers' satisfaction is complex, and it would be ideal to incorporate consumers' self-reported satisfaction measures as a part of the complaint investigation process. Future research should be directed towards that end.

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From the residents' perspectives, the evaluation of every resident is different, and the care approach should be individualized. With the increasing trend of person-centered health care system that requires involvement of care partners on one hand, and active participation of the residents themselves on the other, it is expected that the resident's satisfaction regarding QOC would be guided by the determinants of the person-centered care (Liu et al., 2019; Rozenblum & Bates, 2013). In this context, the changing patterns in allegation categories is important; therefore, future research should focus on the trends of allegation types and frequency of complaints issued within those types to identify changes in residents' care demand over time.

Conclusion

The current study is a unique examination of NH complaints that speaks to the power of consumers' voice. The results show that even a single complaint can lead to a substantial regulatory response, which is essential to improve NH quality. The overall findings suggest that the present compliant process warrants further improvement. For the last few decades, the quality of NH care has been considered a public health concern and a topic of debate among policymakers in the US. Even after multiple reforms and redesigning efforts coordinated through the Senate Special Committee on Aging, the US GAO, and other federal regulatory bodies, NH care remains a complex sector in healthcare. Lack of homogeneity in the state regulations in defining deficiency citations has created confusion among surveyors, staff at the intake point, as well as among care providers. While more fundamental reforms to the ongoing regulatory process need to be done, CMS monitoring of the regulatory process should be more stringent to ensure the regulations are applied consistently.

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APPENDICES

Appendix A: Descriptions of Variables in the Context of Donabedian's SPO Model

Variable	Dataset
Structure	
Profit status (covariates)	OSCAR
Chain membership (covariates)	OSCAR
Part of CCRC (covariates)	OSCAR
Special care unit (covariates)	OSCAR
Resident % receiving Medicare (covariates)	OSCAR
Resident % receiving Medicaid (covariates)	OSCAR
Total number of beds in nursing home (covariates)	OSCAR
Total number of residents in nursing home (covariates)	OSCAR
Occupancy rate (covariates)	OSCAR
Process	
Staffing Characteristics (HPRD) (covariates)	OSCAR
Administrative registered nurses	
Registered nurses	
Licensed practical nurses	
Certified nursing assistants	
Social worker	
Activities staff	
Medical Team Structure (covariates)	OSCAR
Medical Director Only	
Full Medical Team	
Physician Extender Only	
Outcomes	
Total number of complaints (Dependent variable)	ASPEN
Total number of substantiated complaints (Dependent variable)	ASPEN
Total deficiency citations	ASPEN
Scope and severity code	ASPEN
Date complaint received	ASPEN
Cycle visit date	ASPEN
Allegation category code	ASPEN
Allegation finding code	ASPEN
Deficiency prefix code	ASPEN
Deficiency tag number	ASPEN
Contextual components	
State	OSCAR
Survey region	OSCAR
Resident characteristics	
Residents with dementia (Independent variable)	OSCAR
Residents with depression (Independent variable)	OSCAR
Residents with serious mental illness (Independent variable)	OSCAR
Residents physically restrained (covariates)	OSCAR
Residents with indwelling catheter (covariates)	OSCAR
Residents with decubitus ulcer (covariates)	OSCAR
Residents on antipsychotics (covariates)	OSCAR
Resident admission: Black (covariates)	OSCAR