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Cited and Underprepared; the Call for Improved Emergency Preparedness in LTC Facilities

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This is to certify that the doctoral study by

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Walden University
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Abstract

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M.S. HCA, Kings College, 2011

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Abstract

This research investigated the connection between the Medicare star rating system and E-tags on emergency preparedness of nursing homes for disasters in Hampton Roads, Virginia. Emergency preparedness in nursing homes has been a topic of growing interest within the past decade. Hampton Roads, Virginia, has a history of natural disasters including hurricanes and flooding, which necessitates a proper and efficient emergency preparedness plan in nursing home facilities. The primary purpose of this research was to review the secondary Centers for Medicare and Medicaid Services (CMS) data regarding the star rating system and E-tag surveys of each of the 37 nursing facilities that were not connected to a hospital or part of a continuing care retirement community to find a correlation, if any, between emergency preparedness and CMS star rating. The theoretical foundation for the research was the diffusions of innovation theory, which addresses innovation that is communicated between members of a team or social group, inclusive of gaining knowledge of an innovation, persuading others to move toward that innovation, team decision making on the innovation, and implementation/confirmation of that innovation. The statistical analysis provided inconclusive answers to research questions. The potential social change from this study is it may inform nursing home administrators of the 4 most frequent E-tag deficiencies found in this research; and their nonlinear relationship to total bed count and variables such as individual Medicare star rating categories so that administrators can apply this new knowledge to their field in general and their facility in particular; to achieve better overall disaster preparedness coordination.

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Dedication

I dedicate this research to my family, first and foremost my father, Douglas. As my biggest fan, he had always encouraged me to go the distance. A man of integrity and character, he led indiscreetly with patience and kindness. When I lost him in 2016, I began to wonder if it was worth continuing. To my husband, Brent, who kept encouraging me to go on and to not give up, thank you. You were there with reinforcement and encouragement when I needed it the most. Without you, I would have probably not continued. To my mother, Cathy, who's strength and resilience in life has inspired me in more ways than she could ever really know or imagine. She knew what we needed, education, first and foremost, and she supported me every step of the way in that educational journey. To my sister, Candance, who has shown me that you are the creator of your own destiny, the dreamer of your own dreams and the maker of your own path and that you can choose to change your path and make anything happen. Finally, I would like to dedicate this research to a very special group of people, my students. I began teaching college/university level healthcare courses at 26 and entered unsure of what kind of an educator or person I really wanted to be. I have learned more strength and courage from them than any textbook could provide. Thank you for being the inspiration of a lifetime. My greatest achievement in life has been the opportunity to be there for you on your educational journey.

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Cited and Underprepared; the Call for Improved Emergency Preparedness in LTC Facilities

Introduction

Baby Boomer generation aging, has been referred to as the graying of America (U.S. Census Bureau, 2017). For the first time in the history of the United States, in less than two decades time, children will be outnumbered by older adults. These Boomers over the age of 65 will continue to grow in number. In 2007, the American Hospital Association initially highlighted this over 10 years ago in its Boomer report work. The Boomer report stated that by 2030, there will be more than 70 million Americans over age 65. This same emphasis was added to the issue in 2011 when the American Hospital Association reported that Medicare enrollment was also projected to grow significantly now that the baby boomers are reaching eligibility age. The U.S. Department of Health & Human Services' Assistant Secretary for Preparedness & Response Division (2019) noted long-term care (LTC) facilities have significant challenges in dealing with crises due to the susceptibility and fragility of the residing populaces (Department of Health & Human Services' Assistant Secretary for Preparedness & Response, 2019). Recent disasters have illustrated the risks to LTC residents during facility evacuation. The more recent announcement of the Centers for Medicare and Medicaid Services (CMS) Emergency Preparedness Rule was intended to improve preparedness action plans of the LTC facilities to reduce identifiable risks (CMS, 2018). According to the Toosi and Torpey writing for the U.S. Bureau of Labor Statistics (2017), within the next 5 years, our Baby Boomers will have reached ages 60 to 78, and by 2030, they will be working their way

into prime time for nursing home care age, 66 to 84. With the influx of older Americans, entering the LTC arena, the concern is the significant challenges that exist in reference to emergency preparedness LTC facilities (U.S Department of Homeland Security, 2018). The following research may fill a gap in the literature by identifying the most common and current deficiencies in LTC nursing facilities by analyzing their survey-deficiency tags, officially called E-Tags, that are used by Life Safety Code Surveyors (LSC) that cite the facility for any violations.

The challenge of the graying of America is not a new phenomenon in healthcare, as professionals have been aware of the growing numbers for some time. A surprising concern is the lack of preparation for internal and external disasters such as floods, hurricanes, and power outages affecting LTC facilities (Pierce et al., 2017). In an investigative report by the Minority Staff of the U.S. Senate Committee on Finance (2018), LTC facilities, and in particular nursing homes were found to have poor emergency planning and response that had ultimately led to nursing home residents being put at risk during recent hurricanes Irma and Harvey.

CMS established a final Emergency Preparedness Requirements for Medicare and Medicaid Participating Providers and Suppliers effective November 16, 2016, which provides instruction for preparing for a disaster (CMS, 2018). This rule mandates that all healthcare providers and suppliers, such as LTC facilities and durable medical equipment suppliers must implement emergency preparedness plans by November 15, 2017 (CMS, 2018). The guidelines for the CMS final emergency preparedness rule are reported in the

Federal Register (2016) and include four provisions; (a) risk assessment/planning, (b) policies and procedures, (c) communication plan, and (d) training and testing. The CMS rule mandates that for an LTC facility to qualify as a Medicare provider, the emergency preparedness plan must be reviewed annually to ensure an all-hazards approach, which includes capabilities, capacity, preparation, and training for both internal and external disasters (Federal Register, 2016). A two-fold gap in the literature exists due to a lack of coordination and reporting of results on emergency plans (Harrington, Weiner, Ross, & Musumeci, 2017), and, in addition, as identified by the Minority Staff of the U.S. Senate Committee on Finance (2018), a series of missteps in communication and faulty emergency planning, called into question whether the current guidance by way of regulation and requirements is enough. This study may provide information to inform nursing home administrators and the local department of health leaders of the level of emergency preparedness and the need, if any, to create health care policy to improve and/or maintain emergency preparedness programs.

Problem Statement

Nursing homes need to prepare for emergency events that may cause catastrophic destruction (Reilly & Markenson, 2011). The Department of Health and Human Service (2006), Office of the Inspector General suggests that due to susceptibility and unique challenges of the LTC facility population, planning is needed. The 2017 National Health Security Preparedness Index (2017) suggested deep inequities exist in states' preparedness. The American College of Healthcare Executives (2013) stated that

healthcare administrators must actively contribute to their disaster planning and preparedness project management, to ensure a quality plan that enhances community plans that are already in place and embodies a reasonable approach to the risks of the facility based on geographic location. Of the many aspects of emergency preparedness in LTC, development of the emergency preparedness plan is the key step because it provides the rationale and a model for the facility in times of crisis. Hence, this research may fill a gap in the literature by identifying the most common current deficiencies in emergency preparedness using the nursing home facility E-Tags.

Purpose of the Study

The purpose of this study was to inform nursing home administrators and department of health leaders regarding the correlation, if any, between the number of emergency preparedness E-Tag survey citations and the number of Medicaid beds, total beds, CMS star ratings for the facility, and staff turnover of LTC facilities in the Hampton Roads Area of Virginia. This information may fill a gap in the literature to assess the level of compliance with the CMS mandated LTC emergency preparedness plan and inform nursing home administrators and the Department of Health and Human Services. This information may guide nursing home administrations with education about and execution of emergency preparedness plans in Hampton Roads, VA. This research was unique because it addressed a historically under-researched area of LTC emergency preparedness (Pierce et al., 2017). The results of this study provide insight into characteristics of LTC facilities and compliance with the CMS emergency preparedness rule.

Research Question(s) and Hypotheses

RQ 1: What is the correlation, if any, between the number of E-tag deficiencies and the quality rating and total beds in an LTC facility in the Hampton Roads area of Virginia?

H_a1: There is a correlation between the number of E-tag deficiencies and the quality rating and total beds in LTC facilities in the Hampton Roads area of Virginia. Ha: $\rho = 0$

$H_0 1$: There is not a correlation between the number of E-tag deficiencies and the quality rating and total beds in LTC facilities in the Hampton Roads area of Virginia. $H_0 1$: $\rho \neq 0$

RQ 2: What is the correlation, if any, of E-tag deficiencies for emergency preparedness and the CMS star rating for the facility and staffing of LTC facilities in the Hampton Roads area of Virginia?

H_a2: There is a correlation between the E-tag deficiencies for emergency preparedness (x) and the CMS star rating for the facility and staffing (y) of LTC facilities in the Hampton Roads area of Virginia. Ha: $\rho = 0$

$H_0 2$: There is not a correlation between the E-tag deficiencies for emergency preparedness (x) and the CMS Star Rating for the facility and staffing (y) of LTC facilities in the Hampton Roads area of Virginia. H0: $\rho \neq 0$

RQ 3: What is the trend in the number and type of E-tag deficiencies over the 3-year time-period of the study, 2017-2019 in LTC facilities in the Hampton Roads Area of Virginia?

H_a3: There is a trend in the number of E-Tag citations over the 3-year period in the Hampton Roads Facilities 2017-2019.

$H_0 3$: There is not a trend in the number of E-tag deficiencies over the 3-year period in the Hampton Roads Facilities 2017-2019.

RQ 4: What is the association, if any, over the 3-year period, 2017-2019, on the most frequently cited E-tag deficiencies of the study of LTC facilities in the Hampton Roads area of Virginia?

H_a4: There is an association over the 3-year period, 2017-2019, of the most frequently cited E-tag deficiencies of the study of LTC facilities in the Hampton Roads area of Virginia.

$H_0 4$: There is not an association, over the 3-year period, 2017-2019, of the most frequently cited E-tag deficiencies of the study of LTC facilities in the Hampton Roads area of Virginia.

Theoretical Framework

The theoretical framework for this study was Rogers' (1995) diffusions of innovation theory. Because this diffusion study, which addresses innovation that is communicated between members of a team or social group, is inclusive of gaining knowledge of an innovation, persuading others to move toward that innovation, team decision making on the innovation, and implementation/confirmation of that innovation, Roger's theoretical work can apply to LTC facility emergency management preparedness planning, regarding both the process of making the plan and also process improvement

once a plan is in place. The approach provides details on the evolution of change, inclusive of social change, that emerge as a result of development, training and the learning process. Subsequent research and application of Roger's theory offers guidance on ways to enable facility development, thus allowing for insight into the pedagogical challenge of the emergency preparedness planning for the LTC industry (Everett, 2003). Glowacki, Centeio, Van Dongen, Carson & Castelli, (2016), used the diffusion of innovation theory to emphasize how health promotion can address physical activity concerns and create opportunities in school districts. The diffusion of innovation theory may be applied by nursing home administrators to emphasize how emergency project management, as a process of preparedness, planning, and executing, can create opportunities for successful outcomes in both internal and external emergencies.

Nature of the Study

The nature of this quantitative correlational study was to use secondary data, not previously collected for research reasons, to determine trends and relationships, if any, regarding the E-tag assessment of emergency preparedness plans of LTC facilities in Virginia Beach, Virginia. The results of this study may inform administrators and local government officials regarding the status of emergency preparedness for the LTC facilities in the Hampton Roads area, Virginia.

Literature Search Strategy

The initial step in the literature search strategy was to search the U.S. governmental healthcare-related departments as well as Walden library for terms related

to emergency preparedness, including, emergency preparedness program, Life Safety Code, Health Care Facilities Code, and Baby Boomer to name a few. I sorted through the governmental material, then read for applicability. I then thoroughly searched those that were applicable for scholarly articles and/or applicable reports. Scholarly articles that were applicable were then accessed through either the Walden University Library link in the Walden University Blackboard system including, but not limited to databases such as EBSCOhost, CINAHL and Medline or PubMed. Only peer-reviewed journal articles that were available with full text were utilized. I used Google to look up nursing home, National Institutes of Health and CMS data information. I also used data.gov exclusively to gain access to survey information.

Articles published from 2016 – to today became the basis for citation in order to obtain the most up-to-date information, but I also included older findings to help support the timeline and progressive history of information.

Table 1

Search Engines

Search Engine	Boolean Phrase	Number of Results	Number used
CINAHL PLUS with Full Text	"emergency preparedness" AND "nursing homes"	10,486	1
Medline with Full Text	"Disasters" AND "patient-reported outcomes"	14,567	4
Google	Emergency Preparedness	70,900,000	25
Google	"LSC" and "HCFC"	18,700	5
CMS.gov	"nursing homes"	16,552	5
Google	"Centers for Medicaid and Medicare" AND emergency preparedness	761,000	3

Definition of Terms

The list below provides detailed definitions of terms used throughout the course of the study.

Centers for Medicare and Medicaid Services (CMS): The Department of Health and Human Services agency responsible for Medicare and parts of Medicaid (CMS, 2017b).

Baby Boomer: A person born during a period in which there was a marked rise in the U.S. population's birthrate, specifically born in the U.S. following the end of World War II from 1946 to 1964 (Merriam-Webster's Online Dictionary, 2019).

Dependent variable: A mathematical variable whose value is determined by that of one or more other variables in a function (Merriam-Webster's Online Dictionary, 2019). For the purposes of this study, this variable is meant to describe the individual emergency preparedness of LTC facilities based on E-tags.

Diffusion of innovation theory: Theory that explains how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product (LaMorte, 2019).

Emergency preparedness program: A facility's comprehensive approach to meeting the health and safety needs of their patient population that provides facilities with guidance on how to respond to emergency situations that could impact the operation of the facility, such as natural or man-made disasters. It includes (a) all-hazards risk assessment and emergency planning, (b) development and implementation of policies and procedures, (c) a communication plan, and (d) training and testing. The program as a whole consists of the emergency plan, which is based on the four core elements (CMS, 2017c).

Independent variables: a mathematical variable that is independent of the other variables in an expression or function and whose value determines one or more of the values of the other variables (Merriam-Webster's Online Dictionary, 2019). For this research, it was the information available to the stewards of the LTC facilities and the regulatory involvement.

Life Safety Code (LSC) & Health Care Facilities Code (HCFC) surveys: Surveys conducted in accordance with the appropriate protocols and substantive requirements in the statute and regulations to determine whether a citation of noncompliance is appropriate. Deficiencies are based on a violation of the statute or regulations, which, in turn, is to be based on observations of the provider's performance or practices (CMS, 2017a).

Assumptions

It was assumed that insights from this study may be inclusive of the E-tags provided on the facility surveys accessible to both health and safety surveyors and LSC surveyors. Also, it was assumed that the stewards of the individual facilities are making their best effort to follow all state and local regulations when it comes to the facilities' emergency preparedness plan.

The current research was reliant on identifying and construing available survey data and discerning that information in terms of the needs of the facilities. It addresses an under-researched area of LTC emergency preparedness that has, historically, lacked comprehension (Pierce et al., 2017, p. 140-149). An assumption was that all of the surveys from 2017-2019 were available for discernment. The results of this study may provide much-needed insights into the processes by which increasing numbers of LTC facility administrators work through the beginning phase of their emergency preparedness plans to make a viable plan that will satisfy the CMS Rule. The assumptions herein were necessary to eliminate as much human error due to negligence as is possible.

Scope and Delimitations

To minimize internal confounding, I examined facility surveys accessible to the health and safety surveyors as well as the LSC surveyors. I chose the Hampton Roads facilities of the state of Virginia as the target population due to the number of available nursing homes and posted surveys available. This was done to compare facilities and see if the issues that affect one facility affect another in other settings utilizing E-tags as the basis for comparison for the different facilities. CMS delegates the use of 'tags' and in emergency preparedness surveying, they use E-Tags (see table 1). The E-Tags are employed as a citation for non-compliance of all the 17 provider and supplier types per the final rule and determine if the facility is in immediate jeopardy or harm defined by the CMS State Operations manual as "a situation in which the provider's noncompliance with one or more requirements of participation has caused, or is likely to cause, serious injury, harm, impairment or death to a resident" (CMS, 2018). The current research incorporated secondary data (surveys) collected from the Hampton Roads area, Virginia, surveyors and posted publicly through the data.gov database. I analyzed surveys from 2017-2019 and examined E-tag citations.

The research provides an overview of the E-Tag citations in nursing home facilities and their effect on residents. The research was designed to support professional practice by allowing for practical application of improvement measures by assessing and evaluating current deficiencies and using that information to assess strategic planning. This may allow leaders to develop and hone both information and skills to make positive

changes in the future that will benefit both the organization and those it serves. The findings serve as a springboard to lead to an overall positive social change in both organizational development and culture of the facilities.

Literature Review

Nursing Home Evaluation of *E*-Tags

In response to the need for a more synchronized approach to local disaster planning by the Virginia Department of Health (2018), bearing in mind the impact of grave external natural events, such as hurricanes, tornados, and wildfires, and internal events, such as power outages, a three-year planning and development process agreement for LTC was finalized. It is with this agreement, known as the *Memorandum of Understanding*, that new facilities and participants are added each month (Virginia Department of Health [VDH], 2018). Therefore, the Medicaid resident census and number of beds in each LTC facility account for the demographics used for this study.

Insights from this study may be inclusive of the E-Tags provided on the facility surveys accessible to both Health Care Facilities Code surveyors and the LSC surveyors. CMS delegates the use of ‘tags’ and in emergency preparedness surveying, they use E-Tags (see Table 2). The E-tags are employed as a citation for non-compliance of all the 17 provider and supplier types per the final rule and determine if the facility is in immediate jeopardy or harm defined by the CMS State Operations manual as “a situation in which the provider’s noncompliance with one or more requirements of participation has caused, or is likely to cause, serious injury, harm, impairment or death to a resident”

(CMS, 2018, p. 14). The tags for emergency preparedness are E-Tags are accessible to both health and safety surveyors and LSC surveyors. State survey agencies have discretion regarding whether the LSC or health and safety surveyors conduct the emergency preparedness surveys. Aid can be provided to LTC facility administrators in helping them to succeed in the production of their facility emergency preparedness plans, thus supporting the CMS ruling. Fines ranging from $3,050 to $10,000/day can accumulate. The insight, through the use of regressive analysis, illustrates the relationship of the E-tags throughout a 3-year timeframe, 2017-2019.

Table 2.

E-Tags by category

Establishing a comprehensive emergency preparedness program	Policies and Procedures	Communication Plan	Training and Testing	Power System Requirements
E-0001	E-0013	E-0031	E-0036	E-0041
E-0004	E-0015	E-0032		
E-0006	E-0018	E-0033	E-0037	E-0042
E-0007	E-0019	E-0034		
E-0009	E-0020	E-0035	E-0039	
	E-0022			
	E-0023			
	E-0024			
	E-0025			
	E-0026			

Emergency Preparedness and the Nursing Home Administrator

Singh (2016) and Reilly & Markeson (2012) provided information on emergency management principles, effective management and practice, which has been shown as an effective guide for the future research and implementation of an emergency plan by LTC administrators. Pierce et. al., (2017); Nathan (2006); and Maxwell and Fitzgerald (2011) provided different views of strategies to support the development of emergency preparedness plans before an emergency experience arises. Singh (2016) and Runkle, Brock-Martin, Karmaus, and Svendsen (2012) offered models that align well with the methodologies used in this study and that involve current and future administrators' roles and responsibilities in emergency management. Covan and Fugate-Whitlock (2010); Lucchini et al., (2017); and Kort, Stuart, and Bontovics (2005), established an international concern for inclusive approaches to LTC preparedness. Research by Grachek (2006); Castro, Persson, Bergstrom, and Cron (2008); Laditka, Laditka, Cornman, Davis, and Chandlee (2014); Smith, Mozzer, Albanese, Paturas, and Gold (2017); Brodie, Weltzien, Altman, Blendon, and Benson (2006); and Clarke (1981) addressed the role of states and communities in emergency preparedness and planning in LTC inclusive of sheltering in place. Articles focusing on the response and recovery following emergency incidents include Okwuofu-Thomas, Beggs, and Mackenzie (2017); Parkes (1991); and Runkle et al., (2012).

Governmental agencies, offices, and their online information sources provide the latest evidence. The Minority Staff of U.S. Senate Committee on Finance (2018)

provided key evidence on the lack of nursing home emergency preparedness, while the U.S. Department of Homeland Security (2018) presented a national preparation report that outlined better coordination moving forward. The Federal Register (2016) provided emergency preparedness guidelines for the Medicare and Medicaid participating providers.

Hampton Roads Population

According to the Hampton Roads Chamber (2019), Hampton Roads is a combination of seven coastal communities situated in the center of the Eastern seaboard where the Elizabeth, Nansemond, and James Rivers come together to enter into Chesapeake Bay. It is recognized as the 33rd largest metropolitan statistical area in the United States, eighth-largest metro area in the Southeast United States, and the second-largest between Atlanta and Washington, DC. The cities of Hampton Roads, sometimes referred to as Coastal Virginia, include Suffolk, Virginia Beach, Chesapeake, Portsmouth, Norfolk, Newport News, and Hampton.

According to the U.S. Census Bureau (2017), Hampton Roads' seven cities have a total of 1,431,785 inhabitants. The Hampton Roads Chamber (2019) estimates that of those 1,431,785, 120,000 are active duty reserve and civilian personnel employed at nine local military installations, and 823,000 are a part of the civilian labor force. Ninety-one percent have a high school diploma or higher and the median age is 36; 49.1% are male and 50.8% are female. In addition, Hampton Roads boasts a median household income of $56,692.29, with Chesapeake Virginia being the highest at $70,176 and Portsmouth the

lowest at $46,239. With a corporate tax rate of 6% (Hampton Roads Chamber, 2019), an unemployment rate of 2.9% (Virginia Employment Commission, 2019), and a community that hosts not only military and their families but international businesses with companies from 26 different countries, the region offers low cost of doing business (Hampton Roads Economic Development Alliance, 2019).

Virginias Nursing Home Population

Virginia holds 288 dual-certified Medicare & Medicaid nursing homes. The 288 nursing homes have a total of 32,345 beds for skilled nursing facility residents, with 86% of those full at any given time and the overall average Medicare 5 Star Quality rating for Virginia skilled nursing facilities is at 3.2, ranking 41st nationally. The average monthly cost of the nursing homes is $6,707, and the ownership is mostly not-for-profit at 67% with 17% proprietary and 17% governmental (Senior Care, 2019).

Hampton Roads Nursing Homes

There are 37 nursing homes in the 7 cities that compose Hampton Roads, excluding any LTC units or continuing care retirement communities (CCRC's) in the area (Virginia Health Information, 2019). Average star ratings from 1-5 are assessed for overall, staffing, quality, health inspection and fire/safety categories on a yearly basis, which is associated with the E-Tag system of citation in both the proprietary and non-for-profit ownership models of the Hampton Roads nursing homes. Only the nursing facilities that were pure, stand-alone nursing facilities were included in the 37. Ownership

for each of the 37 facilities (see Table 3) and star ratings/ratios are shown below (Table 4).

Table 3

Hampton Roads Nursing Homes Ownership

facility name	city	Ownership
1. Greenbrier Regional Medical Center	Chesapeake	Proprietary
2. Autumn Care of Chesapeake	Chesapeake	Proprietary
3. Chesapeake Health & Rehab	Chesapeake	Proprietary
4. Sentara Nursing Center	Hampton	Nonprofit
5. Coliseum Convalescent Center	Hampton	Proprietary
6. Northampton Convalescent Center	Hampton	Proprietary
7. Riverside Convalescent Center	Hampton	Nonprofit
8. Sentara Nursing Center	Hampton	Nonprofit
9. Bon Secours St. Francis Nursing Center	Newport News	Nonprofit
10. James River Convalescent & Rehab	Newport News	Proprietary
11. Newport News Nursing and Rehab	Newport News	Proprietary
12. Newport, The	Newport News	Proprietary
13. The Gardens at Warwick Forest	Newport News	Proprietary
14. Autumn Care of Norfolk	Norfolk	Proprietary
15. Consulate Healthcare of Norfolk	Norfolk	Proprietary
16. Signature Healthcare of Norfolk	Norfolk	Proprietary
17. Norfolk Health & Rehab Center	Norfolk	Proprietary
18. Sentara Nursing Center	Norfolk	Proprietary
19. Thorntown Hall Nursing & Rehab	Norfolk	Proprietary
20. Autumn Care of Portsmouth	Portsmouth	Nonprofit
21. Portsmouth Health & Rehab	Portsmouth	Proprietary
22. Sentara Nursing Center	Portsmouth	Proprietary
23. Autumn Care of Suffolk	Suffolk	Proprietary
24. Bon Secours Mary view Nursing Care	Suffolk	Nonprofit
25. Concordia Transitional Care	Suffolk	Proprietary
26. Bayside Health & Rehab	Virginia Beach	Proprietary
27. Beacon Shores Nursing & Rehab	Virginia Beach	Proprietary
28. Beth Sholom Home of Eastern VA	Virginia Beach	Proprietary
29. Concordia Transitional Care & Rehab	Virginia Beach	Proprietary
30. Kempsville Health & Rehab Center	Virginia Beach	Nonprofit
31. Heritage Hall – Virginia Beach	Virginia Beach	Proprietary
32. Concordia Transitional Care & Rehab	Virginia Beach	Proprietary
33. Our Lady of Perpetual Help	Virginia Beach	Proprietary
34. Princess Ann Health & rehab	Virginia Beach	Proprietary
35. Sentara Nursing Center	Virginia Beach	Nonprofit
36. Sentara Nursing Center Windermere	Virginia Beach	Nonprofit
37. Virginia Beach Healthcare & Rehab	Virginia Beach	Proprietary

Table 4

Hampton Roads Facility Census.

Facility Name	Star rating	Overall staffing	# of beds	Quality measure	Health inspection	Fire safety inspections
Greenbrier Regional Medical Center	1	1	120	2	1	1
Autumn Care of Chesapeake	2	2	117	4	2	2
Chesapeake Health & Rehabilitation Center	3	2	180	3	3	3
Sentara Nursing Center Chesapeake	1	1	120	3	1	1
Coliseum Convalscent and Rehabilitation Center	1	1	180	3	2	1
Northampton Convalescent Center	4	2	70	5	3	4
Riverside Convalescent Center - Hampton	3	2	130	3	3	3
Sentara Nursing Center Hampton	3	4	86	2	3	3
Bon Secours St. Francis Nursing Center	2	3	115	3	2	2
James River Convalescent and Rehabilitation Center	4	1	154	3	5	4
Newport News Nursing and Rehabilitation Center	4	2	102	5	3	4
Newport, The	5	5	60	5	5	5
The Gardens at Warwick Forest	1	3	209	3	1	1
Autumn Care of Norfolk	1	1	120	1	1	1
Consulate Health Care of Norfolk	2	2	222	3	2	2
Signature Healthcare of Norfolk	1	2	169	3	1	1
Norfolk Health & Rehabilitation Center	2	2	180	3	2	2
Sentara Nursing Center Norfolk	1	4	197	1	1	1
Thornton Hall Nursing and Rehab Center	2	3	60	4	2	2
Autumn Care of Portsmouth	3	1	108	5	3	3
Portsmouth Health and Rehab	1	1	120	1	1	1
Sentara Nursing Center Portsmouth	1	1	124	2	2	1
Autumn Care of Suffolk	1	2	120	3	2	1

Table continues

Facility Name	Star Rating	Overall Staffing	# of beds	Quality Measure	Health Inspection	*Fire Safety Inspections*
Bon Secours Maryview Nursing Care Center	1	1	120	1	1	*1*
Concordia Transitional Care and Rehab - Nansemond Pointe	3	3	148	4	3	*3*
Bayside Health & Rehabilitation Center	5	3	60	5	4	*5*
Beacon Shores Nursing & Rehabilitation Center	1	1	180	3	1	*1*
Beth Sholom Home of Eastern Virginia	5	3	120	5	4	5
Concordia Transitional Care and Rehabilitation - Bay Pointe	2	2	112	4	2	2
Kempsville Health & Rehab Center	4	2	90	3	4	4
Heritage Hall - Virginia Beach	2	1	90	2	3	2
Concordia Transitional Care and Rehab-Rover Pointe	2	2	138	4	2	2
Our Lady of Perpetual Help Health Center	5	3	30	5	5	5
Princess Anne Health and Rehab	3	3	120	4	3	3
Sentara Nursing Center Virginia Beach	3	4	116	1	3	3
Sentara Nursing Center Windermere	2	4	90	1	2	2
Virginia Beach Healthcare & Rehabilitation Center	4	2	180	4	4	4

Memorandum of Understanding

Through a partnership between the Virginia Hospital and Healthcare Association and the VDH, the Virginia Healthcare Emergency Management Program was initiated. This 2015 project, funded through the Federal Hospital Preparedness Program, and supported by the VDH Offices of Licensure & Certification and Office of Emergency Preparedness, Virginia Hospital and Healthcare Association, Leading Age Virginia, and the Virginia Health Care Association, engaged Russell Phillips & Associates to create a statewide LTC mutual aid plan and to develop a memorandum of understanding (MOU)

that would represent a voluntary agreement between LTC facilities that would encourage them to help one another in a disaster situation. The MOU provided a framework for the following: (a) providing or sharing supplies, equipment, transportation, and staff with a facility when a disaster overwhelms their own community or exceeds the capability of their internal emergency operations plans; (b) coordinating with local, regional, and state response agencies; and (c) utilizing pre-designated evacuation locations for residents during a disaster (VDH, 2019).

History of Natural Disasters in Hampton Roads

The Hampton Roads area of Virginia has seen emergencies such as hurricanes, floods, tornadoes, extreme heat, and even snow. The hurricane season, spanning 6 months from June 1 to November 30, is one of the most devastating natural disasters for the area. Of the 53 significant hurricanes, from the first recorded hurricane of significance in 1635 to the Great Coastal Hurricane of 1806, to the 1976 Hurricane Agnes that left 13.6 inches of water throughout the area, to the most recent devastation from Irene in 2011 and Sandy in 2012, Hampton Roads has seen the need for emergency preparedness (National Weather Service, 2019).

Significance, Summary, and Conclusions

LTC concerns have long been a force for social change in that they address disproportions in society, specifically, the differences between state-run facilities, privately owned facilities, proprietary and not-for-profit. The nursing home administrators of today have the task of managing the financial stability and quality of

care of the facility but also keeping the members of the LTC community and staff safe in times of disaster. The potential impact of increased demand for nursing home beds for aging Baby Boomers will increase the pressure to ensure quality programs, well-maintained environments, and safe and efficiently run LTC communities to compete for residents (Thomas, 2015). Emergency preparedness plans will be part of the safety plan that informed residents may use as a gauge for quality of care.

This study may support professional practice by informing nursing home administrators and the Department of Health and Human Services regarding the status of E-Tag deficiencies in the Hampton Roads area of Virginia. The information may inform stewards as they develop strategic planning to execute CMS emergency plans, improve policies, and provide education to staff and residents. The positive social change potential is to improve the safety of residents and staff of LTC facilities and impact culture changes that may be generalizable to LTC facilities in other geographic areas.

Section 2: Research Design and Data Collection

Introduction

In Section 1 of this document, I provided a review of the current literature on emergency preparedness in LTC facilities, using governmental and peer-reviewed evidence. With an emphasis on regulatory history and historical perspective, I addressed the approach to and justification for using reports, plans, and protocols. I also addressed the gap in the literature. I reviewed E-tag violations and discussed the call for more advanced coordination and emergency preparedness plans in LTC facilities in the United States. In this chapter I discuss the research design data collection, interpretation of results, and present threats.

Research Design and Rationale

The research design was quantitative and correlational utilizing secondary data not previously collected for research purposes to investigate the relationship, if any, between LSC surveys and E-tags and the Medicare star ratings of nursing homes in the Hampton Roads, Virginia area.

In this research, deficiency citations for violations of LSC, E-Tags, were examined from the years of 2017-2019 for all 37 nursing homes. Examining scope and severity provided information on the likely impact safety violations have on residents' quality of life. The E-tag results were the independent variable, which I compared to the Medicare star rating results, of overall rating, staffing, quality, health inspection and fire safety, the dependent variables. The Star categories are presented in Table 5.

Secondary Data Analysis Methodology

The data analysis methodology I used to test for associations that included ordinal level variables (i.e., the Medicare star ratings) was the Goodman & Kruskal's gamma test. Laerd Statistics (2019) stated that, when using an ordinal scale, Goodman and Kruskal's gamma (*G* or γ) is a nonparametric measure of the strength and direction of association that exists between two variables that is best to use when there are variables that can be assessed through star ratings, and it is assumed that the variables are monotonic in nature and measured on an ordinal scale. Goodman & Kruskal's test was computed using SPSS software. The analysis used to test for associations that included nominal variables (e.g., the frequencies of the E-tag deficiencies) was Pearson's chi-Square. McHugh (2013) stated that the chi-square statistic is a non-parametric tool designed to analyze group differences when the dependent variable is measured at a nominal level.

Population Sampling, Sampling Procedure and Analysis

The Medicare star ratings and E-tag survey data are secondary data are available at CMS.gov, Medicare.gov, and Data.gov and are available to the public. I assessed the star rating data for the 37, free-standing nursing homes, not part of a hospital or CCRC, in the Hampton Roads, Virginia area.

For this research I used secondary data obtained from CMS.gov, Medicare.gov, and data.gov to perform the purposive analysis. I chose purposive sampling in a homogenous sampling method due to the nature of the topic and geographic location of

the facilities. One of the goals of the research was to generalize about the sample, which consisted of nursing home facilities in Hampton Roads, Virginia, with the most similar characteristics, including external factors such as natural disasters that they share due to geographic location.

Power Analysis

For RQ1-RQ4, I tested the assumption that the sample size should be large enough to provide adequate power to detect statistically significant correlations using ordinal variables. I determined the sample size to test for correlation using power analysis that I conducted using G*Power software (Faul, Erdfelder, Buchner, & Lang, 2007) assuming a 5% significance level (p = .05), a power of 80%, and a strong correlation (0.5). Based on these assumptions, the required sample size was N = 29. The power analysis was repeated for a moderate correlation (0.3) and a weak correlation (0.1). The required sample sizes to detect moderate and weak correlations were N = 82 and N = 779 respectively. The sample size used in this study was N = 37, which provided sufficient power to detect a strong correlation between the variables, but insufficient power to detect a moderate or a weak correlation.

Data Accessibility and Permissions

All data and surveys obtained are public information posted without restriction on the CMS.gov, Medicare.gov, and data.gov United States governmental sites. All variables used for this study (star ratings, fire safety, etc.) are public record and available without restriction on CMS.gov, Medicare.gov, and data.gov.

Data Collection and Management

The data of the 37 Hampton Roads sampled nursing homes, obtained through the CMS.gov, Medicare.gov, and data.gov websites are posted as public data, originally collected by the assigned surveyors. This data provided an electronic record that I analyzed as the principal investigator.

Instrumentation and Operationalization of Constructs

This research was quantitative, correlational study based on secondary data of 37 Hampton Roads nursing homes, provided to the public by CMS. The variables collected included overall star rating, overall staff rating, number of beds, quality measure, health inspection rating, fire safety rating, and E-tag scores.

Operational Definition of Variables

Table 5 illustrates the operational definitions of variables. CMS' Five-Star Quality Rating System, gives nursing homes ratings between 1 and 5. Nursing homes with 1 star in a category are considered to be much below average for that category, 2 stars are below average, 3 stars are average, 4 stars are above average and 5 stars are much above average. The staffing rating has information about the number of hours of care that is provided to each resident each day by the nursing staff and contains the differences in levels of residents' care in each nursing home. The quality measure rating has information on 17 different physical and clinical measures for nursing home residents and offers information on how well nursing homes are fulfilling the physical and clinical needs of their residents. The health inspections contain the 3 most recent health

inspections and investigations due to recent complaints. This information is the end-result of the LSC surveys (CMS, 2017a).

Table 5.

Operational Definitions and Variables.

Name	Measurement	Values of variables
Star rating	Ordinal	1 Much below average 2 Below average 3 Average 4 Above average 5 Much above average
Overall staffing	Ordinal	1 Much below average 2 Below average 3 Average 4 Above average 5 Much above average
Quality measure	Ordinal	1 Much below average 2 Below average 3 Average 4 Above average 5 Much above average
Health inspection	Ordinal	1 Much below average 2 Below average 3 Average 4 Above average 5 Much above average
Fire/Safety inspection	Ordinal	1 Much below average 2 Below average 3 Average 4 Above average 5 Much above average

Data Analysis Plan

I conducted a data analysis plan was conducted using SPSS software. I applied the Goodman & Kruskals gamma test to all variables to find whether a relationship exists. The gamma coefficient should display how closely the data points match. The Goodman & Kruskals gamma test, tests for an association between points as well as the strength of

that association, if one exists. The RQ1 variables were tested to accept or reject the hypothesis. The RQ2 variables were tested to accept or reject the hypothesis. The RQ3 variables were tested to accept or reject the hypothesis. The RQ4 variables were tested to accept or reject the hypothesis. The analysis used to test for association that included nominal variables (e.g., the frequencies of E-tag deficiencies) was Pearson's chi-Square. McHugh (2013) states that the chi-square statistic is a non-parametric tool designed to analyze group differences when the dependent variable is measured at a nominal level.

Research Question(s) and Hypothesis

RQ 1: What is the correlation, if any, between the number of E-tag deficiencies and the quality rating and total beds in an LTC facility in the Hampton Roads area of Virginia?

> H_a1: There is a correlation between the number of E-tag deficiencies and the quality rating and total beds in LTC facilities in the Hampton Roads area of Virginia. Ha: $\rho = 0$
>
> $H_0 1$: There is not a correlation between the number of E-tag deficiencies and the quality rating and total beds in LTC facilities in the Hampton Roads area of Virginia. $H_0 1$: $\rho \neq 0$

RQ 2: What is the correlation, if any, of E-tag deficiencies for emergency preparedness and the CMS Star Rating for the facility and staffing of LTC facilities in the Hampton Roads area of Virginia?

H_a2: There is a correlation between the E-tag deficiencies for emergency preparedness (x) and the CMS Star Rating for the facility and staffing (y) of LTC facilities in the Hampton Roads area of Virginia. Ha: $\rho = 0$

$H_0 2$: There is not a correlation between the E-tag deficiencies for emergency preparedness (x) and the CMS Star Rating for the facility and staffing (y) of LTC facilities in the Hampton Roads area of Virginia. H0: $\rho \neq 0$

RQ 3: What is the trend in the number and type of E-tag deficiencies over the three-year time-period, 2017-2019 of the study in LTC facilities in the Hampton Roads Area of Virginia?

H_a3: There is a trend in the number of E-Tag citations over the three-year period in the Hampton Roads Facilities 2017-2019.

$H_0 3$: There is not a trend in the number of E-tag deficiencies over the three-year period in the Hampton Roads Facilities 2017-2019.

RQ 4: What is the association, if any, over the three-year period, 2017-2019, on the most frequently cited E-tag deficiencies of the study of LTC facilities in the Hampton Roads area of Virginia?

H_a4: There is an association over the three-year period, 2017-2019, of the most frequently cited E-tag deficiencies of the study of LTC facilities in the Hampton Roads area of Virginia.

$H_0$4: There is not an association, over the three-year period, 2017-2019, of the most frequently cited E-tag deficiencies of the study of LTC facilities in the Hampton Roads area of Virginia.

Interpretation of Results

Threats to Validity

The conceptual framework categorizes variables into external and internal threats. Some flexibility in categorization in this way may present itself. For example, a hurricane (an external factor) may lead to a power outage and disaster resulting in non-functional generators (an internal planning factor) characteristic of the facility itself rather than the natural disaster. Thus, the lack of preparedness for the power outage, even though it was a result of the external hurricane, would affect the organizational planning and the star rating. Further refinement of this conceptual framework may be justified for future analyses.

Ethical Procedures

This research should meet the requirements of Walden's standards as Walden doctoral healthcare administration research. Secondary data is public information available through governmental website for CMS and after approval of the Institutional Review Board (IRB) at Walden was given, data was free to be analyzed. The IRB evaluated ethical consideration and decided the data was ethically sound to utilize, upon which time, after approval (Walden IRB Approval number 08-20-19-0628692), statistical analysis proceeded. The study utilized the secondary data concerning the chosen

population of nursing homes to be analyzed in the Hampton Roads area. The dissertation advisor and committee ensures the criterion to protect secondary data.

Summary

The research is summarized by describing the plan for analysis of secondary data that provides an acceptance or rejection of the hypothesis in each of the research questions. All threats to validity are identified and addressed if found with the goal of resolution.

Section 3: Presentation of the Results and Findings

Introduction

The primary purpose of this research was to review the secondary CMS data regarding the CMS Star Quality Rating system and E-tag surveys of each of the 37 nursing facilities, in the Hampton Roads section of Virginia, that were not connected to a hospital or part of a CCRC to find a correlation, if any, between emergency preparedness and CMS star rating. With RQ1 I sought to find a correlation, if any, between the number of E-tag deficiencies, quality rating, and total beds. With RQ2 I sought to find a correlation, if any, between the number of E-tag deficiencies and CMS star rating. With RQ3 I sought the trend in the number and type of deficiencies over a three-year period from 2017-2019. Finally, with RQ4 I sought the association, over a 3-year period, 2017-2019, on the most frequently cited E-tag deficiencies in LTC facilities in the Hampton Roads area of Virginia. The decision to choose either the null hypothesis or alternative hypothesis was based on the statistical significance of the correlation, trend and/or association, if any, that may have indicated a need for better emergency preparedness of the LTC nursing facilities in the Hampton Roads area of Virginia.

In section 3 I reviewed the data collection of the secondary data set and present any discrepancies that had been discussed in Section 2 of this work. I discuss the statistical significance, trend, and association between the variables and the relevance of that information to the population. I present the correlation coefficient(s) are presented to explain the preliminary conclusion. I discuss the further analysis that presents the

statistical significance of the relationship between the variables used to answer each RQ and accept tor decline the null hypothesis.

Data Collection of the Secondary Data Set

Time Frame for Data

Data groupings originate from the current years Medicare star ratings and the 3 years preceding the current year for E-tag deficiency surveys, 2017-2019 based on availability and likely involvement in Medicare star rating outcome. The secondary data variables for RQ1 were the number of E-tag deficiencies, CMS quality rating, and total beds. The secondary data variables for RQ2 were the number of E-tag deficiencies and the overall CMS star rating. The secondary data variables for RQ3 were the number and type of E-tag deficiencies over a 3-year period from 2017-2019. The secondary data variable for RQ4 was the most frequently cited E-tag deficiencies from 2017-2019.

Baseline Descriptive and Demographic Characteristics of the Sample

In this study I describe emergency preparedness in a sample of LTC freestanding nursing facilities in Hampton Roads, Virginia. I examined the correlations amongst CMS star ratings and E-tag survey results within a specific professional category, LTC nursing facility preparedness, in a specific geographic/cultural context, Hampton Roads area of Virginia. In the study I discuss the transposition and implementation of the MOU on the introduction of measures to encourage improvements in the safety and health of facilities. The sample was chosen per geographic location in a purposive manner for LTC nursing facilities of Hampton Roads, Virginia that were free-standing and not part of a CCRC.

Results

Descriptive Statistics

Figure 1 depicts the frequency distribution histograms of the number of beds at a total of 37 LTC facilities in the Hampton Roads area of Virginia. The number of beds per facility ranged from 30 to 222, with a conspicuous mode at 120, representing 35.1% of the total number of facilities. Figure 2 depicts the highly skewed frequency distribution histogram of the number of E-tag deficiencies at the 37 facilities. The number of deficiencies per facility ranged from 0 to 20, with a conspicuous mode at 0, representing 75.7% of the total number of facilities. Figure 3 depicts the frequency distribution histogram of the overall quality star rating at the 37 facilities. The ordinal star rating ranged from 1 to 5, with a mode at 3, representing 35.1% of the total number of facilities. Figure 4 depicts the skewed frequency distribution histogram of the quality star rating for facilities and staffing at the 37 facilities. The star rating ranged from 1 to 5, with a mode at 2, representing 36.1% of the total number of facilities.

Evaluation of Statistical Assumptions

The frequency distributions of all the variables were asymmetrical and visually deviated from normal bell-curves. The quality ratings were measured using an ordinal scale. This implied that parametric statistics (e.g., mean, standard deviation, Pearson's correlation coefficients, and linear regression) were not applicable, and justified the use of non-parametric statistics (e.g., Goodman and Kruskal's gamma coefficient and Pearson's chi-Square test) to address the research questions. As shown in figure 1 below,

a little over 1/3 of the facilities, 35.1% had 120 beds, with the rest following with much lower percentiles in each category; 13.5% had 100, 13.5% had 180, 8.1% had 140, 8.1% had 60, 5.4% had 160, 5.4% had 80, 5.4% had 200, 2.7% had 220 and 2.7% had 40.

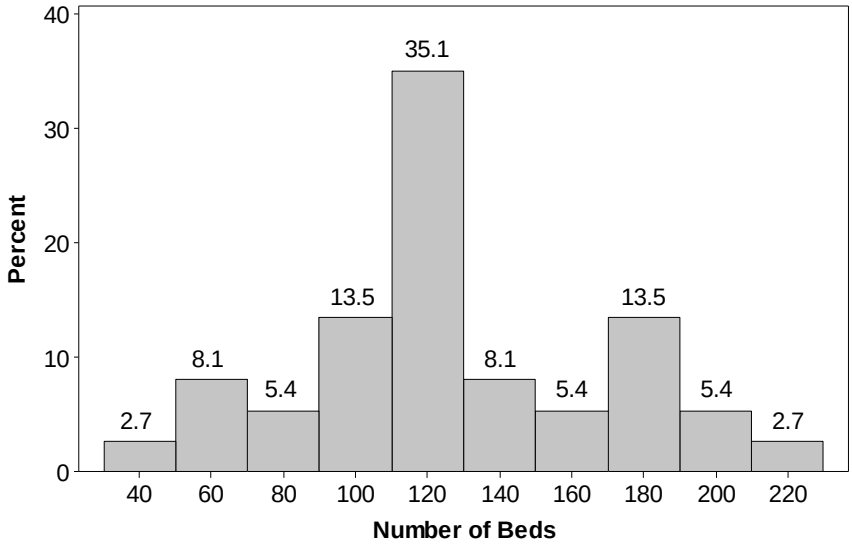

Figure 1. Frequency distribution histogram of number of beds (N = 37 facilities)

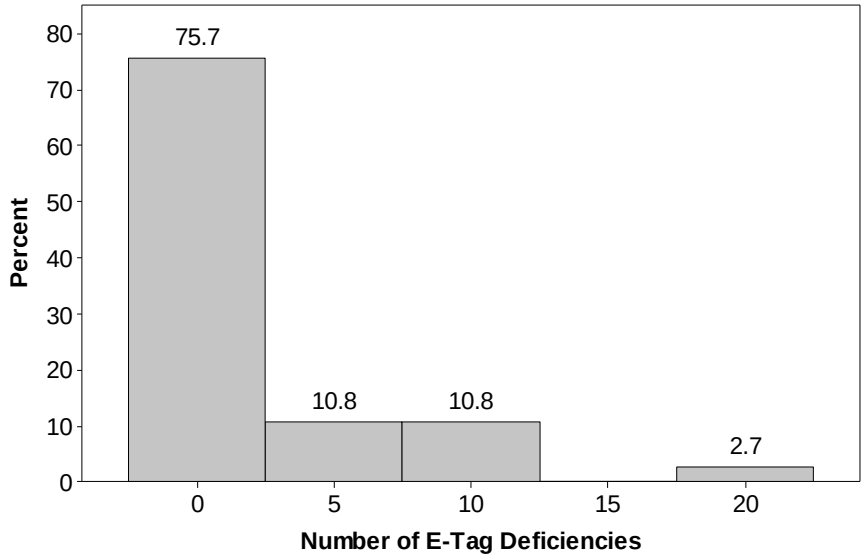

Figure 2. Frequency distribution of total number of e-tag deficiencies (N = 37 facilities)

As shown in figure 2, 75.7% of facilities had zero E-tag deficiencies, 10.8% had 5 E-tag deficiencies, and 2.7% had 20 E-tag deficiencies.

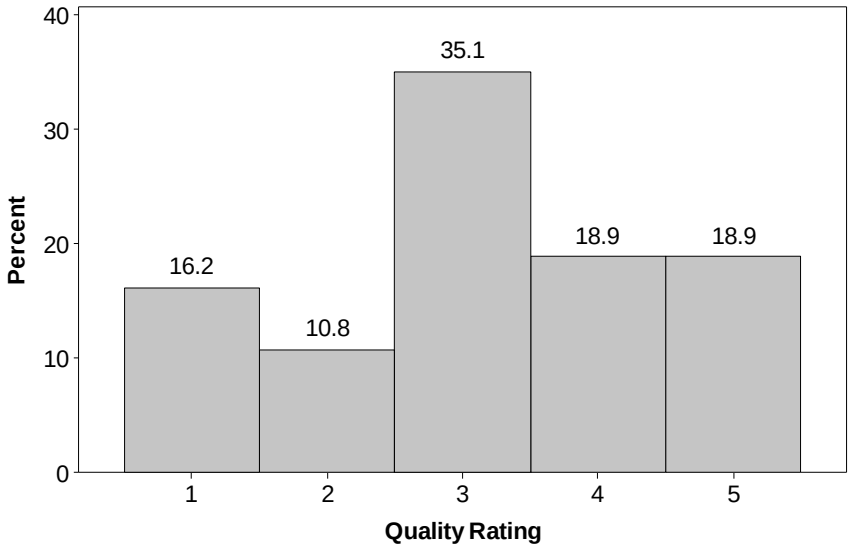

Figure 3. Frequency distribution of the Star overall quality rating (*N* = 37 facilities)

As shown in Figure 3, 16.2% had 1 star for overall quality rating, 10.8% had two stars for overall quality rating, 35.1 had three stars for overall quality rating, 18.9% had four stars for overall quality rating, and 18.9% had five stars for overall quality rating.

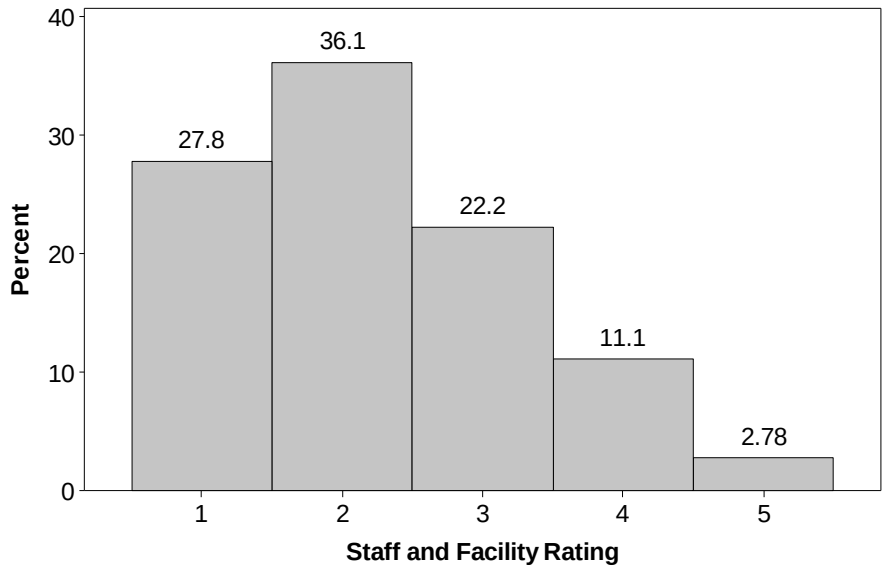

Figure 4. Frequency distribution of the Star rating for facilities and staffing (*N* = 37 facilities)

As shown in Figure 4, 27.8% of the facilities had one star for staffing, 36.1% had two stars for staffing, 22.2% had three stars for staffing, 11.1% had four stars for staffing and only 2.78% of the 37 facilities had five stars for staffing.

Statistical Analysis Findings

The data were analyzed to address RQ1: "What is the correlation, if any, between the number of E-tag deficiencies, the quality rating, and the total beds in an LTC facility in the Hampton Roads area of Virginia?" Figure 5 is a scatterplot depicting the relationship between the number of E-tag deficiencies versus the total number of beds at 37 LTC facilities in the Hampton Roads area of Virginia. Figure 6 is a scatterplot depicting the relationship between the number of E-tag deficiencies versus the total number of beds at the 37 LTC facilities. Figure 7 is a scatterplot depicting the relationship between the number of E-tag deficiencies versus the total number of beds at the 37 LTC facilities.

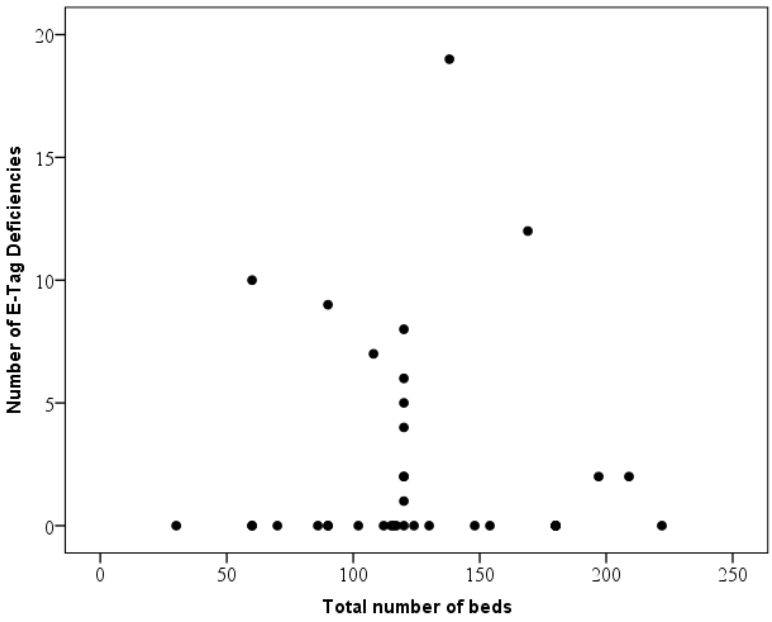

Figure 5. Number of E-tag deficiencies vs. number of beds (N = 37).

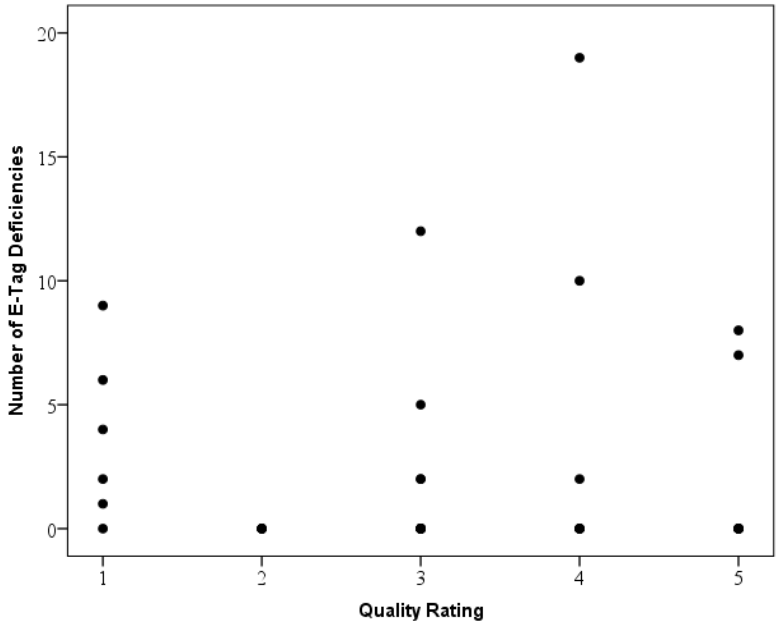

Figure 6. Number of E-tag deficiencies vs. Star quality rating (*N* = 37)

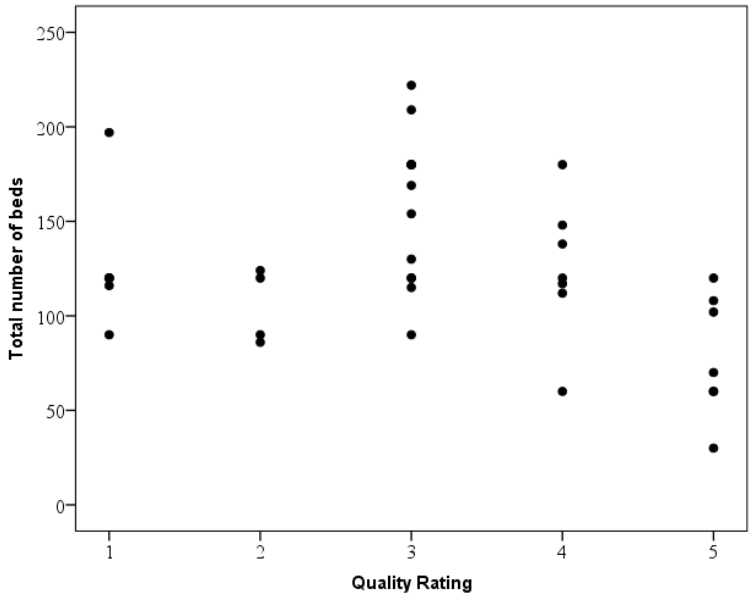

Figure 7. Number of beds vs. Star quality rating (*N* = 37)

Visual examination of the scatterplots in Figures 5, 6, and 7 indicated that the relationships between the three variables appeared to be non-linear. Table 6 presents a matrix of the Goodman and Kruskal's gamma coefficients between the three variables. The coefficients were not statistically significant at the conventional 5% level ($p > .05$).

Table 6

Goodman and Kruskal's Gamma Coefficient Between E-tag Deficiencies, Quality Rating, and Number of Beds.

	Number of E-tag deficiencies	Total number of beds
Total number of beds	.048	1
Quality rating	-.126	-.260

Note. ($N = 37$).

The statistical evidence supported the null hypothesis, that is, there was no correlation between the number of E-tag deficiencies and the quality rating and total beds in LTC facilities in the Hampton Roads area of Virginia. There was insufficient statistical evidence to support the alternative hypothesis.

The data were analyzed to address RQ2: “What is the correlation, if any, of E-tag deficiencies for emergency preparedness and the CMS star rating for the facility and staffing of LTC facilities in the Hampton Roads area of Virginia?” Figure 8 is a scatterplot depicting the relationship between the number of E-tag deficiencies versus the quality rating.

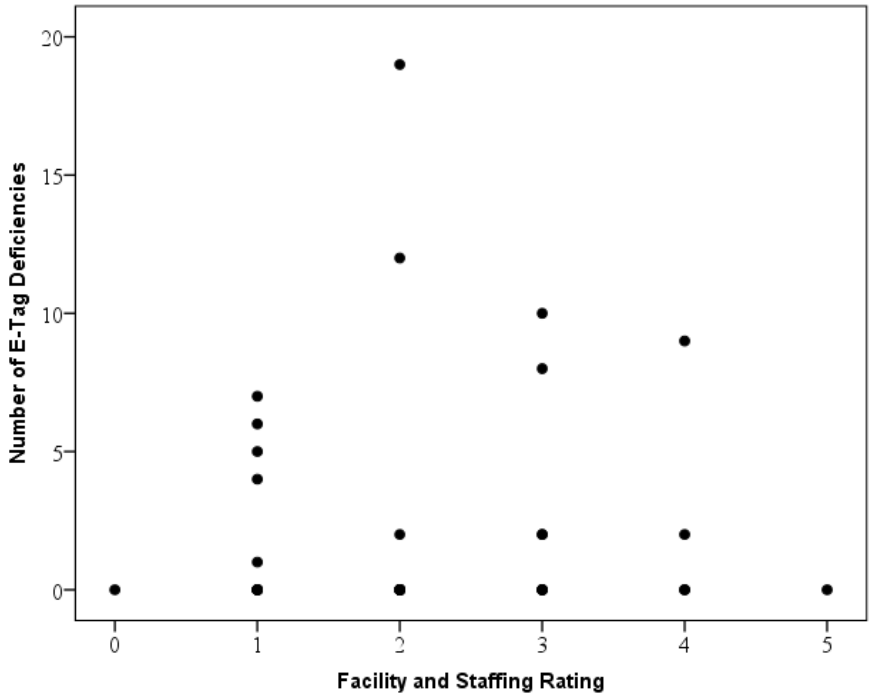

Figure 8. Number of e-tag deficiencies vs Star rating for facility and staffing (*N* = 37)

Visual examination of the scatterplot in Figure 8 indicated that the relationship between the number of E-tag deficiencies and the quality rating for facility and staffing appeared to be non-linear. The correlation between the two variables was not statistically significant at the conventional 5% level (Goodman and Kruskal's gamma [*N*, 37] = .035, *p* = .855). The statistical evidence supported the null hypothesis, i.e., there is no correlation between the E-tag deficiencies for emergency preparedness and the CMS star rating for the facility and staffing of LTC facilities in the Hampton Roads area of Virginia. There was insufficient statistical evidence to support the alternative hypothesis.

It was not possible to address RQ3 “What is the trend in the number and type of E-tag deficiencies over the 3-year time-period, 2017-2019 of the study in LTC facilities

in the Hampton Roads Area of Virginia" because insufficient data were available (see Appendix A). Five deficiencies were reported in December 2017, three from February to March 2019, and 81 between January and August 2018. A statistical comparison between 2017, 2018, and 2019 was not feasible. Table 7 shows the eight most frequent types of deficiency (> 5% each) collectively representing 66.3% of the total. Table 8 shows the 15 less frequent types of deficiency (1% to 5% each). In 2017 there were no deficiencies because regulation was not taken fully into force, 2018 had a great deal once the regulation was more closely monitored, and 2019 saw fewer as the facilities showed improvement with the implementation of the regulation so dramatic improvement can be noted.

Table 7.
Most Frequent E-tag Deficiencies

E-tag deficiency	2017	2018	2019	Total	%
1.Establish emergency prep training and testing.	1	8	0	9	10.1
2. Establish roles under a Waiver declared by secretary.	1	8	0	9	10.1
3. Establish staff and initial training requirements.	1	7	1	9	10.1
4. Establish procedures for tracking staff and patients during an emergency.	0	7	1	8	9.0
5.Address subsistence needs for staff and patients.	0	7	0	7	7.9
6.Address patient/client population and determine types of services needed.	0	6	0	6	6.7
7.Establish policies and procedures for volunteers.	0	6	0	6	6.7
8. Provide family notifications of emergency plan.	1	4	0	5	5.6

Table 8.

Less Frequent E-tag Deficiencies

E-tag deficiency	2017	2018	2019	Total	%
1. Conduct testing and exercise requirements.	0	3	1	4	4.5
2. Establish policies and procedures for sheltering.	0	4	0	4	4.5
3. Create arrangements with other facilities to receive patients.	1	2	0	3	3.4
4. Develop and maintain an Emergency Preparedness Program	0	3	0	3	3.4
5. Implement emergency and standby power systems.	0	3	0	3	3.4
6. Conduct risk assessment and an All-Hazards approach.	0	2	0	2	2.2
7. Establish methods for sharing information.	0	2	0	2	2.2
8. Provide primary/alternate means for communication.	0	2	0	2	2.2
9. Develop Emergency Preparedness policies and procedures.	0	1	0	1	1.1
10. Establish policies and procedures for medical documentation.	0	1	0	1	1.1
11. Establish policies and procedures including evacuation.	0	1	0	1	1.1
12. List the names and contact information of those in the facility.	0	1	0	1	1.1
13. Meet the requirements of an integrated health system.	0	1	0	1	1.1
14. Provide a means of sharing information on occupancy/needs.	0	1	0	1	1.1
15. Provide emergency officials' contact information.	0	1	0	1	1.1

The most frequent deficiencies (each representing 10% of the total) were "Establish emergency prep training and testing" (1 in 2017 and 8 in 2019); "Establish roles under a Waiver declared by secretary"; (1 in 2017 and 8 in 2019) and "Establish staff and initial training requirements" (1 in 2017, 7 in 2018, and 1 in 2019). Based on the available data there was insufficient statistical evidence to test the null hypothesis that there is no trend in the number of E-Tag citations over the three-year period.

It was not possible to address RQ 4: What is the association, if any, over the three-year period, 2017-2019, on the most frequently cited E-tag deficiencies of the study of LTC facilities in the Hampton Roads area of Virginia because sufficient data were not available (see Table 7). Pearson's Chi-Square test was conducted to determine the significance of the association between the frequencies in the columns of the cross-tabulation vs. the frequencies in the rows of the cross-tabulation. The result of this test (Chi-Square (14) = 9.257, p = .814) indicated that there was no significant association at the conventional 5% level. However, this test was probably invalid because 16, 50.0% of the 32 cells in the cross-tabulation had expected frequencies < 1, violating the fundamental assumption that no cells in the cross-tabulation should have expected frequencies < 1 (McHugh, 2013). There was insufficient evidence to test the null hypothesis that there is no impact from the association over the three-year period, on the most frequently cited E-tag deficiencies of the study of LTC facilities in the Hampton Roads area of Virginia. In a future study, it may be possible to re-run the data using Fishers Exact Test instead of the Pearson Chi-Square Test. According to Science Direct

(2019), it can be used as a substitute test in situations where chi-square tests are invalid because of low anticipated frequencies.

Summary

The sample consisted of 37 LTC facilities in the Hampton Roads area of Virginia. The variables (total beds, E-tag deficiencies, quality ratings) were not normally distributed, and non-parametric statistics were applicable. The statistical analysis provided inconclusive answers to the research questions, as follows:

RQ1: The null hypothesis was supported, that is, there is no correlation between the number of E-tag deficiencies and the quality rating and total beds in LTC facilities in the Hampton Roads area of Virginia. There was insufficient statistical evidence to support the alternative hypothesis to see if there was a correlation between the number of E-tag deficiencies and the quality rating and total beds in LTC facilities in the Hampton Roads area of Virginia

RQ2: The statistical evidence supported the null hypothesis, i.e., there is no correlation between the E-tag deficiencies for emergency preparedness and the CMS star rating for the facility and staffing of LTC facilities in the Hampton Roads area of Virginia. There was insufficient statistical evidence to support the alternative hypothesis. There was insufficient evidence to determine if there was a correlation between the E-tag deficiencies for emergency preparedness and the CMS star rating for the facility and staffing of LTC facilities in the Hampton Roads area of Virginia. The data analyzed to address RQ2: “What is the correlation, if any, of E-tag deficiencies for emergency

preparedness and the CMS star rating for the facility and staffing of LTC facilities in the Hampton Roads area of Virginia" as shown in Figure 8, a scatterplot depicting the relationship between the number of E-tag deficiencies vs. facility and staffing star rating, shown facilities with a five star rating having zero E-tag deficiencies and those with a 1 star rating having anywhere from 0-8 E-tag deficiencies, with the most interesting of the data being the two-star facilities having either none or close to twenty, the largest amount of E-tag deficiencies in the rating system.

RQ3: Five deficiencies were reported in December 2017, three from February to March 2019, and 81 between January and August 2018. A statistical comparison between 2017, 2018, and 2019 was not feasible. There was insufficient evidence (see appendix A) to determine if there was a trend in the number and type of E-tag deficiencies over the three-year time period of the study in LTC facilities in the Hampton Roads Area of Virginia.

RQ4: There was insufficient evidence to determine if there was an association between the most frequently cited E-tag deficiencies of the study of LTC facilities in the Hampton Roads area of Virginia

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

The purpose of this study was to review secondary data regarding the correlation, if any, between the number of emergency preparedness E-Tag survey citations and the number of Medicaid beds, total beds, and CMS star ratings for the facility and staff turnover of LTC facilities in the Hampton Roads Area of Virginia. This doctoral study contributes to the body of literature regarding the impact of the level of compliance with the CMS mandated LTC emergency preparedness plan, per the E-tag citations and corresponding star ratings and may be used to guide nursing home administrations with education and execution of emergency preparedness plans in Hampton Roads, Virginia. This research is unique because it addressed a historically under-researched area of LTC emergency preparedness (see Pierce et al., 2017), and the results of this study provided insight into characteristics of LTC facilities and the compliance with the CMS emergency preparedness rule.

The principal findings in this research are promising because the research provided insight into the most frequent E-tag deficiencies including, but not limited to emergency training, testing, staffing roles, volunteer roles, and family notifications. This insight gives way to the theoretical framework of the research. It is particularly encouraging for the application to professional practice because it illuminates particular areas of deficiency and the data shows that the highest E-tag deficiencies are distributed amongst the facilities that have 120 beds.

Interpretation of the Findings

The findings of this research confirm and expand the knowledge of the Minority Staff of the U.S. Senate Committee on Finance (2018), and the U.S. Department of Homeland Security (2018). The four most frequent E-tag deficiencies found in this research, establishing emergency prep training and testing, establishing roles under a waiver declared by secretary, establishing staff and initial training requirements, and establishing procedures for tracking staff and patients during an emergency, reinforced the key evidence brought forth by the Senate Committee on Finance on the subject of lack of preparation in nursing home emergency preparedness, while also supporting the U.S. Department of Homeland Security presentation of the need for better coordination moving forward. The first steps of coordination, such as planning, training, testing, establishing roles, organizing policies, procedures, and volunteers, and so forth, were shown to be the most disregarded and therefore cited which can be clearly noted.

In RQ1, the coefficients were not statistically significant at the conventional 5% level ($p > .05$), and the statistical evidence supported the null hypothesis, that is, there is no correlation between the number of E-tag deficiencies and the quality rating and total beds in LTC facilities in the Hampton Roads area of Virginia. There was insufficient statistical evidence to support the alternative hypothesis. In RQ2, the correlation between the two variables was not statistically significant at the conventional 5% level (Goodman and Kruskal's gamma ([*N*, 37] = .035, $p = .855$). The statistical evidence supported the null hypothesis, that is, there is no correlation between the E-tag deficiencies for

emergency preparedness and the CMS star rating for the facility and staffing of LTC facilities in the Hampton Roads area of Virginia. There was insufficient statistical evidence to support the alternative hypothesis.

Analysis and Interpretation of the Findings in the Context of the Theoretical Framework

The theoretical framework of this research was Rogers (1995) diffusions of innovation. Roger's theoretical work could be applied to LTC facility emergency management preparedness planning regarding the process of making the plan and also process improvement once a plan is in place. The approach provides details on the evolution of change, inclusive of social change, that emerge as a result of development, training and the learning process. The diffusion of innovation theory be applied to be used by nursing home administrators to emphasize how emergency project management, as a process of preparedness, planning, and executing, can create opportunities for successful outcomes in both internal and external emergencies. I quantitatively analyzed the impact of E-tag deficiencies on nursing homes by selecting variables and parameters that indicated the areas of severe deficiency in emergency preparedness E-tags. The interpretation of these findings is a recommendation to better adhere to and apply coordination strategies within the nursing home facilities in reference to emergency preparedness and the CMS Final Rule to improve the conditions of preparedness that may alter the course of disaster activity during an impending threat. Nursing facilities and

those who run them, nursing home administrators, must create better coordination to avoid future deficiencies and disaster.

Limitations of the Study

The limitations of this research are defined according to the limitations set by a statistical analysis, by the management of the secondary data and the availability of the samples. The data analysis methodology applicable to test for associations that included ordinal level variables (i.e., the Medicare star ratings) was the Goodman & Kruskal's gamma test. Laerd Statistics (2019) stated that using an ordinal scale, Goodman and Kruskal's gamma (*G* or γ) is a nonparametric measure of the strength and direction of association that exists between two variables that is best to use when there are variables that can be assessed through star ratings, and it is assumed that the variables are monotonic in nature and measured on an ordinal scale. The main limitation the research suffered was due to insufficient data, that is, to answer RQ3 (see Appendix A), and for RQ4 (see Table 7).

According to Kicinski (2014), publication bias from only publicizing statistically significant positive outcomes, is an ongoing threat to medical research, and therefore, Kicinski supports the practicality of limiting publication bias by publishing inconclusive results. Therefore, although the findings of this research were largely inconclusive, they may lay a much-needed foundation for a future combination through replication of this research and then the combination of replication with meta-analysis.

Recommendations

The recommendations stemming from this research are three-fold. The first recommendation for future research is to secure sufficient data from a wider range of like facilities encompassing a bit more of the Southeastern part of Virginia that will provide a plethora of statistical evidence for generalization. The second recommendation has to do with the foundational knowledge of the subject matter. The literature review shows that while there is a great deal of literature, foundational knowledge, and regulation, that knowledge is not being translated into practice. The findings of this research does not mean that a correlation between the E-tags and Medicare star ratings do not exist, but that more research needs to be done and, in addition, highlights the following areas to be considered moving forward in addition to securing sufficient data, facilities need better facility teamwork and coordination through the use of communication. The third recommendation is making a more comprehensible communication tool to transmit the CMS Final Rule regulations so that facilities are able to abide by the regulation, implement the regulatory necessities and avoid E-tag deficiencies and the dangers associated with that risk.

For example, the most common E-tag in this study, establishing emergency prep training and testing, can help facility administrators in their role. According to the Emergency Preparedness E-tag Guidelines (CMS, 2017c), the E-tag states that the facility has an obligation to not only develop, but also maintain an emergency preparedness training and testing program that is constructed on the emergency plan set forth including

risk assessment, policies and procedures, and the communication plan. In addition, it is essential that the training and testing program be reviewed and updated annually. By acknowledging the responsibility of their role as administrator, they are then able to take any facility-specific risks, for example, in Hampton Roads, flooding, and gear their emergency plan toward the inclusion of policies and procedures for closure or evacuation of their nursing home and include those policies and procedures in the training and testing program. Training and testing will be inclusive of communication of either facility evacuation or closure to essential persons and agencies, testing the patient tracking system and reviewing transportation procedures for transporting patients to other facilities safely. Emergency preparedness training refers to the nursing homes' responsibility to provide both education and training to not only the staff, but also the contractors, and volunteers. Testing occurs when training is operationalized, and the nursing home can appraise the success of the training and the emergency preparedness program on a whole. Testing refers to conducting exercises that test the emergency plan to be able to do two things; identify any existing gaps, and look for any areas for improvement. This information can make the nursing home administrator not only more knowledgeable but more proactive and prepared for emergencies. The administrator is then able to take this pertinent information, alter the plan, policy, and/or procedure for maximum efficiency, fill the gap and make these changes to their team, implementing with appropriate communication skills to result in a reduction of risk, reduction in E-tag deficiencies and better emergency preparedness.

Implications for Professional Practice and Social Change

This research reflects on the impact of emergency preparedness on nursing homes and their patients. The findings from the study variables evaluated the correlations, or lack thereof, between the star ratings and the E-tag deficiencies which is useful for educational purposes to inform nursing home administrators of the compromised emergency preparedness in their facilities with regard to the compliance with the CMS Final Rule and the MOU. This may indicate the opportunity for social change to improve emergency preparedness and outcomes after a disaster.

Informing the nursing home community and nursing home administrators regarding the common deficiencies in E-tag surveys that may indicate the lack of preparedness to care for their patients in time of emergency may result in a significant social change by highlighting the need for administrators to adhere to the CMS Final Rule on emergency preparedness, and to develop and maintain policies and procedures that will train and educate their staff, volunteers, and families of the residents to ensure safety during an emergency.

Professional Practice

Individual facility emergency preparedness plan evaluations that are inclusive of focus on the most common E-tag deficiencies may provide a point of reference for the facilities to improve the protocols, policies, and procedures of the plans before, during and after an event or disaster. The coordination of an emergency preparedness plan and subsequent drills. must begin with the nursing home administrator and management. In

addition to the application of appropriate drills and testing of equipment, coordination through open lines of communication is vital to improvement. All the stakeholders in each nursing facility must be vested in an environment of appropriate safety and training.

Methodological, Theoretical, and Empirical Implications

The research uses quantitative, secondary data, that deals with computing and evaluating variables in order to get results. Per Albers (2017), there are three major didactic goals that need to be imparted and understood when learning, using, and analyzing quantitative data. The first is deciding what questions are of the utmost importance, the second is supposing the potential relevance of those questions, and the last is determining how to recognize the associations (or lack thereof) within the data. This research used secondary data available from both data.gov and Medicare.gov, which was a compilation of surveys collected from each of the nursing homes in the Hampton Roads Virginia area. They are variables that are used by CMS for Medicare star ratings and emergency preparedness planning. The variables are the parameters that could be used to measure the evaluation for the impact of appropriate emergency preparedness and the overall rating of the nursing homes. The theory is to find any correlations between the Medicare star ratings and E-tag deficiencies before a major event and to showcase the need for more coordination and planning before an event occurs. The increase of awareness and planning before disaster will demonstrate improvement for the facilities. This theory could be generalized to other facilities throughout the country, particularly those in areas that are threatened by natural occurrences.

The empirical methods that were used in this research were the observation and measurement of the stricture designated to measure the research question. The empirical portion of the research is the secondary data, i.e., we know there are many E-tag deficiencies within the reports because we can observe them as they already exist, but the implication is a bit more difficult. The implication of the research lent itself to a lack of preparation and preparedness that led to the deficiencies and the formulation of hypothesis and subsequent rejection or non-rejection of the hypothesis along with it.

Positive Social Change

The positive social change that may result from this research could be the promotion of more progressive and aggressive means of emergency preparedness in nursing facilities. Better, more capable preparedness practice to improve conditions and result in a risk reduction. This research will impact the nursing home community and will promote each nursing home to become more prepared as they look to avoid disaster associated with events. In addition, facilities can avoid receiving deficiencies and save time by not having to go back and correct their emergency preparedness plans. Finally, the facility can better train and educate not only their staff but also the family members of the residents, putting their loved ones' minds at ease knowing that they are safe in case of emergency. This contribution will reduce caregiver stress. Overall, this research will positively impact the nursing home community and those association with it.

Conclusion

With the Baby Boomer generation continuing to age and become residents of nursing homes, this study provides evidence that may positively contribute to nursing home practice and create an effective model to guide nursing home administrators to effectively plan and implement emergency preparedness plans in their facilities to reduce risk and create improved safety. The results of the research can be a stronghold example of the knowledge gap and the need for more research in this area of healthcare. Future analysis of data and meta-analysis can help inform healthcare and government leaders of the results of this study and future studies that may lead to the development of more precise healthcare policy to drive the creation of a comprehensive and easily implementable emergency preparedness plan in every nursing home facility.

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Appendix A

E-tag deficiencies

Survey Date	Deficiency Tag Number	Deficiency Description	Scope Severity Code
11/12/2017	36	Establish emergency prep training and testing.	F
11/12/2017	35	Provide family notifications of emergency plan.	F
11/12/2017	37	Establish staff and initial training requirements.	F
11/12/2017	26	Establish roles under a Waiver declared by secretary.	F

11/12/2017	25	Create arrangements with other facilities to receive patients.	F
01/26/2018	37	Establish staff and initial training requirements.	C
01/26/2018	36	Establish emergency prep training and testing.	C
02/14/2018	24	Establish policies and procedures for volunteers.	C
02/142018	15	Address subsistence needs for staff and patients.	C
02/14/2018	37	Establish staff and initial training requirements.	C
02/14/2018	22	Establish policies and procedures for sheltering.	C
03/19/2018	32	Provide primary/alternate means for communication.	C
03/19/2018	39	Conduct testing and exercise requirements.	C
03/19/2018	26	Establish roles under a Waiver declared by secretary.	C
03/19/2018	42	Meet the requirements of an integrated health system.	C
03/19/2018	31	Provide emergency officials' contact information.	C
03/19/2018	24	Establish policies and procedures for volunteers.	C
04/09/2018	36	Establish emergency prep training and testing.	C
04/09/2018	15	Address subsistence needs for staff and patients.	C
04/09/2018	18	Establish procedures for tracking staff and patients during an emergency.	C
04/09/2018	7	Address patient/client population and determine types of services needed.	C
04/09/2018	41	Implement emergency and standby power systems.	C
04/09/2018	33	Establish methods for sharing information.	C
04/09/2018	26	Establish roles under a Waiver declared by secretary.	C

04/20/2018	7	Address patient/client population and determine types of services needed.	C
04/20/2018	36	Establish emergency prep training and testing.	C
04/20/2018	24	Establish policies and procedures for volunteers.	C
04/20/2018	18	Establish procedures for tracking staff and patients during an emergency.	C
04/20/2018	25	Create arrangements with other facilities to receive patients.	C
04/20/2018	15	Address subsistence needs for staff and patients.	C
04/20/2018	39	Conduct testing and exercise requirements.	C
04/20/2018	26	Establish roles under a Waiver declared by secretary.	C
04/05/2018	22	Establish policies and procedures for sheltering.	C
04/05/2018	15	Address subsistence needs for staff and patients.	C
04/05/2018	33	Establish methods for sharing information.	C
04/05/2018	23	Establish policies and procedures for medical documentation.	C
04/05/2018	34	Provide a means of sharing information on occupancy/needs.	C
04/05/2018	6	Conduct risk assessment and an All-Hazards approach.	C
04/05/2018	37	Establish staff and initial training requirements.	C
04/05/2018	20	Establish policies and procedures including evacuation.	C
04/05/2018	41	Implement emergency and standby power systems.	C
04/05/2018	24	Establish policies and procedures for volunteers.	C
04/05/2018	30	List the names and contact information of those in the facility.	C
04/05/2018	35	Provide family notifications of emergency plan.	C

04/05/2018	39	Conduct testing and exercise requirements.	C
04/05/2018	26	Establish roles under a Waiver declared by secretary.	C
04/05/2018	4	Develop and maintain an Emergency Preparedness Program (EP).	C
04/05/2018	36	Establish emergency prep training and testing.	C
04/05/2018	7	Address patient/client population and determine types of services needed.	C
04/05/2018	18	Establish procedures for tracking staff and patients during an emergency.	C
04/05/2018	32	Provide primary/alternate means for communication.	C
05/17/2018	36	Establish emergency prep training and testing.	C
05/17/2018	15	Address subsistence needs for staff and patients.	C
05/17/2018	7	Address patient/client population and determine types of services needed.	C
05/17/2018	4	Develop and maintain an Emergency Preparedness Program (EP).	C
05/17/2018	37	Establish staff and initial training requirements.	C
05/17/2018	18	Establish procedures for tracking staff and patients during an emergency.	C
05/17/2018	26	Establish roles under a Waiver declared by secretary.	C
05/17/2018	24	Establish policies and procedures for volunteers.	C
05/17/2018	22	Establish policies and procedures for sheltering.	C
05/17/2018	35	Provide family notifications of emergency plan.	C
06/05/2018	26	Establish roles under a Waiver declared by secretary.	C
06/05/2018	24	Establish policies and procedures for volunteers.	C

06/05/2018	25	Create arrangements with other facilities to receive patients.	C
06/05/2018	18	Establish procedures for tracking staff and patients during an emergency.	C
06/05/2018	15	Address subsistence needs for staff and patients.	C
06/05/2018	35	Provide family notifications of emergency plan.	C
06/05/2018	37	Establish staff and initial training requirements.	C
06/05/2018	36	Establish emergency prep training and testing.	C
06/05/2018	7	Address patient/client population and determine types of services needed.	C
06/28/2018	37	Establish staff and initial training requirements.	C
06/28/2018	36	Establish emergency prep training and testing.	C
07/13/2018	6	Conduct risk assessment and an All-Hazards approach.	C
07/13/2018	35	Provide family notifications of emergency plan.	C
07/13/2018	41	Implement emergency and standby power systems.	C
07/13/2018	26	Establish roles under a Waiver declared by secretary.	C
07/13/2018	37	Establish staff and initial training requirements.	C
07/13/2018	4	Develop and maintain an Emergency Preparedness Program (EP).	C
07/13/2018	22	Establish policies and procedures for sheltering.	C
07/13/2018	15	Address subsistence needs for staff and patients.	C
07/13/2018	7	Address patient/client population and determine types of services needed.	C
07/13/2018	18	Establish procedures for tracking staff and patients during an emergency.	C

07/13/2018	36	Establish emergency prep training and testing.	C
07/13/2018	13	Develop Emergency Preparedness policies and procedures.	C
08/03/2018	18	Establish procedures for tracking staff and patients during an emergency.	C
08/03/2018	26	Establish roles under a Waiver declared by secretary.	C
02/07/2019	39	Conduct testing and exercise requirements.	C
03/15/2019	37	Establish staff and initial training requirements.	C
03/15/2019	18	Establish procedures for tracking staff and patients during an emergency.	C