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A Bird in Hand: An Examination of the Influence of Nursing School Proximal Density on Hospital Quality of Care Outcomes in U.S. Hospitals

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Abstract

While nurse staffing shortage is generally true, it is not universal, and it remains unclear the degree to which variation in local staffing markets might influence the relationship between nurse staffing and care quality. This study seeks to determine the effect of nurse staffing markets on the quality of hospital care delivered in U.S. hospitals by examining the relationship between the proximal density of nurse staffing resources to hospitals and patient-reported care quality outcomes. This examination analyzes hospital performance on (Hospital Consumer Assessment of Healthcare Providers and Systems) *HCAHPS* based on the proximal density of nursing schools. The analysis combines data from Centers for Medicare and Medicaid Services (CMS) *Hospital Compare* ($N_1 = 2959$) and U.S. nursing school locations from the American Association of Colleges of Nursing ($N_2 = 811$) via a series of binary logistic regressions to determine whether local nurse staffing availability is related to hospital's attainment of either low or high star quality ratings. A sensitivity analysis is also offered to determine the association with 1, 3, and 5-star ratings. The findings suggest that the odds of receiving both a low-star rating and a high-star rating of *HCAHPS* performance increase as proximal density increases while the odds of receiving a 3-star rating decrease. Hospitals are able to achieve the highest levels of performance as high performing hospitals in high-density markets seem to be taking advantage of resource availability to establish close, strong ties with nurse staffing resources as opposed to viewing nurses as an easily replaceable resource.

Keywords

quality improvement, performance measures, organizational theory, nurses, health services research

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What do we already know about this topic?
Based on the current literature, it is unclear the degree to which variation in local staffing markets might influence the relationship between nurse staffing and care quality.
How does your research contribute to the field?
This study contributes by showing that the availability of nurses in local markets has a relationship to hospital care quality ratings by measuring organizational geographic access to resources.
What are your research's implications towards theory, practice, or policy?
By utilizing geographic information systems (GIS) theory and methodology, this approach offers practitioners and policymakers a systematic lens to understand the impact of the persistent nursing shortage on quality outcomes in the United States.

Introduction

Nurse staffing is a critical component of the delivery of high-quality care in U.S. hospitals.[1-4] Previous research has shown there are negative effects on hospital performance when there are insufficient nurses available to meet patient needs.[5-7] Despite the plethora of literature on the implications of the nursing shortage, little consideration has been given to the implications of localized healthcare resources on care quality outcomes. Appreciating the geographic distribution of nurse staffing markets, in particular, may help to uncover the degree to which the external context of hospitals might influence care quality outcomes.

Nurse staffing has long been acknowledged as central to healthcare quality and mortality performance outcomes in hospitals.[8-11] However, the nursing shortage has been noted as a major threat to achieving desired quality performance and has persisted despite the evidence pointing to its negative impact.[2,4,12,13] In an effort to offer a solution to this ongoing trend, hospitals have been recommend to maintain certain nurse to patient staffing ratios.[14] Despite this, the ability to meet recommended and in some instances mandated nurse to patient staffing ratios is varied as the shortage of nurses persists, and scholars find that in nursing workplaces, such as hospitals, there persists a lack of available nurses to fulfill patients need for services.[11,13,15] However, some local nurse markets are not operating in a shortage, and some may even be operating in a surplus of available nurses.[16]

Many studies have examined the relationship between nurse staffing ratios and patient quality outcomes, and find a positive relationship between more nurse staffing and higher quality outcomes.[17-19] While it is clear that nursing availability within hospitals has a positive effect on quality outcomes,[14,20] what remains unclear is the degree to which nurse availability in local markets relate to quality of care outcomes. Local markets are comprised of both hospitals, nurses' primary setting for employment, and nursing schools. The extent to which nursing schools are geographically located in proximity to hospitals may shape the landscape of the nursing workforce and labor market which may, in turn, have important implications for hospital performance metrics.[21]

In the U.S., the context of the present study, there is a saying that "a bird in hand is worth 2 in the bush" which relays the notion that it is better to use what you have available to you than to hope for better elsewhere. Questions remain whether that rings true regarding the relationship between nurse staffing and hospital care quality. The purpose of this study is to examine the influence of local nurse staffing on care quality outcomes. Proximal density is a measure of the availability of resources in a defined geographic area by using geographical information systems (GIS) software, and, with respect to this study, this measure assesses the density of nursing staffing resources to each hospital. A recent study found a negative relationship between proximal density of these resources on care quality outcomes in nursing homes in a single state context.[21] In this examination, we analyze the effect of proximal density of nurse staffing on hospitals *HCAHPS* star ratings using data taken from CMS' *Hospital Compare* and the American Association of Colleges of Nursing. Using resource dependence theory (RDT) as a conceptual framework, a hypothesis of an inverse relationship between localized nurse staffing markets and hospital care quality performance, 1 in which as nurse staffing availability increases hospital performance decreases is analyzed. The nationally representative sample of 2959 hospitals and 811 nursing schools is analyzed using GIS software and binary logistic regression via Stata statistical software.

Conceptual Framework

A conceptual framework that helps to explain the manner in which this environment might influence hospital quality of care is the resource dependence theory (RDT).[22] RDT suggests that having ready access to a resource makes that resource less valuable which could lead to negative outcomes. This theoretical framework contributes to the explanation of the behavior, structure, stability, and change of organizations.[23] Availability of resources and the type of relationship, whether it be formal or informal, can elude to an organization's outcomes.[24] In this case, the resources would be local nurse staffing markets and their relationship with hospitals. However, if these nurses are viewed as a replaceable resource,

that could alter the way in which hospitals value those key resources.[25] Previous examinations of the influence of proximal density of nursing schools on care quality outcomes present mixed results. In the examination of the proximal density of these resources on care quality outcomes in nursing homes, for example, find a negative relationship in 1 state,[21] but a positive relationship nationally.[26]

RDT as a theory as an important framework to understand in the context of proximal density of nursing resources on care quality outcomes in hospitals. The theory argues that an organization's performance is determined by organizational access to critical resources[27] and looks at the ways in which access to these resources can offer organizations a competitive advantage.[28] Organizations typically depend on resources for survival where environmental pressures determine resources.[29] The supply of the nursing workforce and the demand of goods/services from an organization can play a role in these pressures. Therefore, the resources dependence theory (RDT) is drawn upon to better understand these differing outcomes and how care quality outcomes may be different in different proximal density situations.

RDT suggests that being in close distance to nursing schools lessens commitment between staff and outcomes because organizations may not be as worried about retaining

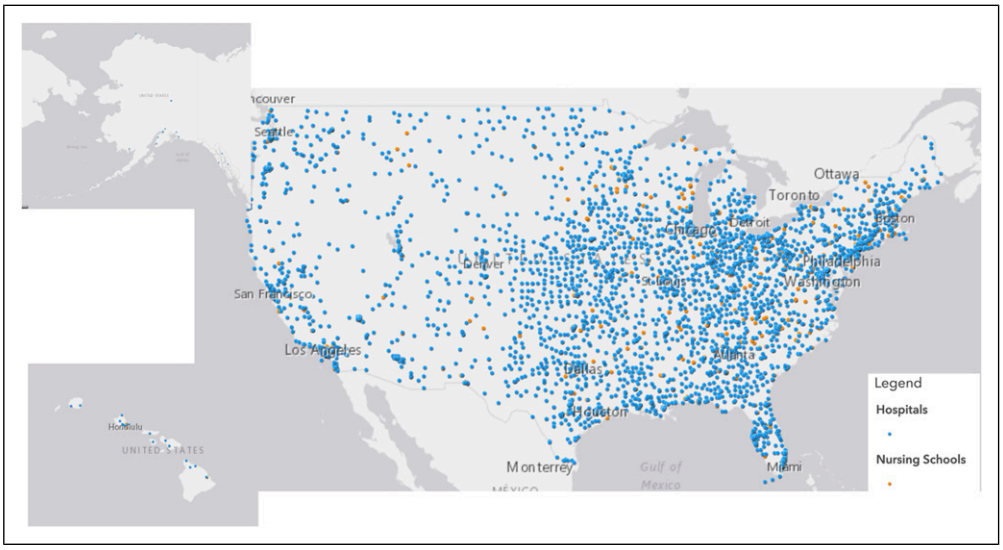

Figure 1. National points for hospitals and nursing schools.

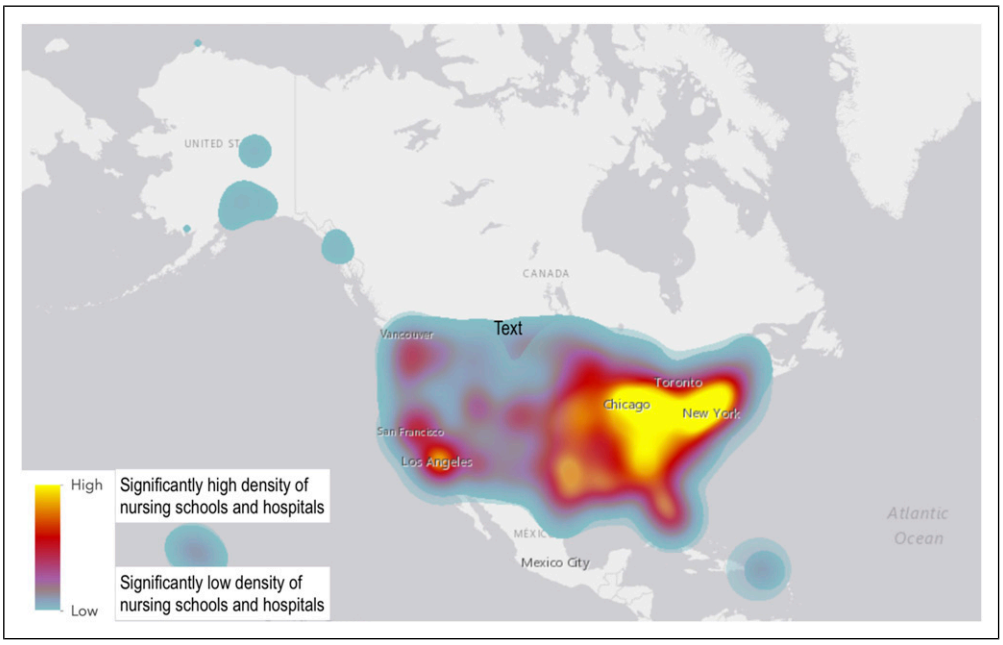

Figure 2. National hot spot analysis.

their resources.[22] By having many nurses available, healthcare managers may see them as easily replaceable resources. This leads to the de-commitment of these nurses. Also, recruitment and retention may not be given much emphasis. Because of the lack of investment of the nurses and commitment from the nurses, lower quality outcomes may occur.

Hypothesis

Figure 1 displays the distributions of U.S. nursing schools and hospitals. The primary source of nurse staffing availability is nursing schools and the number of nursing schools has been noted as central to the nursing shortage.[30] Currently, there is a lack of nursing schools and faculty equipped to prepare the next generation of nurses.[31] In addition to the lack in nursing schools to meet the demand for nursing staff, nursing schools are also not distributed to meet the needs of the U.S. healthcare system. The use of GIS allows for the depiction of geographically verified nursing shortages. Figure 2 shows the "cold spots," which would be marked by significant low densities of hospitals and nursing schools. Hospitals cold spots are similar to population patterns across the U.S. with the northeast and southeast remaining predominantly "hot" compared to the rest of the nation. These gaps, or cold spots, may result in declines in the quality of care, an inability to address specific types of health issues, or negatively impact the financial accessibility or supply of key health services.[10]

Concentrations of resources may be valued differently to different hospitals, in turn changing how hospitals may behave. In areas where there are high concentrations of nurse staffing resources, the resources likely will not be viewed as a valuable commodity because they are readily available. In this case, nurses who originate from the nurse staffing resource (ie, a nursing school within a given proximity) may become less loyal to the facilities they are working within, leading to more turnover and lower quality outcomes. This information suggests that hospital administrators should be more aware of the ways proximal density to nurse staffing resources could be used to their advantage.

In areas where there are low concentrations of nurse staffing resources, competition rises, creating an environment where resources are harder to sustain.[27] Where resources are more difficult to obtain, there is a lack of qualified nurses and nursing students preparing to enter the hospital workforce. This creates a market where resources are sparse and hard to obtain. Therefore, competition increases in an effort to gain nursing resources. In turn, when access to these resources is lost, replacement costs will increase. Thus, commitment to nursing staff, training, and their satisfaction would be lower, leading to lower levels of patient satisfaction.[32] Retention of nurses is also an issue in hospitals where high concentrations of nurse resources leads to less commitment and more turnover and then to lower care quality outcomes. This conceptual framework leads to the following hypothesis:

Hypothesis$_1$: When local nurse staffing resources are higher, hospital care quality ratings are lower.

Methods

Data and Sample

The sample of U.S. hospitals came from the *Hospital Compare* dataset hosted by Medicare.gov. The *Hospital Compare* database provides information on all hospitals that are Medicare-certified in the nation. As of July 2017, there were 4813 hospital providers in the data set. Of these hospitals, satisfactory GIS coordinate information was determined for 3294. From there, 335 were dropped due to missing variable criteria and equated to a sample of 2959 for the study. The database provides the organization's general information, overall rating scores, staffing, and patient outcome information. The data was downloaded as a CVS file for the integration of Microsoft Excel and SPSS, a statistical software program.

The nursing school dataset of accredited schools comes from the American Association of Colleges of Nursing. It contains accreditation dates, nursing degrees offered, and zip code information to calculate proximal density. For the nation, as of July 2017, there were 811 accredited nursing schools. The information was stored in a Microsoft Excel spreadsheet to compare the hospital database easily. Furthermore, the accredited nursing schools were cross-referenced with *The Campaign for Nursing's Future* - Johnson and Johnson and other Boards of Nursing datasets to validate the geographical data and other related descriptive data.

Variables

A model of the components of hospital overall star rating and proximal density to nursing schools was constructed. Key dependent variables examined in the study included hospital overall care rating. The measures includes a star rating, ranging from 1-star (much below average) to 5-stars (much above average). In the *Hospital Compare* dataset, the *Overall* hospital rating includes 57 of the more than 100 measures reported on Hospital Compare, divided into 7 measure groups or categories: mortality, safety of care, readmission, patient experience, effectiveness of care, timeliness of care, and efficient use of medical imaging. This rating is based on facility performance for all star rating measures collectively, each of which has its own five-star rating. The star rating system has been found to be both valid and reliable.[33] The star ratings were dichotomized ("high rating," "low rating," 1-star, 3-star, 5-star) with a high rating equaling a 4- or 5-star rating and a low rating equaling a 1- or 2-star rating.

The key independent variables of proximity included: (a) number of schools within 20 miles and (b) number of schools within 10 miles. These proximities were chosen based on the average commuting distance across the U.S.[34] Controls

included: (a) hospital bed size, (b) ownership type, and (c) facility type. Hospital bed size is the number of beds within a facility. Ownership type whether facility identifes as for-profit, nonprofit, or government entities, with nonprofit as the reference category. Facility type is whether a faciity identifies as general acute care, critical access, or another type other (ie, military, rehabilitation, children, special, long-term care, and psychiatric) with other as the reference category.

Statistical Model

Because the dependent variable is dichotomous, binary logistic regressions were employed to examine the relationship between staffing availability and care quality outcomes. A series of models were undertaken based on the proximal density variables on hospital overall outcome rating. The star ratings were dichotomized ("high rating," "low rating," 1-star, 3-star, 5-star). A high rating equates to a 4- or 5-star rating and a low rating equates to a 1- or 2-star rating. The ratings were analyzed according to published top-box and star-rating methodologies.[35] Other variables were controlled for in the model to account for the effects of nurse staffing within hospitals. In each model, odds ratios are reported instead of coefficient values. The analysis differed slightly from the target sample's (n = 3294) key study variables based on available data in the dataset (n = 2959), a difference of 335. Inclusion was based, in part, by the ability to specifically locate GIS coordinates with the facilities address.

Analysis

Geographical information systems (GIS) are an analysis method that can provide unique insights regarding the extent of the nursing shortage dilemma. By utilizing GIS, this study yields the opportunity to measure where nursing market resources exist and how these resources are affecting hospital outcomes. GIS creates an avenue for looking at the same problem in a different light by providing a geographical representation of the nursing market. The distance between nursing schools and hospitals was calculated using the Near as Table tool in ArcMap 10.4.1. This provided a measurement in meters between a school and the nearest hospital and the hospital to the nearest school. To assess the number of facilities within 20 miles and 10 miles of a school, we utilized 2 buffers at preset mile distances around each school. These were then intersected to determine which facilities fell within these buffers. At this point, the number of facilities within these ranges were counted. As a final step, we repeated the processes for facilities to find how many schools are within the set miles of their location.

Using these counts, spatial statistics were applied to identify optimized hotspots within the nation in terms of the number of facilities and schools within a county. Optimized hot spot analysis works by comparing geophysical neighbors to 1 another and indicates the probability of a county with an unusually high or low count of a feature (in this case schools and hospitals) relative to their neighbors is a function of random chance. Hot spots can help reveal competition in different industry environments.[36]

Results

The results of the analysis indicate an increase in the likelihood of a low-star rating in areas of higher proximal density (20-mile, 10-mile) confirming the hypothesis, but also indicates, paradoxically, an increase in the likelihood of a 5-star rating (10-mile proximal density). This finding, that both the highest and lowest performing hospitals are operating in contexts with the highest concentration of available nurses, suggests that while some hospitals' administrators operate according to the theoretical assumptions of RDT, the administrators within the highest performing hospitals may not. Instead, these organization's performance suggests that

Table 1. Summary Statistics.

Variable n = 2,959		Percent Value	Mean	Standard Deviation	Min	Max
Star rating	Overall rating		3.04	.817	1	5
	Low rating (1-2 stars)	23.7	1.87	.375	1	2
	High rating (3-4 stars)	27.8	4.07	.405	4	5
	1-Star rating	3.2	.02	.148	0	1
	3-Star rating	48.6	.35	.478	0	1
	5-Star rating	2.0	.01	.120	0	1
Hospital bed size			161.46	181.20	8	1763
Ownership type	For-profit	21.2	.21	.41	0	1
	Government	19.8	.27	.44	0	1
Facility type	General acute care	92.3	.85	.36	0	1
	Critical access	6.6	.11	.31	0	1
Proximal density	20 miles		2.21	4.19	0	30
	10 miles		1.09	2.16	0	16

Table 2. Binary Logistic Regression Analysis for Factors Associated with Low Rating and High Rating.

Variables n = 2,959		Low Rating	High Rating	Low Rating	High Rating
Proximal density	20 miles	1.063 (.000)	.985 (.244)		
	10 miles			1.105 (.000)	.978 (.364)
Hospital bed size		1.003 (.000)	1.000 (.178)	1.003 (.000)	1.000 (.168)
Ownership type	For-profit	1.957 (.000)	.467 (.000)	1.945 (.000)	.468 (.000)
	Government	1.145 (.319)	.382 (.000)	1.131 (.364)	.383 (.000)
Facility type	GAC	8.637 (.000)	1.784 (.079)	8.242 (.000)	1.785 (.079)
	Critical access	1.790 (.411)	1.430 (.326)	1.686 (.459)	1.436 (.321)
Chi square (df=6)		332.129 (.000)	91.998 (.000)	322.592 (.000)	91.441 (.000)

Odds ratios is the top value, P-value reported in parentheses. Statistical Significance at P<.05.
Low rating = 1-2 stars, High rating = 3-4 stars.

Table 3. Binary Logistic Regression Analysis for Factors Associated with 1-Star, 3-Star, and 5-Star Rating.

Variables n = 2,959		1-Star Rating	3-Star Rating	5-Star Rating	1-Star Rating	3-Star Rating	5-Star Rating
Proximal density	20 miles	1.124 (.000)	.976 (.024)	1.040 (.241)			
	10 miles				1.281 (.000)	.919 (.000)	1.102 (.097)
Hospital bed size		1.003 (.000)	1.000 (.693)	.999 (.237)	1.002 (.000)	1.000 (.256)	.999 (.187)
Ownership type	For-profit	2.133 (.020)	1.042 (.685)	1.065 (.858)	2.112 (.023)	1.045 (.663)	1.076 (.835)
	Government	2.642 (.002)	.701 (.000)	.224 (.015)	2.755 (.001)	.695 (.000)	.228 (.016)
Facility type	GAC	3.310 (.253)	5.269 (.000)	.423 (.121)	2.564 (.356)	5.043 (.000)	.448 (.150)
	Critical access	.000 (.995)	3.797 (.000)	.110 (.055)	.000 (.995)	3.592 (.000)	.119 (.064)
Chi square (df=6)		119.716 (.000)	62.870 (.000)	18.292 (.004)	126.673 (.000)	73.356 (.000)	19.384 (.004)

Odds ratios is the top, P-value reported in parentheses. Statistical Significance at P<.05.

administrators in these hospitals operate according to the assumptions of another framework, the social network theory (SNT), suggesting, perhaps, that the variance in performance may be based on a different appreciation of the underlying value of nursing resources.

A series of analyses were undertaken to determine the influence of proximal density of nurse schools on hospital quality outcomes. In each model, ratings were broken down into categories to examine proximal density association with hospital star rating. This analysis was used to assess the influence of each proximity variable (nursing schools within 20 and 10 miles) on hospital star rating outcomes. Summary statistics relating to the dependent and independent variables are presented in Table 1. Summary statistics reveal that the average overall star rating for hospitals is 3 stars. Additionally, the best rating for hospitals is the quality measure rating averaging at 3.76. On average, there are 2 nursing schools within 20 miles and 1 within 10 miles.

The results from a binary logistic regression are presented in Table 2 with significance reported at the .05 level. Table 2 shows the results for hospital *Overall Star Rating* sorted by low and high star ratings. These results show a significant relationship between the proximal density of nurse staffing availability and low star ratings hospital at the 20-mile radius (odds ratio = 1.063, P = .000) and 10-mile radius (odds ratio = 1.105, P = .000). High-rating was not significant at the 20-mile or 10-mile proximities.

A sensitivity analysis is presented in Table 3 and offers insight into the specific associations with the 1-star, 3-star, and 5-star ratings especially considering the outliers of 1-star and 5-star facilities. A similar relationship was found for 1-star Rating at the 20-mile radius (odds ratio = 1.124, P = .000) and 10-mile radius (odds ratio = 1.281, P = .000). A 3-star rating was negatively significant at the 20-mile radius (odds ratio = .976, P = .024) and 10-mile radius (odds ratio = .919, P = .000). To note, the 5-star rating was significant at the .10 level at the 10-mile proximity (odds ratio = 1.102, P = .097).

Discussion

In this examination an innovative approach was utilized to examine market factors related to nursing resources and care quality outcomes in hospitals using geospatial analysis and doing so finds mixed support for our hypothesis. The results of the principal analysis show that as proximal density increases, hospitals are more likely to receive a low star rating which supports RDT and our hypothesis. However, the sensitivity analysis reveals that hospitals are more likely to receive either 1-star ratings or a 5-star rating and are less likely to receive a 3-star rating as the amount of resources increases. Given the geographic distribution of both hospitals and nursing schools, it appears that the higher the amount of nursing resources, the more likely a hospital is to

receive a 1-star rating, a low rating or a 5-star rating but less likely to receive a 3-star rating.

The results show that with the increase in proximal density, there is an extreme towards either a low or a high rating. The higher the proximal density, the more likely a facility is to receive a low-star rating or a 1-star rating. However, these results show that the higher the proximal density, the less likely a facility is to receive a 3-star rating. Also, the higher 10-mile proximal density, the more likely a hospital is to receive a 5-star rating. These densities almost synonymously align with population densities in the U.S. However, 1 particular difference is the fluctuation of resources in Washington.

Based on results of previous germane studies,[21,37] it was unclear whether or not proximal density would have a significant relationship with star rating measures in a national context for hospitals. The outcome of this study reveals the importance of market context in these organizational relationships. Perhaps, the relationship between proximal density and star rating outcomes has less to do with whether or not a hospital has nursing resources available and more to do with how that resource is valued by the organization. In order to provide adequate services, nurses are always a valuable resource to hospitals. However, depending on the supply of these resources, hospitals value these resources differently. This may be tied to how hospitals are relating to and utilizing these given resources in their network. With this in mind, the social network theory (SNT)[38] may better explain the results of the study.

SNT lens would suggest that the closer nursing schools are to organizations geographically, the better the quality results would be. The social network theory asserts a positive relationship between proximal density of nursing schools and hospital care quality outcomes. With that said, SNT is a tool that allows the illustration of micro and macro organizational ties.[38] The theory suggests how human and nonhuman organizational elements work together and create a social network.[39] The social network theory proposes that the closer and more numerous the nursing resources, the better the quality outcomes will be.

According to the SNT, these networks can be strong or weak. When there are strong, tightly knitted relationships, the stronger the social ties will be. When this is the case, the organizations within those ties will have better outcomes than those who have weak ties.[40] Within a proximity network, there may or may not be a resource output (nursing school) in close distance to a hospital. Therefore, based on the theory, if there is a low resource output, there may also be lower outcomes in those organizations. The results of a positive relationship coincide with the premise of the SNT as well as the results from a previous study,[21] and the hypothesis that there will be a negative relationship agrees with the resource dependence theory.

Organizations that are using the resources for a competitive advantage are following close, strong ties. Some nursing resources, such as nursing schools, have strategic partnerships with hospitals and other types of healthcare facilities.[41] These networks provide an opportunity to remedy the nursing shortage through partnership incentives, increased wages, loan forgiveness, and more.[7] Additionally, the partnership between facility and school creates a potential funnel of newly minted students and employees. At the same time, both can share in the cost of marketing and promoting nursing careers. However, these strategic partnerships are not an employment guarantee for current or future nurses. Based on this information, practitioners and administrators alike should understand the importance of their relationships with other healthcare resources, such as nursing schools. As the SNT proposes, strong close ties lead to better quality outcomes. It is not just about the closeness of those ties but also how strong those ties are with other organizations.

Efforts have been made to ensure any potential threats to validity were eliminated, but some remain. The sample of hospitals for this study solely consists of hospitals that are included in the *Hospital Compare* dataset. There is potential that these hospitals are different, in kind, for example the difference in magnet hospitals. The same potential for differences is true for nursing schools based on their ranking. Therefore, the sample analyzed may limit the generalizability of the findings. Despite the limitations, the study produces opportunities for future research. With recent implications to the healthcare setting due to Covid-19, future studies will need to consider staffing changes and interest in nursing education. Proximal density and the relationship between the geographical implications on care quality can be used in the continued exploration of other health care facility and educational facility types. By doing so, other geographical implications can be examined to better understand the extent of the healthcare market in its entirety.

Conclusion

The results of the analyses conflict with underlying assumptions regarding the availability of nurses and care quality outcomes. The results indicate that the more nurse staffing availability there is, the more likely a hospital is to receive a low rating but not a high rating. This result is rectified with the sensitivity analysis, revealing that with an increase in proximal density, the more likely a hospital is to receive a 1-star or a 5-star rating and less likely to receive a 3-star rating. The results suggest that densities of resources may offer meaningful insight into care quality outcomes in a variety of contexts.

In this study, the influence of proximal density of nursing schools and hospitals on care quality outcomes in the U.S. is examined. By referencing past studies, multifaceted differences between facility types, such as hospitals and nursing homes, are illuminated. Focusing on the "hospital market" allows for a more holistic view of the healthcare

industry and how organizational resources play a role in optimizing population health. Another contribution of this study is the further depiction of the novel measure for proximal density with regard to nursing schools. The use of proximal density as a measure can be extended to other health care facility types as well. The findings confirm that a low rating or a 5-star rating is more likely for hospitals with the increase in proximal density while there is a decrease in likelihood for a 3-star rating. This information is helpful in the decision-making process of where to locate future health care and educational resources. If proximal density of nursing schools can lead to lower or higher hospital care quality outcomes, the *relationships* between organizations may matter more than the geographical location of the resources themselves. The results show that this is more than about numbers, it is about the strength of these healthcare networks and the quality of the relationships within them.

High performing hospitals in contexts wherein there are many nurses available are able to capitalize on this context with respect to care quality outcomes by considering nurses as a high-value resource. This study's findings suggest that these hospitals are able to maximize care quality performance by augmenting the value proposition of nursing staff. Rather than regarding the value of nurses solely by how easily they might be replaced, which would be the suggestion of RDT, these organizations seem to appreciate the value of nurses by how central the profession of nursing is to the delivery of care quality outcomes, and are, perhaps, using the ready availability of nurses in their markets to recruit and retain the best available nurses. A bird in hand is indeed worth more than 2 in the bush when it comes to nurse staffing.

Practical Implications

The findings of this study support what has long been established in the healthcare management literature as it presents further support that there exists a relationship between nurse staffing and care quality outcomes. Specifically, this study shows that the availability of nurses in local markets has a relationship to hospital care quality ratings. One theory presented, RDT suggests that the availability of resources should decrease the likelihood of high-quality outcomes. Another theory, SNT, suggests that the availability increases the likelihood. Our findings show that local nurse staffing availability increases the likelihood of both a low star and a 5-star rating. Said differently, hospitals in markets with many available nurses are almost as likely to get a low score as they are to get a 5-star rating. The difference may be in how these theoretical lenses suggest how nurses or the nursing profession is regarded in these organizations. Low performing hospitals may be conforming to what RDT suggests would happen in localized surplus markets are viewing nurses in these markets as readily available and therefore a low-value resource. If nurses are a central resource, managers and policy makers should view this workforce as a high-value resource. In other words, replacing a nurse is different from replacing a pair of clinical gloves – nurses are not an easily replaceable resource, recruitment and retention is important, and, because of these facets, can lead to low-quality outcomes. By discounting the value of the nurses, organizations are also forfeiting their care quality outcomes.

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