A Qualitative Approach to Nurse Staffing Challenges in Nova Scotia's Rural Emergency Departments

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Abstract

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In Nova Scotia, rural residents experience access barriers to health care linked to unplanned temporary emergency department closures. Nurse staffing challenges are a persistent and complex reason behind these closures. This qualitative study aims to understand nurse staffing challenges in rural emergency departments in Nova Scotia's Western Zone. The study takes a qualitative approach to inquiry inspired by phenomenological methods and uses the experiences of emergency department managers to define and better understand staffing challenges. The findings of this study illuminated the importance of the management role and provided a better understanding of the complexities involved in staffing challenges, along with an examination of potential solutions.

Keywords: Emergency department, nursing, rural, Nova Scotia

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Temporary unplanned rural emergency department closures are a persistent and frequent event in rural Nova Scotia. Unplanned temporary closures are a disruption of services lasting hours or days. These unplanned closures are linked to staffing challenges associated with physicians, nurses, or paramedics. The frequency, persistence, and unpredictability of these events are a concern for residents needing to access emergency health care services in the province. While the number of nurses overall working in Nova Scotia has grown or remained stable, rural areas and specialty practice areas like the emergency department are more vulnerable to nurse staffing challenges. This vulnerability can lead to unplanned temporary closures. Nova Scotia's Western Zone is one rural area of the province that experiences these temporary unplanned closure events.

This applied health services research study takes a qualitative approach to explore nurse staffing challenges in emergency departments located in Nova Scotia's Western Zone. The study examines the experiences of emergency department health services managers with staffing challenges. This work aims to bring clarity to nurse staffing challenges in the area and to understand nursing-related reasons that might explain why some departments close more frequently than others. This thesis will offer a background on emergency department closures in Nova Scotia, provide a profile for the study area, and present information on the workforce as a preface to this study. A literature review conducted as part of this study will offer insights into the uniqueness of the rural and emergency department setting and discuss nurse staffing challenges that occur in this complex environment. It is expected that the findings of this study will have relevance for health leaders in Nova Scotia. The study will also add to the small body

of knowledge on nursing work specific to the rural Canadian emergency department by highlighting the voice of the frontline managers.

1.0 Background

1.1 Rural Emergency Department Closures in Nova Scotia

Unplanned temporary rural emergency department closures in Nova Scotia have been a persistent issue for the province for over a decade. The topic of rural closures was a significant issue of concern for voters, at least as far back as the provincial election in 2009 (Turnbull, 2009). Yearly public reporting on emergency department closures began in 2010, following the passage of the Emergency Department Accountability Act (Government of Nova Scotia, 2016). This act requires the Department of Health and Wellness to publish closures (scheduled and unplanned) for each emergency department in the province. In the Western Zone, there were 13,788 hours of unplanned between 2010 and 2019 (Province of Nova Scotia, 2010-2019) with some departments closing more than others with no apparent pattern (Figure 1).

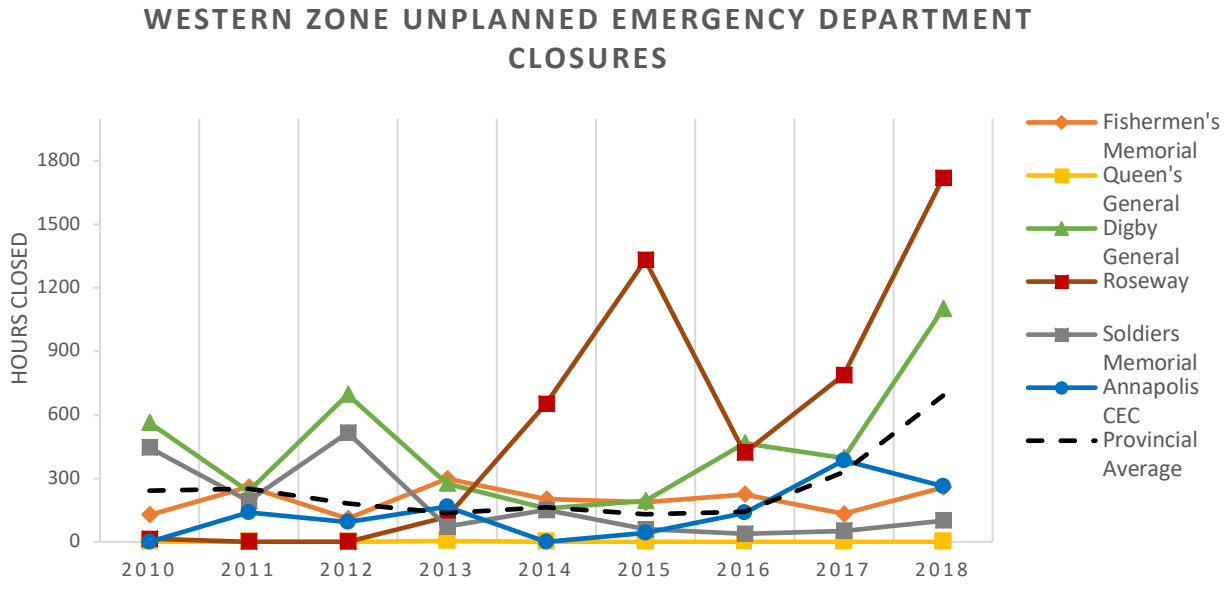

Figure 1. *Unplanned emergency department closures in Nova Scotia's Western Zone.*

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Despite service delivery reforms such as the creation of Collaborative Emergency Centres (CECs) and the addition of paramedics to the emergency department provider team, unplanned temporary emergency department closures due to staffing challenges continue to be a problem. Public consultations are held around the province to report on and discuss the state of emergency care delivery in communities. From reading these public consultation reports through to 2018, residents are still concerned about the sustainability of emergency department services, their recruitment challenges (including for nurses), and also the communication between the Nova Scotia Health Authority and the community. The Department of Health and Wellness' yearly Accountability reports (Province of Nova Scotia, 2010-2018) contains a summary of public consultations on the topic of department closures. In 2010, a public report entitled *The Patient Journey Through Emergency Care in Nova Scotia: A Prescription for New Medicine* (Ross, 2010) validated the concerns of the public around access to care issues for emergency departments. The report revealed that rural residents were waiting too long to access care, that closures were unpredictable, and that closures created confusion for residents as to where they should go to access emergency care (Ross, 2010). Access to health care from the point of view of the Canada Health Act has been interpreted to mean access that is free from financial barriers such as overbilling and co-payments for care (Rechel et al., 2016) but not from geographical or other barriers such as those experienced by the residents of Nova Scotia.

Closures due to a shortage of a specific provider type were not tracked by the Nova Scotia Health Authority until the spring of 2019, making it difficult to determine the provider-specific impact to closures (Personal communication, Nova Scotia Health Authority, May 2019) however it is known that nurse staff challenges to account for some of these (Ray, 2019). From

my personal experience as an emergency department nurse in a rural department, I also know that there can be closures due to nursing-related causes in the Western Zone specifically. While physician-related shortages are likely the most common reason for closures and dominate media accounts, we know less about why closures due to nursing occur and what contributes to them. Why departments close due to nursing is a complicated topic and one that I find personally interesting which inspired me to select this as the topic for my thesis work.

1.2 Emergency care service delivery in the Western Zone

Emergency departments in the Western Zone range in size; there are small community hospitals, a collaborative emergency center (CEC) and three larger regional hospitals. Most departments are open all the time, although some have planned overnight closures. The level of care intensity and the amount of resources available to provide emergency care varies between departments. The level of an emergency department determines what intensity of care the site can provide, a level 1 site being able to offer the highest intensity of care with the most extensive offering of services. A full description of the different levels of service can be seen in the report by Dr. Ross (Ross, 2010). All emergency departments are equipped to stabilize emergency adult and pediatric cases. Not all departments discussed in this study have the resources to provide ongoing care for the most emergent and urgent cases; in these situations, patients are transferred to a center best suited to meet their needs. The Halifax Infirmary (QE2) is the only tertiary hospital (highest level of care) in the province able to offer the full suite of patient care services to adults. The IWK is the only dedicated pediatric hospital in the province and is also a tertiary hospital. Both tertiary emergency departments can receive patient transfers from anywhere in the province. When required, emergency departments in the Western Zone coordinate patient care transfers between departments via the Emergency

Health Services (EHS). The EHS service includes ground ambulance transfers as well as the Life Flight air transport service. On occasion, emergency department nurses or physicians are required to assist with the transport of these patients.

1.3 The Emergency Department Environment

Nova Scotia reports some of the highest emergency department use in the country (Canadian Institute for Health Information [CIHI], 2016). Overcrowding is also a concern in Nova Scotia's emergency departments that have prompted calls to local MLA's and have been reported in the media (D'Entremont, 2018; Doucette, 2019; Ericsson, 2019). Overcrowding is one indicator of unmet demand for health care services. Lack of available alternative level of care beds, challenges with patient flow, staff shortages, and access to primary health care are among identified causes reported by union groups and health administrators for overcrowding situations in emergency departments (Curry, Hiltz, & Buckle, 2019; Doucette, 2019; Ericsson, 2019).

Some unique considerations and challenges come with providing care in the rural emergency department, and these are shaped by the values of rural populations and the resources available in the rural health care system. How rural residents think about their health and make decisions about how, when, and where to access health services differ from their urban counterparts and are shaped by values such as self- reliance, and acceptance of illness (Kulig, Kilpatrick, Moffitt, & Zimmer, 2013). In some rural departments, there may be limited services, equipment, and human resources available. For example, patients may not always be able to receive the level of care they need in a rural department and occasionally have to be transferred to a tertiary care hospital that offers a broader spectrum of services and resources. The broad scope of practice of a nurse working in a rural hospital can be partially explained by

these limited resources (MacLeod et al., 2017). Some rural emergency departments also face challenges in educating and training their staff compared to more resourced urban centres (Hansen, Beer, & Vallance, 2017). Another unique feature of the practice environment is the tendency for nurses to both live and work in the community they serve, providing care to family, friends, and neighbours (MacLeod et al., 2017). The cohesiveness often found in a small rural community hospital has positive benefits for patients and nurses, improving the nurses' connection to their patients and improving continuity of care (Health Association Nova Scotia, 2013).

1.4 Nova Scotia's Western Zone

Nova Scotia had a total population of 965,382 people at the beginning of 2019 (Nova Scotia, 2019). In Nova Scotia, the health care management structure consists of four administrative zones; the Nova Scotia Health Authority manages these zones. These four administrative Zones are as follows, Central (includes Halifax municipality, Eastern Shore and West Hants area), Eastern (includes Cape Breton, Guysborough and Antigonish areas), Northern (includes East Hants, Colchester, Cumberland and Pictou areas) and Western (South Shore, South West, and Annapolis Valley areas).

According to census data, 194,376 people were living in Nova Scotia's Western Zone (Statistics Canada, 2017), which was about 21% of Nova Scotia's population in 2016. The Western Zone. It is the second-largest Zone in the province by population count with Bridgewater, Kentville, and Yarmouth being the largest towns in the Zone. Using data visualizations created with the Maritime Health Atlas (a platform which uses Statistics Canada data), the Western Zone was found to have a higher elderly population, lower household income and lower levels of educational attainment (Maritime SPOR SUPPORT Unit, 2016).

Compared to the rest of Nova Scotia, the Western Zone has the largest percentage of its population who are over the age of 65 (20%), live in low-income households (33%), and have not finished high school at 24% (Maritime SPOR SUPPORT Unit, 2016).

The Western Zone also reports comparatively higher rates of known costly chronic diseases such as diabetes, cardiovascular disease, and chronic obstructive pulmonary diseases (Maritime SPOR SUPPORT Unit, 2016). Single program prevalence reporting and emerging socio-geographical research around chronic diseases in Nova Scotia indicate that location and socio-economic status matter when it comes to predicting health outcomes. For example, the prevalence of diabetes in the Western Zone doubled to 171,862 cases (between 1996 and 2013), which is above the provincial average (Diabetes Care Program of Nova Scotia, 2016, 2018). The prevalence of ischemic heart disease is also above the provincial average in some municipalities like Bridgewater, Shelburne, and Yarmouth areas (Orzel, 2017). Patterns of heart disease in these areas were also found to correspond to the lower socio-economic status of the population in one study (Orzel, 2017). The social vulnerability scale is one tool used to measure the social determinants of health for an area. The tool is used to predict community resilience to major stressors. In a provincial government study, it was found that parts of the Western Zone were comparatively higher than the provincial average on this scale (Bryce, Manuel, Rapaport, & Kang, 2015).

Combined with what is known about the current challenges in providing emergency care in the province, this profile suggests that residents of the Western Zone have high health care needs now and that the need will likely persist into the future if present trends continue. Similarly to the variation in emergency department closures, this regional profile also shows

that there is variation in the health and social determinants within the Zone, indicating that the needs of the population within this Zone probably differ between communities.

1.5 Labour Trends

Understanding the labour market and its trends for the province and the Western Zone are important considerations to health human resource planning, especially since unplanned emergency department closures are primarily a human resource problem. General participation rates for Nova Scotia's workforce is about 62% (as of 2017), according to Nova Scotia's Finance and Treasury Board newsletter (Nova Scotia Daily Stats, newsletter, May 10, 2019). Participation trends have been declining over the past decade and are projected to continue to decline into 2036 in all of Statistics Canada's labour forecasting projections (Martel, 2019). In rural Atlantic Canada, by 2036, Statistics Canada projects participation rates to be less than 2:1 for every non-labour force participant (Martel, 2019). The decrease in national participation rates and ageing population accounts for this decrease in participation rates (Martel, 2019).

The Health Care sector is a large employer within the Western Zone. It is difficult to quickly determine the exact breakdown of employment across the whole area, but some jurisdictional breakdowns are readily available through the Regional Enterprise Networks (REN). Many jurisdictions within the Zone belong to a REN which aims to promote the growth of local economies. These RENs create regional profiles to inform investors and businesses about the area. These profiles include a labour force profile for the area. Within the Western REN (includes Yarmouth and Digby counties and the municipality of Barrington), the Health Care and Social Assistance Sector employs 13.6% of the area's labour force (2016 figures) representing the area's third-largest employment sector (Western Regional Enterprise Network, 2017). Nova Scotia's Valley REN employs 14.35% of the area's labour force and is the region's largest

employment sector (Valley Regional Enterprise Network, 2018). The municipalities of Queens, Bridgewater, Lunenburg, and Chester are jurisdictions that are part of the Western Zone but do not belong to a REN. With one regional hospital and two community hospitals, presumably, the Health Care sector in these municipalities would be a large employer.

Nursing Workforce in Nova Scotia. In Nova Scotia, there are three classifications of professional nurses. These are Nurse Practitioners, also referred to as NPs for short, Registered Nurses (RNs), and Licensed Practical Nurses (LPNs). Nurse Practitioners have the highest level of education at the Master's level and the widest scope of practice. Registered Nurses complete university training at the Bachelor's level, and Licensed Practical Nurses complete training at the college level. According to statistics provided by the Department of Health and Wellness (Department of Health and Wellness, personal communication, Nov 19, 2019), nurses of all classifications are the largest group of professionals employed by the province numbering over 14,700 and growing (see Figure 2 below for this breakdown). Nurses work in a variety of settings and roles across the province; roughly 80% of all nurses work in a direct patient care role.

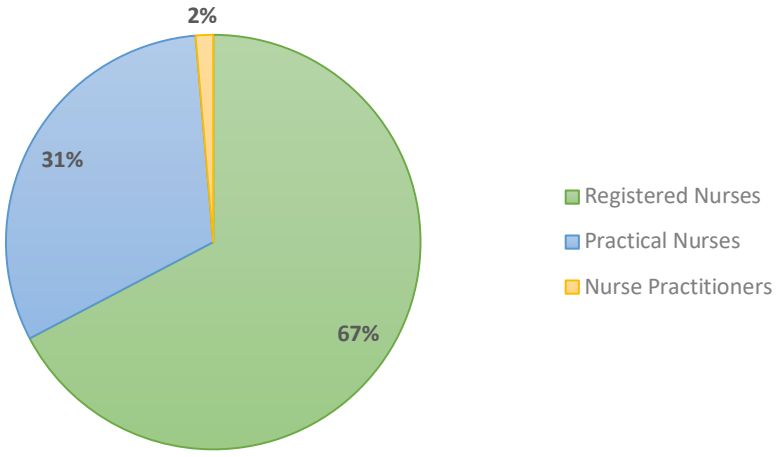

Figure 2. Breakdown of nurses working in Nova Scotia in the year 2018 as a percentage.

Supply of Nurses in Nova Scotia. Over half of Nova Scotia's supply of nurses are graduates of a provincial nursing school (Figure 3) followed distantly by graduates from other provinces and international nurses (Department of Health and Wellness, personal communication, Nov 19, 2019).

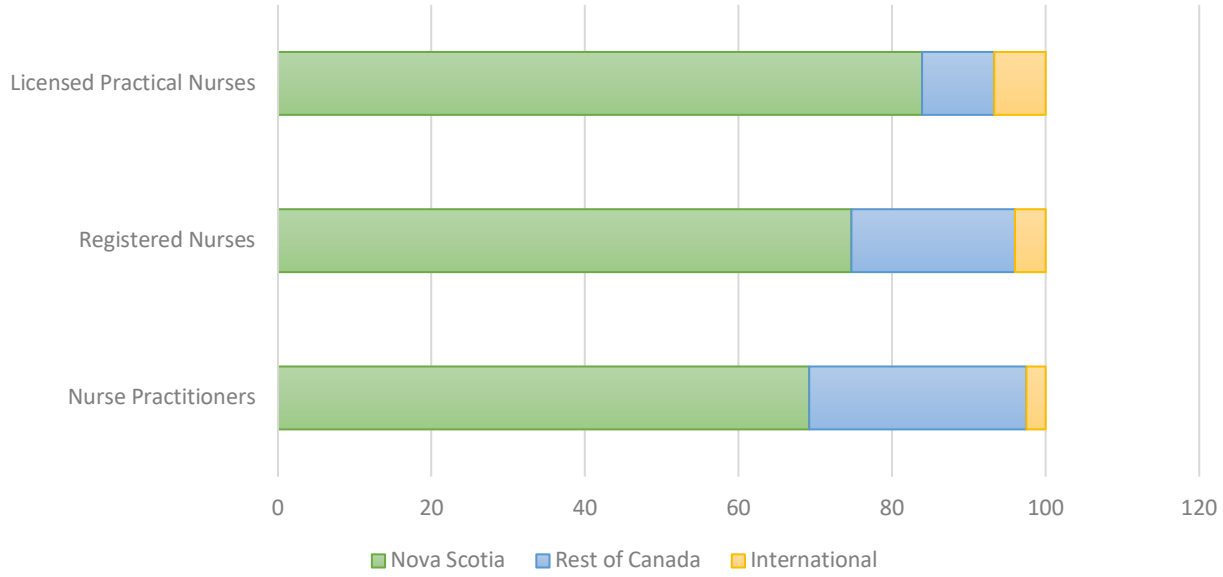

Figure 3. Place of graduation by percentage.

It is important to note that although staffing challenges persist, the number of nurses overall in the province has remained stable (RNs) or has increased (NPs and LPNs) over the past decade (Department of Health and Wellness, personal communication, Nov 19, 2019). Rural areas and specialty practice settings such as those in emergency, intensive (critical) care, long-term, and perioperative care areas have been identified as having higher vacancy rates (Department of Health and Wellness, personal communication, Nov 19, 2019).

Nursing Collective Agreements. Typical nursing shifts are 12 or 8 hours in length. Nurses who are employees of the Nova Scotia Health Authority and work in an emergency department located in the Western Zone follow the Collective Agreement negotiated with Nova Scotia

Council of Unions. This Agreement was signed in November 2018 with changes coming into effect on February 1st, 2019 (Nova Scotia Health Authority & Izaak Walton Killam Health Centre v. The Nova Scotia Council of Nursing Unions, 2018). In this study, many managers spoke about the use of nursing overtime to meet their staffing needs. One change with implications for this study was how the Health Authority decided to interpret nursing overtime language found in the Collective Agreement after February 1st. Data collection for this study included participants who were interviewed before, during, and after changes to the Collective Agreement. Before February 1st, nurses who worked hours over 75 hours in a bi-weekly pay period got paid an overtime rate. Nurses who were required to work beyond their standard shift length got paid an overtime rate. Following February 1st, nurses who worked over 75 hours in a bi-weekly pay period and used sick-time or vacation time did not receive overtime pay for working an additional shift. As a result of these changes, staffing nursing units became harder, prompting concerns by managers and union representatives. Changes to overtime language interpretation have been temporarily reverted to their original interpretation on April 28th, 2019 (MacLean, 2019).

1.6 Overview of Workforce Sustainability Initiatives

The province provides key investments into the recruitment, retention, and training of nurses to maintain the stability of the nursing supply in the province and work towards the right skill mix and distribution of nurses (Department of Health and Wellness, personal communication, Nov 19, 2019). Examples provided by the Department of Health and Wellness of these initiatives can be seen in Appendix A. Examples relevant to the emergency department include the Nursing Strategy, funding specialty education through the Registered Nurses Professional Development Centre, supporting additional seats in provincial nursing schools

including supporting seats for Registered Nurses to train at the Dalhousie Yarmouth campus (Department of Health and Wellness, personal communication, Nov 19, 2019).

To recruit nurses to rural areas, the Nova Scotia Health Authority uses financial incentives (Ray, 2019). For example, a package being used for hard to recruit areas is a $10,000 signing bonus and relocation assistance for emergency department nurses with a return of service contract (Ray, 2019). On occasion, municipalities are also involved in recruitment efforts for nurses. At the time of writing, one Nova Scotian municipality, Guysborough, has topped up these provincial incentives to $20,000 (McMillan, 2019).

1.7 Overview of Nurse Staffing Challenges

Nurse staffing challenges are the result of complex multifactorial issues encompassing supply problems or operational challenges (Montour, Baumann, Blythe, & Hunsberger, 2009; Squires, Jylhä, Jun, Ensio, & Kinnunen, 2017). For example, on the supply side, there can be shortages and distribution challenges of providers (Ray, 2019; Squires, Jylhä, Jun, Ensio, & Kinnunen, 2017; Weinhold & Gurtner, 2014). Countries like the United States are reporting a deficit of 1.1 million nurses (Haddad & Toney-Butler, 2019; McGillis Hall et al., 2019). In the United Kingdom, the Royal College of Nursing is reporting a shortage of 40,000 nurses, which they also say is impacting patient care (The Royal College of Nursing, 2019). There are fears that increasing need for nurses globally could impact Canada's supply of nurses (McGillis Hall et al., 2019); this is an important consideration for staffing challenges as Canada does not track nurse migration to other countries unless licensure is also maintained in Canada (Foster, MacDonald-Rencz, & Hall, 2013).

There are a variety of operational challenges that also influence health staffing. A report by the Advisory Committee on Human Resources describes five factors: "Operational issues

affecting the nursing workforce can be grouped into five key, inter-related areas: a) workload, b) overtime, c) absenteeism, d) employment status and e) scope of practice and non-nursing tasks." (Advisory Committee on Health Human Resources, 2002). For the rural emergency department, additional workload operational considerations include the variability of patient acuity and volume, number of skilled human resources available to draw upon, (Twigg, Cramer, & Pugh, 2016) and medical transports (Hansen et al., 2017).

2.0 Literature Review

2.1 Purpose of the Review

Nurse staffing challenges in rural emergency departments are complex and multifactorial, this literature review attempts to bring clarity to what these staffing challenges are in the rural emergency department setting. While this research project has its foundations in an applied problem (nursing staff challenges in the Western Zone), clarity around these challenges is lacking. A greater understanding of what possibilities exist to describe these staffing issues is needed to help create and implement initiatives aimed at overcoming these challenges. The findings of this review concluded that staffing challenges in the rural emergency department are often the result of layers of complexity influenced by a mix of vacant positions, recruiting and retention challenges, and operational challenges. This review also identified a limited number of contributing factors to staffing challenges and protective factors.

2.2 Review Method

Unplanned temporary emergency department closures have been characterized by the Department of Health and Wellness as a provider shortage (see Emergency Department Accountability reporting) this literature review begins using the main concept "nursing

shortage." Key concepts were used to develop the initial search strategy (Appendix B) with the assistance of a medical librarian at the Nova Scotia Health Authority. These concepts were aligned with MeSH (medical subject headings) found in three major health databases: CINHAL (Medline), PubMed, and EMBASE. Keyword searches limited to the study abstract and title were included alongside MESH terms using the "OR" boolean. Searches of the databases were limited to the English language and full-text availability. Articles that were peer-reviewed studies or reviews were included. News articles, dissertations, and works older than 1990 were excluded. Finding only a few articles, the term "nursing shortage" was deemed to be too narrow. Following a discussion with research team, the search strategy was broadened to include targeted searches of recommended Canadian authors publishing in the health human resource space along with keyword searches in Google Scholar using concepts found in the initial search (see Figure *4)*. Gray literature that targeted reports by health care organizations in Canada and internationally were included in the expanded search.

2.3 Literature Review Findings

There were a few studies found through the search that were excluded. The excluded findings examined the impact of nurse staffing challenges on the emergency department included those that discussed overcrowding, triage delays, and nurse staffing ratios were excluded (see examples by Dadashzadeh et al., 2011; Gilligan & Quin, 2011; Recio-Saucedo et al., 2015). In the initial search, a total of 15 articles were reviewed in their full-text. Of those 15, nine met the inclusion criteria. Articles reviewed could be themed to three categories relating to nurse staffing challenges: major factors, contributing factors, and protective factors.

Examples of major factors associated with staffing challenges included absenteeism, increased demand for emergency department services, vacant positions, work injuries,

recruitment and retention practices and turnover (Bazzoli GJ, Brewster LR, May JH, & Kuo S, 2006; Ferro et al., 2018; Gorman, 2019; Perhats et al., 2012; Sawatzky & Enns, 2012). Other main contributing factors include age of nursing staff, coping styles of nursing staff, scheduling practices, occupational stress, the social environment, clinical experience of the nurse, managerial factors, and the summer season (Alban, Coburn, & May, 1999; Gorman, 2019; Lu et al., 2015; Mion et al., 2006; Sawatzky & Enns, 2012; Winters, 2016).

In addition to major factors, there were also antecedent factors and protective factors to the main factors identified, which were associated with nurse staffing challenges. Antecedent factors included emergency department equipment shortages, use of technology, workload factors including patient factors, pay, moral integrity, workplace physical and mental safety, patient satisfaction, burnout, moral distress, and fatigue (Ferro et al., 2018; Gorman, 2019; Lu et al., 2015; Mion et al., 2006; Perhats et al., 2012). Protective factors against nursing staff challenges and the major factors associated with them include hospital proximity to health care professional teaching facility, legislation, emergency department internship style, staff engagement, staff resilience to stress and professional development (Alban et al., 1999; Bazzoli GJ et al., 2006; Gorman, 2019; Sawatzky & Enns, 2012). These concepts are mapped below .

Contributing Factors ⇒	Major Factors ⇒		⇐ Protective Factors
• Age of staff • Staff coping styles • Scheduling practices • Occupational stress • Social environment • Clinical experience • Managerial factors • Summer season	• Absenteeism • Demand for services • Vacant positions • Work injuries • Recruitment and retention practices • Turnover	Nurse Staffing Challenges	• Proximity to a teaching facility • Legislation • Internship style • Staff engagement • Staff resilience to stress • Professional development

Figure 4. Contributors and Factors Influencing Nurse Staffing Challenges.

2.4 Expanded Literature Search

Many factors can negatively influence nurse scheduling both in rural areas and emergency departments (see Figure 4 above). Examples of influencers include when nurses have multiple employers, operational factors that increase day-to-day workloads, the presence of vacant positions on a unit, and those influencers arising from other human resource challenges that make it challenging to fill shifts (Advisory Committee on Health Human Resources, 2002; Hansen et al., 2017; "Improving staff recruitment and retention in the emergency department," 2017; Montour et al., 2009).

When nurses have multiple employers, such as those who work casually in other locations, their availability becomes less flexible (Montour et al., 2009). There are a host of operational factors that can impact nurse staffing more strongly in rural hospitals and emergency departments, for example, providing care for patients with severe or highly contagious infections; this often requires more intensive nursing care owing to the added precautions to prevent the spread of illness (Montour et al., 2009). Medical transports for critically ill patients are another day-to-day operational factor specific to the rural emergency department. When emergency department nurses are required to accompany the patient to another centre for care, there may not be enough staff left behind to safely deliver emergency care services resulting in a temporary closure (Hansen et al., 2017).

Day-to-day scheduling challenges can also include scheduling for sickness absenteeism or navigating around role productivity issues in cases where nurses also perform non-core nursing tasks like clerical work or in those cases when nurses are not working to their full scopes of practice (Advisory Committee on Health Human Resources, 2002). Trying to schedule effectively with vacant positions can also pose scheduling challenges for small rural emergency

departments. A report from Australia suggests that international competition for highly trained emergency department nurses challenges their ability to retain staff and recruit nurses and schedule appropriate shift coverage ("Improving staff recruitment and retention in the emergency department," 2017).

3.0 Study Methods

In this chapter, I introduce the guiding research questions for this study, discuss ethical approval, the study population, and present the research approach. The discussion on the research approach provides background information on the philosophical underpinnings of the method and includes descriptions of my research population, recruitment, and data collection.

3.1 Research Questions

The research questions guiding this qualitative study are:

- How have Emergency Department Health Services Managers in Nova Scotia's Western Zone experienced nursing staff shortages?
- What has this meant in the context of unplanned temporary rural emergency department closures?
- A secondary research question asks, what nursing-related issues could explain why some emergency departments are closing more than others?

3.2 Ethical Approval and Ethical Considerations

This study received ethics approval from the Nova Scotia Research Ethics Board in October and from the Saint Mary's University Research Ethics Board in November of 2018. A recruitment modification was made to the study in January 2019 to allow the recruitment of former emergency department managers into the study. The first wave of recruitment for the study commenced in December 2018 with the second wave of recruitment, beginning in

February 2019. The qualitative data collection period for the study occurred between January of 2019 and March 2019.

Having a pre-existing relationship with participants is, in many cases, an unavoidable reality associated with doing research in rural settings (McConnell-Henry, James, Chapman, & Francis, 2010). Participants in this study were all work colleagues of the supervising investigator. A small minority of participants were also known to myself in the context of the workplace environment. While the possibility exists that these pre-existing relationships may have influenced how managers answered interview questions and which examples from their experience were shared, the amount of rich interview data that was collected suggests that this influence was minimized and that. The presence of these pre-existing relationships could have also influenced the manager's decisions to take part in the study despite participation being voluntary and without penalty. The identities of the research team were communicated to participants during the study consent gathering phase. Participants were free to withdraw from the study or refrain from answering any research questions at any point if they became comfortable.

3.3 Subject Selection and Recruitment

Emergency Department Health Services Managers and former emergency department managers located in the Western Zone were recruited for this study using a purposeful sampling method. Purposeful convenience sampling offers the most straightforward way to select study participants. A purposeful sampling involves intentionally selecting study participants who can speak to the focus area of the study (Creswell & Poth, 2018, p.148). Within the Western Zone, nine emergency departments are currently managed by eight Health Services Managers. All current Health Services Managers were invited to participate in the research study. At the

discretion of the Supervising Investigator, former managers who had retired or taken positions in other parts of the organization within the past 6-months also received study invitations. The decision to include former managers was a later addition to the study protocol to accommodate a manager expressing interest in the study who would retire during the study period. All managers participating in this study had their study data collected (survey and interview) while they were still working for the Nova Scotia Health Authority. All managers participating in this study held management positions, although some of them were no longer directly responsible for the emergency department. The type of qualitative approach used for this study supports a typical sample of 1-10 participants (Creswell & Poth, 2018, p. 47; Starks & Brown Trinidad, 2007).

Participants were included in this research study if they self-identified as being able to offer details of their experiences with nursing staff shortages in the context of unplanned emergency department closures. To be included, participants needed to self-identify, be a current or former Health Services Managers of an emergency department located in the Western Zone, sign the consent, be available during the study period, agree to complete the survey and interview, agree to review their transcript and speak English. The supervising investigator identified potential study participants and sent the initial letter of invitation using internal workplace email addresses. Study invitations were sent to participants in November of 2018. Potential participants were sent the invitation again following the December holiday period due to the low response rate from the first invitation. Managers interested in the study contacted me, the principal investigator, and provided inform consent. No managers withdrew from the study. There were some challenges in reaching managers for the required study follow up, which is likely a reflection of their busy work lives. Emergency department managers

represent the ideal participant for this study due to their important human resource role within the organization and for the intimate knowledge they have of their departments. It was hypothesized that emergency department managers would be able to offer the rich and holistic descriptions needed to answer the research questions when sharing their experiences.

3.4 Data Collection and Participant Descriptions

Study interviews included a total of nine participants representing seven different departments. Three of these participants included members of the research team, myself (Principal Investigator), Dan (Supervising Investigator), and Caitlin (Research Assistant). A total of six current and former Emergency Department Health Services Managers participated in the study. Of note, the Supervising Investigator also held the role of a Health Services Manager concurrently during the time of this study. Only the six managers recruited into the study completed the demographic survey. The demographic survey was an anonymous multiple-choice online survey created and managed using REDCap 8.8.0 software hosted at the Nova Scotia Health Authority (P. A. Harris et al., 2009). Because some managers in the study either managed more than one department or formerly managed a department, characteristics of the departments presented in this study may not reflect the current practice environment and should be considered as contextual to the study interviews. No statistical analysis was done using survey data. Managers in the study who identified they had managed multiple departments were asked to complete the survey for each department they managed that they wished to speak to in their study interview.

Study interviews were conducted by the principal investigator and were conducted online through the Skype for Business platform provided by the Nova Scotia Health Authority. Interviews were a maximum of 1 hour in length and were recorded for audio using a dedicated

audio recorder. Managers received a copy of the interview guide (Appendix C) in advance of their interview. Study interviews occurred in the workplace during working hours and using workplace computers. For study interviews, the Principal Investigator (myself) was located either in a work office at the Nova Scotia Health Authority or in my home office. One manager in the study completed the interview by phone at their request due to a scheduling conflict. There were no repeated study interviews, and all study follow up occurred by workplace email. Interviews were transcribed verbatim and returned to managers for their review and modifications. Some managers returned their transcripts with edits and modifications. Only material approved by managers was included in data the analysis phase.

Managers expressed a high degree of concern around being identified in the study. Gender-neutral pseudonyms were initially assigned to study participants during the active study phase (excluding the research team). For publication of the study findings, the first and last initials of participant pseudonyms were used. We did not use the names of hospitals or the names of towns. As a final check to prevent study material being presented in a way that identified participants, the Supervising Investigator (Dan) reviewed the findings of the study. One manager requested to review quotes being used for publication - this request was accommodated by the research team.

Managers participating in this all spoke English as their primary language, identified as being male or female, with most participants being female. Most managers (N=6) were between the ages of 41-60. The years of experience between the managers varied between less than one year to over ten years. Three managers had six or more years of health services management experience.

All members of the research team had experience with nurse staffing challenges in Western Zone emergency departments. As the Principal Investigator for this study, I have four years of emergency department nursing experience in the Western Zone in direct patient care. The Research Assistant on this project (Caitlin) had two years of direct patient care experience in the rural emergency department. Both myself and Caitlin are co-workers in the same emergency department. The organizational Supervising Investigator (Dan) is the Research Facilitator for the Western Zone, and also holds a management position.

3.5 Demographic Survey Responses About Managers and Department Staffing

The demographic survey asked managers several questions about the department they managed and about the health care staff working in their departments. The survey also asked questions about the minimum number of health professionals required to staff their emergency department and about which types of health care staff were essential to the operation of the department (could not function without). Physicians and registered nurses are the two classes of professionals that essential in all of the departments managed by participants. The number of registered nurses reported to be required each shift in the emergency department varied among participants, with two being the fewest and more than six being the highest. The lowest number of physicians required per shift was one (most common), and the highest required being two. The median total number of emergency department nurses managed by participants was: 9.5 full-time RNs, 1.5 Part-time RNs, four casual RNs, zero full-time or part-time LPNs, and four casual LPNs. Minimal requirements for licensed practical nurses, paramedics, and care team assistants (CTAs) varied between sites (Figure 2). Paramedics working in emergency departments are contract employees of the Nova Scotia Health Authority and have different managers. At least one department in this study routinely used paramedics in the emergency

department. Care Team Assistants (CTAs) are unregulated health workers who act as assistants to other professionals working in the emergency department. CTAs are delegated patient care activities like those of daily living (eating, going to the washroom, personal hygiene, others). Five departments in this study reported using CTAs. Figure 5, shows a breakdown of which professionals were reported to be essential staff to the emergency department functioning.

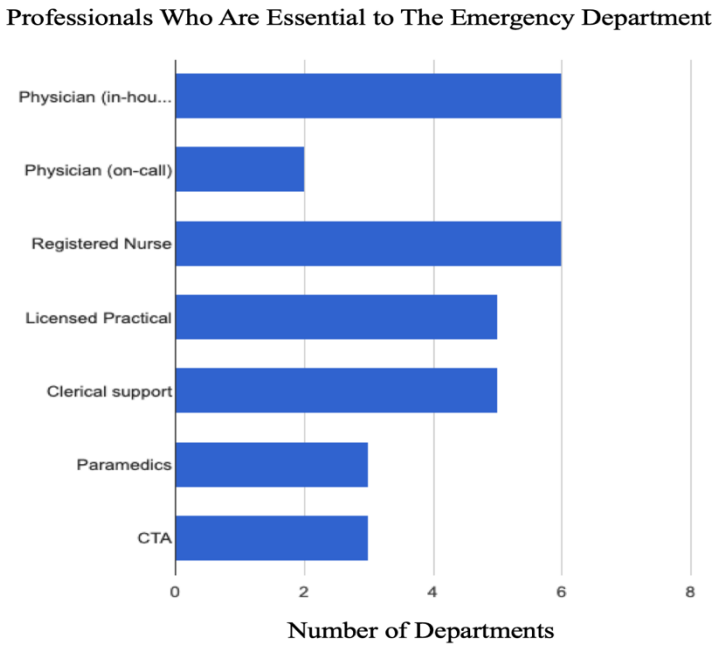

Figure 5. Which professionals are essential to the operation of your emergency department? (Department could not function without)

Emergency departments in this study offered a variety of nursing rotation patterns, the most common (N=6) full-time rotation being "2 days 2 nights" (12 shifts). Other rotation patterns such as "long-week, short-week" were less common and no department allowed for the self-scheduling of nurses. When asked about the task of staffing and scheduling, managers in this study did not report using software for these tasks. All managers reported access to a staffing clerk to assist with staffing and scheduling activities. Access to a staffing clerk varied between participants with some managers reporting shared or partial access. When the staffing

clerk was not available to replace unplanned worker absences, the manager or a nurse in a senior role (charge nurse, nurse supervisor, team lead) performed this function.

3.6 Research Approach

For this study, I have chosen to use a type of qualitative approach called transcendental phenomenology, also called descriptive phenomenology. Phenomenology is a philosophy and a framework (Dowling, 2007) as such, this study has no guiding hypothesis and does not use any other theory to shape the approach to the research. Phenomenology is concerned with describing the objective and subjective lived experiences of participants and then using these experiences to bring meaning to a phenomenon of interest (Creswell & Poth, 2018,p.42,74). The endpoint for phenomenological studies is a statement of essence, which is a descriptive statement describing what a participant experienced - textural description, and how it was experienced-structural description (Creswell & Poth, 2018, p.42, 77, & 78). Qualitative phenomenological research methods have their roots in the discipline of philosophy. This descriptive phenomenological study is inspired by the traditions of Husserl and the research approach developed by Clarke Moustakas (1994).

Transcendental Phenomenology. Creswell and Poth, in their qualitative textbook, recommend qualitative researchers who use a phenomenological approach include a discussion of the philosophy in their work (Creswell & Poth, 2018, p.75). The following section offers a background description of Husserl's transcendental phenomenology and situates it within the context of other phenomenological traditions. Phenomenology as a school of thought began in the pre-World War Two period with Edmund Husserl (1859-1938). Husserl was influential in the world of philosophy and his work has served to inspire the creation of other approaches to

phenomenology and other methods of philosophical inquiry such as existentialism and process philosophy (Husserl, 1964,p. XLII - XLIII).

The Paris Lectures (Pariser Vorträge) offers an overview of Husserl's phenomenology. The Paris Lectures are a set of lectures delivered by Husserl in 1929 and were intended to be a summary of Husserl's transcendental phenomenology (Husserl, 1964, p.LXXVI). Peter Koestenbaum produced the English translation of the Paris Lectures that were used for this thesis. Koestenbaum's translation includes an introductory essay he wrote (indicated by roman numeral page numbers in this study) where he explains some of the complexities of Husserl's phenomenology.

As an approach to inquiry, Husserl's phenomenology is fundamentally reflective and an individualized activity (Husserl, 1964, p.XL). In the method, new knowledge is generated by bringing awareness to conscious experiences. What evidence means is subjective and based on this reflective discovery (Husserl, 1964, p. XXXIX & 22). Individuals using phenomenology turn evidence into knowledge about a phenomenon through the phenomenological analysis process. This analysis is called the phenomenological reduction (Husserl, 1964, p.XL & 23). The quest for the inquirer is to objectively confirm the existence and the meaning of an object found in one's experience (Husserl, 1964, p.XLIII). Because it is the consciousness of the inquirer that performs the analysis and makes judgements about the veracity of the object, the inquirer's previous beliefs, assumptions, and knowledge of the object are suspended before the philosophical inquiry can start so to reduce their biasing effects (Husserl, 1964, p.7). The process of suspension is called bracketing or époche, and it permits the philosopher to critically appraise their own experience (Husserl, 1964, p. XXI & XLIII). Husserl describes this process of suspending

these biases as a mode of becoming in which "...I become the disinterested spectator of my natural and worldly ego and its life" (Husserl, 1964, p.5).

Consciousness and Imaginative Variation. Understanding the role of consciousness in this approach is pivotal to understanding Husserl's phenomenology. Consciousness is always directed towards an object (Husserl, 1964, p.13). Being conscious of something includes how it appears, value judgements about it, memory, beliefs, assumptions, and others. Intentionality is a term used in phenomenology to describe when a person is conscious of something. This act of being conscious represents the interpretation of the object through experience (Husserl, 1964, p.XXIX, 13-15).

Phenomenon. Another important term to define is a phenomenon. A phenomenon is the conscious experience of something. This something can be an object, event, or anything that appears in consciousness real or imaginary (Husserl, 1964, p. XXIV, XXV; Moustakas, 1994, p. 28). Understanding the philosophy behind the research approach helps to ground the research approach of this study. For example, the nurse staffing challenges fit the phenomenological definition of a phenomenon because it is found in the consciousness of managers participating in this study. What exactly defines nurse staffing challenges can be understood by examining the experiences of managers in this study (what they perceive, imagine, remember, feel). By examining the multiple perspectives held by different managers in this study in addition to the experiences of the research team, a fuller picture can be created. Background to Moustakas' Method. Clarke Moustakas used Husserl's transcendental phenomenology as the foundation for a human science research method (Moustakas, 1994, p.1). It is this research process that guides this research study. Moustakas packaged his research method in the form of a guidebook to allow other researchers to follow his step-by-step method (Moustakas, 1994, p. XXII). In his

book, Moustakas spends the first few chapters discussing, interpreting, and defining the key terms to the philosophy of phenomenology (Chapters 1-5). In Chapter 6 Moustakas presents the 7-steps to his phenomenological method and in Chapter 7 presents two data analysis options modified to suit his approach (Moustakas, 1994).

Examining meaning by investigating the lived experience is central to Moustakas' transcendental phenomenology (Creswell & Poth, 2018, p. 74). Moustakas' phenomenology seeks to bring a depth of understanding to a phenomenon of interest that cannot be captured through quantitative methods (Creswell & Poth, 2018, p. 42). Data collection is done primarily through in-depth interviews, but data in the form of the literature review and researchers' experiences are also incorporated into the study. The interview data is analyzed following a specific analysis method intended to mimic the reduction processes used in Husserl's philosophy. Moustakas sets out a 7-step process that represents a systematic way to guide a phenomenological study (Creswell & Poth, 2018, p. 115; Giorgi, 2007; Moerer-Urdahl & Creswell, 2004). These steps were followed used for this research study and are as follows (Creswell & Poth, 2018, pp. 103–104):

1. The researcher finds a topic of personal meaning and significance
2. The researcher conducts a review of relevant literature
3. Establish study criteria and identify participants
4. Participants are provided with a description of the study, purpose, and consent
5. Develop an interview guide
6. Complete the in-depth interviews with participants, being mindful not to bias the interview process. Interviews are to be recorded.
7. Organize and analyze the data

Époche. Research following Moustakas' approach begins from the curiosity of the researcher with the phenomenon. In reflecting on my professional work experiences, I was curious to know more about what a nurse staffing challenges meant and how emergency department closures could be prevented. For Moustakas, the process of the époche is similar to Husserl's in that it is reflective and aims to suspends bias, assumptions, and prejudices related to the phenomenon under study. To demonstrate époche in this study, members of the research team were interviewed following the guide (Appendix C) to capture their experiences. These interviews were done before beginning data collection to call the researcher's attention to their biases before conducting the study interviews or doing the data analysis (Creswell & Poth, 2018, p. 75; Moustakas, 1994, p. 26). Capturing the researcher's experiences through the époche process also helps to bring transparency to the study. Moustakas recommends a transcript is of the researcher's experiences be produced as part of the époche process (Moustakas, 1994, pp. 121 & 122). For this study, interviews from the research team were recorded and transcribed.

3.7 Justification of the Method and Limitations.

Moustakas' method offers a structured approach to the inquiry, which appears rigorous and offers an alternative to hypothesis and theory-driven research. The a-priori approach to inquiry offered by this method aligns well with the research question for this study, which is exploratory. Due to the lack of knowledge about nurse staffing challenges specific to rural emergency departments, a quantitative approach would not be a practical as a deeper understanding of nurse staffing challenges is required. The structured approach and emphasis on reflection made Moustakas' method more appealing over other types of phenomenological methods, and I felt it would be a more manageable approach to work with as a new qualitative

researcher given there was a guide to follow. The reflective emphasis of this approach also reminds me of my nursing training, which required frequent clinical reflections and journaling. Finally, I was also able to identify another study with a management population that took this approach (Symes, 2010) and support for this method in organizational research (Sanders, 1982).

4.0 Data Analysis

4.1 Analysis Method: Modified Stevick-Colaizzi-Keen Method

Moustakas (1998) suggests the use of the modified Stevick-Colaizzi-Keen method in his guidebook. This method was adapted for use in this research project. Each analysis step in the modified Stevick-Colaizzi-Keen method is shown below in Figure 6. Details on how and why this method was adapted for use are described further in section 5.5.

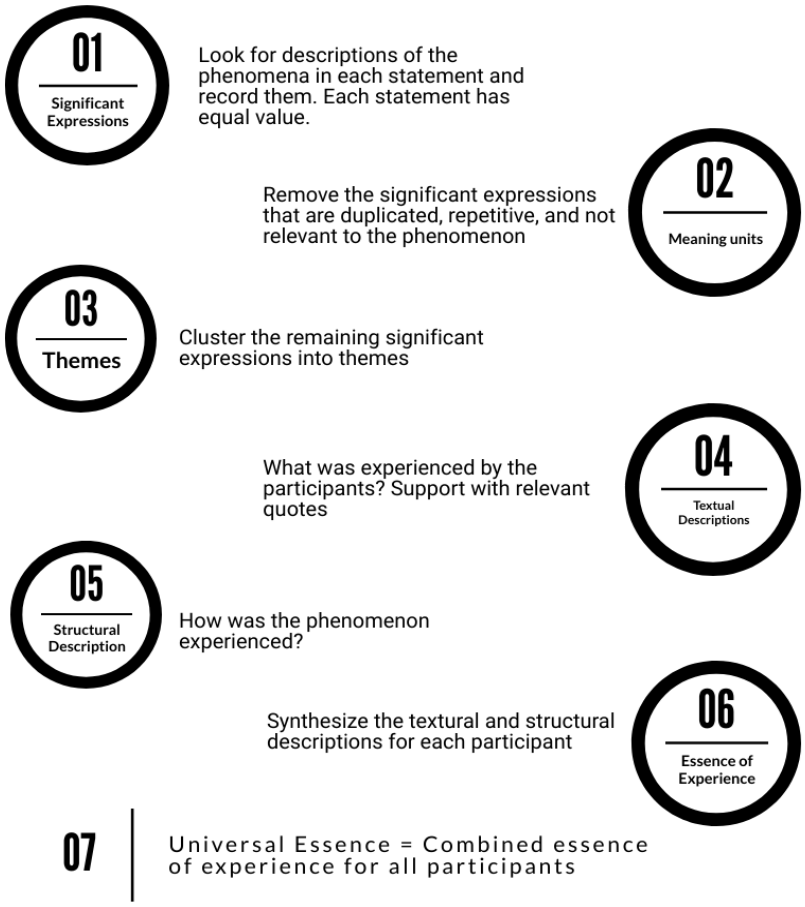

Figure 6. Author created visual representation of the Modified Stevick-Colaizzi-Keen analysis

method following the description provided in Moustakas (1998).

Once the study interviews were transcribed and approved by study participants, steps 1 and 2 of the Modified Stevick-Colaizzi-Keen method were completed for each participant. Transcripts were read by myself to identify the significant statements, which are statements of importance (step 1). At step 2, I identified the meaning units within the significant statements. These meaning units are statements or quotes from the interview that relate to the research topic. Meaning units I selected were discussed with the research assistant to verify their relevance to the topic and to make sure only relevant non-duplicated statements remained as our meaning units. At step 3, transcript meaning units for each participant were imported into the MAXQDA qualitative analysis software package for coding and analysis (VERBI Software, 2018). Following the development of group themes, the textural (what) and structural (how) descriptions were formed for the group (Step 5 and 6) before creating the final statement of essence for the nursing shortage (Step 7).

4.2 Coding and the Analysis Process

Meaning units were coded using a coding strategy that employed a non-interpretative semi-open coding approach to help develop the research themes. The Modified Stevick-Colaizzi-Keen method does not specify the use of coding to develop themes; coding did prove to be an efficient way to organize the large amounts of interview data. Codes used in this study were a single word or two assigned to a meaning unit segment of interview text. Codes in qualitative research are words or phrases that can be used to summarize and identify an important piece of study data (Saladaña, 2009, p. 3). Our codes for this study were descriptive. Coding in qualitative analysis represents a bridging step between the data that is collected and getting to the analysis of that data (Saladaña, 2009, p. 4).

We allowed codes and our definitions for these codes to emerged from the participant's transcripts; we also considered the context of the interview as a whole. As much as possible, we wanted our study definitions to emerge from the study data and not be influenced by other theories or assumptions. Definitions for codes in the codebook for the codes which were not self-explanatory or easily understood were agreed upon between myself and the research assistant. As a starting point to analyzing the interviews and refining the meaning units with the research assistant (Caitlin), I produced a descriptive summary of each transcript, proposed meaning units, and an initial (early) code for each meaning unit (Appendix D). Three sets of participant transcript meaning units were coded to develop and test the accuracy of applying the codes before we were satisfied the codebook was stabilized and produced a reliable coding pattern. The use of two researchers to create the codebook in this way helped to add rigour to our study. I then finished coding the remaining meaning units of the participant's transcripts, reviewing any new codes with Caitlin when they emerged. I completed the final editing of the codebook and had responsibility for making final decisions for codes, their definitions, and the overall codebook. In total, there was a total of 330 meaning units across all of the nine transcripts included in this study for analysis.

Codes from the codebook were assigned multiple times to participant meaning units and also overlapped with other codes where appropriate. This technique of creating overlapping codes is called Simultaneous Coding (Saladaña, 2009, p. 6) and allowed us to see patterns of variation in our data and linkages between the data. Codes were grouped and rearranged several times to form codes and sub-codes under major category headings (Appendix E). A total of 58 codes and 12 categories were developed from the 330 meaning units. In total, we had 983 coded segments of text from meaning units for analysis. A single context code assisted in

creating structural and textural descriptions (excluded from the codes above and analysis). Different code visualization strategies to help with the analysis process. Code maps (shown in section 5.0) created in the MAXQDA software helped in understanding how coded meaning units related to each other. The code matrix browser (Appendix E) was another useful visualization tool to give some sense of balance between the codes and the different participants in the study. This tool was used as a guide to making sure the themes were representative of the group and not biased towards one participant or the research team.

4.3 Strengths and Limitations of Coding Strategy

Use of the Simultaneous Coding made creating a coding structure complicated and required a fair amount of reflection on the part of the researcher to categorize the data. However, the style of coding is a good fit with the phenomenological approach (A-priori, requires reflection). Many of the codes used in this study connected to other codes. Because of this interconnectivity, it made the creation of a coding structure difficult. Coding and the use of a qualitative software program in phenomenological studies are controversial (Sohn, 2017). The risks associated with coding and software are that it can take the researcher away from the text of the interview and prevent the deep knowing of the data (Sohn, 2017). Becoming detached from the chosen theoretical framework is another risk of using software in phenomenology (Sohn, 2017). The researcher can become overwhelmed by lots of codes which might be easier to create when using a software program (Sohn, 2017). A lot of data was collected during the study; at times, it was overwhelming to manage all this information.

4.4 Developing the Themes

After coding all the meaning units for participants, a variety of strategies were used to develop the themes from the data. Themes are generated based on patterns, trends, and

concepts found in the research data and are discovered by using a variety of ways to look at the data, not just from the coding itself (Saladaña, 2009, p. 13). The modified Stevick-Colaizzi-Keen method does not offer specific guidance on how to arrive at research themes and does not suggest a coding approach. Decisions around coding and developing themes were determined arrived at through discussion with my thesis supervisors. The privacy concerns of participants were an important consideration to the approach used for the data analysis as it was important to balance with the overall transparency of the study.

The guiding principles involved in creating the themes were to keep research bias in check, achieve a balanced perspective between participants (done through coding visualizations), remain close to the data (coding meaning units) and by being sensitive to the context (developing a code to flag context and the use of transcript descriptions). Repeated re-reading of study transcripts, researcher reflection, and data visualizations allowed us a variety of ways to understand the data and look for patterns to arrive at our study themes. The use of frequency counts was another visualization method in addition to mapping. Repetitive occurrences of meaning units were removed before the analysis step. Removal meant that each time a code was used, it was a unique instance. This helped me understand the variation in the data. Other analysis strategies included the creation of code visualizations like relational code maps and the matrix browser of which frequency counts were included. Code maps were developed in MAXQDA and were based on code frequency counts, code coverage in text, linked codes (code co-occurrences), and researcher discussion of the transcripts. Appendix E (code matrix browser) shows one example of how I visualized the codes across participants by frequency count and weight against the overall coded data by the participant.

It is common in transcendental phenomenology studies and for studies using the Modified Stevick-Colizzi-Keen method to present findings and themes for each study participant (Brown, Sorrell, McClaren, & Creswell, 2006; Moerer-Urdahl & Creswell, 2004). Doing the analysis and presenting the findings at the group level is a departure from the standard practice but was necessary from a privacy perspective as showing individual transcripts by participant could have resulted in participants being identified.

5.0 Findings

This study has three themes: filling shifts, problem-solving, and community. The essential features of nurse staffing challenges (which embody the themes in this study) form the relevant components to the definition of nurse staffing challenges. Moustakas recommends data for a transcendental phenomenology be presented in a way that includes examples of meaning units, those meaning units clustered into themes, textual and structural descriptions. A statement of essence is also given (Moustakas, 1994, p. 184). The textural and structural descriptions summarize what managers experienced and how they experienced it. The theme filling shifts was a dominant theme in this study. In this chapter, I begin with the description of the essence for nurse staffing challenges. I then discuss each of the three themes and offer examples of meaning units best representing each theme.

5.1 Essence of the Nurse Staffing Challenges

Rural emergency department nurse staffing challenges begin with the inability to fill nursing shifts. There are barriers and facilitators associated with filling shifts as well as triggering events that lead to the need to fill a shift. Triggering events can be interconnected where the presence of one trigger another. Nurse staffing challenges are a phenomenon that occurs in

community settings. They have a negative impact on emergency department managers, staff, and communities. The effects of not being able to fill a nursing shift is often not a pleasant experience; it is a stressful and frustrating event. It creates worry, panic, and sometimes hopelessness. The pressures of needing to fill nursing shifts in the emergency department encourages problem-solving, which can sometimes lead to innovative solutions.

Textural and Structural Description. When managers talked about nurse staffing challenges, the terms they used to describe what they experienced were words like "plugging holes" and "operational requirements." Managers talked about the challenges they faced in trying to fill nursing shifts, retain nursing staff, and recruit new nurses. Managers also shared how they managed during a nursing shortage and the operational challenges they faced on the job. How participants talked about nurse staffing challenges varied, they talked about their community and the connection and responsibility they felt for it in their role as managers and how it made them feel when they were unable to mitigate the impacts of a nurse staffing challenges and unplanned closures.

5.2 Theme: Filling Shifts, the Essence of Nurse Staffing Challenges:

"Having the appropriate number of RNs is crucial to being able to maintain the emergency department service" (Manager P.L)

Managers in this study described a fragility in their nursing staff levels characterized by being unable to fill nursing shifts, which is central to the essence of the nurse staffing challenges. Being unable to fill a nursing shift has three characteristics, an impact to the emergency service (immediate and delayed), a trigger, barriers and facilitators.

Impact. When a manager is unable to fill a nursing shift, there are immediate and delayed implications. The impact of being unable to fill a shift could result in a temporary closure event, working short, redistributing nursing resources from other units in the hospital or the temporary loss of a vital nursing role within the department such as the Charge Nurse (supervisory role). The type of impact resulting from not being able to fill a shift varied between participants and was also dependant on the characteristics of the department. For example, the larger regional sites in this study did not report having temporary closures where the smaller sites did.

The impact of staffing challenges was found to have delayed implications extending to the emergency department community (colleagues and coworkers) and influencing staff job satisfaction and turnover of nursing staff (Table 1. see "Working short"). A few participants reported that being unable to fill nursing shifts in other units outside of the emergency department also could impact the staffing in the emergency department if for instance, nursing resources were reallocated to the unit.

Table 1
Impact of nurse staffing challenges reported by study participants

Impact Examples	Example meaning Unit	Codes
Working short	• "People leave because if we are always short staff, always working short, the acuity is still rising, the stress just never goes away, you dread going into work, but if you know you've got a motivated group of people to come and work with how ever busy it is you're like ok I can deal with that" (Manager P.L)	Filling shifts/Workload
Redistributing resources	• "If I have an LPN who has called in sick either on days or nights that will also cause a closure for the emergency department because that will pull 1 of the 2 RNs from	Problem solving/Strategy/Nurse Reassignment

	the emergency side of things over to take care of the inpatient population." (Manager L.L)	
Loss of important role	• "We had even in the past had the nurse manager come in and work to avoid a closure. I've come in before to avoid a closure." (Manager S.C) • "If someone calls in sick it is usually the charge nurse role that gets reassigned so that means there is nobody in the department that is responsible for overseeing the flow into the department, advocate for admitted patients to see if they can get beds and have a global view of what is going on in the department so yes for sure on a daily basis the nursing shortage does impact operations." (Manager K.W)	Problem solving/Strategy/Role substitution

Triggers to Staffing Challenges. In this study, the need to fill a nursing shift could be triggered by the presence of a vacant nursing position, sick calls, nurses on vacation or leaves of absences, and unfilled gaps in the department's nursing schedule. All managers in this study talked about sick time, most reported their departments lacked the capacity to be resilient to short term scheduling needs presenting as a sick call "we're not short daily but I feel like you're only ever just a sick call away from being short or having to close" (Manager A.P). Some managers in this study reported gaps in their nursing schedules. Managers would have a known emergency department nursing shift that needed to get filled in advance "usually though you try to fill the shifts you know you usually try to look in advance obliviously if it is a sick call that is a short term thing" (Manager C.T on filling shifts). These known in advance shifts were more likely to be the result of a vacant position, leave of absence, or problems with the department's nursing rotations. "I did not realize how many holes we had in our schedule, but in a two week

period, I have nine unfilled shifts. It is insane, so I think that has certainly impacted the closures over the last few years" (Manager L.L on the staffing office and the nursing schedule).

Having vacant positions (especially long-term vacancies) is a challenge that would trigger the need to fill shifts "I have four core vacancies...and all those vacancies most of them have been posted for more than six months" (Manager K.W on describing the scope of nursing shortages). Vacant positions are linked to the recruiting and the hiring process, which had positive and negative discussion points for the managers in the study.

The action of filling a gap in the schedule by seeking replacement staff was a challenge for some managers who relied on a centralized staffing office that was not able to meet their needs "they are not able to do it in time...I know that there has been closures and staff have said well I didn't get the call [to pick up a shift]" (Manager A.P on the staffing office). Some managers felt that their departments were less of a priority "...the staffing office etcetera obviously it is more important to keep a level 2 facility fully staffed than (emergency department X), and that is understandable" (Researcher Dan on the staffing office).

Barriers and Facilitators. Being able to fill nursing shifts required that the emergency department manager was able to do one of three things: recruit new staff, get their existing staff to work extra shifts, or borrow someone else's staff to fill their scheduling needs (from another unit or emergency department for example). With each of these above requirements, there were barriers and facilitators attached to them that made being able to fill a shift harder or easier. These barriers and facilitators are discussed below.

Managers who reported difficulty filling shifts due to vacant positions reported challenges in the recruiting and the hiring process. Managers associated recruitment with any of the following: location (rurality), the town's amenities, the type of position being posted

(permanent or temporary, full-time or part-time), the reputation of the hospital, emergency department nurse identity, size of the department, educational opportunities available for nurses, human support resources, and physical resources (equipment, etc..) available in the department. Nurse identity was an interesting finding that suggested how the nurses' see (or do not see) themselves as an emergency department influences the type of department and location they would want to work in "...you kind of feel a little on your own but then there are other times when you kind of feel that is the draw to rural nursing, you do learn a lot more whereas at bigger centers you have your role and you very much stick to your role." (Manager A.P on working rural). The concept of nursing identity had an urban/ rural lens. Another barrier to the recruitment process that was frustrating for managers was the lengthiness of the hiring process, from posting a vacant position to the administrative processes of hiring (background checks, licensures) to onboarding (general hospital orientation). Three managers in the study spoke about the broader system-level barriers that were associated with recruitment challenges these included political health policy agendas (austerity of the 1990s) and educating new nurses (changes to university programs, and the number of seats in nursing university programs).

Factors described by managers that increased the availability (or likelihood) of nurses working extra shifts included having casual staff; retaining retired nurses; access to emergency department nurses working at other sites (shared or flexible staffing arrangements); having nursing staff with a strong commitment to their coworkers and community; offering extra shifts as early as possible; offering a financial incentive (overtime pay). A further elaboration of what managers thought about the availability of nurses can be seen in Table 2 located on the next page.

Table 2
Barrier and Facilitators to filling nursing shifts

Facilitators and barriers	Example meaning units	Codes
Retaining retired nurses Commitment	• "I think some of it is the relationship they [nursing staff] have with their colleagues and I think a large part of it to be honest is it is a small town, it is a small community and it is that dedication piece and not wanting to see the closures and those are some of the perks to being in a small community." (Manager S.C)	Filling shifts/Retirement
Offering shifts early	• "To me you should be offering overtime in the smaller sites and you know don't wait until the day before because I might be willing to do overtime you know. Like a lot of people have lives, well, we all have lives right?" (Manager A.P)	Problem solving/Strategy/Overtime
Incentives Work-life balance	• "What are you going to do have a day off or come in and work an extra shift? People with families and young children and whatever else is going on with their lives if you can't offer an incentive to do it why do it?" (Researcher Dan)	Problem solving/Strategy/Overtime

A barrier to nurse availability is the workload and morale of the emergency department. Managers reported tired and exhausted nurses were less likely to pick up extra shifts. The interpretation of the overtime language in the union agreements was also a barrier that influenced the likelihood of nurses picking up extra shifts. Some managers reported that not being able to offer an incentive to nurses for working extra shifts impacted the likelihood of filling nursing shifts.

Getting staff to stay (not turnover) was another barrier to filling shifts as it triggered the need to recruit. Most managers in this study believed job satisfaction and work-life balance were linked to turnover, which spurred to the need to recruit. The connection between job satisfaction and recruitment, as one example, is seen in the co-occurrence of coded meaning units with the thicker line indicating more co-occurrences (Figure 7). Co-occurrence refers to meaning units that were coded with multiple codes. These co-occurrences in Figure 7 indicate that when managers were talking about job satisfaction, there was a good chance they were talking about recruitment as well. Looking at co-occurrences helped develop an understanding of how topics relevant to the study were related.

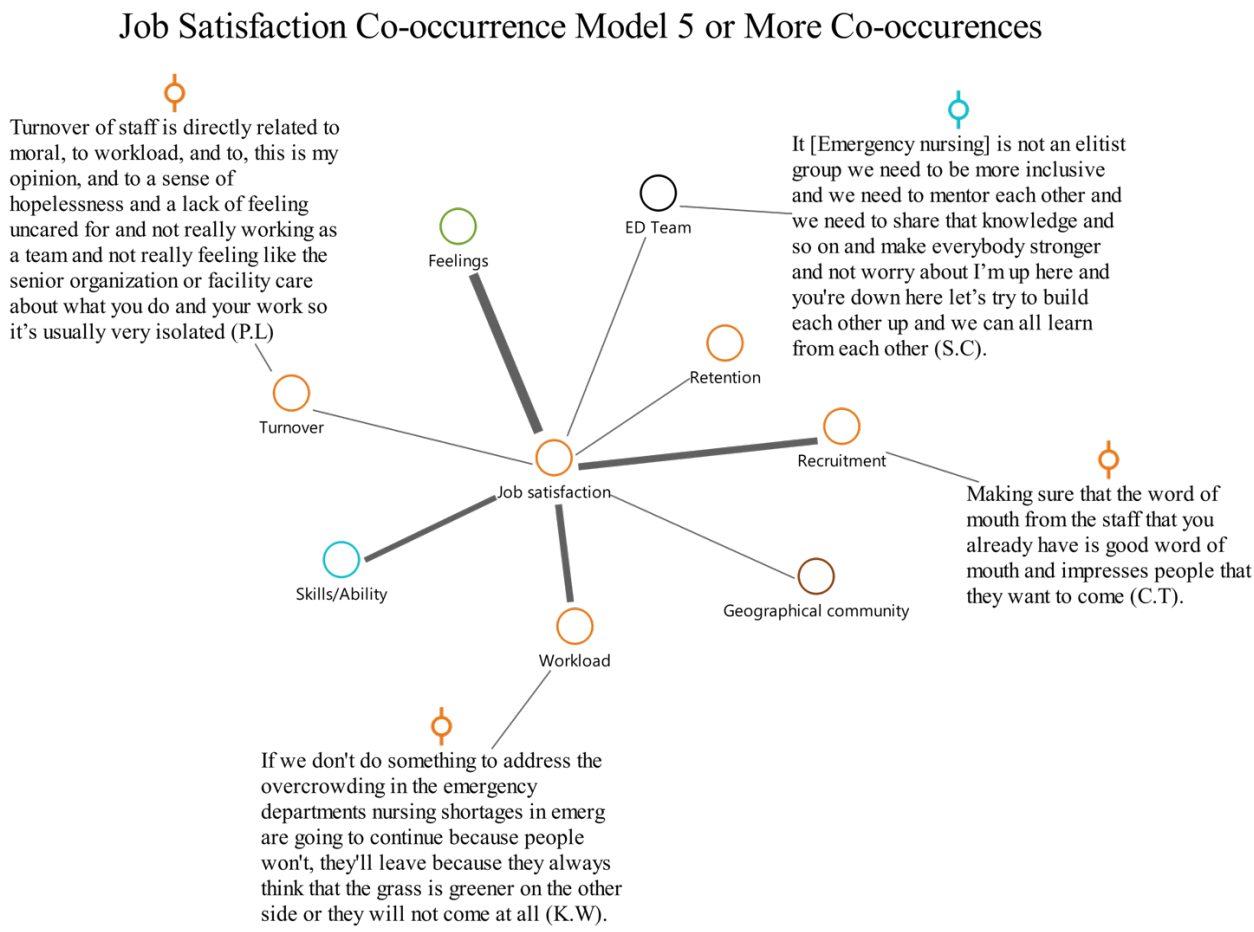

Figure 7. Code co-occurrence model for job satisfaction.

Job satisfaction for this study was coded to include any aspect of the nurse's job that, in the manager's experience, caused satisfaction or dissatisfaction with the nurse's work. This code included topics like emergency department nurse identity and the morale of the nursing staff. Work-life balance in this study included discussions related to a nurse's time away from the workplace, such as days off, spending time with family, or going to a conference. Like job satisfaction, work-life balance also has co-occurring codes, including a connection to job satisfaction. A complete list of all the barriers mentioned by managers in this study can be seen in Appendix F.

5.3 Theme: Problem-Solving to Fill Nursing Shifts

Without the need (present or future) to fill nursing shifts, there would be no reason for managers to engage in problem-solving to find solutions to fill nursing shifts. Problem-solving is an essential component to nurse staffing challenges that were shared by all participants. This problem-solving was aimed at mitigating triggers, removing barriers, and creating facilitators. Managers in this study all possessed abilities that acted as facilitators to successfully solving a staffing challenge. Problem-solving strategies used by managers are highlighted in Table 3. These strategies include over hiring practices, sharing resources, retention, and recruitment.

Over hiring. Over hiring practices were the most successful strategy reported by managers in this study. Over hiring is when managers would hire above their usual core number of nurses. This hiring practice improved the resilience of departments when they were challenged with triggering events for nurse staffing challenges. The goal of over hiring was to create what managers described as a "cushion" or "pillow" of staff to use when there was a sick call, for example. For managers in this study, the term "Surge Hiring" or "Surge Staffing," was used to describe this practice. Over hiring was also a cost avoidance measure; it worked on the

theory that hiring above the core required number of nurses for the department was more cost-effective than filling scheduling gaps by using overtime. Sick time was a frequently discussed trigger to filling nursing shifts alongside vacant positions. Offering overtime was not a guarantee that shifts would get filled so having this extra "cushion" made it easier for shifts to get filled as the resource pool of nurses available to be scheduled by the managers in this study was expanded. Having this staffing "pillow" was an example of a practice that was working well and desired by managers. Supernumerary hiring was a slower strategy of adding to the supply of available nurses. The supernumerary hiring strategy was aimed at attracting new graduate nurses to the department. During the nurse's tenure as a supernumerary, the nurse would not be counted as core staff and would undergo an orientation period usually several months in length or longer. All managers in this study reported using at least one over hiring strategy, sometimes both. Some managers attempted to use this strategy but were not successful in being able to recruit the extra staff, which was frustrating for them.

Sharing Resources. Sharing nursing resources was another strategy used successfully by some managers in this study and desired by others. Managers who made use of this strategy to fill their shifts either cross-trained nurses from another unit within the hospital to the emergency department (less common) or developed a nurse sharing arrangement with another emergency department in the Zone. The sharing arrangements with other emergency departments were reported differently among the managers who discussed them. Some managers had access to a list of available nurses at other sites to call to offer the shift, and others had more immediate access to nurses; they were able to schedule directly. Sharing resources in this way was described by managers as requiring collaboration with others, a willingness to share, and the support of frontline nurses as keys to success. Not all managers

were successful in attempting to set-up a staff sharing arrangement "we tried to come up with an arrangement [with another hospital], but we did not have any uptake of that to see if there was any interest from anyone" (Manager S.C on sharing resources). Of note, in the demographic survey, only two managers reported the use of an external staffing agency (travel nurses) to fill shifts. The use of agency nursing staff was not mentioned at all in participant interviews.

Recruitment and Retention. How managers in this study strategized around retention and recruitment varied among participants. Some managers in this study reported using multiple strategies simultaneously and spoke optimistically about their strategies. Other managers recognized the need to strategize in this area but expressed a sense of hopelessness in being able to achieve success. Examples highlighting the use and attempted use of these strategies can be seen in Table 3. All managers in this study talked about recruitment. One manager mentioned that it was typical for emergency departments in the province to have high turnover rates and attrition. These high rates of turnover and attrition could explain why managers in this study all discussed this topic in study interviews.

When talking about recruitment, some managers problem-solved around the length of the recruitment process and used a variety of strategies to shorten this process. For example, one manager would speak directly to all the adjacent departments (human resources and finance) involved in the hiring process to request an expedited process. Other managers would post vacant positions as early as they could. One manager in the study proactively planned recruitment of the future workforce by encouraging university nursing school placements in their emergency department, feeling that if nurses were exposed to the emergency department environment earlier, this would be positive for recruitment. Hiring new graduate nurses in supernumerary positions was another strategy for recruitment and retention (in addition to

being an over hiring strategy). A high value was placed on the orientation period for nurses new to the emergency department and new to nursing practice. This orientation period was reported to help with the transition to practice and help new nurses feel supported, which managers felt improved retention. Orientation for new nurses could be hindered when the operational requirements of the department were strained or in cases where more senior nurses had a negative disposition to new staff in the department.

Managers also described techniques they used in the interview process that they believed were associated with the retention of nurses. For example, managers shared how they would assess the nurse's willingness to move to a rural community during the hiring interview. Several managers felt that a nurse would be more likely to stay if that nurse moved to, lived in, or grew up in a rural community. One manager in the study talked about how costly turnover was for the department sharing experiences where nurses living in the Halifax area would be hired, orientated, and then leave to work in Halifax. Retaining nurses had a double benefit of reducing the need to hire and avoiding the costly hiring process.

Table 3
Strategies for problems solving

Problem-solving strategy and initiatives	Example meaning units	Code
Over hiring: Surge staffing	• "Hiring some extra RNs on top of what we would normally require for the emergency department and it has been very successful since that date only once I think that I can recall was there ever a closure that was due to a shortage of nurses" (Manager C.T) • "There is a new theory and it is called Surge Staffing and it is...sort of a money saving exercise and what you do is you over staff your department	Problem solving/ Surge Hiring

	and the way it works is you know you are going to have sickness, you know you are going to have to recruit people because people move along, and you know you are going to have to backfill people and backfilling etc. is paid at overtime so you have shift switches at overtime so if you have enough staff or you have slightly over staff they can fill in a lot of that overtime need..." (Manager P.L)	
Sharing resources: Using nurses from other sites	• "The ones coming from other sites, it wasn't because of a vacant position but it was because of a lack of casual staff locally. The majority were short term sick calls so those last minute call ins where you are scrambling" (Manager S.C)	Problem solving/ Sharing resources
Cross-training staff from other units	• "I have cross trained some of my staff [for the emergency department]...and I and I am in the process of doing that in the reverse as well." (Manager L.L)	
Retention: Keeping retired nurses	• "I think the only thing I would mention is the importance of being able to keep your retired people as casual if they are willing to do so that has been a huge help for us." (Manager S.C)	Problem solving/ retention
Offering professional development	• "Professional development is an important part of retention and development if you can avoid turnover you avoid the long delay in the recruitment process, the long delay in orientation, and familiarizing yourself with the site so the less turnover the better the more stable your workforce the more flexible you workforce the better." (Researcher Dan)	
Recruitment: Double posting positions	• "Every vacancy that I have I post for two positions but the reality is that the recruitment challenges are huge so getting one person to fill the position is just as challenging as it is to get two" (Manager K.W)	Filling shifts/Vacancies/Recruitment

Hiring Supernumerary new graduates and offering co-op placements	• "Let them [nursing students] have exposure even if it is split so part medical and part emergency department whatever so we get regular co-op students ..now we have new grads that want to do supernumerary positions it is a new way of thinking we are there and that is what we need to do and think outside that old box" (Manager S.C)	Filling shifts/Vacancies/Recruitment
Posting permanent instead of temporary positions	• "One of our issues with recruiting in the community sites, if we post a temporary position we are unlikely to get any applicants at all if I post it as permanent you'll get more interest." (Manager L.L)	

Skills and Abilities. To support problem-solving activities, managers in this study demonstrated a wide variety of skills and abilities, both as managers and as leaders. For example, collaboration was what made sharing human resources and being able to expedite the hiring process possible. Seven main skills and abilities were either demonstrated or shared by managers in this study. These skills and abilities were advocating, looking ahead and planning managing risk, building teams, collaborating, being creative, motivating others, and leadership. Of these attributes, leadership and teambuilding emerged as the most frequently counted codes in this study. Everyone, including the researchers, discussed the importance of leadership and teambuilding.

Managers spoke about leadership in two ways. They spoke about the qualities their managers (directors) had and how it impacted them as managers. Managers spoke about their leadership qualities (or qualities associated with leadership) that impact on their staff. Having a manager who is a skilled leader created an environment of support for managers in this study and managers believed being a skilled leader also created this supportive environment for their

staff. Support, as reported by managers, referred to the freedom to innovate, share ideas in a safe space, and grow their capacities as managers or as frontline staff. Leadership was also discussed as being strategic in that it was used to create a vision and a sense of purpose and opportunity for frontline nurses. The skill to build a team of nurses to work in the emergency department was important, and so too, was working with a good team (cohesion). For managers in this study building a team was about keeping and finding balance. The balance of veteran and junior nurses, balancing of risks (need to fill a vacant position with the risk of having a new hire that will not stay). Managers also built their teams by connecting with their staff and doing activities such as team meetings and check-ins with staff. Succession planning and sharing the leadership role was also an example of team building. One manager created unit champions for each classification of nurse (registered nurses and licensed practical nurses) to build the capacity and leadership qualities of that frontline staff member. Further examples of these skills and abilities and their influence based on the study data can be seen below in Table 4.

Table 4
Manager's skills and abilities and their influence

Skill/ Ability	Example meaning unit	Influencer
Advocate	• "I've done a lot of lobbying for things, one of the main factors we've done is a lot of discussion with my director and the staff about needing to change the environment and listen to the [staff] to affect some kind of change and to come up with a plan." (Manager P.L)	• Job satisfaction • Work-life balance • Inpatients • Recruitment • Safety • Staff wellness
Look/plan ahead	• "I do not like closing down the emergency department and I will look at every single possible option to keep the emergency department open." (Manager C.T)	• Filling shifts • Recruitment • Community safety

Risk management	• "...there is not a good mix of senior and junior nurses so I think what happens is that junior nurses don't feel supported and the senior nurses are left feeling unsafe and almost unsupported themselves." (Manager A.P)	• Operational requirements • Role protection • Community safety • Care of inpatients
Creativity	• "We have become resourceful with using paramedics and so on..." (Manager S.C)	• Orientation and transitions to practice • Filling shifts • Recruitment
Motivate	• "From a motivational point of view if we are getting throughput and moving people through that is great but if we are stagnant and we are not coping then that is not great so I have motivation that we've made these changes and it seems to be working but there is a next step and as long as we are moving forward I'm still motivated, my staff are motivated, we can still feel like there is hope..." (Manager P.L)	• Building morale • Staying positive • Planning ahead

5.4 Theme: Being Connected to Community

Community was a subtheme that was interconnected with both filling shifts and problem-solving. Community in the context of this research refers to the relational spaces and physical locations of community. Community is a much more complicated theme to conceptualize. One code I used to help arrive at this theme was the code "geographical community," which was given to meaning units that referenced a physical location: of a town (including its amenities), the hospital, or the emergency department. The relational aspect of the community theme refers to two elements: the internal community of the emergency department service (other emergency departments, and EHS) including adjacent supports (internal human resources and finance departments) and the community of health care

professionals working in a specific emergency department (managers, physicians, paramedics, CTAs).

Community as a theme does go beyond just looking at those two codes alone and it was highly interconnected with other elements in this study. The code co-occurrence model below gives some idea of this interconnectedness (Figure 9)

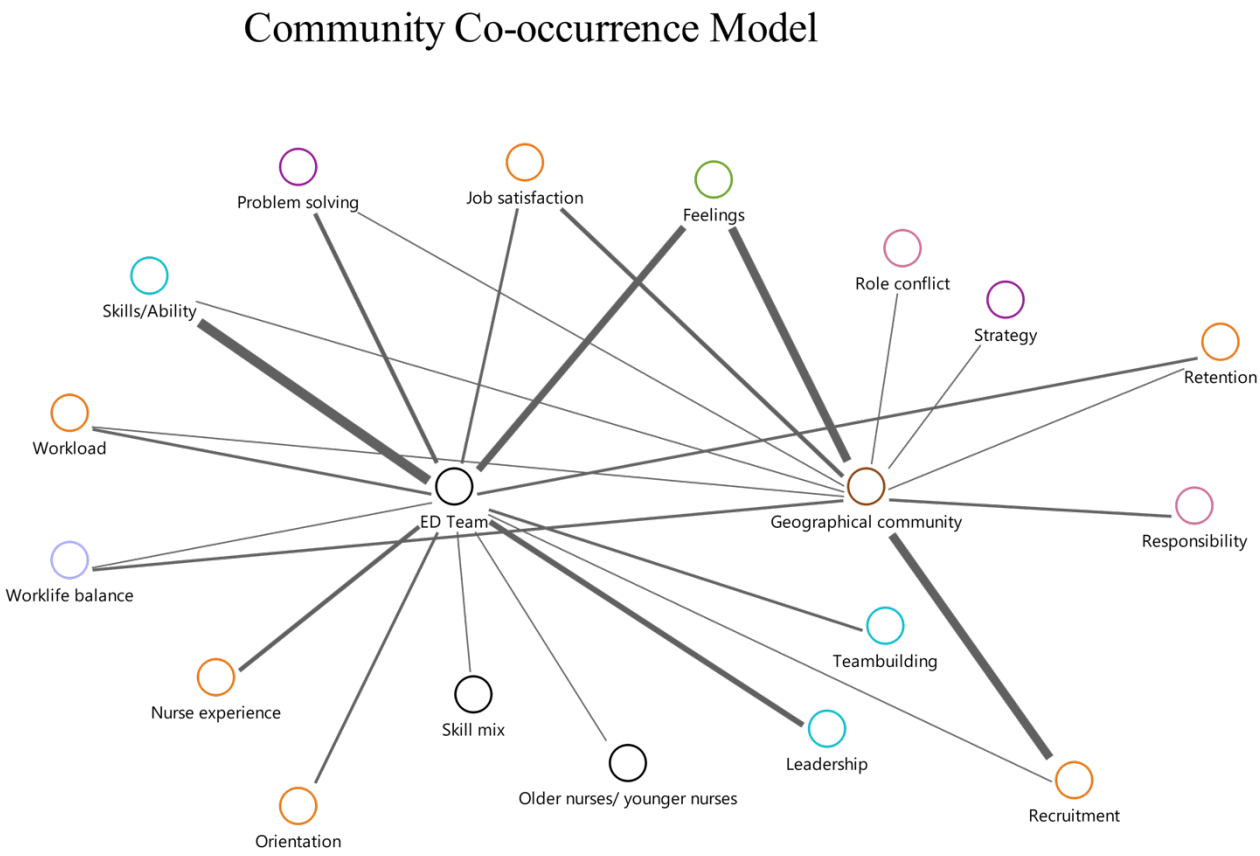

Figure 9. Community Co-occurrence Model Highlights Interconnectedness.

Managers in this study all talked about the connection between the emergency department, their role as manager, the staff they managed, and community. Community, as described in this research, was connected with just about every major experience shared by managers in the study, as you can see in Figure 9. Managers experienced stress, frustration, and concern when they were unable to fill a nursing shift. These feelings were tied to how they

viewed their role and responsibilities as a manager "it is actually a very emotional experience for me to be honest because for several reasons number one you know in my role the health of the community is very important and keeping the community safe and when we are not open you are not doing that you don't feel like you are fulfilling what you should be doing for your community" (Manager S.C on closures). In our researcher transcripts, Caitlin and I (as emergency department nurses) shared our commitment to the community and lack of role fulfillment we felt when we are unable to provide care "You don't get a sense of fulfillment...you want to get a sense of serving your community and actually doing your job" (Caitlin on working when the emergency department is closed). Our quotes as researchers support what Dan (researchers) and manager A.P say about commitment and dedication to the community "for a small group of people the pressure of preventing a closure was significant because they knew it would affect the public" (Researcher Dan on community and filling shifts) "...it is an important service, and you don't want your family, your friends, and your community to go without." (Manager A.P on keeping emergency departments open). Supporting the relational community was an important facilitator to filling nursing shifts; the cohesion of nurses working in the emergency department to their community would motivate nurses to pick up extra shifts and also to continue working after they have retired as S.C mentions in Table 3.

On the topic of being hired to a rural emergency department, there is an identity component where nurses who live rural might preference this environment. There is also an adoption component in hiring when a nurse is hired and joins the new community. This transition requires supports and a welcoming environment for integration and retention "...how are you making out having those frequent check-ins helping them navigate the community and that kind of stuff also you know just the fact that they are changing the practice environment

and things are not the way they are at home and maybe we do things differently so helping them sort through that..." (Manger K.W on orientation) and "It is like a sense of community a sense of family where you go to work, and you enjoy spending time with your coworkers, and you get your breaks, and the doctors you work with your coworkers are friendly I think that has a lot to do with how the department functions and people wanting to stay" (Researcher Caitlin on teams and job satisfaction).

Community, when considered just as a physical location, was most often discussed with recruitment and retention. When community is viewed more broadly also to include relationships between groups, it had many more intersections with different topics of discussion mentioned under the themes filling shifts and problem-solving. Community has a complex interaction with nurse staffing challenges and not only represents the environment where this phenomenon occurs but ties into why there is a need to fill nursing shifts, the barriers and facilitators to filling shifts. Community is an essential component of the nurse staffing challenges found in the experience of health services managers. As a theme, community is more complicated to understand, but without a community (physical and relational), there would be no emergency department and no need to fill nursing shifts.

6.0 Discussion

The impacts and challenges identified in the literature around nursing staff challenges are similar to those identified by managers in this study. While some managers are challenged by recruiting, other managers may be challenged in other ways to fill nursing shifts. Managers often experienced more than one challenge associated with filling a nursing shift. The impacts and challenges identified in the literature around nursing staff challenges are similar to those

identified by managers in this study. Understanding the local context and local issues around staffing challenges for each area is important because one area may look different than another. Understanding regional variation and complexity facilitates using interventions most likely to be effective in the local area and can aide in the consideration to adopt initiatives from other sources. A high-level overview of identified staffing challenges discussed by managers in this study matched to the literature findings on the topic is presented in the following tables.

Table 5.
Challenges associated with filling nursing shifts that have parallels with the literature

• Challenges with orientation (right skill-mix, preceptor match, and welcoming environment)	• Inefficient staffing and scheduling (the process of filling sick calls, gaps in schedules, insufficient staffing clerk resources)
• Challenges recruiting to the community (things to do for younger nurses, jobs for spouses, schools, etc.)	• Negative social work environment (low morale, stress, others)
• Department factors (overcrowding, shortages on other units)	• Overworked nurses (high use of overtime and heavy workloads)

Table 6.
Examples of initiatives or suggestions to overcome nurse staffing *challenges reported by managers*

• Shared float pool	• Flexible staffing arrangements
• More permanent full-time vs. part-time positions/ Posting permanent not temporary positions (in the case of leaves)	• Greater collaboration between the emergency department and community supports services
• Localized staffing and scheduling	• Having a positive hospital reputation among staff/public including on social media
• Proactive planning and visioning for the emergency service, not just crisis management	• Developing nursing mentors/ preceptors

• Over hiring (surge and supernumerary)	• Having a clinical nurse leader role supporting emergency department nurses

Table 7.
Effective interventions from the literature to improve nurse staffing challenges

• Preceptorship/ mentorship programs for new graduates*	• Promoting of the ED workplace, tackling myths, promoting family-like atmosphere*
• Professional development/ improving access through distance learning	• Career opportunities (creating new advanced practice roles) *
• Dedicated supernumerary mentors*	• Flexible schedules*
• ED residency programs (for nursing students) *	• Transition support (settling into the new community) *
• Local workforce recruitment planning	• Financial incentives
• Resources/education for managers (recruitment, hiring, scheduling)	• Staff scheduling tools (mathematically based) *
• Workload decision support tools*	

* Indicates ED specific

In a systematic review of interventions to reduce nursing turnover, the following strategies were useful: use of a transformative leadership style or style that encourages group cohesion and helping new nurses' transition to practice, (Halter et al., 2017). Being a new graduate or within the first five years of practice is also associated with increased turnover (Robinson NC & Pinkerton S, 2004; Welding, 2011). Knowledge of strategies believed to reduce turnover in the early practice group would be useful for reducing nurse staffing challenges in rural emergency department settings. This is an important implication for this study as participants reported to mostly fill their vacant positions with new graduate nurses. Managers in this study identified the transition to practice (for new nurses and those new to working in emergency care), and the social aspects of work (group dynamics, cohesion, others) as being important factors involved in nurse staffing challenges. Some managers shared that when

nurses were new and they had a negative transition experience (orientation, lack of supportive, mentor mismatch, others) this could be a barrier to retaining them and negatively impact their skill development in the emergency department setting.

Managers in this study discussed their use of strategies to support new graduate transitions, examples included check-ins with new staff, co-op or school placements in the emergency department, and supernumerary positions. The government of Nova Scotia also funds two initiatives that support transition to practice, the Nursing Strategy, which supports local retention projects and the RNPDC [Registered Nurses Professional Development Centre] which offers specialty post-graduate courses in emergency nursing. Other examples of transition to practice initiatives used elsewhere include an assigned one-to-one resource person (mentor who helps the new nurse socially adapt and learn skills), a unit-based resource nurse, standardized transition programs, and/or dedicated time for the new nurse to spend with a preceptor (Rush, Adamack, Gordon, Lilly, & Janke, 2013). Of these additional transition supports listed, best practices were recommended to include a mixture of initiatives (Rush et al., 2013).

Extended paid full-time orientation programs such as Ontario's New Graduate Guarantee is a Canadian example that was used to improve the transition to practice experience for new nurses in the province by offering a 6-month orientation. While successes with this type of initiative are reported in some rural areas (Sandler, 2018), the program was too costly to implement in others (Erie St. Clair LHIN, n.d). This finding suggests that provincially planned policies that do not reflect the uniqueness of rural needs may not work in all rural areas and highlights the presence of a rural-urban implementation gap found in other studies (Doeksen, St. Clair, & Eilrich, 2016; Montour et al., 2009). A contributor to this gap in Canada and other countries is the lack of policies specifically for rural and remotes areas (Rechel et al., 2016).

Mentorship and preceptorship programs are supported in nursing literature to improve transition to practice ("Improving staff recruitment and retention in the emergency department," 2017; Kulig et al., 2013; Rohatinsky & Jahner, 2016; Rush et al., 2013). Evaluations of these transition to practice programs alone were difficult to find so despite being supported, it is unclear how effective these programs are by themselves for the emergency department. An evaluation of a bundled program including both retention and transition to practice supports decreased vacancy rates from 65% to 14% in one United Kingdom emergency department ("Improving staff recruitment and retention in the emergency department," 2017). While not surprising, this finding suggests that these programs are also effective emergency department settings. One unique initiative mentioned in the literature but not yet tried in this setting, is the concept of a transition support team where supports are available to help new nurses integrate into the rural community (MacLeod. , Kulig, & Stewart, 2019) perhaps similar to community navigator programs used as part of immigration programs.

The theme of community found as a result of this study gives support to interventions that would create those bonds between new nurses and their new rural community and potentially improve retention. Family and friends are critical to a nurses' decision to practice in a rural environment, so developing and maintaining these relationships for all nurses in the rural emergency department would be important. A Canadian study on rural nursing practice found that 51% of study participants chose to stay working rurally for reasons related to family and friends (MacLeod et al., 2017). Rural nurses also deeply integrate into their communities advocating for positive change and helping their communities in times of need (MacLeod et al., 2019), a finding supported by the managers in this study.

Lack of team support was found to be one of the top reasons why many Canadian nurses left their jobs in a past study by researchers O'Brien-Pallas et al (2008). Managerial factors and the social environment are important to both the rural and emergency department settings (Gorman, 2019; Lu et al., 2015; Mion et al., 2006; Sawatzky & Enns, 2012; Winters, 2016). A manager's leadership style has also been found to play a role in nurse job satisfaction (Advisory Committee on Health Human Resources, 2002; Cummings et al., 2010; A. Harris & McGillis, 2012). A qualitative descriptive study done in Canada looking at nurse reported determinants of intention to remain employed and also found that supportive management indirectly influenced a nurse's intention to stay and that this relationship is influenced by job satisfaction (Tourangeau, Cummings, Cranley, Ferron, & Harvey, 2010). For licensed practical nurses (LPNs), one study found that a lack of respect and recognition for their work influenced their decision to leave (Foster et al., 2013). The LPN specific findings of this study are relevant for rural emergency departments in Nova Scotia which often employ LPNs, as most participants in this study shared.

The theme around problem-solving in this study highlights the important role played by emergency department managers in creating and facilitating a positive work environment for nursing staff along with the skill and abilities exercised in their role to motivate, advocate, and develop nurses. Positive work environments have also been reported as a factor in reducing vacancies in rural hospitals (LaSala, 2000), where positive work environments are described in the literature as being those that demonstrate they value their staff (Foster et al., 2013).

Organizations with positive work environments may also have improved patient outcomes (A. Harris & McGillis, 2012). Values held by nurses working in rural emergency departments like "being able to make do with less" can hide workload and resource challenges

(Twigg et al., 2016). "Making do with less" can potentially lead to negative outcomes for patients (Twigg et al., 2016), and contribute to the perpetuation of conditions that can lead to a negative work environment.

There is no agreed-upon definition of leadership in the context of the nursing literature (Cummings et al., 2018), so understanding the descriptions of the characteristics and qualities [skills and abilities] of various styles of leadership is important. For example, studies suggest that best outcomes for the workforce occur when leaders focus their attention on the people they manage as opposed to just the tasks (Buchan, Shaffer, & Catton, 2018; Cummings et al., 2010, 2018). This focus includes developing, supporting, and engaging staff (Buchan et al., 2018; Cummings et al., 2010, 2018). "Relational leadership practices [includes focusing on developing and maintaining relationships] need to be encouraged and supported by individuals and organizations to enhance nursing job satisfaction, retention, work environment factors and individual productivity within healthcare settings" (Cummings et al., 2010).

Developing the skill and abilities of managers as well as tools and resources to support their work could all be beneficial to facilitate the development, support, and engagement of nursing staff by their managers; this should in turn, facilitate improved job satisfaction and retention. Greater support and development of managers could also be an important consideration for the retention and recruitment of managers themselves. "In many other situations, head nurses became front-line managers with responsibilities so broad they spent their time managing paper and budgets rather than working with the human beings assigned to them. The satisfaction of managers has become increasingly problematic, and their jobs are seen as so demanding that younger nurses have little interest in taking on those roles; they see

the working lives of their managers and want no part of it." (Advisory Committee on Health Human Resources, 2002).

On the topic of leadership, the managers in this study valued and invested in their staff sharing examples of initiatives they supported, like developing nurses to become mentors, supporting training days, and creating leadership role opportunities within their departments. Rural nurses may face barriers to attending professional development courses, for example distance; however, professional development is one strategy to improve retention and reduce absenteeism (Harris & McGillis, 2012; Lalonde, Hall, Price, Andrews, & MacDonald-Rencz, 2013). The literature makes several suggestions that could be useful to educators and managers and improve the uptake and delivery of education to rural emergency department nurses. These include offering courses through online platforms, offering flexible scheduling, making sure courses are relevant to the practice area, and offering paid educational leaves to attend educational events (Kulig et al., 2013; Lalonde et al., 2013).

Tools and resources to support the work of the manager include workload decision support and scheduling tools as well as resource toolkits. Workload, scheduling and communication were all challenges that contributed to nurse staffing challenges in this study. Several managers did report using data like patient volumes in their department to inform staffing decisions such as adding nursing staff at the time of day when emergency department visit volumes peaked. No managers reported the use of a specific scheduling tool. In at least one American study, the use of a mathematically based scheduling tool in the emergency department was found to improve the scheduling process (Svirsko, Norman, Rausch, & Woodring, 2019).

The use of workload decision support tools was mention in two publications, one of which was in a rural emergency department environment (Twigg et al., 2016; Vincent & Beduz, 2010). Workload is a measurable component of job satisfaction in human resource literature (Kan, Levanon, Li, & Ray, 2018). Job satisfaction for nurses lacks a consistent definition in the nursing literature (Tourangeau et al., 2010). This makes understanding this definition an important consideration to job satisfaction (Cummings et al., 2018), particularly in unique settings like a rural emergency department. Workload challenges have negative implications for the emergency department that have been associated with turnover in several studies (Gorman, 2019; Lu et al., 2015; Mion et al., 2006; Perhats et al., 2012) suggesting that heavy workloads decrease job satisfaction. A heavy workload is also related to pre-absenteeism (coming to work when the nurse is not fully engaged in their work either physically or mentally), and sickness absenteeism (Brborović, Daka, Dakaj, & Brborović, 2017). In this study, the heavy workloads of emergency department nurses and sick calls were two frequently shared experiences of managers resulting in staffing challenges. Recalling that chronic disease rates are associated with reduced worker productivity, the higher rates of chronic disease in the Western Zone could also be another overlooked possibility in explaining nurse absenteeism if the nurses also have a chronic disease.

Decision support tools for managers mentioned in the literature included workload and staff utilization measurements, as well as patient outcome measures (Twigg et al., 2016). In Ontario, a toolkit for managers to help them make evidence-based human resource decisions was developed. This tool was called The NHRBPT (Nursing Human Resource Best Practice Toolkit) and included five elements: planning tools, manager interventions, recruitment, retention and professional practice (Vincent & Beduz, 2010). "Regular reviews of staffing and

scheduling procedures are recommended (minimum yearly) in order to be responsive to recruitment and retention issues...triggers such as staff complaints, increased sick time, or overtime may warrant a review and further action...Key areas identified for practice change related to the use of forecasting tools, scheduling and retention strategies." (Vincent & Beduz, 2010).

Recruitment to rural emergency departments was a challenge identified by managers in this study and the research (Bazzoli GJ et al., 2006; Sawatzky & Enns, 2012). Managers identified the lack of amenities and things to do in the town as being barriers to recruitment for younger nurses. Being located near a university and having nursing students was a facilitator to recruitment identified by managers in this study and the literature (Bazzoli GJ et al., 2006; Kulig et al., 2013).

Examples of recruitment strategies used by managers in this study included financial incentives, extended orientations (supernumerary positions), and nursing student placements to attract nurses to rural emergency departments. While some managers reported improvements with these initiatives, most still experienced nurse staffing challenges. Financial incentives are also important to the retention and recruitment of rural nurses according to two large Canadian studies (not specific to the emergency). Salary and lack of other financial incentives were reasons cited by rural nurses who intended to quit their jobs (O'Brien-Pallas et al., 2008), and income was the number one attractor to recruiting nurses to a rural location (MacLeod et al., 2017). Financial compensation was found to be linked to job satisfaction in at least one small single site Canadian study (Singh & Loncar, 2010).

Another interesting finding of this study was the idea that there was a certain kind of emergency department nurse that worked in smaller rural departments vs more urban settings.

Some managers in this study suggested this kind of nurse prefers rural life, has an attachment to the community and might value a slower work pace, educational opportunities, and lower acuity patients. Location and practice environment are both identified in the literature related to rural recruitment as being reasons for choosing to practice rural (MacLeod et al., 2017).

Filling nursing shifts in the emergency department in the presence of increasing demands for services, labour challenges, and unhealthy populations are considerations that make for an extremely complex problem for the Health Services Manager to address. When managers are faced with the repetitive need to fill shifts in combination with these jurisdictional factors, the complexity of these problems increases, making the search for sustainable solutions difficult. A combination of interventions to address key challenges specific to the different areas are likely to be necessary. The creation of a toolkit with interventions that managers can implement based on their individual needs could be created using the insights generated from this study, blending what has been working well for managers and those from the literature.

For rural areas, the literature seems to advocate for an approach to interventions that are tailored to the local context (Doeksen et al., 2016; Health Association Nova Scotia, 2013; Montour et al., 2009) and include a mixture or bundle of initiatives to address the multifaceted nature of staff challenges (Buykx, Humphreys, Wakerman, & Pashen, 2010).

6.1 Study Limitations

The literature reviewed as part of this study was limited by a lack of publications specific to the rural emergency department setting. Research from other settings highlighted in this study appear to be relevant to the rural emergency department setting, but the evidence base to support this similarity is small. There is also a lack of research available related to Licensed Practical Nurses (LPNs) working in emergency departments. Where some emergency

departments in the Western Zone do utilize Licensed Practical Nurses, it would have been beneficial to include more studies addressing this group of nurses.

Using phenomenology to underpin the study design meant that some interesting findings were out of scope for this project. It also meant that deep explorations into ontological questions emerging from this study, like nurse identity, were not explored in great detail. The use of the phenomenology approach was useful for identifying key concepts and highlighting areas for exploration but might have been too rigid a method. This study occurred during a period of transitions related to the nursing Collective Agreements, the experiences of managers in this study may not be consistent due to the long recruitment window and data collection period occurring during this period of change. Finally, this study is limited by the small sample size; therefore, the findings are not generalizable to other areas - they may, however, be transferable.

7.0 Conclusion

This qualitative study highlights the importance of the lived experience, clinical expertise, and professional commitment to the health care of rural Nova Scotian communities held by rural emergency department managers. The findings of this study enhance our understanding of the factors that affect nurse staffing in rural emergency departments and discusses ways these challenges have, are, and could be addressed. By understanding the experiences of managers, a definition of nursing staff challenges was created following phenomenological research methods. While simplistic, the definition found resulting from this study was that nurse staffing challenges are the inability to fill nursing shifts in the emergency department. To further expand on that definition, not being able to fill an emergency department shift had many negative impacts for examples unplanned temporary closures of the

emergency department or working with fewer nurses in the department than planned (short-staffed). The reasons reported for not being able to fill a shift were complex and varied. Generally, these reasons were either a complication from having vacant positions in the emergency department or for operational reasons. Many managers in this study reported challenges with recruitment and retention but they also reported challenges in scheduling nursing staff or in hiring and onboarding new staff among others. Other operational challenges identified in this study included human resource management issues like sickness absenteeism and high overtime usage.

The strategies managers used, and their ability to access resources can explain why some departments close more frequently than others. Nurse staffing challenges are complex, the synthesis of the findings from this study and the literature highlights the need for health leaders to appreciate the nuances of the rural and emergency department setting and the vital role played by managers in service delivery. Recommendations emerging from this study included increased job supports for emergency department managers and interventions aimed at addressing staffing challenges that are tailorable to the local setting and make use of multiple (bundled) intervention strategies.

8.0 Next Steps and Future Research

Research findings are being shared with study participants to seek their feedback. After this, an executive summary of findings will be created to share with the organization and other interested parties. There are many ways in which nursing staffing challenges can present, studies such as this that seek a deeper understanding of what these issues are and how they are experienced in a geographic area such as the Western Zone could have value in helping health leaders best match limited resources to address the most relevant challenge. Where few

interventions aimed at improving nursing staff challenges in rural emergency departments were identified (in Canada and abroad), evaluating existing human resource practices, as well as recruitment and retention incentives, could be beneficial to gauge their effectiveness. Other health leaders seeking transferable strategies to staffing challenges could also be interested in knowing if proposed interventions worked in other jurisdictions.

For ontology scholars, a study that seeks to understand how rural emergency department nurses identify would be a pressing need. To effectively manage and negotiate staffing challenges, managers need a holistic understanding of what draws nurses to rural emergency department work and what keeps them there. Those identity pieces appeared in this study to be linked to a decision to practice and stay in a rural emergency department. Because the rural emergency department is a complex environment and unique in many ways compared to other rural hospital units, a better understanding of how this identity is shaped would have high value to recruitment and retention efforts in rural settings.

Suggested next steps with a broader focus could include creating a space for municipalities and community stakeholders to share what is working well in their areas related to addressing the social determinants of health, sharing strategies that working to recruit and retain health care staff such as nurses, and to potentially discuss opportunities for facilitating the sharing of health care staff within the Zone. Next steps could also include advocating to governments for health and social policies that consider rural needs.

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Appendix A. Nova Scotia's Provincially Funded Nursing Workforce Initiatives

Table 1

Provincially Funded Nursing Workforce Initiatives.

Name of Initiative	Description	Information Link
Nursing Strategy	Supports employer driven recruitment and retention projects	https://novascotia.ca/dhw/nurses/
Registered Nursing Professional Development Centre (RNPDC)	Provides post-graduate practice specialty education for Registered Nurses	https://www.rnpdc.nshealth.ca/
Additional seats for nurses in nursing schools	Funds seats at Nova Scotia's three nursing schools (at the university level)	1.https://www.dal.ca/faculty/health/nursing.html 2.https://www.stfx.ca/academics/science/nursing 3.https://www.cbu.ca/academics/programs/bachelor-of-science-nursing/
Seats for Registered Nurses at Dalhousie's Yarmouth campus		
Additional seats and incentives for primary health care NPs	To support collaborative family practice teams focusing on areas challenges by recruitment and retention	

Note. Names of initiatives were provided by the Department of Health and Wellness in a personal communication Nov 19, 2019. Links and descriptions added by author.

Appendix B. Scoping Review Search Concepts

Major Concept	**Emergency Department**	**Nursing Manager**	**Nursing Shortage**	**Rural Hospital**
Key terms	Emergency service	Nurse administrator	"Nursing shortage"	Rural
	Emergency room	Head nurse		
	Emergency ward	Nursing manager		
	Emergency department			

Appendix C. Interview Guide

A Qualitative Approach to Nursing Staff Shortages in Nova Scotia's Rural Emergency Departments

Interview Guide - Participant Copy

Thank you for agreeing to participate in my research study. I look forward to talking with you soon. As a reminder, interviews will be recorded and information that can identify you will be kept confidential. Information that identifies you will not be published and any direct quotations will use a code or pseudonym. Here are a few points on the interview approach I will use and the list of questions you can expect to be asked.

Interview approach:

- The purpose of the interview is an in-depth exploration of your experience with nursing shortages in the specific context of unplanned emergency department closures.
- I will endeavor to understand your experiences without being influenced by my own assumptions and pre-conceived ideas.
- What makes up a person's experiences are broad and not necessarily limited to what you may think, feel, or see. Please feel free to describe your experiences however you see fit.

Potential questions (You may be asked some or all of the questions below and in any order)**:**

1. Can you describe your experience with nursing shortages and in the context of unplanned emergency department closures?
    - What would you say has shaped or influenced this experience?
    - Has this experience changed over time?
2. How are nursing shortages connected to unplanned emergency department closures (in general and specific to your department)?
3. Thinking back to the last time you experienced an unplanned closure related to a nursing shortage:
    - What was your role in the situation?

      Is this typical? If not, can you describe your typical experience?
    - What specific actions did you take?

      Is this typical? If not, can you describe your typical experience?
    - What emotions did you feel?
    - Is this typical? If not, can you describe your typical emotional reaction?

Appendix D: Example of Early Analysis Work

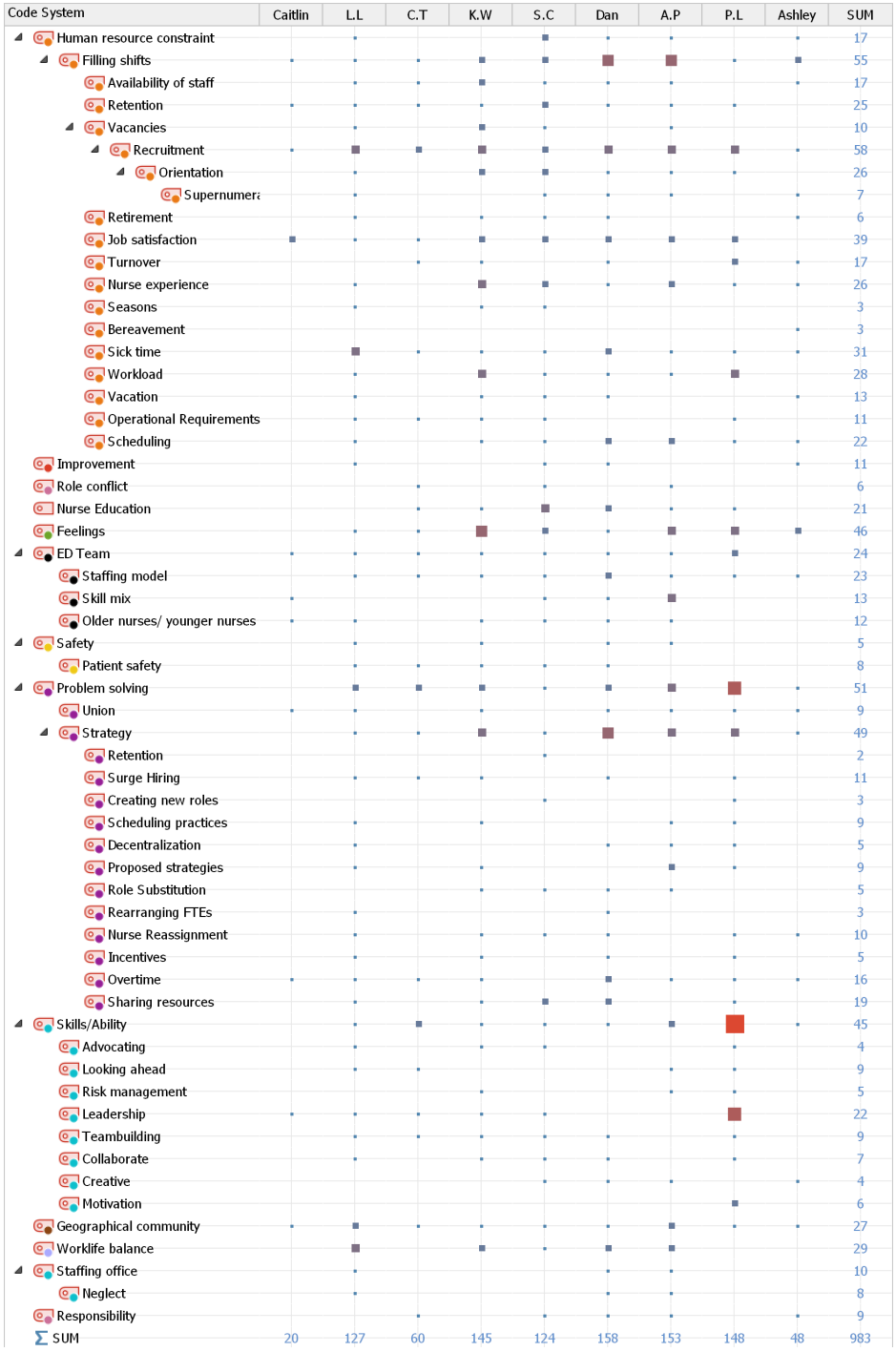
Ashley Meaning Units, Codes, Description

Meaning units, codes, summary

Transcript Line	Early Code	Meaning Units "quotes"	Transcript summary
8	• Filling shifts • Union	I know our Charge Nurse had covered some of the shifts herself and usually you know a call will go out based on our union contract	Backfilling shifts is described as a creative process where shifts offered for replacement can be divided. The Charge Nurse is also used to backfill shifts sometimes as is the use of overtime and asking staff to stay late beyond their shift. The decision to backfill shifts using overtime is decided by management which often gets approved
16	• Filling shifts • HR Resource	you know in the past we would have holes in our schedule that we would know in advance that we couldn't fill and in advance I mean a couple of days, you might have a week lead up time to try and fill the shift but you just can't because you just don't have the available bodies to fill it	Ashley also describes situations where there were known gaps in the schedule that could not be filled because of understaffing
16	• Working extra • Burnout • Filling shifts	a lot of staff work a lot of extra shifts so I think burnout maybe or just being really tired I think could factor in to why some nurses could be	Ashley associated working extra shifts with burnout and exhaustion and feels this could be a reason why staff would be

	reluctant to pick up and extra shift so that could be a cause as well	less likely to backfill shifts

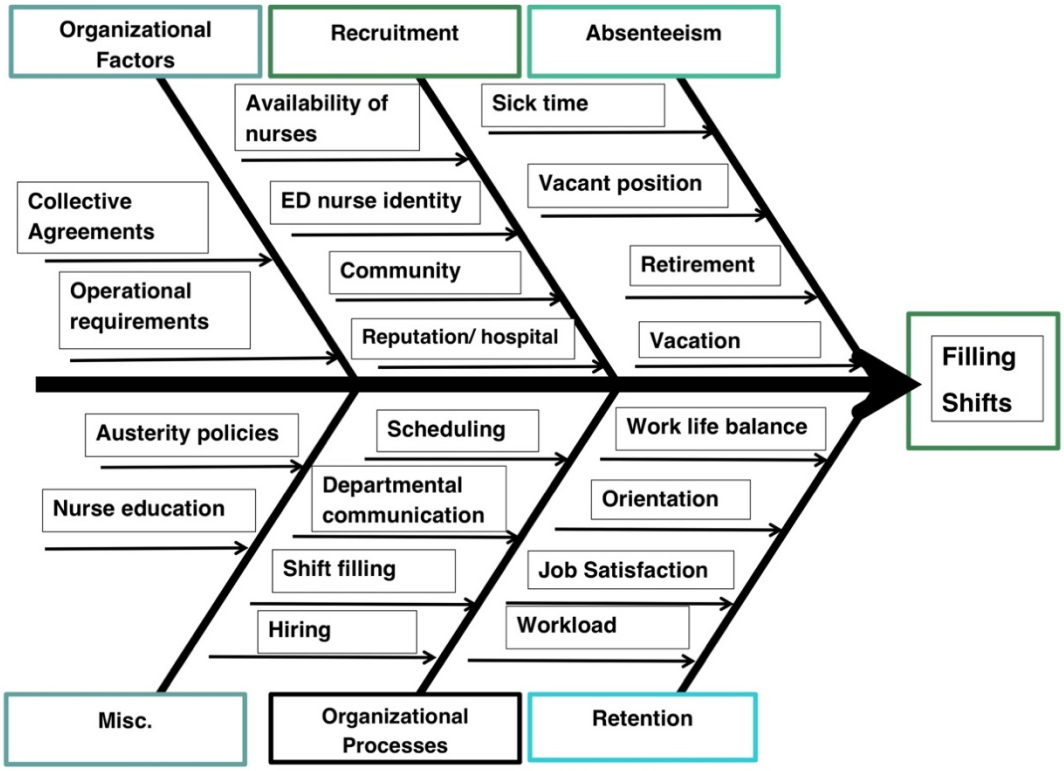
Appendix E: Example of MAXQDA Code Matrix Browser



Code System	Caitlin	L.L	C.T	K.W	S.C	Dan	A.P	P.L	Ashley	SUM
Human resource constraint										17
Filling shifts										55
Availability of staff										17
Retention										25
Vacancies										10
Recruitment										58
Orientation										26
Supernumera										7
Retirement										6
Job satisfaction										39
Turnover										17
Nurse experience										26
Seasons										3
Bereavement										3
Sick time										31
Workload										28
Vacation										13
Operational Requirements										11
Scheduling										22
Improvement										11
Role conflict										6
Nurse Education										21
Feelings										46
ED Team										24
Staffing model										23
Skill mix										13
Older nurses/ younger nurses										12
Safety										5
Patient safety										8
Problem solving										51
Union										9
Strategy										49
Retention										2
Surge Hiring										11
Creating new roles										3
Scheduling practices										9
Decentralization										5
Proposed strategies										9
Role Substitution										5
Rearranging FTEs										3
Nurse Reassignment										10
Incentives										5
Overtime										16
Sharing resources										19
Skills/Ability										45
Advocating										4
Looking ahead										9
Risk management										5
Leadership										22
Teambuilding										9
Collaborate										7
Creative										4
Motivation										6
Geographical community										27
Worklife balance										29
Staffing office										10
Neglect										8
Responsibility										9
SUM	20	127	60	145	124	158	153	148	48	983

Note: Each small box gives us an idea of how frequently each participant talked about a certain topic like leadership for example. The larger the box the more of that participant's meaning units were related to that topic (code). The matrix browser lets us see this comparison across all participants.

Appendix F: Barriers to Filling Shifts



This figure shows a categorized version of these barriers presented in the form of a fishbone diagram where any one of the individual items listed could alone or in combination lead to the need to fill a nursing shift.