



Facilitators and Barriers to Care in Rural Emergency Departments in Alberta for Patients on Peritoneal Dialysis (PD): An Interpretive Descriptive Study

Canadian Journal of Kidney Health and Disease
Volume 7: 1–9
© The Author(s) 2020
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/2054358120970098
journals.sagepub.com/home/cjk



Lisa Lillebuen¹ , Kara Schick-Makaroff¹ ,
Stephanie Thompson², and Anita Molzahn¹

Abstract

Background: Home dialysis offers many advantages to patients, but they require support to manage a home-based therapy such as peritoneal dialysis (PD). A rural emergency department provides an important safety net for patients requiring medical care, including managing complications of PD, such as peritonitis. Patients living in northern Alberta are spread out geographically and can be far from a PD training center, yet anecdotally, many rural sites do not provide care for these patients.

Objective: Our aim was to identify the facilitators and barriers to nursing care in rural emergency departments in northern Alberta for patients receiving PD.

Design: A qualitative interpretive descriptive approach was used.

Setting: Rural emergency departments across northern Alberta.

Participants: Purposeful sampling was used to seek participants from 1 of 4 rural acute care hospital emergency departments in northern Alberta. Six registered nurses and 1 licensed practical nurse agreed to participate in the study. They ranged in experience from 2 to 18 years. Two of the participants were unit managers, 2 were clinical nurse educators (CNEs), and the other 3 were staff nurses with 1 of them in a leadership position.

Methods: Individual semistructured interview were conducted over the telephone. The interview guide was developed based on a review of the literature. Interviews continued until no new information was obtained, that is, data were saturated. Interviews were audio recorded and transcribed verbatim. Field notes were recorded. A constant comparative approach was used for analysis. The coding process was both deductive (drawing from the literature) and inductive.

Results: Seven participants were interviewed, and there were 4 main themes and 1 subtheme that emerged from the analysis: *education (along with the subtheme of resources)* was seen as both facilitators and barriers; *patient/family ability to perform PD*; *infrequent exposure*; and *physician supports*. Continuing education about PD was a facilitator, and the lack of education was a barrier to provision of PD care. Similarly, availability of resource materials about PD and access to a CNE were facilitators, while lack of these resources was a barrier to offering PD care. As PD was not always seen regularly, infrequent exposure was a barrier to offering PD care. Lack of physician supports, both from the locum physicians who were sometimes reluctant to care for these patients and the delays in reaching nephrologists were barriers.

Limitations: The findings represent the perceptions of the emergency department nurses who participated. These perceptions may differ from those of nurses who work in other regions of the country. Furthermore, most participants were in a leadership role, and it may be that their perspectives differ from those of front-line nurses.

Conclusions: The findings from our study highlight the need for availability of education and resource materials/persons to care for these patients. There is also a need for greater physician support from both local physicians as well as nephrologists to offer high-quality PD care.

Trial registration: Not applicable. This study is not a clinical trial. It did not involve prospective assignment of participants to a treatment group.

Abrégé

Contexte: La dialyse à domicile présente plusieurs avantages pour les patients, mais ces derniers ont besoin de soutien pour gérer une modalité de dialyse à domicile comme la dialyse péritonéale (DP). Les urgences des milieux ruraux constituent un important filet de sécurité pour les patients requérant des soins médicaux, notamment pour des complications de la DP telles



que la péritonite. Les patients du nord de l'Alberta sont répartis sur un vaste territoire et résident parfois à bonne distance d'un center où recevoir une formation sur la DP. Pourtant, plusieurs centers ruraux n'offrent pas de soins pour ces patients. **Objectif:** Notre objectif était de recenser les facteurs facilitant ou entravant la prestation de soins infirmiers dans les urgences rurales du nord de l'Alberta pour les patients traités par DP.

Type d'étude: Une approche qualitative, interprétative et descriptive a été utilisée.

Cadre: Les urgences situées en milieu rural dans tout le nord de l'Alberta.

Participants: Un échantillonnage ciblé a été utilisé pour rechercher des participants dans l'une des quatre urgences d'hôpitaux de soins aigus ruraux du nord de l'Alberta. Six infirmières autorisées et une infirmière auxiliaire autorisée, dont l'expérience professionnelle variait de 2 à 18 ans, ont accepté de participer à l'étude. Deux participantes étaient gestionnaires d'unité, deux étaient infirmières cliniciennes enseignantes, les trois autres faisaient partie du personnel infirmier, l'une d'elles occupant un poste de direction.

Méthodologie: Des interviews individuelles semi-structurées, dont le guide était basé sur une revue de la littérature, ont été menées par téléphone. Les entretiens se sont poursuivis jusqu'à saturation des données, c'est-à-dire jusqu'à ce qu'aucune nouvelle information ne soit obtenue. Les interviews ont été enregistrées et transcrites verbatim; les notes d'observation ont été consignées. Une approche comparative constante a été employée pour procéder à l'analyse des données. Le processus de codage était à la fois déductif (tiré de la documentation) et inductif.

Résultats: Sept participantes ont été questionnées et l'analyse des données a permis de dégager quatre thèmes principaux et un sous-thème: *l'éducation*, et le sous-thème des ressources (perçues à la fois comme des facilitateurs et des obstacles); *la capacité du patient ou d'un membre de la famille de pratiquer la DP*; *l'exposition peu fréquente*; et *le soutien d'un médecin*. La formation continue sur la DP facilite la prestation de soins pour ces patients, mais l'éducation peut s'avérer un obstacle lorsqu'elle est déficiente. Tout comme l'accès à des documents de référence et à une infirmière clinicienne enseignante facilite la prestation de soins en DP alors que leur absence l'entrave. L'exposition peu fréquente à cette modalité et le manque de soutien des médecins, soit en raison de la réticence des médecins suppléants à s'occuper de ces patients ou de délais pour atteindre les néphrologues, ont été perçus comme des obstacles.

Limites: Ces résultats reflètent les perceptions des participantes; un point de vue qui pourrait différer de celui d'infirmières œuvrant dans d'autres régions du pays. Aussi, plusieurs participantes occupaient des postes de direction; leur perspective pourrait diverger de celle des infirmières et infirmiers de première ligne.

Conclusion: Nos résultats soulignent la nécessité de disposer de documentation sur la DP et de ressources à la fois matérielles et humaines pour s'occuper de ces patients. Il importe aussi de renforcer le soutien des médecins locaux et des néphrologues afin d'offrir des soins de grande qualité aux patients suivant des traitements de dialyse péritonéale.

Enregistrement de l'essai: Sans objet. Il ne s'agit pas d'un essai clinique; l'étude n'a pas impliqué une éventuelle affectation des participants à un groupe de traitement.

Keywords

emergency department (ED), peritoneal dialysis (PD), rural, nursing, end-stage kidney disease (ESKD)

Received February 27, 2020. Accepted for publication September 24, 2020.

Introduction

Peritoneal dialysis (PD) can be delivered almost anywhere, including in rural and remote locations. People in Alberta are widely distributed geographically, and many patients do not live near a center that offers PD. When complications arise, urgent treatment may be needed in a rural emergency department (ED). However, not all rural EDs have been willing to provide this treatment. A better understanding of this situation could enhance care of people receiving PD.

Patients living in nonurban areas have fewer options for maintenance dialysis and are more likely to start with PD.¹ Despite the importance of PD as an alternative modality in this population, PD units are generally found in urban areas.² People receiving dialysis therapy are at a higher risk of multiple admissions to hospital than either people with or without chronic kidney disease.³ While some rural hospitals have embraced the opportunity to learn PD procedures and have staff willing to assist patients when they present to their ED,

¹Faculty of Nursing, University of Alberta, Edmonton, Canada

²Division of Nephrology, Faculty of Medicine & Dentistry, University of Alberta, Edmonton, Canada

Corresponding Author:

Lisa Lillebuen, Faculty of Nursing, University of Alberta, Edmonton Clinic Health Academy, 11405-87 Ave Edmonton, AB, Canada T6G 1C9.

Email: kaye@ualberta.ca

other rural areas have staff who are not willing to provide any PD-related care even when taking direction over the phone from a PD-trained nurse. This can delay treatment, which is potentially harmful to the patient; for example, prompt initiation of therapy for peritonitis is critical.⁴

In part because PD is less expensive than other dialysis modalities, it is often promoted as a dialysis modality of choice. A major challenge to the growth of PD, and home dialysis in general, is the fact that most people on dialysis in many regions are elderly and have comorbidities.⁵ Common barriers to PD include language barriers, history of noncompliance, psychiatric conditions, and dementia/poor memory; physical barriers include decreased strength to lift PD bags, decreased vision, decreased hearing, and some degree of immobility.⁶ Thus, support from family members is required for many patients to perform PD. In previous studies, marriage was found to be associated with increased use of PD, and living alone was linked with decreased use of PD.^{6,7} The impact of family support has not been studied in populations where home care assistance is available.⁸

The essential next step in expanding home dialysis therapies in Canada is to identify facilitators and barriers to their wider adoption. Osterlund et al⁹ identified factors that favored home dialysis, as well as modifiable and nonmodifiable factors opposing home dialysis selection. Some of the factors included: medical, psychological, cognitive, and social factors, home physical environment, dialysis program, local hospital or regional factors, health care professional-related factors, health system-related factors, and exogenous factors.⁹

Tonelli et al¹ reported that patients in remote areas were more likely to switch from hemodialysis to PD and were less likely to suffer PD technique failure leading to conversion from PD to hemodialysis. They also found that a distance of >50 km was also associated with an increased risk of death for PD patients compared with distances of <50 km. Bergjan and Schaepe¹⁰ found that it was not until the patient returned home that they usually began having more questions about PD and felt overwhelmed. A key element to managing rural PD patients was the willingness of remote area health professionals to help the patient in successfully managing their dialysis.¹¹

There is limited literature that deals with non-PD staff providing PD care to patients. In a study conducted in France, it was found that nurse PD assistants required little training; they received a half day of training from the PD unit at the initiation of treatment and then were required to train other nurse colleagues.¹² In Denmark, nurses received 2.5 hours theoretical training and 2.5 hours clinical training from a PD nurse with the patient in their home.¹² Given this, it seems reasonable to expect that nurses in the ED could provide care to people receiving PD if needed, but anecdotal reports suggest that this is not common. Hence, the objective of this study was to identify facilitators and barriers for PD care in rural EDs in Alberta.

Methods

This interpretive descriptive study was conducted between May to July 2019. We chose interpretive description, a qualitative method, because there is little known about the topic. Interpretive description was selected because it was developed for generation of knowledge that is relevant to and practical for health care disciplines, and enables one to draw on previous literature and knowledge of the area.¹³ Inclusion criteria were any regulated nurse, including registered nurse (RN), licensed practical nurse (LPN), clinical nurse educator (CNE), or nurse manager who worked in rural ED settings in northern or central Alberta; and experience with a person seeking PD-related care in an ED (whether or not that person actually received care or was sent to another facility for PD care). As is usual in qualitative research, we sought a homogeneous sample of nurses working in locations in northern Alberta who were close to the residences of people receiving PD.

We purposefully selected EDs in active treatment hospitals without PD programs located in rural areas of northern Alberta. The hospitals were selected based on the known geographical distribution of patients receiving PD in Alberta Kidney Care-North (AKC-N). Alberta Kidney Care-North trains patients and families and manages care of PD in the geographical area of Alberta from Red Deer to the north. In March 2019, there were 341 patients on PD, representing 29.8% of all patients requiring renal replacement therapy. Of those patients, 59.8% resided outside of the cities of Edmonton or Red Deer. Between visits to the PD clinic and nephrologist, nurses and physicians practicing in rural areas provide health care to people receiving PD, and nephrology personnel are available for consultation. Professional development is offered by the nephrology CNEs to staff in EDs.

In total, we approached 8 ED managers regarding participation and 4 agreed to participate. Of the 4 ED managers contacted initially, 2 declined involvement of their department and access to their staff because they reported that their staff did not have the time and/or they did not provide care related to PD. After this difficulty with recruitment, 4 additional sites, which also had people with PD residing in the region, were approached and agreed to participate. The study was approved by the University of Alberta Research Ethics Board (Pro00086829). Alberta Health Services (AHS) administrative approval was initially granted April 26, 2019, from Northern Alberta Clinical Trials and Research Center, and subsequent approval for additional sites was obtained in May 2019.

Nurse managers and CNEs were contacted via telephone and email to solicit assistance with staff recruitment. Participants were recruited with an information letter sent by email through their nurse managers and CNEs, as well as with an information poster displayed in their staff rooms. Verbal consent was obtained before the interview.

Table 1. Participant Demographics.

	Gender	Years nursing	Nursing role	Level of education
Participant 1	Female		Unit manager	BScN
Participant 2	Female	18	Other (clinical coordinator)	BScN
Participant 3	Female	2	Staff nurse	LPN
Participant 4	Female	17	CNE	BScN
Participant 5	Female	13	Unit manager	BScN
Participant 6	Female	2	Staff nurse	BScN
Participant 7	Female	15	CNE	BScN

Note. CNE = clinical nurse educator; LPN = licensed practical nurse; BScN = Bachelor of Science in Nursing.

Table 2. Sample Interview Questions.

1. Have you ever cared for a patient undergoing peritoneal dialysis?
 - a. If yes, how comfortable did you feel in providing this care?
 - b. Where did you look for resources to provide this care?
2. What are the facilitators to providing PD support in your community or hospital?
3. What resources do nurses need to provide that support?
4. What are the challenges/barriers to providing PD support?
5. What do you think the barriers and/or facilitators are for patients to have to travel to Edmonton to receive treatment related to PD?
6. Anything else you want to add or tell me?

Note. PD = peritoneal dialysis.

The participants included 2 nurse managers, 2 CNEs, and 3 staff members. Their demographic characteristics are described in Table 1. Owing to the geographical locations of the sites, semistructured interviews (18-38 minutes in duration) were conducted over the telephone. Interviews began with broad exploratory questions regarding the nurse's experience with caring for someone receiving PD and then became more focused. An interview guide was developed by the researchers without a preconceived conceptual framework, based on a review of the literature, to address the research questions (see sample interview questions in Table 2). The interview guide was iteratively refined. Interviews were audio recorded and transcribed verbatim. Field notes were recorded. All interviews were conducted by the principal investigator, a graduate student in nursing, who had no prior relationship with participants.

While data saturation was sought and desired, the focus was on obtaining a deeper understanding of the participant perspective while still recognizing that outliers may exist. We attained data saturation when the final participants did not identify new information. Transcripts were read individually by 3 authors, and consensus was reached on the categorization of data into themes and subthemes. Key categories were compared to identify similarities and were then organized into major themes and subthemes. Coding was conducted manually by the lead author (L.L.). Data collection and analysis occurred in a concurrent and iterative fashion. We used a constant comparative approach, meaning that new data were compared to emerging themes from previous interviews to allow for further understanding of concepts and refinement of

themes as data collection progressed.¹³⁻¹⁵ To enhance the rigor of results, all transcripts were read individually by 3 of the authors (L.L., K.S.M., and A.E.M.), and consensus was reached on the categorization of data into themes subthemes. Research team consensus was evident after discussion (See COREQ checklist in supplemental material).

Results

Participants

All participants were female with 2 to 18 years of nursing experience. Two CNEs, 2 unit managers of EDs, 2 staff nurses, and 1 nurse in a clinical leadership role were interviewed. They were employed in 4 different sites in Alberta, 3 from AHS North zone and 1 from AHS Central zone.

There were 4 main themes that emerged from the analysis: *education (along with the subtheme of resources)*, *patient/family ability to perform PD*, *infrequent exposure*, and *physician support*. Table 3 provides sample quotes, and Table 4 highlights these findings.

Education

Education was consistently described by participants as both a facilitator and a barrier for providing care in the rural ED. Having education about the treatment was perceived as the main facilitator of nurses' willingness to care for patients on PD. For instance, one nurse stated, "once we knew what we were doing, it was pretty seamless. It was pretty flawless."

Table 3. Sample Participant Quotes.

Theme	Facilitators	Barriers
Education	<p>“The patient actually trained me how to do it. I have no idea how to do it.”</p> <p>“That left as vulnerable to- we’re not really trained to do this, so we need to get some education here.”</p> <p>“If you have somebody coming to your site or show up at your site who is from your community who’s a PD patient, then I think, yes your staff should have the training.”</p> <p>“I think education is always the front-line answer to that because when people feel they’re given the right information and they feel like they’re getting good in-services and stuff they feel more comfortable.”</p> <p>“I think education is always the front-line answer to that because when people feel they’re given the right information and they feel like they’re getting good in-services and stuff, they feel more comfortable.”</p>	<p>“Orientations are a joke. Well our orientations are-it’s a rural center.”</p> <p>“We share resources, so workloads are heavy. We often feel we want more education and we want our educator to be present but we’re only one piece of their puzzle.”</p> <p>“We could definitely probably use more [education] but we don’t see them very often, honestly.”</p> <p>“The challenge is the education is not mandatory . . . The ER I got zero buy-in so far from staff . . . its up to the management and supervisory level to implement.”</p> <p>“There needs to be a standardized education plan for it and then how are you going to maintain minimal competence.”</p> <p>“It’s not a difficult skill but the more challenging part is knowing the whole process.”</p> <p>“Keeping people educated is a challenge, because you educate one group of people, you get them where you’d like them to be or get a solid foundation, and then they’re gone.”</p> <p>“I think part of it is the lack of opportunity to maintain competency when they gain it.”</p> <p>“It just depends on what’s happening in Alberta Health Services, if they’ve got a lot of education being rolled out to them. They kind of have to pick and choose what they go to . . . They don’t come unless it’s really necessary.”</p> <p>“We share resources, so workloads are heavy. We often feel we want more education and we want our educator to be present but we’re only one piece of their puzzle.”</p>
Resources	<p>“It’s pretty straightforward just because they have given us, like I said, the full peritoneal dialysis, peritonitis management and exactly what we have to follow which is really good.”</p> <p>“I am comfortable going out and looking for those resources and self-teaching, but I would have been hesitant because it is something new, right?”</p> <p>“I searched Insite, went into the NARP homepage and into their manuals, and I found some PD training information and education.”</p>	<p>“There is resistance sometimes with doing new things, not everyone is willing to be that self-initiator and self learner.”</p>
Infrequency of PD		<p>“The challenge is one, the frequency of exposure to these patients, and the exposure comes with no warning.”</p> <p>“No, I would have to say this particular lady is the only one that I’ve seen.”</p> <p>“Its challenging to stay current with it because it is so infrequent.”</p>
Patient/family ability to perform PD	<p>“The patient actually trained me how to do it. I have no idea how to do it.”</p> <p>“The family really does all of it.”</p> <p>“She’s very independent with it. I did nothing.”</p> <p>“They’re very well educated before they leave Edmonton.”</p> <p>“It seems to go pretty straightforward . . . the training that they get, that the patient and family get is very detailed. That prepares them very well.”</p> <p>“It’s usually a team effort, right, where . . . if the patient isn’t feeling really well, then the family sometimes takes over, but a bit of a mix.”</p>	
Physician supports		<p>“Doctors to be honest, doctors are a huge barrier because our doctors are not part of the community.”</p> <p>“It’s not just physician buy-in, but its physician’s willingness to provide direction to the staff.”</p> <p>“The really challenging part is the rural physicians . . . they have no clue how to manage the patient’s peritoneal dialysis. They don’t, they won’t have anything to do with it.”</p> <p>“That physician has to be willing to get that prescription for us whether they’re consulting nephrology or whether they’re comfortable doing that themselves.”</p>

Note. PD = peritoneal dialysis.

Table 4. Summary of Themes.

Facilitators	Barriers
Education	Lack of education
Resources	Lack of resources
Patient/family ability to perform PD	Infrequent exposure
	Lack of physician support

Note. PD = peritoneal dialysis.

Some participants suggested what education was needed and how the education could best be facilitated.

While education was seen as a facilitator, lack of education was seen as a barrier. It appeared that nurses at these sites were not prepared to care for people receiving PD. One nurse said, there was “no education so [we] scrambled to find it.”

A CNE’s role is to assist with clinical skill development of nurses, develop written policy and procedures, and help develop and implement educational programs.¹⁶ In most of the sites where nurses were interviewed for this study, it was apparent that there were issues with availability of a CNE. Participants described how they have to share the CNE with other rural facilities. Some participants noted that it was difficult to get time off work to attend educational sessions. One stated, “every once in a while, we’ll have training days, but if you are working that day, they’re not giving you the day off to do it.” A few of the participants suggested that PD education should be offered at minimum once a year. The CNEs who were interviewed noted that it is sometimes a struggle to provide staff with education and that it depended on the priorities of the employer. At times, other areas for education were of greater importance. Furthermore, staff were selective and did not attend available educational sessions unless they were perceived as necessary.

Resources

A subtheme, resources, was identified. All but one participant discussed the resources that they would have found helpful in caring for patients on PD. Most of the participants described their ability to find resources such as PD policies on the AHS internal website (Insite) when needed. Currently, Alberta Kidney Care has a PD nurse on call daily. Participants greatly appreciated this resource. Another support was the resourcefulness of the staff at these sites. All participants discussed how they would go about finding resources if needed and a few of the CNE and managers mentioned the importance of teaching staff to be able to find resources independently. “What we tend to do is show them how to access the information because you’re not going to remember all of this.”

While having resources was a facilitator, not having them was a barrier to being able to care for a PD patient. There was

a tension in that all the participants interviewed were willing to seek the information to provide the care, yet they also described how not all the staff would be willing to do so. For example, one stated, “There is resistance sometimes with doing new things. Not everyone is willing to be that self-initiator/self-learner.” One CNE participant reported that there was “zero buy-in for ED staff” at her site and that they would have no problem saying “no” to doing PD due to lack of training or comfort level. Other participants discussed the importance of management support for PD care and provision of educational resources. One nurse suggested that it was a managerial responsibility to implement educational programs relating to PD.

Patient/Family Ability to Perform PD

Patient/family ability to perform PD was described as a facilitator by the participants. The participants all described how the patients or their families were independent with their PD and that they knew best what was needed for them. This was described as being very helpful for the staff to provide care for the patient. “They were just so knowledgeable . . . I just think that’s great because you are empowering the patient and it makes my job a lot easier.”

Infrequent Exposure

Participants discussed how infrequently PD was seen at their sites. They also noted that patients were typically being seen for issues not related to PD and that PD care was secondary. One nurse participant said, “I haven’t even heard of a [PD] patient coming through in a long time or any issues of any patients on PD coming through.” This infrequent exposure to PD resulted in lack of comfort in providing PD care, and participants recognized that if they did not see a patient with PD for a while, they lost their comfort level and skills quickly.

Physician Support

Lack of physician support at the rural sites was highlighted as a barrier for patients to receive care because some physicians did not support offering care in the ED to people receiving PD therapy. One participant thought that because the doctors were locums and not part of the community, they lacked commitment. “They’re not as invested as much as we are in obtaining that knowledge and the in-services, and implementing new programs and things like that, like we are.” Another believed that physicians were unwilling or unprepared to provide direction to the nursing staff. While lack of physician support at the sites was listed as a potential barrier, so was the process for consulting nephrologists in the city. One participant stated,

The unfortunate thing is when our physician does then get on the phone and consult, say nephrology on-call through RAAPID

[the referral, access, advice, placement, information and destination program], that can take anywhere from an hour or two to get a hold of somebody and get that consult done.

Another participant discussed how it is typically the nurses who call the PD unit and relay the information to physicians but that in her opinion, some rural physicians are reluctant to listen to nurses' suggestions.

Discussion

In this qualitative study, we have identified facilitators and barriers for rural ED nurses to the provision of PD care. Themes that emerged included education (with the subtheme of resources), patients'/families' ability to perform PD, infrequent exposure to patients on PD, and lack of physician support. Some of the themes that emerged were identified as both facilitators and barriers. There are no other studies that explicitly examine facilitators and barriers to provision of PD care in rural communities. Hence, our findings advance the field.

There is limited literature that deals with how non-PD staff provide PD care to patients. Most studies that were found relate to assisted-PD programs.¹⁷⁻²³ While monitoring for infections is important, so is ensuring high-quality PD training programs. The International Society of Peritoneal Dialysis (ISPD) has provided a detailed description of the recommended practice of PD training^{24,25} which the AKC-N follows. Patients on dialysis present more frequently to the ED than nonrenal patients.^{11,26,27} While patients are taught what to do if they develop a cloudy bag (sign of peritonitis) or have problems with their PD, taking appropriate action can be extremely challenging for nursing and medical staff with no previous dialysis experience.¹¹ Participants discussed the many resources that were provided to them either by the patient or the PD program. Clear step-by-step instructions, guidelines, and having videos were helpful for the participants, especially in managing peritonitis.

Yet, regular experience is necessary to ensure competence. Participants identified that PD was seen infrequently. It may be that if ED nurses had greater competence in the procedures, they would welcome visits of people receiving PD therapy. Rural nursing has been characterized as fundamentally different from nursing in urban areas due to factors such as geographic and professional isolation, limited access to resources, social connections in the community, and a varied and often extended scope of practice^{22,28-32} Nurses practicing in rural settings regard themselves as "jack of all trades" and require a wide range of skill sets, which can be challenging for clinicians in rural areas to maintain through continuing education.³³ These challenges were illuminated by participants in our study. Furthermore, inadequate orientation to rural nursing, combined with a lack of continuing education opportunities addressing emergency and critical care, creates

problems for maintenance of competence.³⁴ Considine and Hood³⁵ conducted a study that assessed the CNE role in the ED and its impact on nursing. They found that there were increases in the reported adequacy of in-service education, level of clinical support, and satisfaction with current level of knowledge in emergency nursing.

A surprising finding was the lack of perceived physician support that the nurses experienced. In our study, some participants reported that some physicians were reluctant to listen to nurses' suggestions. In comparison to their urban counterparts, nurses and physicians in rural settings face more challenging working conditions. In addition to the difficult working conditions common to urban settings, specific challenges to rural areas include limited access to specialized care, geographical distance from specialized centers, poor emergency transport capabilities, and limited training.³⁶ Interestingly, nurses reported having a difficult time getting physicians to communicate directly with the nephrologist. Some studies have identified that back-up from local and regional colleagues is important, and expectations regarding support influence physicians' decisions to practice rurally.³⁷⁻³⁹ Further attention by nephrologists to prompt and open responses to requests for support of people on PD could result in enhanced knowledge and comfort of ED physicians and nurses and ultimately better care for people on PD.

Limitations

Our sample size was relatively small, and findings may differ for other regions of the province. Access to other sites in other regions may illuminate additional facilitators or barriers. The experiences of a greater number of front-line rural nurses who were not CNEs or managers may have also been different from those reported. Although representativeness is not a goal of qualitative research, the findings may resonate for nurses in this and other regions. Areas for further research may include systematic literature reviews addressing strategies to enhance continuing education of nurses in rural and remote settings and the development of tools to measure rural nurse competency. Wilkinson⁴⁰ identified a need for a greater focus on competency development once nurses have completed their formal education. Understanding of the types of educational supports currently offered to rural nurses in Canada could be helpful. It would also be interesting to study rural physicians' perceived facilitators and barriers to providing PD care.

Conclusion

As renal programs strive to increase numbers of patients on PD, it is important to consider the supports that patients require to remain in their home and community. The findings from our study highlight the need for nurses working in rural communities to be educated and have proper resources to

care for these patients. They also need the support of attending physicians, which was not always available from locum physicians practicing in these rural communities. It was suggested that support from nephrologists could also be more timely. Care of people receiving PD requires collaboration among members of a team of people including the PD training center and staff, the patient and family, and rural nurses and physicians. It has been posited that those organizations with a positive professional practice environment, characterized by healthy and respectful nurse-physician relationships, are better able to recruit and retain the best nurses; and that this, coupled with higher levels of communication, respect, and collaboration between nurses and physicians contribute to a better environment for patients.^{41,42} These findings need to be replicated and considered in future dialogues to continue to improve the care of patients on PD.

Ethics Approval and Consent to Participate

Ethics approval and Alberta Health Services Operational approvals were obtained from the University of Alberta Research Ethics Board (Pro00086829), and from Northern Alberta Clinical Trials and Research Centre.

Consent for Publication

The authors have consented to publication of this article.

Availability of Data and Materials

No additional data or materials are available for this review. Please contact corresponding author with any requests.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The first author received financial support for the masters level thesis research from the Kidney Foundation of Canada and the University of Alberta, Faculty of Nursing.

ORCID iDs

Lisa Lillebuen  <https://orcid.org/0000-0001-9244-0350>

Kara Schick-Makaroff  <https://orcid.org/0000-0001-6200-3416>

References

1. Tonelli M, Hemmelgarn B, Cullerton B, et al. Mortality of Canadians treated by peritoneal dialysis in remote locations. *Kidney Int.* 2007;72(8):1023-1028. doi:10.1038/sj.ki.5002443.
2. Wang V, Maciejewski ML, Coffman CJ, et al. Impacts of geographic distance on peritoneal dialysis utilization: refining models of treatment selection. *Health Serv Res.* 2017;52(1):35-55. doi:10.1111/1475-6773.12489.
3. Daratha KB, Short RA, Corbett CF, et al. Risks of subsequent hospitalization and death in patients with kidney disease. *Clin J Am Soc Nephrol.* 2012;7(3):409-416. doi:10.2215/CJN.05070511.
4. Kam-Tao Li P, Szeto CC, Piraino B, et al. ISPD peritonitis recommendations: 2016 update on prevention and treatment. *Perit Dial Int.* 2016;36(5):481-508. doi:10.3747/pdi.2016.00078.
5. Oliver MJ, Quinn RR, Richardson EP, Kiss AJ, Lamping DL, Manns BJ. Home care assistance and the utilization of peritoneal dialysis. *Kidney Int.* 2007;71(7):673-678. doi:10.1038/sj.ki.5002107.
6. Miskulin DC, Meyer KB, Athienites NV, et al. Comorbidity and other factors associated with modality selection in incident dialysis patients: the CHOICE study. Choices for healthy outcomes in caring for end-stage renal disease. *Am J Kidney Dis.* 2002;39(2):324-336. doi:10.1053/ajkd.2002.30552.
7. Little J, Irwin A, Marshall T, Rayner H, Smith S. Predicting a patient's choice of dialysis modality: experience in a United Kingdom renal department. *Am J Kidney Dis.* 2001;37(5):981-986. doi:10.1016/s0272-6386(05)80014.
8. Oliver M, Garg A, Blake P, et al. The impact of contraindications, barriers to self-care and support on incident peritoneal dialysis utilization. *Nephrol Dial Transplant.* 2010;25(8):2737-2744. doi:10.1093/ndt/gfq085.
9. Osterlund K, Mendelsohn D, Clase C, Guyatt G, Nesrallah G. Identification of facilitators and barriers to home dialysis selection by Canadian adults with ESKD. *Semin Dial.* 2014;27(2):160-172. doi:10.1111/sdi.12183.
10. Bergjan M, Schaepe C. Educational strategies and challenges in peritoneal dialysis: a qualitative study of renal nurses' experience. *J Clin Nurs.* 2016;25:1729-1739.
11. Carruthers D, Warr K. Supporting peritoneal dialysis in remote Australia. *Nephrology.* 2004;9(suppl 4):S129-S133. doi:10.1111/j.1440-1797.2004.00348.x.
12. Verger C, Duman M, Durand PY, Veniez G, Fabre E, Ryckelynck JP. Influence of autonomy and type of home assistance on the prevention of peritonitis in assisted automated peritoneal dialysis patients. An analysis of data from the French language peritoneal dialysis registry. *Nephrol Dial Transplant.* 2007;22(4):1218-1223. doi:10.1093/ndt/gfl760.
13. Thorne S, Kirkham SR, MacDonald-Emes J. Interpretive description: a noncategorical qualitative alternative for developing nursing knowledge. *Res Nurs Health.* 1997;20(2):169-177. doi:10.1002/(sici)1098-240x(199704)20:2<169::aid-nur9>3.0.co;2-i.
14. Creswell JW. *Qualitative Inquiry & Research Design: Choosing among Five Approaches.* 3rd ed. Thousand Oaks, CA: Sage; 2013.
15. Thorne SE, Reimer Kirkham S, O'Flynn-Magee K. The analytic challenge in interpretive description. *Int J Qual Meth.* 2004;3(1):1-11. doi:10.1177/160940690400300101.
16. Brennan J, Olson EL. Advancing the profession: the clinical nurse educator. *Nursing.* 2018;48(10):53-54. doi:10.1097/01.NURSE.0000545017.83543.8f.
17. Bechade C, Lobbedez T, Ivarsen P, Povlsen JV. Assisted peritoneal dialysis for older people with end-stage renal disease: the French and Danish experience. *Perit Dial Int.* 2015;35(6):663-666. doi:10.3747/pdi.2014.00344.
18. Franco MR, Fernandes N, Ribeiro CA, Qureshi AR, Divino-Filho JC, da Gloria Lima M. A Brazilian experience in

- assisted automated peritoneal dialysis: a reliable and effective home care approach. *Perit Dial Int.* 2013;33(3):252-258. doi:10.3747/pdi.2012.00031.
19. Lobbedez T, Moldovan R, Lecame M, Hurault de Ligny B, El Haggan W, Ryckelynck JP. Assisted peritoneal dialysis. Experience in a French renal department. *Perit Dial Int.* 2006;26(6):671-676. doi:10.1177/089686080602600611.
 20. Povlsen JV, Ivarsen P. Assisted automated peritoneal dialysis (AAPD) for the functionally dependent and elderly patient. *Perit Dial Int.* 2005;25(suppl 3):S60-S63. doi:10.1177/089686080502503S15.
 21. Xu R, Zhuo M, Yang Z, Dong J. Experiences with assisted peritoneal dialysis in China. *Perit Dial Int.* 2012;32(1):94-101. doi:10.3747/pdi.2010.00213.
 22. Giuliani A, Karopadi AN, Prieto-Velasco M, Manani SM, Crepaldi C, Ronco C. Worldwide experiences with assisted peritoneal dialysis. *Perit Dial Int.* 2017;37(5):503-508. doi:10.3747/pdi.2016.00214.
 23. Brown EA, Dratwa M, Povlsen JV. Assisted peritoneal dialysis: an evolving dialysis modality. *Nephrol Dial Transplant.* 2007;22(10):3091-3092. doi:10.1093/ndt/gfm399.
 24. Bernardini J, Price V, Figueiredo A, International Society for Peritoneal Dialysis (ISPD) Nursing Liaison Committee. Peritoneal dialysis patient training, 2006. *Perit Dial Int.* 2006;26(6):625-632. doi:10.1177/089686080602600602.
 25. Figueiredo AE, Bernardini J, Bowes E, et al. A syllabus for teaching peritoneal dialysis to patients and caregivers. *Perit Dial Int.* 2006;36(6):592-605. doi:10.3747/pdi.2015.00277.
 26. Czyzewski L, Wyzgal J, Czyzewska E, Szarpak L. Emergency care of the dialysis patients. *Disaster Emerg Med J.* 2017;2(1):39-44. doi:10.5603/DEMJ.2017.0007.
 27. Komenda P, Tangri N, Klajncar E, et al. Patterns of emergency department utilization by patients on chronic dialysis: a population-based study. *PLoS ONE.* 2018;13(4):e0195323. doi:10.1371/journal.pone.0195323.
 28. Ronksley PE, Tonelli M, Manns BJ, et al. Emergency department use among patients with CKD: a population-based analysis. *Clin J Am Soc Nephrol.* 2017;12(2):304-314. doi:10.2215/CJN.06280616.
 29. Bushy A. Nursing in rural and frontier areas: issues, challenges and opportunities. *Harvard Health Policy Rev.* 2006;7(1):17-27.
 30. Long KA, Weinert C. Rural nursing: developing the theory base. *Sch Inq Nurs Pract.* 1989;3(2):113-127.
 31. MacLeod M. *We're It": The Nature of Nursing Practice in Very Small Rural and Remote Hospitals in Northern British Columbia.* Prince George, Canada: University of Northern British Columbia; 1998.
 32. MacLeod ML, Martin Misener R, Banks K, Michel Morton A, Vogt C, Bentham D. "I'm a different kind of nurse": advice from rural and remote Canada. *Nurs Leadersh.* 2008;21(3):40-53. doi:10.12927/cjnl.2008.20060.
 33. Zibrik KJ, MacLeod MLP, Zimmer LV. Professionalism in rural acute care nursing. *Can J Nurs Res.* 2010;42(1):20-36.
 34. Sedgwick M, Phil-Zieber EM. New rural acute care nurses speak up: "We're it" but we're not ready. *J Nurses Prof Dev.* 2015;31(5):278-283. doi:10.1097/NND.0000000000000188.
 35. Considine J, Hood K. A study of the effects of the appointment of a clinical nurse educator in one Victorian emergency department. *Accid Emerg Nurs.* 2000;8(2):71-78. doi:10.1054/aaen.1999.0100.
 36. Pavloff M, Farthing PM, Duff E. Rural and remote continuing nursing education: an integrative literature review. *Online J Rur Nurs Health Care.* 2017;17(2):88-102. doi:10.14574/ojrmhc.v17i2.450.
 37. Chauban TS, Jong M, Buske L. Recruitment trumps retention: results of the 2008/09 CMA rural practice survey. *Can J Rural Med.* 2010;15(3):101-107.
 38. Cameron PJ, Este DC, Worthington CA. Professional, personal and community: 3 domains of physician retention in rural communities. *Can J Rural Med.* 2012;17(2):47-55.
 39. Helland LC, Westfall JM, Camargo CA Jr, Rogers J, Ginde AA. Motivations and barriers for recruitment of new emergency medicine residency graduates to rural emergency departments. *Ann Emerg Med.* 2010;56(6):668-673. doi:10.1016/j.annemergmed.2010.06.561.
 40. Wilkinson CA. Competency assessment tools for registered nurses: an integrative review. *J Contin Educ Nurs.* 2013;44(1):31-37. doi:10.3928/00220124-20121101.
 41. Galletta M, Portoghese I, Battistelli A, Leiter MP. The roles of unit leadership and nurse-physician collaboration on nursing turnover intention. *J Adv Nurs.* 2013;69(8):1771-1784. doi:10.1111/jan.12039.
 42. Nelson GA, King ML, Brodine S. Nurse-physician collaboration on medical-surgical units. *Medsurg Nurs.* 2008;17(1):35-40.