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CONTENTS

12 Format Update: APA 7th Edition

13 Perceptions of hospital safety for inpatients with chronic kidney disease: A cross-sectional quantitative study

By Lucia New, Donna Goodridge, Joanne Kappel, Joshua Lawson, Roy Dobson, Erika Penz, Gary Groot, and John Gjevre

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Perceptions of hospital safety for inpatients with chronic kidney disease: A cross-sectional quantitative study

By Lucia New, Donna Goodridge, Joanne Kappel, Joshua Lawson, Roy Dobson, Erika Penz, Gary Groot, and John Gjevre

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ABSTRACT

Background: Due to pathophysiological, medical, and psychological factors, risks for physical and emotional harm while hospitalized are higher for individuals living with chronic kidney disease. Patient feedback regarding aspects of their physical and interpersonal care environments may provide insights into care quality and patient safety.

Methods: Using the Patient Measure of Safety questionnaire, a quantitative exploratory study was undertaken to assess patients' perception of safety. Thirty participants were asked to assess organizational and local factors within their care environments known to contribute to safety incidents.

Results: Positive associations were noted between individual domains of safety, as well as respect and dignity, and overall score. No statistically significant differences were observed between participant characteristics and overall safety rating.

Conclusions: Patient safety is influenced by perceived levels of safety on aspects within the physical and interpersonal care environments. Obtaining patient feedback is important for patient safety initiatives and continuous improvement.

Key words: chronic kidney disease, safety, quantitative study, hospital safety, respect, dignity, patient feedback

Compared to patients without underlying health conditions, the risk for incurring harm while hospitalized is higher for individuals with chronic illnesses such as chronic kidney disease (CKD) and end-stage renal disease (ESRD) (Canadian Patient Safety Institute, 2018). According to the National Kidney Foundation, CKD is defined as kidney damage or glomerular filtration rate (GFR) <60 mL/min/1.73 m² for three months or longer (Kidney Disease Improving Global Outcomes [KDIGO], 2013). Individuals are deemed to be at ESRD when the level of GFR is <15 mL/min/1.73 m² or the kidneys have lost all functioning and renal replacement therapy is required (KDIGO, 2013). Patients with CKD and ESRD have frequent encounters with the healthcare system including an increase in hospitalizations (Go et al., 2004; Årestedt et al., 2019). Impaired kidney functioning combined with medical and pharmacological management of comorbidities predispose individuals to higher rates of safety incidents (Wagner & Fink, 2017; Offurum et al., 2016; Harel et al., 2012). Adverse events experienced by patients with CKD may be attributable to under-recognition or under-appreciation of the extent of compromised kidney function (Bohlouli et al., 2016; Wagner et al., 2015). Patients receiving peritoneal or hemodialysis may be at risk for adverse events including: peritonitis or bacteremia associated with peritoneal catheters or vascular access devices; vascular access-related events, such as needle infiltration; falls; and line clotting associated with dialysis equipment malfunction (Kliger, 2015; Wagner & Fink, 2017). Adverse events in these patient populations may result in more significant complications due to reduced kidney functioning and associated pathophysiological diseases (Chapin et al., 2010; Seliger et al., 2008; Fink et al., 2009; Ginsberg et al., 2014), affecting lengths of stay and hospital readmissions (Bohlouli et al., 2016; Bohlouli et al., 2017; Chapin et al., 2010; Wagner & Fink, 2017).

For patients living with CKD, perceptions of safe care include the need for presence and vigilance of nursing staff, trust relationships with care providers, and the ability to control their own situation (Lovink et al., 2015). Similarly,

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patients with ESRD express the importance of having information shared with them, being respected for their knowledge and knowing their plan of care (Årestedt et al., 2019). Distrust develops and patients begin to feel unsafe when these needs are unmet (Mollon, 2014). Recognition of emotional harm resulting from questionable interpersonal care has been gaining momentum in recent years (Sokol-Hessner et al., 2015; New et al., 2019). Since people with CKD and ESRD may be hospitalized more frequently, obtaining feedback regarding their care experiences may provide insights into hospital safety and quality of care.

This project was part of a mixed methods study exploring perceptions of safety for patients with CKD and ESRD while they are in the hospital. Qualitative data were obtained through face-to-face interviews, and have been published elsewhere (New et al., 2019). For quantitative data, the Patient Measure of Safety (PMOS) questionnaire (Giles et al., 2013) was utilized to determine patients' perceptions of safety within hospital settings, based on their evaluation of factors contributing to safety incidents. The PMOS questionnaire was developed through interviews with more than 30 patients from one teaching hospital in northern England. The Yorkshire Contributory Factors Framework (Lawton et al., 2012) was used to guide data analysis and the theming process. Face validity of the questionnaire was confirmed through a research advisory group composed of patients and staff (Giles et al., 2013). Eight domains of safety were initially identified through factor analysis, with confirmation of reliability and validity through a study involving 297 patients (McEachan et al., 2014). The questionnaire has been adapted for primary care settings (Hernan et al., 2016) and a long-term care facility in Australia (Taylor et al., 2016). Based on feedback from patients, the PMOS has undergone several iterations since its initial development, and is currently utilized by hospitals in the United Kingdom (UK), as part of a safety and service improvement strategy (Sheard et al., 2014; O'Hara et al., 2016).

Besides medical management, the physical and interpersonal care environments also play a role in patient safety. The extent to which patients are able to provide feedback on factors within their care environments that affect their safety has received limited research to date. The objective of this quantitative study was to examine safety perceptions of patients with CKD and ESRD through their assessment of organizational and local factors that have been known to contribute to safety incidents.

METHODS

Research Design

This research was part of a cross-sectional study using a mixed methods research design. Qualitative data were obtained using a semi-structured interview guide. Analysis and results have been reported elsewhere (New et al., 2019). Quantitative data were collected from 30 participants at one acute care hospital in an urban centre, using the Patient Measurement of Organizational Safety (PMOS) questionnaire. Data were collected between October 2017 and March 2018.

Instrument

The PMOS questionnaire was ideal for this study, as it was designed to solicit feedback, specifically from the perspective of patients, regarding factors or components associated with hospital care, that have been known to contribute to patient safety. The version of the PMOS utilized in this study comprised of 43 items, included one question specific to the concept of respect and dignity: "I was always treated with dignity and respect." Remaining questions were categorized into domains of safety: communication and teamwork (nine items); organization and care plan (five items); access to resources (four items); ward layout (11 items); information flow (three items); staff roles/responsibilities (four items); staff training (two items); and equipment design and function (four items). Positively and negatively worded items on the PMOS were scored on a five-point Likert scale from strongly disagree (1) to strongly agree (5). The statement "After a shift change staff knew important information about my care" is an example of a positively worded item. An example of a negatively worded item is: "A doctor changed my plan of care and other staff didn't know about it." If participants answered agree/strongly agree with positively worded items or disagree/strongly disagree with negatively worded items, a score of 1 was assigned. Agreement with positively worded items and disagreement with negatively worded items indicate that participants did not perceive their safety to be impacted by elements of care addressed by each item. Conversely, ratings of disagree/strongly disagree with positively worded items or agree/strongly agree with negatively worded items were assigned a score of 0. The overall PMOS score was calculated by summing up item scores, for a possible maximum total safety score of 43. Higher scores represent higher levels of overall perceived safety.

Unlike the overall score, totals for the domains were calculated by adding up the raw scores from the individual items in each domain. The maximum possible score for each domain is the number of items per domain multiplied by five, the highest value for each item: communication and teamwork (45), organization and care plan (25), access to resources (20), ward layout (55), information flow (15), staff roles/responsibilities (20), staff training (10), and equipment design and function (20). Similarly, higher scores represent higher levels of safety perceived in each domain.

Reliability of the PMOS in a hospital setting has been established through Cronbach's α (0.66 – 0.89) for individual test items within the domains (McEachan et al., 2014). Test-retest reliability, conducted within a two-week time frame, indicated acceptable internal validity on the positive PMOS index ($r = 0.75$) (McEachan et al., 2014).

Ethical Considerations

Ethics approval was obtained from the University of Saskatchewan Behavioural Ethics Board (17-300) and Saskatoon Health Region Research Ethics Board (16-309). An explanation of the purpose of the study was provided, and written informed consent was obtained prior to data

collection. Participants were informed of the option to stop or withdraw from the study at any time and that all data would be de-identified. Study participants were also reassured that their care would not be influenced by their answers.

Setting and Participants

Patients living with CKD and ESRD were recruited from one acute care hospital located within an inner-city neighbourhood in Saskatchewan. To ensure that participants represented the patient population in this study, purposive sampling was used. On a weekly basis, the researcher attended nephrology hand-over rounds to obtain names of patients with CKD or ESRD who might be approached for participation in the study. Recruitment occurred over a six-month period from October 2017 to March 2018. Inclusion criteria included: inpatients over 18 years, CKD stages 3, 4, ESRD-non-dialysis, and ESRD receiving dialysis; hospital admissions unrelated to post renal transplant or dialysis treatment; able to provide consent and complete questionnaire with or without assistance of researcher; and primary language being other than English if interpreter service was available. Patients who were deemed to be medically unstable or who had been hospitalized for less than 24 hours were excluded. Participants were from either a medical or surgical inpatient unit, with bed capacity between 35 to 45 per unit. Patient accommodations on every unit comprised a mixture of single and multi-bed rooms.

Data Collection

The PMOS questionnaire was completed at the participants' bedside during their hospital stay. All participants spoke and understood English. Participants were given the choice of having the researcher read the questions out loud and record their responses, or completing the questionnaire independently. The majority of the questionnaires were filled out with the assistance of the researcher. Time of completion for each questionnaire ranged between 10 to 15 minutes.

Data Analysis

Data analysis was performed using SPSS (version 25). Percentile values were used to separate participants into groups with low, moderate, or high perceived levels of safety to enable a more comprehensive analysis. Comparisons between participant characteristics and the overall PMOS score were analyzed using chi-squared and Mann-Whitney tests. Correlation between individual domains, the question item related to dignity and respect, and the overall PMOS score were calculated using Spearman's rho. Statistical significance level was set at $p < .05$.

RESULTS

Participant Characteristics

Thirty individuals living with CKD and ESRD participated in this study. Fifty-three percent were males. Slightly more than half were 65 years old or younger. Approximately two-thirds of the respondents had an education level between grades 10 to 12. The majority of the participants

had ESRD and had two or more comorbid conditions. Three-quarters of participants were on hemo or peritoneal dialysis. Detailed demographic and clinical characteristics are available in Table 1.

Table 1. Participant characteristics ($n = 30$)

Characteristics	n (%)
Sex	
Male	16 (53.3)
Female	14 (46.7)
Age	
≤ 65 years	17 (56.7)
≥ 66 years	13 (43.3)
Self-declared Ethnicity	
Non-Caucasian Canadian	16 (53.3)
Caucasian Canadian	14 (46.7)
Education Level	
< Grade 9	7 (23.3)
Grades 10–12	20 (66.7)
Post-secondary	3 (10.0)
Length of CKD	
≤ 5 years	19 (63.3)
≥ 6 years	11 (36.7)
Stage of CKD	
3	3 (10.0)
4	4 (13.3)
5 (ESRD)	23 (76.7)
Type of Dialysis	
Hemodialysis	17 (56.7)
Peritoneal	6 (20.0)
Currently not on dialysis	7 (23.3)
Comorbidities	
Present (diabetes, hypertension, PVD)	25 (83.3)
Absent	5 (16.7)
Number of hospitalizations in past 5 years	
<5 times	12 (40.0)
5-10 times	6 (20.0)
>10 times	12 (40.0)
Admitting Diagnosis	
Infection of extremities	9 (30.0)
Infection to dialysis catheters	3 (10.0)
Other (i.e., cardiac, pneumonia, infection (other), amputation)	18 (60.0)
Length of Stay	
≤ 15 days	21 (70.0)
≥ 16 days	9 (30.0)

Comparisons Between Participant Characteristics and Overall PMOS Scores

Chi square analysis was conducted for a comparison of characteristics between participants with low, moderate, and high overall PMOS scores. Results are presented in Table 2. No statistically significant differences were found between participant characteristics and overall perceptions of safety. Results from chi-squared test were confirmed by the Mann-Whitney test.

Comparisons between Individual Domains and Overall PMOS Scores

Descriptive statistics for individual domains of safety are presented in Table 3. Descriptive statistics of the overall PMOS score are as follows: mean (23); SD (8.74); median (25); 25th percentile (15.5); and 75th percentile (29.25). Findings from the Spearman's correlation test indicate statistically significant positive associations between individual domains of safety, as well as the item on respect and

Table 2. Participant characteristics by category of overall PMOS scores

Characteristics	Low PMOS Score (< 15.5) $n = 7$	Mod PMOS Score ($15.5-29.24$) $n = 16$	High PMOS score (≥ 29.25) $n = 7$	p value**
Sex n (%)				
Male	3 (18.8)	7 (43.8)	6 (37.5)	.15
Female	4 (28.6)	9 (64.3)	1 (7.1)	
Age n (%)				
≤ 65	5 (29.4)	10 (58.8)	2 (11.8)	.21
≥ 66	2 (15.4)	6 (46.2)	5 (38.5)	
Ethnicity n (%)				
Caucasian Canadians	4 (25.0)	9 (56.3)	3 (18.8)	.82
Non-Caucasian Canadians	3 (21.4)	7 (50.0)	4 (28.6)	
Education n (%)				
\leq Grade 9	1 (14.3)	4 (57.1)	2 (28.6)	.80
\geq Grade 10	6 (26.1)	12 (52.2)	5 (21.7)	
Previous employment n (%)				
Manual labour	6 (22.2)	14 (51.9)	7 (25.9)	.60
Licensed/professional	1 (33.3)	2 (66.7)	0 (0.0)	
Length of time living with CKD n (%)				
≤ 5 years	4 (22.2)	10 (55.6)	4 (22.2)	.96
≥ 6 years	3 (25.0)	6 (50.0)	3 (25.0)	
Stage of CKD n (%)				
≤ 3	3 (37.5)	5 (62.5)	0 (0.0)	.16
≥ 4	4 (18.2)	11 (50.0)	7 (31.8)	
Current dialysis treatment n (%)				
On dialysis	6 (26.1)	10 (43.5)	7 (30.4)	.12
Not on dialysis	1 (14.3)	6 (85.7)	0 (0.0)	
Comorbidities n (%)				
Present	5 (18.5)	16 (59.3)	6 (22.2)	.10
Absent	2 (66.7)	0 (0.0)	1 (33.3)	
Hospitalizations within last 5 years n (%)				
≤ 5	4 (33.3)	5 (41.7)	3 (25.0)	.50
> 5	3 (16.7)	11 (61.1)	4 (22.2)	
Current length of stay n (%)				
≤ 15 days	6 (28.6)	10 (47.6)	5 (23.8)	.53
> 16 days	1 (11.1)	6 (66.7)	2 (22.2)	

*chi-squared; Significance level ($p < .05$); † Assumptions of cell size not met

Table 3. Descriptive statistics of PMOS domains, and respect and dignity, and their correlation with the overall PMOS score

Domains & item (total possible score)	Mean	SD	Median	(25 th percentile, 75 th percentile)	Spearman's rho (rs (28))	<i>p</i> value*
Communication & teamwork (45)	30.7	5.8	32	(26.5, 35)	.85	<i>p</i> < .001
Organization & care planning (25)	17.1	2.99	17.5	(14.8, 19)	.72	<i>p</i> < .001
Access to resources (20)	13	2.6	13	(11.8, 15)	.67	<i>p</i> < .001
Ward layout (55)	32.9	7.3	33	(27.75, 37.3)	.74	.001
Information flow (15)	9.2	2.3	9.5	(8, 11)	.58	.001
Staff roles (20)	12.9	2.1	13	(11, 14)	.48	.007
Staff training (10)	6.4	1.9	6	(4.75, 8)	.47	.009
Equipment design & function (20)	12.1	2.8	12	(10, 14.3)	.75	<i>p</i> < .001
Respect & dignity (5)	3.43	1.5	4	(2, 5)	.4	.03

*Spearman's rho
Significance level (*p* < .05)

dignity and the overall PMOS score. Moderate associations were noted between respect and dignity, staff training, staff roles, and overall score. Strong associations were noted between communication and teamwork, organization and care planning, access to resources, ward layout, information flow, equipment design and functioning and the overall PMOS score.

DISCUSSION

The PMOS questionnaire was found to be a feasible and acceptable instrument to obtain feedback from inpatients with CKD and ESRD on their perceptions of safety during hospitalizations. Patient feedback can help with safety and quality improvement through identification of possible gaps between patients' perception of care received and providers' perception of care provided. Findings from this study suggest a relationship between the overall perception of safety and all domains. When participants perceive the risk for harm in all domains of safety to be low, their overall sense of safety was high. Alternatively, when perceptions of risk for harm from individual domains were high, participants rated their overall hospital safety experience to be low. Associations between perceptions of overall safety, individual domains of safety and participant characteristics were insignificant regardless of the lengths of stay, number of previous hospital visits, stage of their kidney disease, or the presence of comorbidities.

Safety is closely aligned with the quality of care for many patients, and often the separation between the two concepts is indistinct (Pronovost et al., 2005; Rathert et al., 2011). When expectations of care are not met, concern for safety may exceed feelings of dissatisfaction or frustration (Rathert et al., 2011). Regardless, whether

responses indicate dissatisfaction with care or concern for safety, patient feedback is valuable for quality and safety improvement. Many participants in this study have had frequent care experiences as inpatients and willingly provided feedback on the domains of safety specified in the PMOS questionnaire.

Being an inpatient in acute care environments may mean the involvement of a team of healthcare professionals where continuity of care between providers is challenging. Communication between providers regarding patients' plans of care is necessary for continuity and consistency of care, and prevention of errors. The importance of communication and coordination of care is well researched (Irurita, 1999; Radwin, 2000; Williams, 2004; Tong et al., 2009). Lack of care coordination and communication were worrisome for patients, as they felt that no one was taking responsibility for their care, which may potentially have a negative impact on their safety (Irurita, 1999). Less anxiety was expressed about the occurrence of mistakes when care was coordinated, as patients felt that communication between providers must have taken place (Radwin, 2000). Regrettably, patients felt that it was not uncommon for errors to occur in acute care settings due to the lack of communication between specialists (Williams, 2004). Patients have also expressed the wish for the plan of care to be shared with them (Irurita, 1999), and for more informational, psychological and practical support (Tong et al., 2009). The desire for providers to respect their experience and knowledge and partnering with them in deciding on the care plan have been articulated by some patients (Radwin, 2000; Årestedt et al., 2019). Patients described feelings of disappointment when their knowledge and experience were underestimated or discounted by care providers (Roberti et

al., 2018). The significant association between communication and teamwork, organization of care and care planning and the overall perception of safety in this study is supported by findings in the literature.

Healthcare teams following the care of inpatients may consist of numerous providers, and patients may not always be aware of providers' identities or their roles. Patients with CKD and ESRD may be in hospital for reasons other than renal-specific causes and can often have multiple physicians involved in their care. Recalling the names and roles of the various providers can be challenging. Patients were able to remember the names of their nurses more often than that of physicians involved in their hospital care (O'Leary et al., 2010). In another study, only a small percentage of patients were able to identify the physicians in charge of their care (Arora et al., 2009). Introductions and presence of name tags for identification were perceived to be important and patients who knew which physicians and nurses were responsible for their care also perceived their overall safety to be high (Sofaer, 2005). Similarly, for participants in this study, a direct correlation was noted between ratings of staff roles and overall safety.

Survey responses in this study suggested that aspects of the physical environment significantly influenced participants' overall perception of safety, a finding supported by other researchers (Williams, 2004; Entwistle et al., 2005; Sofaer et al., 2005). Inadequacies of hospital accommodations and lack of cleanliness of hospital space were concerning for patients, particularly for those with comorbidities (Williams, 2004; Entwistle et al., 2005). Cleanliness of the hospital room and the bathroom was both an indicator of competence and commitment of the hospital staff, but more important, it meant that the potential for contracting hospital-acquired infections (HAI) was reduced (Sofaer et al., 2005). Susceptibility for HAIs was concerning for patients with CKD and ESRD due to both a higher risk and a lower reserve and who may be in the hospital currently for antimicrobial treatment.

Participants in this study were asked to provide an assessment of equipment and supplies required for their care, staff knowledge, and their ability and skills to use the necessary equipment. Based on the significant association between these domains and the overall safety rating, it would appear that the availability and functionality of equipment required for their care, as well as staff knowledge and ability to operate the equipment were a consideration for overall safety for study participants. These findings are supported by other safety research (Wysong & Driver, 2009; Lovink et al., 2015; Shattell et al., 2005; Koutantji et al., 2005). Patients felt reassured by their nurses' technical skills and confidence with using monitoring equipment (Wysong & Driver, 2009). At a hemodialysis unit, patients felt safe when staff displayed confidence in working with the machines, and were able to quickly resolve cycler alarms (Lovink et al., 2015). On the other hand, not all patients understood or appreciated care providers' technical competence or skill levels. Some patients noted inconsistencies in care more than efficiencies of task performance in general (Shattell et al., 2005; Koutantji et al., 2005).

All the same, nurses' technical competence and experiential knowledge are valued by patients, enabling them to feel safe from harm when these qualities were evident, particularly when combined with caring and compassion (Irurita, 1999; Radwin, 2000). Equally important are qualities such as being available and their readiness to listen, providing patients with a sense of security and safety (McCabe, 2004). On the other hand, caring and compassion without professional competence are also harmful to patients (Kvåle & Bondevik, 2010). To feel safe, both technical skills and interpersonal aspects of caring were important to patients (Attree, 2001). However, although patients were able to describe desired professional and compassionate qualities of nurses looking after them, they did not necessarily feel qualified to assess the competency of staff (Calman, 2006). Although previous research confirms findings from the current study, it may also be that staff training and competence are noted only when these skills are absent, causing patients to feel unsafe.

Although patients were not prepared to evaluate staff competence, some were willing to comment on their interactions with staff. Being treated with respect and dignity has been found to contribute to feelings of safety, as noted in this study also. The importance of establishing a connection with staff and being perceived as a person who matters contributed to patients feeling safe (Bridges et al., 2010). Violations to dignity identified by Jacobson (2009) largely consisted of patient and provider interactions with patients reporting being treated with rudeness, indifference and condescension, and being ignored. Dignity violations and disrespectful treatment may lead to emotional harm, the impact of which may be as significant as physical harms (Sokol-Hessner et al., 2015), causing secondary harms such as feeling powerless (Brown et al., 2018). For participants in the current study, a moderate correlation between respect and dignity and overall safety was found.

In this study, participant characteristics were unrelated to domain and overall safety ratings. Findings from this study contrasted with other research, where differences based on various participant characteristics were found to be significant. Age was a significant factor in some study findings. Older men felt safer than younger ones, unlike the female population where younger women felt safer than older ones (Wolosin et al., 2006). Overall perceptions of medical safety were higher for patients with shorter lengths of stay (Burroughs et al., 2007). Difference in ratings for safety related to treatment options, device use, and medications were found to be significant, based on gender, age, employment, past experience of adverse events, and clinical settings (Sahlström et al., 2014). Moreover, patients who have multiple chronic conditions, are on multiple medications, or had previously experienced harm are more likely to be vigilant about safety aspects of care (Schwappach et al., 2011; Weingart, 2005). The small sample size in this study may have contributed to the lack of association between participant characteristics and domains, as well as overall safety ratings.

Limitations

The study setting, sample size, and the purposive method of sampling preclude the generalization of results to other centres or other patient populations. Future studies should include patients who may be at high risk of experiencing harm, but lack the ability to articulate their concerns. Additionally, given that the survey was administered immediately following an interview, as a part of a larger study, some participants may have been experiencing fatigue while answering questions. This may influence the interpretation of responses and subsequently the usefulness of responses in informing safety strategies involving patients. Measurement bias may be a distinct possibility. The PMOS questionnaire was developed in the UK and the way question items were phrased may be confusing to some individuals. Although the questionnaire has been validated in the UK and Australia, its appropriateness for the context of the current study will need to be validated. Future research involving this instrument should include a pilot test to determine item clarity. Despite these limitations, the PMOS specifically looks at safety from the patient's perspective and can be useful for soliciting feedback from patients regarding factors known to contribute to safety perceptions in acute care hospital settings. Additional research involving a larger sample size, other patient populations and clinical contexts may be beneficial. Suggestions include testing the instrument in outpatient and dialysis settings with CKD and ESRD patients. Comparing the perceptions of individuals with CKD and ESRD to patients with other chronic illnesses who are hospitalized may be educational as well. Undoubtedly, using the questionnaire may give patients a voice to express concerns regarding physical and psychological safety and, in doing so, assist in efforts to keep them safe.

REFERENCES

- Årestedt, L., Martinsson, C., Hjelm, C., Uhlin, F., & Eldh, A. C. (2019). Patient participation in dialysis care—A qualitative study of patients' and health professionals' perspectives. *Health Expectations*, 22(6), 1285-1293. <https://doi.org/10.1111/hex.12966>
- Arora, V., Gangireddy, S., Mehrotra, A., Ginde, R., Tormey, M., & Meltzer, D. (2009). Ability of hospitalized patients to identify their in-hospital physicians. *Archives of Internal Medicine*, 169(2), 199-201. <https://doi.org/10.1001/archinternmed.2008.565>
- Attree, M. (2001). Patients' and relatives' experiences and perspectives of 'good' and 'not so good' quality care. *Journal of Advanced Nursing*, 33(4), 456-466. <https://doi.org/10.1046/j.1365-2648.2001.01689.x>
- Bohlouli, B., Jackson, T. J., Tonelli, M., Hemmelgarn, B., & Klarenbach, S. (2017). Adverse outcomes associated with preventable complications in hospitalized patients with CKD. *Clinical Journal of the American Society of Nephrology*, 12(5), 799-806. <https://doi.org/10.2215/CJN.09410916>
- Bohlouli, B., Tonelli, M., Jackson, T., Hemmelgarn, B., & Klarenbach, S. (2016). Risk of hospital-acquired complications in patients with chronic kidney disease. *Clinical Journal of the American Society of Nephrology*, 11(6), 956-963. <https://doi.org/10.2215/CJN.09450915>
- Bridges, J., Flatley, M., & Meyer, J. (2010). Older people's and relatives' experiences in acute care settings: Systematic review and synthesis of qualitative studies. *International Journal of Nursing Studies*, 47(1), 89-107. <https://doi.org/10.1016/j.ijnurstu.2009.09.009>
- Brown, S. M., Azoulay, E., Benoit, D., Butler, T. P., Folcarelli, P., Geller, G., Rozenblum, R., Sands, K., Sokol-Hessner, L., Talmor, D., & Turner, K. (2018). The practice of respect in the ICU. *American Journal of Respiratory and Critical Care Medicine*, 197(11), 1389-1395. <https://doi.org/10.1164/rccm.201708-1676CP>
- Burroughs, T. E., Waterman, A. D., Gallagher, T. H., Waterman, B., Jeffe, D. B., Dunagan, W. C., Garbutt, J., Cohen, M., Cira, J., & Fraser, V. J. (2007). Patients' concerns about medical errors during hospitalization. *The Joint Commission Journal on Quality and Patient Safety*, 33(1), 5-14. [https://doi.org/10.1016/S1553-7250\(07\)33002-X](https://doi.org/10.1016/S1553-7250(07)33002-X)
- Calman, L. (2006). Patients' views of nurses' competence. *Nurse Education Today*, 26(8), 719-725. <https://doi.org/10.1016/j.nedt.2006.07.016>
- Canadian Patient Safety Institute. (2018). *Patient safety in Canada*. <https://www.patientsafetyinstitute.ca/en/toolsResources/Documents/Patient%20Harm%20Awareness%20-%20Ipsos/CPSI%20-%20Patient%20Safety%20in%20Canada%20Baseline%20Report.pdf>
- Chapin, E., Zhan, M., Seliger, S. L., Walker, L. D., & Fink, J. C. (2010). Adverse safety events in chronic kidney disease: The frequency of "multiple hits". *Clinical Journal of the American Society of Nephrology*, 5(1), 95-101. <https://doi.org/10.2215/CJN.06210909>

CONCLUSION

Utilizing the PMOS questionnaire, perceptions of overall safety are clearly influenced by participants' perceived levels of safety regarding factors within the physical and interpersonal care environments. Confidence in care providers' skills and abilities, and trusting that their care plans will be communicated amongst care providers contribute to perceptions of safe care. Cleanliness of the physical environment was important for patients with CKD and ESRD, who often have other comorbid health conditions, which may place them at higher risk for contracting HAIs. Equally important to feeling safe is the need to be treated with respect and dignity. Of note, although many aspects of hospitalization contribute to perceptions of safe care for patients, the concept of patient safety is often subsumed within the larger concept of quality of care. Associations between the PMOS domain scores and overall perception of safety may likely reflect perceptions of safety, as well as service quality. Nonetheless, obtaining patient feedback should continue as it can be an early warning of a deficient system, signalling for improvement in the care process. To enhance the usefulness of patient feedback, a suggested recommendation is to combine quantitative assessment tools with qualitative assessment where patients are encouraged to give voice to their experiences.

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- Entwistle, V. A., Mello, M. M., & Brennan, T. A. (2005). Advising patients about patient safety: current initiatives risk shifting responsibility. *The Joint Commission Journal on Quality and Patient Safety*, 31(9), 483-494. [https://doi.org/10.1016/S1553-7250\(05\)31063-4](https://doi.org/10.1016/S1553-7250(05)31063-4)
- Fink, J. C., Brown, J., Seliger, S. L., Walker, L., & Zhan, M. (2009). CKD as an underrecognized threat to patient safety. *American Journal of Kidney Disease*, 53(4), 681-688. <https://doi.org/10.1053/j.ajkd.2008.12.016>
- Giles, S. J., Lawton, R. J., Din, I., & McEachan, R.R. (2013). Developing a patient measure of safety (PMOS). *BMJ Quality & Safety*, 22(7), 554-562. <http://dx.doi.org/10.1136/bmjqs-2012-000843>
- Ginsberg, J. S., Zhan, M., Diamantidis, C. J., Woods, C., Chen, J., & Fink, J. C. (2014). Patient-reported and actionable safety events in CKD. *Journal of the American Society of Nephrology*, 25(7), 1564-1573. <https://doi.org/10.1681/ASN.2013090921>
- Go, A. S., Chertow, G. M., Fan, D., McCulloch, C. E., & Hsu, C. Y. (2004). Chronic kidney disease and the risks of death, cardiovascular events, and hospitalization. *New England Journal of Medicine*, 351(13), 1296-1305. <https://doi.org/10.1056/NEJMoa041031>
- Harel, Z., Wald, R., Liu, J. J., & Bell, C. M. (2012). Lapses in safety in end-stage renal disease patients admitted to surgical services. *Hemodialysis International*, 16(2), 286-293. <https://doi.org/10.1111/j.1542-4758.2011.00633.x>
- Hernan, A. L., Giles, S. J., O'Hara, J. K., Fuller, J., Johnson, J. K., & Dunbar, J. A. (2016). Developing a primary care patient measure of safety (PC PMOS): a modified Delphi process and face validity testing. *BMJ Quality & Safety*, 25(4), 273-280. <http://dx.doi.org/10.1136/bmjqs-2015-004268>
- Irurita, V. (1999). Factors affecting the quality of nursing care: the patient's perspective. *International Journal of Nursing Practice*, 5(2), 86-94. <https://doi.org/10.1046/j.1440-172x.1999.00156.x>
- Jacobson, N. (2009). Dignity violation in health care. *Qualitative Health Research*, 19(11), 1536-1547. <https://doi.org/10.1177/1049732309349809>
- Kidney Disease Improving Global Outcomes. (2013). KDIGO 2012 Clinical practice guideline for the evaluation and management of chronic kidney disease. *Kidney International Supplements*, 3(1), 1-150. https://kdigo.org/wp-content/uploads/2017/02/KDIGO_2012_CKD_GL.pdf
- Kliger, A. S. (2015). Maintaining safety in the dialysis facility. *Clinical Journal of the American Society of Nephrology*, 10(4), 688-695. <https://doi.org/10.2215/cjn.08960914>
- Koutantji, M., Davis, R., Vincent, C., & Coulter, A. (2005). The patient's role in patient safety: Engaging patients, their representatives, and health professionals. *Clinical Risk*, 11(3), 99-104.
- Kvåle, K. & Bondevik, M. (2010). Patients' perceptions of the importance of nurses' knowledge about cancer and its treatment for quality nursing care. *Oncology Nursing Forum*, 37(4), 436-442. <https://doi.org/10.1188/10.ONF.436-442>
- Lawton, R., McEachan, R. R., Giles, S. J., Sirriyeh, R., Watt, I. S., & Wright, J. (2012). Development of an evidence-based framework of factors contributing to patient safety incidents in hospital settings: A systematic review. *BMJ Quality & Safety*, 21(5), 369-380. <http://dx.doi.org/10.1136/bmjqs-2011-000443>
- Lovink, M. H., Kars, M. C., de Man-van Ginkel, J. M., & Schoonhoven, L. (2015). Patients' experiences of safety during haemodialysis treatment — a qualitative study. *Journal of Advanced Nursing*, 71(10), 2374-2383. <https://doi.org/10.1111/jan.12690>
- McCabe, C. (2004). Nurse-patient communication: An exploration of patients' experiences. *Journal of Clinical Nursing*, 13(1), 41-49. <https://doi.org/10.1111/j.1365-2702.2004.00817.x>
- McEachan, R. R., Lawton, R. J., O'Hara, J. K., Armitage, G., Giles, S., Parveen, S., Watt, I., & Wright J. (2014). Developing a reliable and valid patient measure of safety in hospitals (PMOS): A validation study. *BMJ Quality & Safety*, 23(7), 565-573. <http://dx.doi.org/10.1136/bmjqs-2013-002312>
- Mollon, D. (2014). Feeling safe during an inpatient hospitalization: A concept analysis. *Journal of Advanced Nursing*, 70(8), 1727-1737. <https://doi.org/10.1111/jan.12348>
- New, L., Goodridge, D., Kappel, J., Groot, G., & Dobson, R. (2019). "I just have to take it"—patient safety in acute care: perspectives and experiences of patients with chronic kidney disease. *BMC Health Services Research*, 19(1), 199. <https://doi.org/10.1186/s12913-019-4014-4>
- O'Hara, J. K., Lawton, R. J., Armitage, G., Sheard, L., Marsh, C., Cocks, K., McEachan, R.C., Reynolds, C., Watt, I., & Wright, J. (2016). The patient reporting and action for a safe environment (PRASE) intervention: A feasibility study. *BMC Health Services Research*, 16(1). <https://doi.org/10.1186/s12913-016-1919-z>
- Offurum, A., Wagner, L. A., & Gooden, T. (2016). Adverse safety events in patients with Chronic Kidney Disease (CKD). *Expert Opinion on Drug Safety*, 15(12), 1597-1607. <https://doi.org/10.1080/14740338.2016.1236909>
- O'Leary, K. J., Kulkarni, N., Landler, M. P., Jeon, J., Hahn, K. J., Englert, K. M., & Williams, M. V. (2010). Hospitalized patients' understanding of their plan of care. *Mayo Clinic Proceedings*, 85(1), 47-52. <https://doi.org/10.4065/mcp.2009.0232>
- Pronovost, P. J., Thompson, D. A., Holzmüller, C. G., Lubomski, L. H., & Morlock, L. L. (2005). Defining and measuring patient safety. *Critical Care Clinics*, 21(1), 1-19. <https://doi.org/10.1016/j.ccc.2004.07.006>
- Radwin, L. (2000). Oncology patients' perceptions of quality nursing care. *Research in Nursing & Health*, 23(3), 179-190. [https://doi.org/10.1002/1098-240X\(200006\)23:3<179::AID-NUR2>3.0.CO;2-T](https://doi.org/10.1002/1098-240X(200006)23:3<179::AID-NUR2>3.0.CO;2-T)
- Rathert, C., May, D. R., & Williams, E. S. (2011). Beyond service quality: The mediating role of patient safety perceptions in the patient experience-satisfaction relationship. *Health Care Management Review*, 36(4), 359-368. <https://doi.org/10.1097/HMR.0b013e318219cda1>
- Roberti, J., Cummings, A., Myall, M., Harvey, J., Lippiett, K., Hunt, K., Cicora, F., Alonso, J. P., & May, C. R. (2018). Work of being an adult patient with chronic kidney disease: a systematic review of qualitative studies. *BMJ Open*, 8(9). <http://dx.doi.org/10.1136/bmjopen-2018-023507>
- Sahlström, M., Partanen, P., & Turunen, H. (2014). Safety as experienced by patients themselves: A Finnish survey of the most recent period of care. *Research in Nursing & Health*, 37(3), 194-203. <https://doi.org/10.1002/nur.21589>
- Schwappach, D. L., Frank, O., & Hochreutener, M. A. (2011). 'New perspectives on well-known issues': Patients' experiences and perceptions of safety in Swiss hospitals. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*, 105(7), 542-548. <https://doi.org/10.1016/j.zefq.2010.07.002>
- Seliger, S. L., Zhan, M., Walker, L. D., & Fink, J. C. (2008). Chronic kidney disease adversely influences patient safety. *Journal of American Society Nephrology*, 19(12), 2414-2419. <https://doi.org/10.1681/ASN.2008010022>
- Shattell, M., Hogan, B., & Thomas, S. P. (2005). "It's the people that make the environment good or bad": The patient's experience of the acute care hospital environment.

- AACN *Clinical Issues*, 16(2), 159-169. <https://doi.org/10.1097/00044067-200504000-00006>
- Sheard, L., O'Hara, J., Armitage, G., Wright, J., Cocks, K., McEachan, R., Watt, I., & Lawton, R. (2014). Evaluating the PRASE patient safety intervention — a multi-centre, cluster trial with a qualitative process evaluation: Study protocol for a randomised controlled trial. *Trials*, 15(1), 420. <https://doi.org/10.1186/1745-6215-15-420>
- Sofaer, S., Crofton, C., Goldstein, E., Hoy, E., & Crabb, J. (2005). What do consumers want to know about the quality of care in hospitals? *Health Services Research*, 40(6), 2018-2036. <https://doi.org/10.1111/j.1475-6773.2005.00473.x>
- Sokol-Hessner, L., Folcarelli, P. H., & Sands, K. E. F. (2015). Emotional harm from disrespect: The neglected preventable harm. *BMJ Quality & Safety*, 24(9), 550-553. <http://dx.doi.org/10.1136/bmjqs-2015-004034>
- Taylor, N., Hogden, E., Clay-Williams, R., Li, Z., Lawton, R., & Braithwaite, J. (2016). Older, vulnerable patient view: A pilot and feasibility study of the patient measure of safety (PMOS) with patients in Australia. *BMJ Open*, 6(6). <https://doi.org/10.1136/bmjopen-2016-011069>
- Tong, A., Sainsbury, P., Chadban, S., Walker, R. G., Harris, D. C., Carter, S. M., ... Craig, J. C. (2009). Patients' experiences and perspectives of living with CKD. *American Journal of Kidney Diseases*, 53(4), 689-700. <https://doi.org/10.1053/j.ajkd.2008.10.050>
- Wagner, L. A., & Fink, J. C. (2017). Ensuring patient safety during the transition to ESRD. *Seminars in Nephrology*, 37(2), 194-208. <https://doi.org/10.1016/j.semnephrol.2016.12.009>
- Wagner, L. A., Tata, A. L., & Fink, J. C. (2015). Patient safety issues in CKD: Core curriculum. *American Journal of Kidney Diseases*, 66(1), 159-169. <https://doi.org/10.1053/j.ajkd.2015.02.343>
- Weingart, S. N., Pagovich, O., Sands, D. Z., Li, J. M., Aronson, M. D., Davis, R. B., Bates, D., & Phillips, R. S. (2005). What can hospitalized patients tell us about adverse events? Learning from patient-reported incidents. *Journal of General Internal Medicine*, 20(9), 830-836. <https://doi.org/10.1111/j.1525-1497.2005.0180.x>
- Williams, A. (2004). Patients with comorbidities: Perceptions of acute care services. *Journal of Advanced Nursing*, 46(1), 13-22. <https://doi.org/10.1111/j.1365-2648.2003.02961.x>
- Wolosin, R. J., Vercler, L., & Matthews, J. L. (2006). Am I safe here?: Improving patients' perceptions of safety in hospitals. *Journal of Nursing Care Quality*, 21(1), 30-38. <https://doi.org/10.1097/00001786-200601000-00008>
- Wysong, P. R., & Driver, E. (2009). Patients' perceptions of nurses' skill. *Critical Care Nurse*, 29(4), 24-37. <https://doi.org/10.4037/ccn2009241>