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Exploring nurse leader fatigue: a mixed methods study

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Aim To describe hospital nurse leaders' experiences of fatigue.
Background Fatigue is a critical challenge in nursing. Existing literature focuses on staff nurse fatigue, yet nurse leaders are exposed to high demands that may contribute to fatigue and associated risks to patient, nurse and organisational outcomes.
Methods A mixed method approach comprising semi-structured interviews and the Occupational Fatigue Exhaustion Recovery scale with 21 nurse administrators (10 nurse managers and 11 nurse executives) from hospitals in a Midwestern state.
Results Most nurse leaders experience fatigue; nurse managers reported higher levels of chronic fatigue. Participants identified multiple sources of fatigue including 24 h accountability and intensity of role expectations, and used a combination of wellness, restorative, social support and boundary setting strategies to cope with fatigue. The consequences of nurse leader fatigue include an impact on decision-making, work–life balance and turnover intent.
Conclusions The high prevalence of nurse leader fatigue could impact the turnover intent of nurse administrators and quality of care.
Implications for nursing management This study highlights the significance and consequences of nurse leader fatigue. As health care organisations continue to raise awareness and establish systems to reduce nurse fatigue, policies and programmes must be adapted to address nurse leader fatigue.

Keywords: fatigue, nurse executive, nurse leader, nurse managers, quality, turnover

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Introduction

Internationally, there is concern about the impact of occupational fatigue in health care; for both individual nurses and health care organisations (Smith-Miller *et al.* 2014). Occupational fatigue, hereafter referred to as fatigue, can negatively impact patient safety, nurse safety and well-being, and nurse retention (Smith-Miller *et al.* 2014). Current literature describes staff nurses' sources of fatigue, including work-related factors (e.g. high demands and scheduling) and personal factors (e.g. age and sleep) (Rogers 2008, Geiger-Brown & Trinkoff 2010, Smith-Miller *et al.* 2014, Steege & Dykstra 2016). However, little is known about nurse leaders' experience with fatigue; nurse leaders are defined here by their position of formal leadership within the hospital setting. Nurse leaders are called upon to partner with staff nurses to decrease the risks of fatigue and to create healthier work environments by influencing policies, and implementing improved systems of care (American Nurses Association 2014, AONE 2015). Nurse leaders are

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part of these work environments and yet their experiences of fatigue have not yet been considered.

Background

In today's complex health care environments, nurse leaders are responsible for achieving high quality patient and organisational outcomes. Similar to staff nurses, nurse leaders, including nurse managers and executives, are exposed to high demands and stressors, including multiple and complex priorities with frequent interruptions, and long work hours (Bjerregård Madsen *et al.* 2016). Nurse leaders' experiences with fatigue may also have important implications for how they view fatigue and their ability to effectively create and sustain healthy work environments within the health care system (Connaughton & Hassinger 2007).

Occupational fatigue is a '...complex multidimensional condition with emotional, physiologic, cognitive/mental and sensory components that occur as a consequence of excessive work demands and insufficient energy restoration' (Smith-Miller *et al.* 2014, p. 487). While stress, burnout, emotional exhaustion and turnover intention may be related to fatigue, they are distinct constructs. Work-related stress is a significant concern for leaders and is associated with negative job satisfaction, turnover intention, job performance, personal well-being and emotional exhaustion (Hayes *et al.* 2010, Van Bogaert *et al.* 2014). Although multiple studies have investigated job stress in nurse leaders and its relation to workload and emotional exhaustion, nurse administrators' experiences with fatigue, including their fatigue levels, coping strategies, sources of fatigue and consequences are not documented.

Fatigue, and related variables of workload and stress, may have important implications for retaining and recruiting nurse leaders. Warshawsky and Havens (2014) identified reasons for manager turnover, which included stress and burnout. Ensuring a leader pipeline is a significant challenge in health care (Thompson 2008). The ageing leadership workforce, impending retirements and negative perceptions of the role contribute to difficulties with recruiting and retaining nurse managers (Laschinger *et al.* 2008, Sverdlik 2012, Hewko *et al.* 2015).

The study

Aim

The aim of this study was to describe the experiences of nurse leaders with occupational fatigue.

Design

This study used a mixed method approach comprising qualitative descriptive design using semi-structured interviews to gain a rich understanding of nurse leaders' experiences with fatigue and quantitative measures of fatigue levels.

Conceptual framework

This study was guided by the conceptual model of Occupational Fatigue in Nursing (Steege & Pinekenstein 2016). In this model, which is derived from the Systems Engineering Initiative for Patient Safety model (Carayon *et al.* 2006), nurse fatigue is conceptualised as multi-dimensional – including mental, physical and emotional fatigue – and occurring on a continuum ranging from acute to chronic resulting from complex demands in the work system exceeding the available capacity of a nurse. This model highlights the sources of fatigue spanning the nursing work system including attributes of the individual nurse, technology and tools, tasks, organisation and the physical environment, and outlines the impact of fatigue on patient, nurse and organisational outcomes. Nurse coping strategies can increase the capacity of a nurse and mitigate the development of fatigue or its impact on outcomes. The components of this model: fatigue levels, types and sources, coping strategies and consequences provided the framework for this study's design, data analysis and presentation of findings.

Participants

Nurse leaders for the study were defined by their position of formal leadership within a hospital organisation. Specifically, nurse managers (NM) and nurse executives (NE) were recruited via e-mail to participate in the study. We refer to both NM and NE groups of participants collectively as nurse administrators. To ensure some level of shared experience and responsibility, a convenience sample of managers from medical-surgical and intensive care units were recruited from two hospitals located in a Midwestern city. Managers from medical-surgical and intensive care units were selected to allow for variability in potential demands and stressors that may contribute to fatigue, and because of the generalisability of these types of units to hospitals across the country. One hospital is a large academic medical centre, the other a community hospital. Executives were recruited from different hospitals located in a Midwestern state.

Data collection

Prior to data collection, ethical approval for the study was obtained from the University of Wisconsin-Madison Health Sciences Institutional Review Board (#2015-0824) in July 2015.

A total of 21 individual interviews were conducted (10 managers and 11 executives) in line with recommendations for qualitative content analysis (Elo *et al.* 2014) between September and November 2015 either in person or by phone (8 NE interviews were conducted by phone). All interviews were conducted by the same facilitator (JR) using a consistent semi-structured guide. The questions explored the primary components of the conceptual framework; namely fatigue levels, types, and sources, coping strategies and consequences. Interviews were audio recorded and ranged from 30 to 55 minutes.

At the end of the interview, each participant completed a demographic survey and the Occupational Fatigue Exhaustion Recovery (OFER) scale. The OFER includes three subscales to assess acute and chronic states of fatigue and intershift recovery (Winwood *et al.* 2005, 2006). The OFER has demonstrated reliability and validity in the nurse population (Winwood *et al.* 2005, Barker & Nussbaum 2011, Sagherian & Geiger Brown 2016).

Data analysis

Audio recordings were transcribed verbatim by a HIPAA certified transcriptionist and uploaded to the cloud-based coding application Dedoose (2015). Transcripts were analysed for themes using directed content analysis (Hsieh & Shannon 2005). The authors used the study's conceptual framework to direct the coding of the transcripts. Two of the authors (LS and JR), a human factors engineer and a nurse, served as the initial coders. First, six transcripts (three manager and three executive) were read to identify themes. An initial coding structure was developed based on identified themes and the components of the conceptual model. The remaining transcripts were coded independently; agreement was ensured after four additional transcripts were coded and after completing all coding, the two coders met again to ensure agreement of four additional double-coded transcripts. Three authors (EAK, BP, LS) independently reviewed the coded transcripts, identified subthemes that emerged from the initial coding, and then met to agree on the defined subthemes.

Scores for each of the subscales of the OFER were calculated according to published guidelines (Winwood *et al.* 2005, 2006). Descriptive statistics for acute fatigue, chronic fatigue and intershift recovery were calculated for managers and executives as separate groups.

Findings

The nurse manager (NM) participants ranged in age from 35 to 59 with a mean (SD) of 48.1 (8.2) years. The nurse executives' (NE) age ranged from 50 to 62 with a mean (SD) of 58.5 (4.7) years. The descriptive characteristics of NM and NE participants are included in Tables 1 and 2, respectively.

Findings are organised by the components of the study's conceptual framework: nurse leader fatigue levels, types, and sources, coping strategies and consequences.

Table 1
Demographic characteristics for nurse manager participants

Nurse manager participant	*Gender*	*Average hours of sleep/night*	*Years of experience as a nurse*	*Years of experience in current position*	*Highest degree held*	*Unit type*	*Average hours worked/ week*	*Number of hospital beds on unit*	*Average census on unit*
1	F	7–8	18	3.5	Masters	MedSurg	50	26	26
2	F	6–7	30	15	Masters	ICU	60	16	16
3	F	5–6	14	6	Masters	MedSurg	50–60	15	12
4	F	5–6	36	3	Masters	MedSurg	55	28	26
5	F	6–7	26	8.5	Masters	ICU	60	7	7
6	F	6–7	13	5	Masters	MedSurg	50	34	18
7	F	7–8	26	4	Baccalaureate	ICU	60	45	36
8	F	5–6	36	4	Masters	MedSurg	50–55	36	18
9	F	6–7	33	4	Masters	MedSurg	45	28	26
10	F	6–7	25	9	Masters	MedSurg + Intermediate	55–60	29	29

MedSurg, Medical Surgical; ICU, Intensive Care Unit.

Table 2
Demographic characteristics for nurse executive participants

Nurse executive participant	*Gender*	*Average hours of sleep/night*	*Years of experience as a nurse*	*Years of experience in current position*	*Highest degree held*	*Average hours worked/ week*	*Type of hospital*	*Magnet hospital*	*Number of hospital beds at facility*	*Average census at facility*
1	F	5–6	38	4	DNP	60	Academic Medical Centre	Yes	Large	500
2	F	5–6	39.5	10	Masters	60	Community	No	Medium	180
3	F	6–7	40	8	Masters	50-60	Community	No	Small	24
4	F	6–7	30	10	Masters	55	Community	No	Small	13
5	F	8–9	30	4	Masters	50	Community	No	Small	40
6	F	7–8	25	2	DNP	50	Critical Access	No	Small	13
7	F	7–8	37	11	Masters	50	Government	Yes	Medium	107
8	F	7–8	38	10	DNP	50	Community	No	Large	300
9	F	7–8	40	7	Masters	55	Community	No	Large	275
10	F	7–8	40+	18	Masters	60+	Community	Yes	Large	290
11	M	7–8	32	15	Masters	55	Community	No	Small	22

Number of hospital beds key: small hospital, 0–99 beds; medium, 100–399 beds; large, >400 beds.

Nurse leader fatigue

All the nurse manage participants reported that they experience fatigue at work and several reported experiencing fatigue almost all of the time; '[I experience fatigue] 100% of the time' – NM9. Managers reported experiencing multiple dimensions of fatigue including: mental, physical, emotional and compassion fatigue, as well as sleep deprivation. Managers noted that while their current overall fatigue levels are high, they experienced physical fatigue less frequently or at a lower level than when they worked previously as a staff nurse. The signs and symptoms of fatigue described by nurse managers included a lack of focus, distraction, decreased tolerance, feeling overwhelmed and a desire to rest.

> 'I think tired, just wanting to take a nap. Sometimes my tolerance of challenging situations. Sometimes you internally feel like, how can I take a step? But you just keep going and you savour when you do get to bed.'
>
> (NM6)

A majority of nurse executives reported experiencing fatigue in their current position; however, two nurse executives said they do not really experience fatigue or rarely experience fatigue (every few months). In contrast to the nurse managers, nurse executives reported a more limited set of fatigue dimensions, primarily mental and/or emotional fatigue.

Signs and symptoms of fatigue reported by nurse executives included: feeling worn out, difficulty focusing, disorganisation, making mistakes or decreased quality of work, disengagement from work, low energy at and outside of work, anxiety about starting another work week, and feelings of frustration. According to NE7, '[my] brain stops working at its highest capacity and you start missing details and your reflexes are affected, your judgement is somewhat impaired,' while NE1 described the symptoms of fatigue as feeling 'fuzzy mentally'.

Table 3 provides a summary of OFER scores for manager and executive participants. Scores for each subscale range from 0 to 100; higher scores represent higher fatigue or recovery levels. The mean chronic fatigue scores were higher for managers and mean intershift recovery scores were higher for executives. Mean acute fatigue scores were approximately equal for the two groups.

Table 3
Descriptive statistics for fatigue and recovery scores from the Occupational Fatigue Exhaustion Recovery (OFER) scale

	Acute fatigue			*Chronic fatigue*			*Intershift recovery*		
	Range	*Mean*	*SD*	*Range*	*Mean*	*SD*	*Range*	*Mean*	*SD*
Managers	17–90	54	29	17–87	52	22	13–97	53	30
Executives	10–90	52	23	0–90	33	29	33–100	72	19

Sources of fatigue

Managers reported a variety of sources of fatigue (Table 4), most prominently, the continuous 24 hours a day, 7 days a week accountability to their unit and staff. Technology compounds this source of fatigue; with cell phones and pagers, managers are always accessible to their staff. 'Even on vacation, unfortunately unless you're out of the country, your staff still have your cell phone number. So they still tend to call' – NM10. Managers also describe constant accountability as inhibiting them from recharging or recovering when they are physically not at work.

Managers report a struggle to be visible, accessible, and responsive to all of their staff (including those that work night or evening shifts) in real time and balance that with completing their own work. '[I have] an open door policy. ...I'm pretty accessible to the staff, which is maybe my downfall' – NM1. Another described trying to control interruptions yet feeling torn by obligations to be available '...I do shut my office [door]... although people will knock, and I always feel obligated to answer' – NM9.

Additionally, nurse managers consistently describe being responsible for a litany of ongoing responsibilities including meetings, e-mail, human resource 'drama' (employees not meeting expectations) and personnel issues as fatiguing. Constant interruptions while tackling these responsibilities further contributes to nurse manager fatigue.

Similar to the nurse managers, the nurse executives reported meetings and long work days as predominate sources of fatigue (Table 4). Many nurse executives report working above and beyond a full time 40 hour work week; the mean (SD) reported hours worked per week for nurse executive participants in this study was 54.5 (4.2) hours.

Executives reported mental fatigue, in particular, arises as a result of their work to lead a department of nursing, support nursing and regulatory standards, multi-task, balance multiple projects and accomplish the expectations of their role. Executives also reported their responsibility to ensure adequate staffing for patient care contributing to their fatigue. Finally, several nurse executive linked their age to decreased stamina and sleeping difficulties, thus acting as another contributing factor to their fatigue.

Coping with fatigue

Both nurse managers and executives used a variety of strategies in an attempt to manage their fatigue (Table 5). Most often they reported positive coping strategies that related to wellness and restorative strategies, such as healthy eating and exercise, getting enough rest and taking vacations. Multiple participants also commented on their awareness of fatigue and being in tune with their body.

In addition, social support, communication and networking activities were noted. Nurse executives particularly note the importance of debriefing and having a strong network of support with colleagues as helping to reduce fatigue. Nurse executives also describe identifying the areas of their work that are challenging in

Table 4
Fatigue sources and themes, including exemplar quotes

Sources of fatigue	*Theme*	*Supportive quote(s)*
Nurse managers	24-7 accountability	'...you're on call 24/7 365 days a week so you're never ever off. Even on Christmas or New Year's or Thanksgiving. ...we got paged on Thanksgiving that staffing was tight. ...So you can't really ever relax.' – NM1
	Visibility and responsiveness to staff	'Connecting with the people that need me every day. Just making sure that I'm touching stuff, if they send me an e-mail or they try to stop me in the hall or just being overall present for all 3 shifts. And that weighs a lot on me.' – NM6
	Interruptions in workflow	'And so my day, really from the minute I hit the floor to the minute I leave, is that constant barragement. I have 72 staff, I have 28 patients that when I'm here physically, it's ongoing. And then I've got to get to these meetings, and I also have to keep up with my e-mail and I'm supposed to implement, put a new action plan and submit something. That's what kind of fatigues me is that ongoing interruptions.' – NM9
Nurse executives	Meetings	'So I would say 80% of what I do, I'm in a room with other people, whether it's trying to be inspirational, whether it's a fact finding, I spend 80% in meetings. That in and of itself to me, wears me out.' – NE1
	Long work days	'Long work days, 12 hour days. Day in and day out.' – NE10
	Leadership responsibility	'As an executive I think it's more of the mental fatigue because of the responsibility of the entire nursing organisation and trying to move them forward to the vision. Helping them learn and maintain nursing standards. Bringing them up to skill levels that we should be at for standards of care.' – NE6
	Age and decreased stamina	'Age I think is a factor. I think as you grow older you don't have the capacity that you have when you're young.' – NE7

a positive way and spending time on those areas as a strategy to mitigate fatigue.

Due to the 24 hour accountability of the leadership role, strategies that attempt to set boundaries were also reported. These coping strategies included delegation to subordinates, empowering staff to make their own decisions, getting off the unit, protecting some time in an effort to decrease interruptions to work on projects, and not checking e-mail continuously.

Consequences of fatigue

When initially asked about the consequences of fatigue, both nurse managers and nurse executives commented on the impact on nursing staff and quality of care. For example, one nurse executive provided a list of potential consequences of fatigue to health care quality, including patient safety risks and errors: '...patients being readmitted. The risk of patients falling. The risk of patients having pressure ulcers. The risk of patients getting the wrong medication.' – NE2. Other nurse executives described sentinel events that occurred where fatigue was identified as a contributing factor.

After further probing, participants described the impact of their own fatigue on their own quality of life, organisational outcomes and quality of care (Table 6). Specifically, nurse managers discussed the personal consequences of fatigue, resulting from the role's 24 hour accountability. Most participants reported feeling tired at the end of their days and a subsequent impact on their personal relationships and life outside of work. Others described fatigue as inhibiting them from doing everything they would like to do outside of work, such as pursuing hobbies, going on vacations or going out with friends.

Fatigue may also contribute to how long nurse leaders intend to stay in their role. One nurse manager reports fatigue as a driving force to looking for a new role. 'That's why I keep looking at the job board. 'Cause I feel like this job is sucking the life out of me.' – NM1. In addition, some nurse managers wonder if there will be nurses to fill the role of the nurse manager in the future if the role does not change.

Table 5
Fatigue coping strategies and themes, including exemplar quotes

Coping strategies	*Theme*	*Supportive quote(s)*
	Wellness and restorative strategies	'I try to be very in tune with my body and know when I need to rest or sometimes if I feel like I'm getting a little tired from all of the work, then I say today I'm just gonna take a break and I'm not gonna do that and I'll catch back up tomorrow. You have to find a balance or you won't survive in this role 'cause it can take up all of your time.' – NM6
		'I try to be a little healthier, I think eating helps, water helps.' – NM5
		'I try to get a great night's sleep. I am really aware of fatigue and so I know when I start getting tired or distracted then I need to get up and walk around. Go to another environment, go outside, get some fresh air, caffeine, coffee, and I know that I try to model not e-mailing people during the night or on the weekends or being very thoughtful about disrupting time away from work because if you can't ever get it off your mind you can't ever come to rest.' – NE10
	Boundaries on work	'I try to meditate but lately it's been a little bit crazier to meditate. I try to turn my brain off when I leave work but that's really hard too. I was trying to decide why it's so hard the other day and I think it's cause we're here 10 hours a day so, really there's not a lot of hours left in the day so to get my brain to chill out?' – NM1
		'I rarely get a phone call from my charge nurse... my staff is kind of auto-pilot when I'm not here. As it should be. When I was a director, that's how my managers operated, and the people that reported to me, that's how they operated. I hardly ever got phone calls from them, 'cause they just took care of things and their staff took care of things.' – NM4
		'I read very little e-mail now when I'm at home. I try to avoid that as much as possible. I try to take at least one day on the weekend where I just do not read any journals, I don't talk about work with anyone, I don't get on my Blackberry, I try to save that day for me.' – NE7
	Social support	'Talking about things, like you just ran into my nurse practitioner, I think she's definitely a sounding board for someone that knows the staff, knows the things that are going on in the unit and I can bounce things off of to just either acknowledge that yes this is going on and I'm moving in the right direction, or do you have any ideas, or just listen to me. That is huge, huge. If I didn't have anybody to talk to, I think that would be really difficult.' – NM5
		'I think developing a support mechanism of peers. And the use of humour too. I like to goof around and enjoy the work and that also helps reduce stress and fatigue.' – NE11
	Positive challenges	'You know you raise a problem and then you're given time to work on a really interesting project. I mean there's tons of projects going on and I think if they didn't have that opportunity, that would be linked to fatigue. You have to have that to keep your brain active and engaged. ... there's an art in learning to do a project and then bringing that back to the bedside, whatever bedside you're working at. And learning how to implement and sustain it. So I think those are the things that combat fatigue.' – NE7

Executives also express concern about who will be willing to step into future nurse executive roles, particularly given the lack of time off to rest and recover. When probed about how long they may be able to stay in their roles as nurse executives, there were mixed responses. Some reported that as long as they are able to maintain their self-care strategies they would stay; others reported that the intensity of their job would limit how long they would be able to stay in their role.

Finally, nurse executives described potential downstream impacts of their fatigue on nurses and quality of care.

Discussion

Nurse administrators are in a unique position because they experience relatively high levels of fatigue in response to the demands and stressors inherent to their jobs, and simultaneously have a responsibility to monitor and address fatigue and associated risks in nursing staff. This study offers new insight into these leaders' experience with fatigue.

Almost all participants in this study reported experiencing fatigue at work. The reported Occupational Fatigue Exhaustion Recovery scores show that managers and executives had roughly equivalent levels of acute fatigue; however, nurse managers had higher chronic fatigue and lower intershift recovery levels than nurse executives. Comparatively, these numbers differ from OFER scores previously reported for staff nurses in the literature. Prior studies have documented acute fatigue levels ranging from 63–66, 41–50 for chronic fatigue, and 50–52 for intershift recovery in staff nurses (Barker & Nussbaum 2011, Scott Blouin *et al.* 2016). Specifically, nurse managers and nurse

Table 6
Fatigue consequences and themes, including exemplar quotes

Consequences	*Theme*	*Supportive quote(s)*
	Impact on life outside of work	'Someone just asked me to go to something at 7:30 at night, I'm like are you kidding. I come too early, cause I want to see all 3 shifts and that's really important to me. And so I know I could, but there's gonna be a lot going on next week so I knew that I couldn't do that. I have done things at night, it just makes, I just get tired.' – NM8
		'I'm exhausted when I get home, and then I'm cranky and then I feel guilty cause I'm cranky with the kids and I'm too tired. . .That's the problem.' – NM1
		'I just don't have the energy oftentimes now to call family and get involved in long conversations, or friends. So I think I've probably not kept in contact with people that I would have liked to have kept more contact with. Otherwise, and I have chosen not to go to certain things because I know that it will make me tired, too tired to really enjoy my work the next week, say for a weekend trip somewhere.' – NE7
		'Low energy levels when I'm not working, certain times, a little anxiety related to Sunday night before starting the work week again, and probably just a sense of frustration over trying to be a husband, a father, and a hospital executive.' – NE11
	Sustainability in role	'Probably not [sustainable in my current position]. You know 'cause I been doing this 25, 30 years and I do enjoy it. I love being a nurse, I really do. I love taking care of patients. I never mind taking an assignment. But I think you get to a point in your career where you want to do something easier. Sometimes we all joke about, why don't we just scoop ice cream? Everybody's happy getting ice cream. I could see myself doing something part time. Because you realise, you've given 200% to your career and to your profession, you kinda want to take a step back and start enjoying other things. I mean there's a lot of things I'd like to do personally and I do have a lot of hobbies but you know I'd like to spend more time on the hobbies than my job. . .you can't work 60 hour weeks and take piano lessons or take a cooking class.' – NM2
		'. . .I don't know how much is the job, how much is my age, but. . .I want to leave at the top of my game. And so if I find that I'm not meeting those goals then I'll stop. There are days I go home and I have full intention of going for a walk and I know it would be in my best interest, but I get in my pyjamas. So again, I don't know how much is age, the role, and when you've been in it this long, you know when you see the same things? Year after year? You know I think sometimes that can weigh on you as well. This isn't a job where you can check stuff off a list. And I think that can definitely weigh on the fatigue quotient.' – NE1
	Pipeline of future nurse leaders	'. . .I'm a little worried about who's gonna take my job or nurse manager jobs. I think that they [nurses in direct care] have a great thing going on with 12 hour shifts and you know they've got a lot of time off.' – NE7
	Downstream impacts on quality of care	'. . . so I talk about in health care [the] sharp end where nurses and patients are is where all the medical accidents happen. . . yet decisions I make here in this office at the blunt end . . .decisions I make every day affect the work at the sharp end. So I'm fully aware that I can be tired and still make decisions. It doesn't seem like they're having a direct impact on patients yet they potentially could . . . if I take a short cut on a preventative maintenance for equipment . . . those kind of decisions do affect safety and I could be making them when I'm fatigued.' – NE10

executives in the current study had slightly lower mean acute fatigue scores (54 and 52, respectively) compared with previously published levels for staff nurses. Nurse managers in this study had approximately equivalent mean chronic fatigue levels (52), whereas nurse executives had lower mean chronic fatigue levels (33) compared with published levels for staff nurses. Managers in the current study also had similar mean intershift recovery levels (53), while nurse executives had higher mean intershift recovery levels (72) than those published for staff nurses.

Lower levels of acute fatigue found in this study may be attributed to differences in the types of demands associated with nursing leadership positions compared with the demands placed on a staff nurse. Fatigue arises initially as an acute state in response to short-term demands and is resolved with sufficient recovery between shifts (Winwood *et al.* 2005, Sagherian & Geiger Brown 2016). Without sufficient recovery, acute fatigue can develop into a chronic state, which is associated with more serious consequences for nurse performance, well-being and retention. Higher levels of chronic fatigue, and the associated lower levels of intershift recovery, amongst managers in this study align with participants' descriptions of sources of fatigue related to 24/7 accountability and no opportunity for recovery or restoration outside of work.

Previous research has identified a significant inverse relationship between years of experience as a nurse and fatigue levels (Barker & Nussbaum 2011). The mean (SD) number of years of experience in this study was 25.7 (8.4) and 35.0 (5.3) for managers and executives, respectively. These relatively high levels of experience may explain the lower levels of acute fatigue in participants from this study. Nurse leaders with greater work experience may develop effective coping strategies and a level of resilience that reduces their day-to-day fatigue (Brewer & Shapard 2004, Portela *et al.* 2004).

Nurse leaders' fatigue arises in response to a variety of work demands and stressors and was described as multidimensional, particularly including emotional and mental fatigue. Nurse managers and executives described long hours, competing work goals and tasks, and responsibility to the staff they supervise as contributing to their fatigue. In particular, both groups noted that meetings, e-mail and human resource-related tasks contributed to their fatigue. These work activities may not be perceived as congruent with the administrators' professional identity and goals in their position. Prior research characterising sources of fatigue in staff nurses found that work tasks that do not align with nurses' professional identity and goals, as well as tasks that take nurses away from direct patient care are perceived as contributing to fatigue (Steege *et al.* 2015, Steege & Dykstra 2016).

Managers described the constant accountability to their unit and their staff as the most prominent source of their fatigue. Accountability to patients has been identified as part of nursing professional culture and a barrier to fatigue countermeasure programmes for staff nurses (Steege & Rainbow 2017). Staff nurse resistance to taking breaks during their work shift is well-documented in the fatigue management literature (Scott *et al.* 2010, Smith-Miller *et al.* 2014). The value that nurse managers place on being available to their unit and their willingness to sacrifice their own personal health and well-being may develop during their time as a staff nurse and carry forward into their role as a manager. Similar to programmes and policies to provide staff nurses breaks during their shift, coverage models need to be developed and implemented to allow nurse leaders time to recover outside of work hours. For example, innovative shared leadership models in nursing, that allow for alternative ways to organise and share the work, are emerging with positive feedback from managers and staff (Rosengren *et al.* 2010, Creedle *et al.* 2012).

In this study, nurse administrators were aware of their fatigue levels and reported a variety of coping strategies to deal with fatigue; both managers and executives planned their response to their fatigue levels. Participants described intentionally leaving work earlier or finding time to exercise when they were experiencing increased fatigue levels. This ability of nurse leaders to engage in self-care and use healthy coping strategies as a form of resiliency practices may positively impact job satisfaction, and mitigate turnover intent (Hudgins 2016). Cline (2015) described the importance of resiliency practices of realistic goal-setting, and planning responses to stressful situations to support their health. Restorative strategies such as healthy eating, taking breaks and vacations and attempting to get enough rest were most frequently described. However, the 24 hour accountability and constant interruptions were frequently noted as barriers to effective coping. Although difficulty with sleep was reported as a source of fatigue in the interviews, the actual hours of reported sleep in the survey varied with some administrators sleeping only 5 hours per night. The nurse managers reported fewer hours of sleep, which may further explain their higher chronic fatigue and lower intershift recovery levels.

The nurse managers' and executives' initial responses when asked about consequences of fatigue focused on the fatigue of staff nurses providing direct patient care rather than the potential effects of their own fatigue. However, leaders' decisions made at the 'blunt end' of care can trickle down and significantly impact the nursing practice and patient outcomes at the 'sharp end'. Decisions made by top level managers may cause 'latent conditions. . .the inevitable 'resident pathogens' within a system' that may eventually lead to an error by an individual working at the sharp end of health care (Reason 2000, p. 769). As nurse leaders continue to respond to the ANA's (2014) call to develop and implement policies to address fatigue, it is essential that a system-based approach, involving all of the layers of the organisation, is used to create a just work culture that provides safe and reliable care (Reason 2000).

A consequence of fatigue that both nurse managers and nurse executives are concerned about is sustainability in their positions and securing a pipeline for future nurse leaders. These nurse leaders are not convinced that they will be able to continue in their role for an extended period of time. Many also recognise that the current role is not appealing to direct care nurses. Prior work supports this finding; a Canadian study reported that only 19% of staff nurses expressed interest in management roles and indicated concerns about heavy workloads and work–life balance (Wong *et al.* 2013). Nurse executives, often come to their position later in their career and may be more likely to end their tenure with retirement. The unknown future is whether or not the long hours and high demands on these executives will result in early retirement (Denker *et al.* 2015). This study highlights the need to address fatigue in nurse leaders, in order to recruit nurses for these important roles in the future.

Limitations

The nurse leader positions selected were intended to be representative of typical nurse manager and executive positions; however, recruitment of participants from one Midwestern state may limit generalisability. Additionally, the sample size is fairly small for interpreting the OFER scores. However, the use of the OFER as a measure of fatigue allows for comparison with previously published studies of nurse fatigue. Future work should evaluate fatigue levels in a larger sample of nurse leaders to better quantify and compare levels of fatigue across the nursing workforce.

Conclusions

Findings from this study confirm that nurse leaders experience fatigue, and nurse managers in particular experience relatively high levels of chronic fatigue compared with other nursing roles. Fatigue in nurse leaders can impact their performance, work–life balance, turnover intention and may have a trickle-down effect to nurses providing direct care ultimately impacting patient and nurse outcomes. The conceptual model of Occupational Fatigue in Nursing was a useful guide for describing nurse leaders' experiences with fatigue. This supports using this model as a framework for describing the specific elements of fatigue across nursing work systems, including diverse roles and accountabilities. Moreover, the specific themes identified in this study enhance the model and its use as a guide to tailor the design of fatigue risk management systems to address fatigue across the nursing workforce.

Implications for nurse management

The relatively high chronic fatigue levels in nurse managers indicates a significant need for organisational-level support to evaluate and redesign leadership structures and workload. This should include the consideration of innovative shared coverage or leadership models, and implementation of organisational policies and practices that limit length of work days and weekly hours worked to align with national scheduling recommendations. Additionally, it may be prudent to promote and role model resiliency practices to promote self-care. Nurse leader fatigue may negatively alter perceptions about leadership positions and must be addressed to safeguard the future of the nursing workforce. Furthermore, the potential for a trickle-down effect of nurse leader fatigue may have negative consequences for nursing practice and quality outcomes both at the individual and organisational level. Ultimately, nurse leader fatigue impacts the entire health care system.

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