

Considering the relationship between sleep and empathy and compassion in mental health nurses: It's time

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**Considering the relationship between sleep and empathy and compassion in mental health
nurses: It's time**

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Abstract

Sleep plays a critical role in overall health, well-being, and daytime functioning. Provision of 24-hour care means that nurses undertake shift work and therefore have been found to commonly not get the recommended amount of sleep, resulting in sleep deprivation. Research to date has focused on how sleep deprivation impacts their cognitive performance (e.g., reaction time, memory consolidation); however, less considered is how nurses' sleep impacts on their ability to understand and provide emotional care to consumers. In this paper, we examine how sleep may influence nurses' ability to empathize and provide compassionate care, both of which are fundamental aspects of their work. We begin by considering the unique challenges nurses face as shift workers and the impact of sleep on physical and psychological functioning. We examine how empathy and compassion drive nurses' attempts to understand consumers' perspectives and experiences and motivate them to want to help those in their care. Work directly investigating the relationship between sleep and these processes indicates emotional recognition and experience are hampered by poor sleep, with greater compassion towards oneself or from others associated with better sleep. Much of this work has, however, been conducted outside of the nursing or health professional space. We discuss issues that need to be addressed in order to move understanding forward regarding how sleep impacts on mental health nurses' empathy and compassion, as well as how an understanding of the sleep–empathy/compassion link should be an important priority for nurse education and well-being.

Keywords: compassion, empathy, fatigue, mental health nurses, shift work, sleep, sleep deprivation, sleepiness.

Introduction

Sleep is vital to healthy physical functioning and psychological well-being. Unfortunately, nurses working shift rotation often do not get the recommended amount of sleep (Jafari Roodbandi et al. 2015; Shao et al. 2010), with potential negative impacts on both the individual nurse's health and safety (Sun et al. 2019), as well as their job performance (Bae & Fabry 2014; Dorrian et al. 2008; Sun et al. 2019). Factors associated with shift work, such as irregular and increased working hours, have been shown to predict more nursing errors (e.g., medication and procedural errors) or near errors (Rogers et al. 2004; Scott et al. 2006). Reduced sleep duration, specifically, has also been shown to significantly predict increased errors and near errors in the care provided to consumers (Dorrian et al. 2006).

A growing body of literature suggests that sleep plays an important role in one's ability to both process and express emotions (Palmer & Alfano 2017). In the case of nurses, a core component of their work involves the ability to empathize with consumers' experiences, communicate this understanding in an appropriate way in order to build rapport, demonstrate care and compassion and, consequently, provide help (Dewar & Nolan 2013; Fry et al. 2013; Gerace et al. 2018; Reynolds 2000/2018; Sinclair 2017; Straughair et al. 2019). In mental health nursing, specifically, empathy and compassion are vital to the formation and maintenance of nurse–consumer relationships (Brunero et al. 2010; Dziopa & Ahern 2009; Reynolds 2018). This leads to the question of whether there is a relationship between sleep and mental health nurses' ability to provide empathic and compassionate care to their consumers.

Background

Shift work and sleep in nurses

Shift work is common practice in nursing in order to provide 24-hour consumer care. However, between 57% and 83% of nurses worldwide working shift work report experiencing sleep problems (Jafari Roodbandi et al. 2015; Shao et al. 2010). This is because shift work is essentially an environmental challenge that requires individuals to live out of phase with the local

time cues (e.g., the light–dark cycle), ultimately impacting sleep regulation (Åkerstedt 2003; Rajaratnam & Arendt 2001). Sleep is regulated through two physiological processes known as the circadian system and the homeostatic sleep drive. The circadian system, also known as the ‘body clock’, helps to regulate daily rhythms to an approximate 24-hour cycle. The sleep/wake cycle is possibly the most widely recognized of the circadian rhythms, where sleep is promoted at night and alertness during the day (Borbély 1982). The homeostatic sleep drive, also known as ‘sleep pressure’, posits that there is a progressive increase in sleep pressure during periods of wakefulness, which then decreases throughout a sleep period. These two processes typically work together to ensure optimal alertness during wake and have an important role in sleep timing, duration, and intensity (Borbély 1982).

The impact of circadian and homeostatic disruption is especially robust when nurses work in rotating shifts, with the inclusion of night shifts (Chang et al. 2013; Sun et al. 2019). This disruption has been found to result in inadequate sleep quantity and sleep quality for nurses (Geiger-Brown et al. 2011; Shao et al. 2010). For example, the National Sleep Foundation (2013) report that the average sleep duration for nurses is ~5–6 hours a night, which is below current adult sleep recommendations of 7–9 hours a night for adults aged 18–64 years (Hirshkowitz et al. 2015). The lack of good quantity and quality sleep as a result of shift work is concerning for nurses since sleep serves several functions. These include restoration (Adam & Oswald 1984; Dattilo et al. 2011), enhanced tissue growth and repair (Adam & Oswald 1977), energy conservation (Berger & Phillips 1995; Campbell & Murphy 2007; Jung et al. 2011; Shapiro & Flanigan 1993), information processing (Rechtschaffen 1998), and the consolidation of memory and learning (Hennevin et al. 1995; Stickgold 2005).

In line with these concerns, research suggests that not obtaining adequate sleep leads to several deleterious effects, both on the health of individuals (e.g., metabolic function, hormone secretion, mood; Sun et al. 2019) and on their cognitive performance at work (e.g., slowed physical and mental reaction time, impaired memory, reduced motivation; Dall’Ora et al. 2016). The primary focus for researchers to date has been on the impact of inadequate sleep on cognitive function (Chang et al. 2013; Kaliyaperumal et al. 2017). For example, in one study investigating the quality and quantity of sleep in mental health nurses, Chang et al. (2013) found

that when compared to nurses who had been off-duty, nurses who had worked two consecutive night shifts performed worse on measures of information and attentional processing. However, in recent years there has been a growing body of literature that highlights the role of sleep in understanding emotions and emotional processing, including daytime mood, emotional reactivity, emotional memory formation, and, of importance to the present discussion, empathic behaviour (Gruber & Cassoff 2014; Tempesta et al. 2018). In general, research to date supports that sleep loss can alter the ways in which an individual both understands and expresses emotions and that there appears to be a bidirectional relationship between the two (Palmer & Alfano 2017). In the context of the nursing profession, the effects of inadequate sleep for emotional recognition and expression are particularly important to consider for both nurses' well-being and the care they provide to consumers.

Empathy and compassion

Empathy, perhaps, has a longer history of consideration in the psychotherapy and nursing literature, with compassion more recently investigated for its importance to the nurse–consumer relationship (Dev et al. 2019; McCaffrey & McConnell 2015). While the importance of empathy and compassion in nursing care is largely not contested, nursing scholars have highlighted the lack of clarity in the use of such terms (Gerace 2020; Schantz 2007; Sinclair et al. 2017). The term *empathy* has been used to refer to both cognitive processes and emotional outcomes. The cognitive process most often studied, referred to as perspective taking, involves imagining what another person is thinking and feeling and considering, from their vantage point, why they are acting in a particular way (Gerace et al. 2013; McKinnon 2018; Wiseman 2007). Perspective taking is accomplished through the use of several strategies (Gerace et al. 2015). Mental health nurses report asking consumers questions, listening, and, when undertaken mindfully, placing themselves psychologically in the consumer's position (e.g., imagining they were in the consumer's situation) or utilizing similar past experiences such as remembering times when, as consumers themselves, they felt disempowered during interactions with health professionals

(Gerace et al. 2018). Perspective taking is considered an effortful and deliberate process and, therefore, under cognitive control (Gerace et al. 2015; Stansfield et al. 2016).

After apprehending another person's perspective or what it is like to be them, the empathizer may experience emotional outcomes (Davis 1994/2018). These include parallel responses, where the empathizer experiences the same or very similar emotions to the other person (e.g., 'I'm *sad* because they are *sad*'). Indeed, some theorists contend that such parallel emotion or emotional contagion precedes (rather than follows) more conscious experiences of cognitive empathy or attempts at perspective taking (see Hoffman 2000; Shamay-Tsoory et al. 2009), including nursing theorists (Morse et al. 1992/2006).

The empathizer may also experience reactive responses, where the emotion is not necessarily the same as the other person's, but is a response to their plight (Davis 1994/2018). For example, the empathizer might feel *concerned* for the *sad* person. Some researchers include *compassion* under the umbrella of reactive empathic emotional responses, with compassion referred to as *empathic concern* (Batson 2011; Davis 2017; Gerace et al. 2018). However, others investigate compassion in its own right, considering empathy to be perspective taking and acknowledging that compassion often comes about through this cognitive awareness and recognition that another person is suffering (Kirby et al. 2017; Strauss et al. 2016). This has led to some confusion in the literature (Gerace 2020) and, like empathy, there has been debate in nursing about how best to define compassion. In a grounded theory study by Sinclair et al. (2017), consumers considered it as 'a virtuous response that seeks to address the suffering and needs of a person through relational understanding and action' (p. 444). This focus on action is important, as compassion (or empathic concern) is considered a predictor of wanting to help another person, with this compassionate or empathic emotion motivating the empathizer to attempt to alleviate the other's needs (Batson 2011).

While compassion is seen to motivate action through engagement with another's often negative experiences and suffering (Sinclair et al. 2017), an empathizer may also experience what is called personal distress, where they experience aversive negative feelings towards the other person's emotions and situation (Eisenberg & Eggum 2009). This can result in wanting to avoid

the other person or, as in the case of nursing where the nurse must still engage with a consumer, more surface-level interaction (Gleichgerrcht & Decety 2013; Michaelson 2012). Indeed, within nursing and other healthcare literature, the concept of personal distress shares commonality with compassion fatigue, described as a reduction in 'capacity or our interest in bearing the suffering of others' (Figley 2002, p. 1434; see also Hunt et al. 2017; Wilkinson et al. 2017). Whereas empathic concern or compassion is associated with motivation to help, personal distress decreases desire to engage and intervene in another's distress (Batson 2011).

Much of the helping literature has focused on the motivating nature of empathic concern or compassion. However, another outcome of perspective taking is that the empathizer will draw conclusions or make attributions regarding the causes of the other person's behaviour and situation (Davis 1994/2018). Within mental health nursing studies, the types of attributions made have been found to be associated with how motivated a nurse is to help the consumer (Bingham & O'Brien 2018; Forsyth 2007).

Research suggests that an individual's propensities for perspective taking, compassion, and even personal distress are related; for example, ability to understand others' perspectives is associated with greater compassion and reduced personal distress reactions (Davis 1994/2018). However, an increasing body of research also suggests that individuals may be better skilled at or, inversely, experience deficits in certain empathic or compassion components but not others (Besel & Yuille 2010; Day et al. 2010; Harari et al. 2010; Jordan et al. 2016; Shamay-Tsoory et al. 2009), such as a person being able to take the perspectives of others, but not feeling the care or concern that motivates helping behaviours. Given the utility of empathy and compassion to nursing practice, it is important to consider factors that may impact on nurses' provision of these interpersonal skills in consumer care. We now turn to examining the influence of sleep on empathy and compassion.

The relationship between sleep, empathy, and compassion

A growing body of literature highlights the critical role sleep plays in emotional processing (Beattie et al. 2015). The same brain structures and neurochemicals govern the regulation of both

emotion and sleep (Goldstein & Walker 2014), so it is not surprising that there is a relationship between the two. Findings from a systematic review emphasized the relevance of impaired recognition and expressivity of emotions in social interactions when an individual is sleep deprived (Beattie et al. 2015). However, there is still a general lack of consensus regarding the specific role that sleep has on emotional processing, largely due to inconsistent findings from research studies to date (Beattie et al. 2015; Gruber & Cassoff 2014; Palmer & Alfano 2017; Tempesta et al. 2018), making the relationship a prominent and emerging area of research.

Much of what we know regarding the relationship between the impact of sleep on empathy and compassion comes from a small but growing body of studies outside of nursing. From the studies that have been conducted, evidence suggests that impaired sleep (both quantity and quality) negatively impacts one's ability to be empathic with another individual (Tempesta et al. 2018). Among the first studies in the area, work by Killgore et al. (2008) demonstrated the deleterious effects of sleep deprivation on empathic abilities. In this study, participants who were sleep deprived for 58 hours in the laboratory showed a decrease in their self-reports of emotional intelligence, a concept that encompasses empathic aspects such as self-insight, perspective taking, and the enacting of relationship-enhancing behaviours. In a later study conducted by the same research group, sleep deprivation decreased the ability of participants to recognize emotions such as happiness and sadness (Killgore et al. 2017).

A series of studies by Guadagni and colleagues examined the impact both sleep quantity and sleep quality have on emotional components of empathy. In these studies, sleep deprivation or decreased sleep duration predicted both decreased parallel and reactive empathic responses to stimuli involving others (Guadagni et al. 2014, 2017). Guadagni et al. (2017) study, participant subjective ratings of lower sleep quality predicted decreased parallel and reactive empathic response to negative stimuli. Using functional magnetic resonance imaging (fMRI) to further understand how sleep quality relates to emotional empathic responses, Guadagni, Burles et al. (2018) mapped differences in activity in the left insula cortex between better and less rested participants exposed to negative stimuli. These findings highlight the relationship between lower self-reported sleep quality and an individual's ability to empathize with another's emotions (Guadagni, Burles, et al. 2018; Guadagni et al. 2017). Recent work by this group on the sleep–

empathy link has replicated findings with paramedics (Guadagni, Cook, et al. 2018), who may share similar contextual situations (both social and emotional) as nurses.

Latest research has been utilizing fMRI to further explore the neural mechanisms involved in the relationship between sleep and empathy. Tamm et al. (2017, 2019) have conducted fMRI studies examining the effect of sleep restriction specifically on empathy for pain. Findings highlighted that there could be differences in age groups as to how age interacts with sleep, and the impact that has on emotion regulation, including empathy. Older adults showed an increase in perceived unpleasantness to others experiencing pain following sleep restriction; however, this was not seen in younger adults (Tamm et al. 2017). Consideration of this should be made when generalizing findings pertaining to sleep and empathy across age groups. Interestingly, although these researchers did not study the sleep–empathy link with health professionals, they concluded that such work should be done with this group, given the importance of empathy to health care, as well as the need to consider how prosocial behaviour is affected by limited sleep.

There is a dearth of studies investigating the role of sleep specifically on nurses' (or, indeed, health professionals') ability to empathize and provide compassionate care. While the studies discussed above support the relationship between insufficient sleep and compromises in empathy and compassion, the demands of nursing work (Hunt et al. 2017; Wilkinson et al. 2017) and the nature of the empathy and compassion being a requirement of the role (Gerace et al. 2018) suggest that the impact of sleep deficiencies may play out differently in community versus nursing groups.

Studies that have investigated nurses' sleep and their empathic or compassionate responses have focused on self-compassion rather than compassion towards consumers. In one such study by Kemper et al. (2015), lower trait self-compassion and mindfulness in nurses and other sampled health professionals predicted worse sleep. However, such associations become statistically non-significant when factors such as stress were considered, which itself is associated with lower self-compassion and mindfulness (Kemper et al. 2015). Other nursing studies focusing on specific types of empathic or compassionate response have found that lower self-reported cross-cultural empathy was associated with sleep problems (Wesołowska et al. 2018), while

nurses' experiences of compassion received from colleagues were associated with reports of better sleep quality (Zhang et al. 2018).

How can research in the area move forward?

It is our contention that there are several issues that need to be considered in order to examine robustly the largely under-investigated relationship between sleep and empathy and compassion in nurses. Primarily, as our discussion of definitions of empathy and compassion suggests, these terms refer to several distinct cognitive processes (e.g., perspective taking) and outcomes (e.g., empathic concern). We would argue that this lack of clarity in terms identified by nursing scholars (Gerace 2020; Schantz 2007; Sinclair et al. 2017) comes at a cost to research both on these interaction processes and outcomes, but also as researchers begin to consider in more depth the impact of sleep on empathic and compassionate care. Of the studies that have been conducted, some have focused on cognitive processes such as emotional recognition (e.g., Killgore et al. 2017), while others focused on emotion reactions (e.g., Guadagni et al. 2017). Regardless of focus, there needs to be clarity regarding what researchers mean when using terms such as empathy and compassion. Without clear and consistent definitions, we will be unable to develop understanding of the ways in which sleep impacts on these nursing processes and outcomes.

Given that empathy and compassion encompass both cognitive and emotional components, it will be important to examine the ways in which these cognitive and emotional processes and outcomes may uniquely relate to sleep. Neuroimaging research provides evidence that empathic cognitive processes and emotional outcomes may involve independent systems (Shamay-Tsoory et al. 2009). This is in line with previous discussion regarding individuals experiencing deficits (or strengths) in some types of empathy or compassion, but not others. For example, some nurses may be better able to take the perspective of their consumer, but this does not mean that they experience more compassion or concern, while others may experience higher personal distress that prevents them from fully engaging with their consumer's experiences.

Related to the need for precise definitions is the need for robust operationalization (measures) of sleep and both empathy and compassion. Nursing-specific measures of empathy are lacking, meaning that many studies use scales not tailored to the work of nurses or health professionals (see Hunt et al. 2017). Even when such measures have been developed within the nursing context, most are self-report and are trait-level measures and thus do not tap into nurses' considerations of particular consumers or, indeed, the consumer's perspective on whether they have felt empathy and compassion from their nurses (Yu & Kirk 2009). Going forward, neuroimaging along with self-reports is likely to be useful. For example, a study by Tei et al. (2014) found that nurses who reported higher burnout exhibited reduced fMRI activity when exposed to the pain of others, reflective of lesser empathic emotion, but that these nurses, surprisingly, self-reported higher trait perspective taking. Measurement of sleep is also important when considering the relationship between sleep, empathy, and compassion. In literature to date with non-nurse populations, both subjective measures (e.g., sleep diaries, sleep questionnaires; Guadagni et al. 2017) and objective measures (e.g., at-home polysomnography; Tamm et al. 2017, 2019 and actigraphy; e.g., Guadagni et al. 2017) have been utilized to examine this relationship. However, no studies examining the sleep, empathy, and compassion link in nurses to date have used the gold standard objective sleep measurement of polysomnography. This is a key research priority moving forward, to better understand the link between objective sleep outcome variables compared to subjective evaluations and how they relate to empathy and compassion. It is therefore recommended that a combination of both objective and subjective sleep measures be utilized in future studies, as there is some evidence to suggest differences between the specific outcome measures (i.e., subjective sleep quality vs. objective sleep duration) on the impact inadequate sleep has on empathy (Guadagni et al. 2017).

As we have discussed, there are few studies investigating the role of sleep in nurse empathy and compassion. Studies with non-nursing populations are useful for unpacking these relationships, but do not take account of the social and emotional contexts of nurse–consumer interactions (Gerace et al. 2018). Such contexts are likely to differ according to the setting in which the nurse practices. For example, as Gerace et al. (2018) argue, the mental health nurse–consumer relationship often involves an inherent degree of conflict or discord that is not present

in other clinical settings, since many consumers are detained for treatment and nurses often apply restrictive interventions.

Underlying all of this is the need to consider causal relationships, such as whether lack of sleep impacts empathy and compassion, or whether empathy and compassion, particularly personal distress reactions, impair sleep in professionals once they have finished their shift. It is likely that such relationships are reciprocal given the evidence for a bidirectional relationship between sleep and emotion more broadly (Palmer & Alfano 2017).

Conclusion

The purpose of this paper was to identify the current gap in knowledge regarding the relationship between sleep and empathic and compassionate care in nurses. While nurses in all settings depend on the use of empathy and compassion to facilitate positive therapeutic outcomes, empathy is a fundamental tool for those working in mental health settings, given the centrality of the nurse–consumer relationship (Gerace et al. 2018). The literature tells us that emotional processing can be compromised by insufficient sleep. However, there has been very little work conducted with nurses or, indeed, data collected specifically on mental health nurses. We believe there is a pressing need for research in this area. Such studies must measure empathy and compassion clearly and give thought to chosen sleep outcome measures. In these investigations of sleep, empathy, and compassion, researchers will need to consider both the social and emotional contexts of nurse interaction with consumers.

Relevance to clinical practice

Nurses are expected to provide empathic and compassionate care. Though there is limited research investigating nurses, and specifically nurses working in mental health settings, initial evidence posits that inadequate sleep results in a number of deleterious effects, including reduced ability to empathize with and feel compassion for others (Tempesta et al. 2018), as well as impaired physical health and cognitive performance while working. If future research evidence

identifies a significant relationship between social and emotional contexts encountered by mental health nurses, and the potential negative effects of inadequate sleep on their ability to respond empathically and compassionately to consumers in their care, this will build on current evidence regarding the importance of sleep on job performance. This means that mental health nurses and the organizations for which they work will need to consider the importance of sleep not only in relation to nurse or consumer safety (Scott et al. 2014), but also in relation to the ways in which nurses can be educated about how to enact good self-care and stress management (Edwards & Burnard 2003; Kemper et al. 2011). There is support for the implementation of a range of fatigue management strategies in healthcare settings including the use of napping of appropriate duration, light exposure, or attenuation, as well as consideration of types of shift in rostering (e.g., the detrimental effects of shifts that involve a quicker return to work; Querstret et al. 2020). At a wider policy level, this also speaks to broader issues regarding the need for nursing organizations, reflected for example in a position statement by the American Academy of Nursing (Caruso et al. 2017), to advocate for the use of best practice evidence regarding shift design and fatigue management processes.

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