

University of Wollongong

## Research Online

---

Faculty of Science, Medicine and Health -  
Papers: Part B

Faculty of Science, Medicine and Health

---

1-1-2020

### **Teamwork and social cohesion are key: Nurses' perceptions and experiences of working in a new decentralised intensive care unit**

Clare Loveday

Heidi Lord

*University of Wollongong, hll654@uowmail.edu.au*

Laura Ellwood

Kim Bonnici

Virginia Decker

*See next page for additional authors*

Follow this and additional works at: <https://ro.uow.edu.au/smhpapers1>

---

#### **Publication Details Citation**

Loveday, C., Lord, H., Ellwood, L., Bonnici, K., Decker, V., & Fernandez, R. S. (2020). Teamwork and social cohesion are key: Nurses' perceptions and experiences of working in a new decentralised intensive care unit. Faculty of Science, Medicine and Health - Papers: Part B. Retrieved from <https://ro.uow.edu.au/smhpapers1/1662>

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: [research-pubs@uow.edu.au](mailto:research-pubs@uow.edu.au)

---

## Teamwork and social cohesion are key: Nurses' perceptions and experiences of working in a new decentralised intensive care unit

### Abstract

© 2020 Background: Decentralised nursing stations (DCNs) have gained popularity in new hospital designs owing to their positive impact on patient safety. However, the impact on the nurses' working environment and on continuity and quality of patient care is limited. Objectives: The objective of this study was to describe nurses' perceptions and experiences of the working environment and of patient care in a decentralised intensive care unit (ICU). Methods: Twelve months after the establishment of the new decentralised ICU in a tertiary teaching hospital in Sydney, Australia, a prospective cross-sectional survey of registered nurses working in the unit was undertaken. Nurses' perceptions and experiences of the working environment and patient care were evaluated using a 56-item questionnaire comprising nine domains and optional open-ended comments. Quantitative data were analysed using SPSS, version 25. Qualitative data were used to enhance the quantitative data. Results: A total of 128 nurses responded to the questionnaire. The mean scores for overall job satisfaction, nursing teamwork, social cohesion, continuity of patient care, and quality of patient care were 3.02 ( $\pm 0.91$ ), 2.78 ( $\pm 1.05$ ), 2.68 (1.02), 2.60 ( $\pm 1.01$ ), and 3.48 ( $\pm 0.88$ ), respectively, for a maximum obtainable score of 5. Overall mean scores for teamwork, social cohesion, and continuity of patient care were explained by nurses to be a direct result of the physical layout of the new DCN ICU. Nurses believed this influenced their ability to interact with other staff and impacted teamwork and social cohesion and in turn reflected in their current job satisfaction. Conclusions: Implementation of a new model of nursing care, whereby staff members are rostered together in a pod for a period of time, along with team-building exercises, is recommended to improve the social cohesion and teamwork within the DCN ICU. Further research on nurses' experiences within a DCN ICU is required to produce robust evidence and generalisability.

### Publication Details

Loveday, C., Lord, H., Ellwood, L., Bonnici, K., Decker, V. & Fernandez, R. (2020). Teamwork and social cohesion are key: Nurses' perceptions and experiences of working in a new decentralised intensive care unit. *Australian Critical Care*,

### Authors

Clare Loveday, Heidi Lord, Laura Ellwood, Kim Bonnici, Virginia Decker, and Ritin S. Fernandez

## **Teamwork and social cohesion are key: nurses' perceptions and experiences of working in a new Decentralised Intensive Care Unit**

### **Authors:**

**Clare Loveday<sup>1</sup>, Heidi Lord<sup>2</sup>, Laura Ellwood<sup>2</sup>, Kim Bonnici<sup>1</sup>, Virginia Decker<sup>1</sup>, Professor Ritin Fernandez<sup>2,3</sup>**

1. Intensive Care Services, St George Hospital, South Eastern Sydney Local Health District
2. Centre for Research in Nursing and Health, St George Hospital, South Eastern Sydney Local Health District
3. School of Nursing, University of Wollongong

### **Abstract**

#### ***Background***

Decentralised nursing stations (DCNs) have gained popularity in new hospital designs due to their positive impact on patient safety. However, the impact on the nurses' working environment and on continuity and quality of patient care is limited.

#### ***Objectives***

The objective of this study was to describe nurses' perceptions and experiences of the working environment and of patient care in a decentralised intensive care unit (ICU).

#### ***Methods***

Twelve months following the establishment of the new decentralised ICU in a tertiary teaching hospital in Sydney, Australia a prospective cross-sectional survey of registered nurses working in the unit was undertaken. Perceptions and experiences of the working environment and patient care were evaluated using a 56 item questionnaire comprising of nine domains and optional open ended comments. Quantitative data was analysed using SPSS version 25. Qualitative data was used to enhance the quantitative data.

#### ***Results***

A total of 128 nurses responded to the questionnaire. The mean scores for overall job satisfaction, nursing teamwork, social cohesion, continuity of patient care and quality of patient care were 3.02 ( $\pm 0.91$ ), 2.78( $\pm 1.05$ ), 2.68(1.02), 2.60( $\pm 1.01$ ) and 3.48( $\pm 0.88$ ) respectively, for a maximum obtainable score of 5. Overall mean scores for teamwork, social cohesion and continuity of patient care, were

explained by nurses to be a direct result of the physical layout of the new DCN ICU. Nurses believed this influenced their ability to interact with other staff and impacted on team work and social cohesion and in turn was reflective in their current job satisfaction.

### ***Conclusions***

Implementation of a new model of nursing care, whereby staff are rostered together in a pod for a period of time, along with team building exercises, are recommended to improve the social cohesion and teamwork within the DCN ICU. Further research on nurses experiences within a DCN ICU are required to produce robust evidence and generalizability.

### **Keywords**

Decentralised intensive care unit; ICU design; nurse job satisfaction; patient centred care

## Background

Traditionally, ICUs were designed with a central nursing station and multiple occupancy bed spaces that were indicated to provide better clinical outcomes for patients due to nurses' having greater visibility of the patient.<sup>1</sup> With increasing patient acuity, antimicrobial resistance,<sup>2</sup> greater demands for patient privacy<sup>3</sup> and comprehensive and holistic care<sup>4</sup> as well as the integration of advanced technology, single occupancy ICU rooms and decentralised nursing stations (DCNs) are now recommended.<sup>5-7</sup> The decentralised design consists of multiple spaces for documentation, storage of medication and nursing supplies throughout the ICU.<sup>8</sup> Literature supports the move to single rooms with evidence of a reduction in both the risk of the colonisation of multi-resistant microorganisms and use of antimicrobials.<sup>2,5</sup> This design also promotes patient centred care and has demonstrated enhanced patient safety such as preventing falls,<sup>9</sup> and improved patient satisfaction and clinical outcomes.<sup>6,7,9</sup> While this design has positive outcomes for patients the literature suggests that the DCN ICU design is a less supportive environment and may have a negative impact on nurses' job satisfaction.<sup>10-12</sup>

However, given the evidence for the benefit of DCNs for patients and the recommendation by the Australasian Health Facility Guidelines for use in ICUs,<sup>13</sup> the design has been recently implemented in a tertiary hospital in Sydney, Australia. The layout of the new ICU comprised of 52 single-occupancy adult ICU beds clustered into four clinical pods (DCNs) across two floor levels. The geographical layout of the new DCN ICU design necessitated changes to the models for staffing to ensure delivery of safe and effective patient care.<sup>14,15</sup> In addition, strategies to promote team work, communication and enhance job satisfaction were implemented.<sup>16,17</sup> These strategies included creation of new roles including Pod Coordinators (experienced RNs rostered supernumerary to coordinate care in the individual pods) and Access Nurses (experienced RNs rostered supernumerary to provide clinical support to bedside RNs). The existing roles of the nurse unit managers (NUM 1 and NUM 2) were modified. The NUM 1's were responsible for leading, directing and coordinating patient flow and staff allocation, and NUM 2's were responsible for managing staff performance, rostering, work health and safety, quality, and day to day operations of the ICU. In this new DCN design, the goal was to achieve patient centred care<sup>18,19</sup> focusing on the "right nurse for the right patient every time" and to meet that goal, nurses were allocated to a specific patient each shift according to their skill and the patient's acuity. Staff were not rostered to work in a specific pod thus maintaining flexibility for patient allocation.

Given the strategies implemented to reduce the potential negative implications of the DCN ICU design on nursing staff based the limited literature exploring this, the change in the design of the ICU offered a unique opportunity for management to evaluate the impact on nursing staff working in the new unit.

## **Aim**

The aim of this study was to describe nurses' perceptions and experiences of the working environment and of patient care 12 months following the introduction of the DCN design in ICU.

## **Methods**

### ***Study design, setting and participants***

This prospective cross-sectional study was undertaken at a large tertiary teaching hospital in Sydney, Australia. All registered nurses (RNs), NUMs level 1 and level 2 (total of 211) who worked in the ICU since the introduction of the new model of care design were invited to participate in the study. Staff on leave, and nurse managers were excluded from the study as the aim of the survey was to capture the views of all staff currently working in a direct clinical nursing capacity. Data were collected from January to March 2019 12 months following the implementation of the DCN ICU. All RNs eligible for inclusion in the study were asked to participate in the survey via their work email. Reminder emails were distributed twice to participants. Participants were informed that their participation was voluntary, that no identifiable information would be obtained and that all responses were confidential. Consent was implied by the completion of the questionnaire. Participant privacy and confidentiality were maintained by using numerical unique identifiers and password-protected files. Ethics approval was obtained from the South Eastern Sydney Local Health District Human Research and Ethics Committee (approval number REGIS: 2019/ETH10686)

### ***Data collection***

Data were collected using a self-administered, 56 item questionnaire available via an online link. Data was clustered into five domains for collection: (1) demographic information (years working in the ICU and years of experience as a registered nurse), (2) job satisfaction (3) team work (4) social cohesion (5) continuity and quality of patient care. Participants were also asked to provide comments at the end of each domain.

### ***Development of the questionnaire***

The 56-item investigator developed questionnaire was based on an extensive literature review, the ICU Nurse Survey<sup>20</sup> and advice from ICU expert clinicians'. The questionnaire was reviewed by 10 intensive care clinical experts for face validity. Only two items "Overall, how would you rate the social cohesion between nurses" and "Rate the quality of patient care in ICS" were adapted from The ICU Nurse Survey<sup>20</sup>.

The nurses' perceptions questions were rated on a 5-point (Never=0, rarely=1, sometimes=2, usually=3, always=4 or; strongly disagree=0, disagree=1, neither agree nor disagree=2, agree=3, strongly agree=4) Likert scale and open ended responses were provided at the end of each domain .

### ***Data analysis***

Quantitative data were analysed using SPSS® version 25. Categorical data was presented as percentages and continuous data was presented as means and standard deviation (SD). One-way analysis of variance (ANOVA) was used to assess differences between the number of years working in the ICU department, years of experience as a RN and job satisfaction, social cohesion, team work, continuity of care and quality of patient care, followed by Tukey's *post hoc* significant difference (HSD) test. Statistical significance was set at p-value less than 0.05.

The qualitative data were reviewed by two authors independently and then compared and discussed to reach a consensus of the verbatim quotes to be used. The qualitative responses were used to enhance the quantitative data.

## **Results**

### ***Demographics***

A total of 128 participants completed the study for a response rate of 60.7% (128/211). All quantitative data was complete, however only 46% of respondents completed the open ended questions. Thirty four (28.4%) participants had five years or less overall nursing experience and 50 (56%) had worked at the ICU at the study hospital for 5 years or less (Table 1).

### ***Job satisfaction***

The mean score for satisfaction with their present job was 3.02 ( $\pm 0.91$ ), however, the mean score for the question relating to 'Independent of your present job, how satisfied are you being a nurse?' was significantly higher 3.62 ( $\pm 0.82$ ) ( $p < 0.00001$ ) (Table 2). There were no statistically significant differences

in mean job satisfaction scores based on the number of years working in the ICU [F (4, 118) =0.829, P=0.509] or the number of years working as an RN [F (3, 114) =1.32, P=0.271]. Qualitative findings supported the quantitative results, with one participant saying “I really enjoy working [sic] in ICU @ [hospital]. I feel very well supported in my role both by management and education”

### ***Teamwork***

The mean score for nursing teamwork was 2.78 ( $\pm 1.05$ ) and participants felt that their opinions were considered by other nursing team members (Mean 2.84 $\pm$ 0.75) (Table 2). There were no statistically significant differences in mean scores for nursing team work based on the number of years working in the ICU [F (4, 113)=0.230, P=0.921] or as a RN [F (3, 109)= 2.18, P=0.094]. The qualitative responses for teamwork found that the participants expressed concerns with the lack of shared responsibilities among some team members and thought that the new DCN ICU design, changes in staffing, lack of consistency within the new roles and incongruent skill mix contributed to poorer teamwork.

### ***Social cohesion***

The mean score for ‘social cohesion’ was 2.68(1.02). Whilst the nurses’ reported that they felt they knew the majority of their nursing colleagues (mean score 3.24 $\pm$ 1.10) the scores for ‘feeling included in the nursing group’ were lower (2.60 $\pm$ 0.94) (Table 2). There were no statistically significant differences in mean scores for social cohesion based on the number of years working in the ICU [F (4, 117) =0.525, P=0.718] or as a RN [F (3, 113) =1.41, P=0.244]. The qualitative analysis found participants believed that developing a positive team culture is imperative to the functioning of the unit and social cohesion. Some senior staff felt that the physical layout of the ICU was a barrier when trying to preceptor junior staff members and also contributed to the feeling of isolation within the unit.

### ***Continuity of patient care***

The mean score for the overall continuity of patient care was 2.60( $\pm 1.01$ ). Scores for the questions relating to ‘ongoing plan for the patient is clear’ were (3.37 $\pm$ 0.93), and satisfaction with the method used to allocate patients were (3.31 $\pm$ 0.85) (Table 2). Mean scores for continuity of patient care significantly differed among RNs with less than 10 years’ experience (subgroups: 1 year, 1-3 years, 3-5 years , 5-10 years) and more than 10 years’ experience in the study ICU [F (4, 118)= 2.66, P=0.036]. *Post hoc* analysis revealed that the mean scores for those with less than one years’ experience in the ICU were significantly higher compared with those with more than 10 years’ experience (3.04  $\pm$



1.06 vs.  $2.19 \pm 0.98$ ,  $P=0.22$ ) but did not significantly differ from those with 1-3 years ( $2.77 \pm .951$ ), 3-5 years ( $2.5333 \pm .772$ ) and 5-10 years ( $2.48 \pm 1.08$ ) experience ( $p>0.05$ ).

Mean scores for continuity of patient care significantly differed among RNs with less than 10 years' experience (subgroups: 1 year, 1-3 years, 3-5 years , 5-10 years) and more than 10 years' overall experience as a RN [F (3, 114)= 2.79,  $P=0.043$ ]. *Post hoc* analysis however did not reveal any differences in the mean scores between the various groups. Qualitative data indicated that whilst the nurses felt that overall continuity of care was good including excellent handover, at times patient acuity and staff skill mix meant that continuity was disrupted.

### **Quality of patient care**

The mean score relating to overall quality of patient care was ( $3.48 \pm 0.88$ ), completion of all basic nursing care was ( $3.25 \pm 0.70$ ) and for patient supervision  $2.87(0.73)$  (Table 2). Mean scores for overall quality of patient care significantly differed among RNs with less than 10 years' experience (subgroups: 1 year, 1-3 years, 3-5 years , 5-10 years) and more than 10 years' experience in the ICU [F (4, 115)= 2.68,  $P=0.006$ ]. *Post hoc* analysis revealed that the mean scores for RNs with less than one years' experience were significantly higher compared with those with 5-10 years and more than 10 years' experience ( $4.00 \pm 0.722$  vs.  $3.26 \pm 0.85$   $P=0.018$  vs  $3.16 \pm 0.94$   $p=.006$ ) but did not significantly differ from those with 1-3 years ( $3.58 \pm .75$ ) and 3-5 years ( $3.39 \pm .916$ ) experience ( $p>0.05$ ).

Similarly, mean scores for overall quality of patient care significantly differed among those with less than 10 years' experience (subgroups: 1 year, 1-3 years, 3-5 years , 5-10 years) and more than 10 years' experience as an RN [F (3, 111)= 3.86,  $P=0.011$ ]. *Post hoc* analysis revealed that the mean scores for RNs with 1-3 years' experience were significantly higher compared with those with 5-10 years and more than 10 years' experience ( $4.07 \pm 0.73$  vs.  $3.23 \pm 0.92$   $P=0.013$  vs  $3.34 \pm 0.89$   $p=.027$ ) but did not significantly differ from those with 1-3 years ( $3.58 \pm .75$ ) and 3-5 years ( $3.39 \pm .916$ ) experience ( $p>0.05$ ). Qualitative data supported the quantitative findings in that nurses reported a challenge supervising patients that were geographically separated within the DCN ICU.

## **Discussion**

### **Key findings and relationship to previous studies**

The implementation of the DCN design in ICUs is increasing as evidence supports the success of this design in improving patient centred care.<sup>7</sup> However, the impact of DCN ICUs on the nurses' work

environment is less well researched and understood. Therefore, the aim of this cross-sectional study was to describe the nurses' perceptions and experiences of working in a newly implemented DCN ICU environment.

Our study found that most nurses were satisfied with their current position, however they indicated that insufficient staff and skill mix affected their ability to take breaks and impacted on rostering allocation. This in turn reduced their job satisfaction. These findings are consistent with the literature, where nurses working in a decentralised unit were less satisfied with their job compared to those working in a centralised unit.<sup>11, 21</sup> Interestingly though, evidence shows that rostering difficulties are not unique to the DCN ICU design and are considered a challenge within all nursing specialties.<sup>22, 23</sup> The demand control theory may help to explain that people employed in high demand roles with low control, such as ICU nurses, experience diminishing emotional reserves meaning they are more susceptible to burnout and consequently poorer job satisfaction.<sup>12</sup> Those nurses who are less satisfied with their role often withdraw and become disengaged with their position.<sup>24</sup> Therefore, the demand control theory explains the findings in this study whereby nurses were significantly more satisfied with being a nurse than being a nurse in their current environment.

The ability to form strong social cohesion with colleagues is important to ICU nurses,<sup>25, 26</sup> however, in our study, nurses reported low social cohesion scores. These results are similar to another study examining nurses' job satisfaction and work environment between those who worked in a decentralised unit compared to a centralised unit.<sup>21</sup> Nurses in a study by Parker et al.<sup>21</sup> noted the difficulty in social and professional communication with their colleagues due to the physical layout of the decentralised unit. Furthermore, isolation was a common theme among nurses working in a decentralised unit.<sup>21</sup>

Effective teamwork is essential not only for patient safety and continuity of care, but also contributes to nurses' sense of belonging in the ICU.<sup>27</sup> Nurses' in our study indicated that the new physical layout was a major contributor to less effective communication and inconsistent teamwork within the DCN ICU. This result is concerning because evidence has shown an increased risk of adverse events and an increase hospital length of stay as a direct result of poor communication.<sup>28, 29</sup> Nurses felt that the inability to observe when their peers required assistance as well as the difficulty in learning by observation were all factors contributing to ineffectiveness of the team work in the DCN ICU. These findings are consistent with the literature, where nurses working in a centralised unit felt that teamwork was better compared to when they worked in the decentralised design as they had the opportunity to more closely interact

with other staff members, as well as have greater visibility of when their colleagues required assistance.<sup>21, 27</sup>

Poorer continuity of care in a decentralised unit has been reported by patients and caregivers, as they had various nurses looking after them during their hospital stay.<sup>28</sup> Similarly, reports from nurses in our study concur with this finding, where continuity of patient care was impeded due to the DCN design. Nurses felt that roster allocations and poor skill mix meant that they were allocated to a different patient most shifts, therefore impacting on the continuity of patient care. Interestingly, our results demonstrated that those nurses with fewer years nursing experience felt that continuity of care was high compared to nurses with 10 or more years of experience. This may be related to higher emotional exhaustion (or burnout) among the senior nurses, due to longer term work overload, insufficient reward systems and conflicting values over time.<sup>24</sup>

In our study, the overall quality of patient care within the new DCN ICU was rated as good. Nurses with five or more years of ICU experience rated the quality of patient care higher than those nurses who had less than 1 years' experience. This result was not surprising, as the ICU clinical setting requires nurses to have long term consolidation of specialised skills.<sup>30</sup> Therefore, less experienced nurses may have perceived the quality of care they give to a patient as inadequate compared to more senior staff. Another significant highlight from our study is that senior nursing staff conveyed concerns that the physical layout was affecting their ability to preceptor junior staff members which may have a flow on effect on the quality of patient care. Fletcher et al.<sup>31</sup> reported that even though nurses may express a love of their nursing career and are patient focused, if they don't have the consolidation of skills and mentoring required to perform their role, they demonstrate feelings of guilt and inadequacy.

### ***Limitations***

Our study has several limitations. Firstly, there are inherent biases within the cross-sectional study design. Bias of the measures of outcome is an issue with this study as not all potential participants responded to the questionnaire and in particular, in those who did respond, only 46% responded to the open-ended questions. However, it is important to note that no data was omitted from the analysis.

A pre-study conducted prior to the transition to the DCN design would have been beneficial to be used as a retrospective baseline measurement of the five domains. In future, a longitudinal design study may be more effective in predicting the cause effect relationship of how the DCN design did/or did not affect

the perceptions and experiences of nurses. This study was conducted in a single-centre, and while the findings may be relevant to other centres, the results cannot be generalised to all new DCN ICU settings. Furthermore, the use of a validated questionnaire would have ensured the validity and reliability of the included items.

### **Conclusions**

The results of this study have illustrated that nurses are overall satisfied with their job and the quality of patient care. However, the results have also indicated that there are areas that can be improved upon to ensure a cohesive and collaborative ICU. The factors affecting job satisfaction such as rostering and ability to get breaks on time are found to not be a direct result of the DCN ICU, but are highlighted as problematic across nursing generally. Despite this, team work and social cohesion are the key areas identified from this study as requiring improvement. The results of this study emphasis the need for implementation of effective team building strategies and modification of the model of care to address team work and social cohesion.

### **Acknowledgements:**

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## References:

1. Sessler CN. Evolution of ICU Design: Smarter Is Better. *Chest*. 2014;145(2):205-6.
2. Levin PD, Golovanevski M, Moses AE, Sprung CL, Benenson S. Improved ICU design reduces acquisition of antibiotic-resistant bacteria: a quasi-experimental observational study. *Crit Care*. 2011;15(5):R211.
3. McConnell B, Moroney T. Involving relatives in ICU patient care: critical care nursing challenges. *J Clin Nurs*. 2015;24(7-8):991-8.
4. Christensen M, Hewitt-Taylor J. Defining the expert ICU nurse. *Intensive Crit Care Nurs*. 2006;22(5):301-7.
5. Sarode VV, Hawker FH. Design and organisation of intensive care units [Internet]. In: Bersten A, Soni N editors. *Oh's Intensive Care Manual E-Book*. 7<sup>th</sup> ed. Oxford (UK): Elsevier Health Sciences; 2014. p. 3-9
6. Ferri M, Zygun DA, Harrison A, Stelfox HT. Evidence-based design in an intensive care unit: End-user perceptions. *BMC Anesthesiol*. 2015;15(1):57.
7. Magdzinski A, Marte A, Boitor M, Raboy-Thaw J, Paré B, Gélinas C. Transition to a newly constructed single patient room adult intensive care unit-Clinicians' preparation and work experience. *J Crit Care*. 2018;48:426-32.
8. Pati D, Harvey Jr TE, Redden P, Summers B, Pati S. An empirical examination of the impacts of decentralized nursing unit design. *HERD*. 2015;8(2):56-70.
9. Fay L, Cai H, Real K. A systematic literature review of empirical studies on decentralized nursing stations. *HERD*. 2019;12(1):44-68.
10. Gharaveis A, Hamilton DK, Pati D. The impact of environmental design on teamwork and communication in healthcare facilities: a systematic literature review. *HERD*. 2018;11(1):119-37.
11. Zborowsky T, Bunker-Hellmich L, Morelli A, O'Neill M. Centralized vs. decentralized nursing stations: Effects on nurses' functional use of space and work environment. *HERD*. 2010;3(4):19-42.
12. Bakker AB, Le Blanc PM, Schaufeli WB. Burnout contagion among intensive care nurses. *J Adv Nurs*. 2005;51(3):276-87.
13. Australasian Health Infrastructure Alliance. *Australasian Health Facility Guidelines* [Internet]. Part B - Health Facility Briefing and Planning, HPU 360 Intensive Care Unit. Sydney: AHIA; 2019 [cited

2019 Nov 10]. 29 pages. Report no.: 7.0. Available from: [https://aushfg-prod-com-au.s3.amazonaws.com/HPU\\_B.0360\\_7.pdf](https://aushfg-prod-com-au.s3.amazonaws.com/HPU_B.0360_7.pdf)

14. McGahan M, Kucharski G, Coyer F, Paper WABNR. Nurse staffing levels and the incidence of mortality and morbidity in the adult intensive care unit: a literature review. *Aust Crit Care*.

2012;25(2):64-77.

15. Penoyer DA. Nurse staffing and patient outcomes in critical care: a concise review. *Crit Care Med*.

2010;38(7):1521-8.

16. Boyle DK, Kochinda C. Enhancing collaborative communication of nurse and physician leadership in two intensive care units. *J Nurs Adm*. 2004;34(2):60-70.

17. Kalisch BJ, Lee H, Rochman M. Nursing staff teamwork and job satisfaction. *J Nurs Manag*.

2010;18(8):938-47.

18. Kelleher S. Providing patient-centred care in an intensive care unit. *Nurs Stand*. 2006;21(13).

19. Jakimowicz S, Perry L. A concept analysis of patient-centred nursing in the intensive care unit. *J Adv Nurs*. 2015;71(7):1499-517.

20. Abbenbroek BJ. Intensive care unit organisation and its impact on patient and nurse outcomes: a cross-sectional study of two models [dissertation on the Internet]. Sydney, Australia: University of Technology Sydney; 2018. [cited 2019 Nov 10]. Available from

<https://opus.lib.uts.edu.au/handle/10453/125518>

21. Parker F, Eisen S, Bell J. Comparing centralized vs. decentralized nursing unit design as a determinant of stress and job satisfaction. *J Nurs Educ Pract*. 2012;2(4):66-76.

22. Burke EK, De Causmaecker P, Berghe GV, Van Landeghem H. The state of the art of nurse rostering. *Journal of Scheduling*. 2004;7(6):441-99.

23. Burke E, Cowling P, De Causmaecker P, Berghe GV. A memetic approach to the nurse rostering problem. *Applied Intelligence*. 2001;15(3):199-214.

24. Kalliath T, Morris R. Job satisfaction among nurses: a predictor of burnout levels. *JONA: The J Nurs Adm*. 2002;32(12):648-54.

25. Mealer ML, Shelton A, Berg B, Rothbaum B, Moss M. Increased prevalence of post-traumatic stress disorder symptoms in critical care nurses. *Am J Respir Crit Care Med*. 2007;175(7):693-7.

26. Burgess L, Irvine F, Wallymahmed A. Personality, stress and coping in intensive care nurses: a descriptive exploratory study. *Nurs Crit Care*. 2010;15(3):129-40.

27. Cai H, Zimring C. Out of Sight, Out of Reach: Correlating spatial metrics of nurse station typology with nurses' communication and co-awareness in an intensive care unit. Proceedings: Eight International Space Syntax Symposium, Santiago, Chile; 2012. 8039: 1-16.
28. Goldschmidt KA, Gordin P. A model of nursing care microsystems for a large neonatal intensive care unit. *Adv Neonatal Care*. 2006;6(2):81-8.
29. Leonard M, Graham S, Bonacum D. The human factor: the critical importance of effective teamwork and communication in providing safe care. *BMJ Qual Saf*. 2004;13(suppl 1):i85-i90.
30. Gajic O, Afessa B, Hanson AC, Krpata T, Yilmaz M, Mohamed SF, et al. Effect of 24-hour mandatory versus on-demand critical care specialist presence on quality of care and family and provider satisfaction in the intensive care unit of a teaching hospital. *Crit Care Med*. 2008;36(1):36-44.
31. Fletcher CE. Hospital RNs' job satisfactions and dissatisfactions. *J Nurs Adm*. 2001;31(6):324-31.

**Appendix:**

**Table 1: Demographic data**

	<b>Frequency (Valid %)</b>	
	<b>Years worked as a RN</b>	<b>Years worked in ICU at current hospital</b>
<1 year	0 (0)	25(20)
1-3 years	14 (11.7)	26(20.8)
3-5 years	20 (16.7)	19(15.2)
5-10 years	32 (26.7)	27 (21.6)
>10 years	54 (45)	28(22.4)



**Table 2: Nurses perceptions and experiences of working in the DCN ICU**

	Mean (SD)	Qualitative comments
<b>Job Satisfaction</b>		
Overall satisfaction with the present job	3.02(0.91)*	"I feel the current nursing model does not assist in pt (sic) continuity, team building, pt (sic) safety, employee satisfaction, skill consolidation. Possibly long term (2-3months) allocated to a pod will assist with this."
Independent of the present job, satisfaction with being a nurse	3.62(0.82)*	No relevant comments.
<b>Team work</b>		
Overall rating of nursing teamwork in the DCN ICU	2.78(1.05)*	"The environment can be very isolating and the wards so big it can be difficult to talk to people, get help when required, or learn by observation."
The nursing clinical lead in the pod is easy to identify	4.15(0.78)*	"Again it depends who the access nurse is, so (sic) people are very pro-active and get in and help, while there is a couple.... who disappear and don't help."
My opinions are listened to by the other nursing team members	2.84(0.75)*	"Nurses at the coldface [sic] need to feel valued and listened to. Strong feelings of disempowerment."
<b>Social cohesion</b>		

Overall rating of social cohesion (unity) between nurses in the DCN ICU	2.68(1.02)*	“Due to the increase in staff numbers it has made it difficult to create social cohesion amongst ICU nurses. There is also less teamwork.”
I feel included in the nursing group	2.60(0.94)*	“Maybe suggest to have us work in the same pod for a period of time to gel more with fellow colleagues and get to know each other better”
I feel I know most nurses in STG ICS	3.24(1.10)*	“We need more situations or activities to know each others [sic] in the unit”
<b>Continuity of patient care</b>		
Overall continuity of patient care in the DCN ICU	2.60(1.01)*	“clearly difficult to maintain continuity of care, when patient acuity and staff skill mix are factored”
The ongoing plan for the patient is clear	3.37(0.93)*	“in the way of of [sic] continuity of care with handover of patient plan of care and succinct handovers I feel that this is generally held at a high standard”
I am satisfied with the current method used to allocate	3.31(0.85)*	“overall, the current method to allocate staff is satisfactory”
<b>Quality of patient care</b>		
Overall quality of patient care in the DCN ICU	3.48(0.88)*	“quality of care remains high at STG ICU, however, I do feel there are still significant areas for improvement”

Able to complete all basic nursing care	3.25(0.70)*	No relevant comments.
Patients are well supervised	2.87(0.73)*	<p>“Caring for two 1: 2 patients who are geographically separated is a huge challenge and at times unsafe”</p> <p>“Doubled patients should be next to each other. It makes it challenging when they are far away”</p>
I can identify the nursing "champions" for specific basic nursing care eg. pressure injury interest (PIIG) group	2.72(1.22)*	No relevant comments.

\* Maximum obtainable score was 5