

Peer Review File

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	Authors' response	Text change / relevant page number
Reviewer A		
<p>The literature review needs further justification and rationale for the study needs more work - I am not convinced about the need or the justification of the study based on your literature review. Many times, I kept asking myself: why is this important? Why should be we researching this? What is the gap that your study is seeking to address?</p>	<p>Thank you for your comment. The introduction has been rewritten to more clearly articulate the gap in the literature. Reviewer 2 noted that this topic is of great significance and highlighted that it was well written and easy to read.</p>	<p>Page 5-6. A review by de Cássia Fogaça and colleagues (5) described staff working in pediatric and neonatal intensive care units as ‘strong candidates for stress and burnout’ and identified the need to develop preventative measures and intervention models.</p> <p>Despite this call for action there has been little rigorous research on the precise levels of burnout in PICU staff and even fewer studies exploring factors which may be associated with increased risk, or indeed, factors which may be protective.</p> <p>Furthermore, there is some recent dissent from the popular notion of the risk of burnout in intensive care settings; van Mol and colleagues suggested that the issue of burnout remained ‘open for discussion’(6). What is evident is that there are important clinical and health system impacts if health professionals have high levels of burnout. Burnout may adversely impact physical and psychological health of the clinician (7, 8)</p>

		<p>and the individual's professional identity (9) which in turn may negatively impact quality, safety and satisfaction with care, and recovery times of patients (8, 10). Ultimately, burnout in the health professional workforce results in organisational issues including poor staff recruitment and retention, job dissatisfaction, poor relationships with colleagues, and staff shortages (11). Demand for a critical care health professional workforce is projected to grow (11, 12). It is therefore imperative to measure contemporary levels of burnout, together with factors associated with both risk and protection, in order to inform interventions that reduce the risk of burnout while supporting the growth and wellbeing of this specialised PICU workforce.</p>
<p>There is some missing information in the methodology. For example, what the search terms? How did you come up with these? Did a medical librarian help with the data search?</p>	<p>The search strategy was originally located in an additional supplementary table. MeSH and search terms have been listed under the search strategy. A medical librarian assisted with this search and this has been noted.</p>	<p>Page 6-7: We conducted electronic searches of PUBMED, Medline, CINAHL and PsychINFO, using a combination of keywords and MeSH terms to review the concept of burnout. A university based librarian assisted in, and informed the search strategy, with members of the research team. Keyword search terms included 'pediatric intensive care unit/s', 'PICU', 'pediatrics/paediatrics', 'hospitals', 'burnout', 'professional', 'stress', 'psychological', 'anxiety, professional', 'adaptation, psychological', 'empathy', 'depression', 'stress, occupational', 'fatigue'; 'coping', 'job</p>

		satisfaction', 'personal satisfaction', 'job experience', 'stress, psychological', 'stress', 'coping', 'resilience', 'satisfaction', 'emotional exhaustion', 'depersonalisation', 'professional accomplishment', 'retention' and 'environment'.
How was the data extraction made and how was the sheet (you provided) determined?	Data extraction was made using the STROBE tool which is a 22 item checklist to assist in data extraction, that has been previously used in the literature	Page 7-8: The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement, a 22-item checklist to guide data extraction, ensure adequate reporting, assessment of strengths and weaknesses and discussion was used (13). The Checklist for Prevalence Studies from the suite of Joanna Briggs Institute Critical Appraisal Tools for Systematic Reviews was used to assess the methodological quality of studies reporting prevalence data (14). No papers were excluded because of their validity or quality (See Table 1).
The analysis and the results were very descriptive, and I do not think they truly address the research question you posed in this study. I wonder if you could have presented the findings more differently using an established framework e.g thematic analysis?	The studies included in this review have been presented to illustrate the key features most relevant to study aims which were to assess prevalence of burnout, identify risk factors for burnout in PICU, and factors associated with lower risk of burnout.	Sections of the analysis and results have been re-written however the headings used clearly link to the original questions posed for this review. Please refer to revised track changed document.
Perhaps the biggest limitation of the thesis was around the discussion. This section appears to be a very descriptive and it is not fully clear how it adds to the research objectives or what you were trying to	The discussion has been rewritten to provide a more detailed critical review of the available literature.	For example, Page 18 This review highlights the limitations of the use of cross-sectional measures to establish prevalence and risk factors of burnout. These measures fail to

<p>achieve. The discussion section needs to go beyond describing to explaining, critically reviewing, comparing, and contrasting, interpreting, reflecting, etc. Unfortunately, you were not able to do this and instead, repeated most of the descriptive analysis.</p>		<p>systematically examine ecological factors such as working conditions, team culture, leadership, the working environment, and organisational issues likely to affect health professionals. Although validated, these tools do not concurrently measure personal, employment conditions, social and cultural factors that contribute to stress and distress in an individual's life. Perhaps more critically, none of the 20 articles included in this review have explored the implications of their findings for the individuals' health or tangible outcomes for patients or the team culture.</p>
<p>There were no recommendations or implications for practice arising from the findings/discussion</p>	<p>The conclusion refers to the gap identified and suggests that ecological or systems models may be potential approaches to understand, identify and manage burnout that may be useful in developing future strategies to support staff.</p>	<p>The conclusion refers to the gap identified and is supported by the literature, Page 18-19: Deficiencies in the current literature relating to burnout, specifically the absence of multidimensional approaches to identify burnout and promote wellbeing of the PICU staff, were identified. Future research on burnout experienced by PICU staff should be inclusive of the suggested profiles proposed in the recently revised Maslach Burnout Inventory (40) rather than using a binary burnout/no burnout model. Without accurate measures of the phenomenon of burnout together with related risk and protective factors of burnout in the PICU, the development and implementation of effective interventions, and subsequent mitigation of burnout symptoms, is challenging. Ecological or organisational</p>

		systems models which offer approaches to understand the complex systems in which burnout may manifest (59), and to identify and manage burnout experienced by health professionals, may be useful to inform supportive strategies for staff working in the unique work environment of PICU into the future.
I have provided specific comments throughout the paper - I would recommend going through these to improve the paper. See file “TP-2020-PCC-14(TP-20-400)_for reviewer AS comments”.	These suggestions have been addressed where relevant in the paper.	Please refer to track changed document
Reviewer B		
<p>This study aimed to synthesize the existing evidence on burnout among pediatric ICU staff. This is a topic of great significance since burnout affects the emotional and physical wellbeing of Pediatric ICU providers and has several negative downstream effects on the work performance, career span, and patient outcomes, so I appreciate authors examining this topic.</p> <ol style="list-style-type: none"> 1. This manuscript is very well written and was easy to read. There are no major spelling and grammar errors. 2. The strength of the manuscript is that it addresses a topic of great importance to the field of critical care. There is a dearth of studies looking at nurse burnout, especially in PICU, so authors have used the review to 	Thank you for your positive review and identifying this topic important for review.	

<p>compile the existing evidence on PICU staff burnout and associated factors.</p> <p>3.As authors have correctly done, they have included studies that used validated scales to measure burnout</p>		
<p>4. Please define ‘Staff’. The descriptive account created by the authors misses the literature on mid-level provider burnout (physician assistants and advanced practice providers). Please include the relevant literature if any.</p>	<p>Thankyou for this comment. This important point has been clarified as part of the Search strategy and eligibility criteria.</p>	<p>Page 7: Studies of mixed staff populations were eligible if the PICU staff population data was clearly identifiable and analysed independently. Staff for the purposes of this review included any health professional discipline working in PICU as part of the multidisciplinary team.</p>
<p>5. Please state and cite the two standardized reporting tools used</p>	<p>Please note that the two tools used are noted under Data Synthesis: STROBE and Joanna Briggs Institute Critical Appraisal Tools for Systematic Reviews</p>	<p>Page 7-8: Due to the variable nature of the studies and range of assessment measures, it was not possible to combine data into a meta-synthesis. Studies have been presented to illustrate the key features most relevant to study aims. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement, a 22-item checklist to guide data extraction, ensure adequate reporting, assessment of strengths and weaknesses and discussion was used (13). The Checklist for Prevalence Studies from the suite of Joanna Briggs Institute Critical Appraisal Tools for Systematic Reviews was used to assess the methodological quality of studies reporting prevalence data (14). No papers were excluded because of their validity or quality (See Table 1).</p>

<p>6. Limitations- Please add that majority of studies were in western settings</p>	<p>A sentence has been added to the discussion of study limitations.</p>	<p>P16: Several studies provided limited or no demographic data (18, 19, 31) and most studies were conducted in Western industrialised settings where health systems and models of health care vary considerably from developing nations.</p>
<p>Reviewer C</p>		
<p>1. Slight overuse of direct quotes</p>	<p>This has been addressed in the introduction and where relevant in the revisions. Example provided</p>	<p>The term “burnout” is in popular use in the community and in health settings. It has been defined as “a psychological syndrome emerging as a prolonged response to chronic interpersonal stressors on the job with three key dimensions an overwhelming emotional exhaustion, feelings of cynicism and detachment from the job, and a sense of ineffectiveness and lack of accomplishment” (1)(p103). Burnout is said to occur at an individual level and has been described as a negative psychological experience that involves feelings, attitudes, motives and expectations which create distress, discomfort, dysfunction and negative consequences for the individual however it is not regarded as a medical or psychiatric diagnosis (2). Emotional exhaustion is identified as the core component of burnout (3).</p>
<p>2. Mentions methodological quality of studies was assessed using 2 validated tools, but the</p>	<p>Thank you for picking up this oversight which was a problem with version control.</p>	<p>The Strengthening the Reporting of Observational Studies in Epidemiology</p>

<p>study quality and risk of bias was never discussed.</p>	<p>This description has now been corrected to better describe these tools and their application in this paper.</p>	<p>(STROBE) statement, a 22-item checklist to guide data extraction, ensure adequate reporting, assessment of strengths and weaknesses and discussion was used (12). The Checklist for Prevalence Studies from the suite of Joanna Briggs Institute Critical Appraisal Tools for Systematic Reviews was used to assess the methodological quality of studies reporting prevalence data (JBI Critical Appraisal) (13). No papers were excluded because of their validity or quality (See Table 1). Limitations section has now been rewritten - please see page 15-16.</p>
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