The impact of COVID-19 on primary health care delivery in Australia

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The impact of COVID-19 on primary health care delivery in Australia

Abstract
Aims: To validate the 'safe and effective staffing tool' and explore the impact of COVID-19 on the quality of Australian primary health care (PHC). Design: A national survey was conducted from October to December 2020. Methods: The online survey was distributed via social media and professional organisations to PHC nurses. Results: Three-hundred fifty-nine PHC nurses participated. A two-factor solution was found with factors named; 'Perception of quality of care provided' and 'Personal satisfaction with care delivered'. Cronbach's alpha demonstrated good internal consistency for the total scale (α = .915) and each subscale (α = .879/α = .864). Nearly three-quarters of participants (71.3%) were satisfied with the quality of care they delivered. Participants working in general practice, and those with more nursing experience had significantly higher scores in the factor 'perceptions of quality of care provided' and the total 'quality and satisfaction with care'. A lack of time, inadequate supervision and support, and performing non-nursing duties were reported to be impacting care quality. Most participants (80.5%) reported that COVID-19 had impacted negatively on the detection and management of non-COVID related health conditions. Conclusion: The 'safe and effective staffing tool' is a valid and reliable measure of perceived quality of care and satisfaction with care delivered. Many PHC nurses perceive that there has been an overall reduction in the quality of care delivered due to COVID-19 and feel that there is a lack of adequate supervision and workplace support. Given the limited baseline data, further research is required to understand the extent that COVID-19 impacts these findings. However, this study demonstrates that strategies need to be implemented to support PHC nurses to provide high-quality care to optimise health outcomes and maintain nurse satisfaction. Impact: This is the first attempt to evaluate care quality in Australian PHC. Policymaking requires this evidence to drive changes to better support PHC nurses.

Keywords
care delivery, community, COVID-19, nursing, pandemic, primary health care, quality, safety, support, workforce

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Running Head: PHC delivery during COVID-19

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Keywords: community nursing, pandemic, primary health care, nursing workforce, support

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2) drafting the article or revising it critically for important intellectual content.
* http://www.icmje.org/recommendations/
ABSTRACT

Aims: To validate the ‘safe and effective staffing tool’ and explore the impact of COVID-19 on the quality of Australian primary health care.

Design: A national survey was conducted from October-December 2020.

Methods: The online survey was distributed via social media and professional organisations to PHC nurses.

Results: Three-hundred fifty-nine PHC nurses participated. A two-factor solution was found with factors named; ‘Perception of quality of care provided’ and ‘Personal satisfaction with care delivered’. Cronbach’s alpha demonstrated good internal consistency for the total scale ($\alpha=0.915$) and each subscale ($\alpha=0.879/\alpha=0.864$).

Nearly three-quarters of participants (71.3%) were satisfied with the quality of care they delivered. Participants working in general practice, and those with more nursing experience had significantly higher scores in the factor ‘perceptions of quality of care provided’ and the total ‘quality and satisfaction with care’. A lack of time, inadequate supervision and support, and performing non-nursing duties were reported to be impacting care quality. Most participants (80.5%) reported that COVID-19 had impacted negatively on the detection and management of non-COVID related health conditions.

Conclusion: The ‘safe and effective staffing tool’ is a valid and reliable measure of perceived quality of care and satisfaction with care delivered. Many PHC nurses perceive that there has been an overall reduction in the quality of care delivered due to COVID-19 and feel that there is a lack of adequate supervision and workplace support. Given the limited baseline data, further research is required to understand the extent that COVID-19 impacts these findings. However, this study demonstrates that strategies need to be implemented to support PHC nurses to provide high-quality care to optimise health outcomes and maintain nurse satisfaction.

Impact: This is the first attempt to evaluate care quality in Australian PHC. Policymaking requires this evidence to drive changes to better support PHC nurses.

Keywords: nursing, primary health care, quality, COVID-19, care delivery, safety, workforce, community.
1 INTRODUCTION

Primary Health Care (PHC) services are a person’s first point of contact with the health system. In Australia, this sector comprises a variety of health service settings, including general practices, community-based health services and specialist community clinics, Aboriginal health services, prisons, refugee health, schools and residential aged care services (Halcomb et al., 2017). PHC settings often have a multidisciplinary team of health professionals providing a range of services. PHC nurses are largely Baccalaureate (or equivalent) prepared Registered nurses, but also include Masters’ prepared Nurse practitioners, or Diploma prepared Enrolled nurses (Halcomb et al., 2014). Services provided in PHC are diverse and include management of acute presentations, prevention and health screening services and management of chronic conditions. Providing these services in the community is an important strategy to maintain health and well-being and intervene early when ill health occurs (World Health Organization, 2018).

The declaration of a global COVID-19 pandemic by the World Health Organization in March 2020 triggered an immediate and decisive shift in the delivery of PHC in Australia and across the globe (Kidd, 2020). Restrictions in peoples’ movements, social distancing orders and fear of contracting COVID-19, all contributed to a global decrease in presentations to general practice and other community-based PHC settings (Roehr, 2020; Wright et al., 2020b). To address issues of physical contact, there has been a rapid upscaling of telehealth consultations (Duckett, 2020; James et al., 2021). While telehealth has been considered successful in meeting the care needs of many individuals, the reduced physical patient encounters and loss of opportunistic screening is considered likely to impact negatively on the early detection of health issues and lead to a greater burden of chronic health conditions in the future (World Health Organization, 2020). There have been attempts to quantify the impact of COVID-19 on patient care via measures such as attendance and screening rates (Roehr, 2020; Tsirtsakis, 2020). However, this provides only one dimension of the impact of the pandemic on care quality. Understanding the perceptions of PHC nurses’ of the impact of the COVID-19 pandemic on the quality of care delivered and the PHC nurses’ satisfaction with care delivered during the pandemic provides a different perspective that can inform the delivery of care during the pandemic as well as critical reflections on the pandemic response and planning for future health services. It is these variables that are the focus of exploration in this paper.
2. BACKGROUND

Understanding patient safety indicators, including care quality, staffing and skill mix is important to ensure that patient care is optimised. Despite the significant attention paid to nurse staffing and quality indicators in acute care, there has been much less attention paid to exploring the quality of nursing care delivered in PHC (Griffiths et al., 2011; Senek et al., 2020b). The recent impact of COVID-19 on the PHC environment provided a platform on which to explore the views of PHC nurses on the impact that the pandemic has had on the quality of care delivered in PHC and highlight areas for future development.

Nurse staffing levels have been widely debated in acute care, with the patient to nurse ratios demonstrated to impact patient mortality and various other outcomes (Aitken et al., 2018; Griffiths et al., 2018). While the lessons around workload and staff ratios are likely transferrable, staffing in PHC settings is much less well defined (Halcomb et al., 2014). This stems from the range of diverse clinical settings and organisations in which PHC nurses are employed. Despite the challenges in measurement, the importance of nurse staffing demonstrated in acute settings highlights the need to also consider this issue in PHC settings.

A further key indicator for patient safety relates to ‘care left undone’. This refers to any aspect of care that is either in whole or part not delivered on a particular shift or during a specific encounter or is delayed (Senek et al., 2020b). The presence of ‘care left undone’ is associated with lower nurse staffing levels and higher nurse workloads. In their systematic review of the impact of missed care on patient outcomes, Recio-Saucedo et al. (2018) reported greater medication errors, more readmissions and increased adverse events (falls, pressure areas, and urinary tract infections) when there were increased levels of missed care. As communication with patients and their family is frequently an aspect of care left undone, lower patient satisfaction has also been a reported outcome (Park et al., 2018). A consequence of this may be a reluctance by patients to use a particular service or even engage with health professionals. Given its frontline role in the health system, ensuring that people engage with PHC is vital. Therefore, understanding when care is left undone is important as an indicator of quality and engagement.

When nurses are not able to provide the quality of care that they would like this often has a personal impact on their physical and psychological well-being (Borneo et al., 2017). Understanding the impact of their workload on nurses is important given its links to job satisfaction and staff retention (Halcomb et al., 2018; Semachew et al., 2017). While much has been done to explore these links in hospital settings, there has been much less attention...
paid to these issues in PHC (Halcomb et al., 2018). It is timely, therefore, to explore these issues to promote well-being in the PHC nursing workforce.

3. THE STUDY

3.1 Aims
This study sought to explore the ongoing impact of COVID-19 on PHC in Australia. This paper aims to validate the safe and effective staffing tool and report on the perceptions of PHC nurses on the impact that the COVID-19 pandemic has had on quality-of-care delivery. Additional data about the impact on the psychological well-being and coping strategies of PHC nurses are reported separately.

3.2 Design
We undertook a national cross-sectional online survey in Australia between October and December 2020.

3.3 Participants
Nurses currently working in Australian PHC settings were eligible to participate. This included Diploma-prepared Enrolled nurses (EN), Baccalaureate-prepared (or equivalent) Registered Nurses (RN) and Registered Midwives (RM), and Masters-prepared Nurse Practitioners (NP). Participants were employed in a range of settings including general practice, community-based settings such as community health services, Aboriginal medical services, Justice Health, Occupational Health, and schools/universities.

To recruit participants, information about the survey and the survey link was circulated via professional nursing organizations including the Australian College of Nursing (ACN), Australian Primary Health Care Nurses Association (APNA) and Primary Health Networks across Australia. These organisations publicised the survey in their regular emails, on websites, via networking sessions and in newsletters or social media posts. The survey information and electronic link were also circulated by the researchers via Facebook, Twitter and LinkedIn.

3.4 Data collection
The researchers designed a survey tool specifically for this study based on their previous research around COVID-19 and PHC in Australia (Ashley et al., in press; Ashley et al., 2021; Halcomb et al., 2020; Halcomb et al., 2020; James et al., 2021), emerging literature and consultation with local clinicians and experts. The survey was delivered via Qualtrics software.
3.4.2 Survey tool
The final survey was separated into four sections. Section one collected demographic and professional information. Section two included items concerned with participants' perceived safety at work, levels of support, and concerns about COVID-19. Section three comprised the Depression Anxiety Stress Scales (DASS-21)(Henry & Crawford, 2005) and the 28-item Brief COPE scale (Carver, 1997).

The final section of the survey, which is the focus of this paper, explored perceptions of COVID-19 impact on quality-of-care delivery. Quality and satisfaction with care were measured using the staff perception and well-being items from the 'Safe and effective staffing tool' (Borneo et al., 2017). This tool consists of 17-items, each rated on a 5-point Likert scale from strongly disagree (1) to strongly agree (5). Data from other sections of the survey addressed discrete and different research questions and so is reported elsewhere (in press).

3.5 Ethical considerations
Ethical approval was sought and granted by the Human Research Ethics Committee at the University of Wollongong (Approval Number HE2020/161) and the University of Notre Dame, Sydney (Approval Number 2020-056S). The survey commenced with information outlining the purpose of the study and the use of data. Consent was implied by survey completion.

3.6 Data analysis
Data were exported from Qualtrics into SPSS version 25 (IBM Corp., 2015) for analysis. The dataset was checked for missing data or participants who did not meet the inclusion criteria (ie. not working in PHC as a nurse). Relevant items were reverse coded before analysing to ensure that higher scores reflected a greater perception of quality of care. Additionally, demographic variables were recoded as follows, (1) age (≤50 years, ≥51 years), (2) years experience as a nurse (≤20 years, ≥21 years), (3) years experience as a PHC nurse (≤12 years, ≥13 years), (4) employment status (full-time, part-time, other), (5) employment setting (other, general practice) and (6) primary workplace location (capital city/metro, rural/remote). Data were then analysed using a combination of descriptive and inferential statistics. Descriptive statistics such as the mean, median and range are used to describe the data. To calculate the mean score for the total scale and each factor the scores for each item within the scale/factor were summed.

Construct validity of the instrument was assessed using best practices in Exploratory Factor Analysis (EFA)(Williams et al., 2012). Principal Components Analysis (PCA) followed with
Varimax Rotation used to conduct the exploratory factor analysis. Components were extracted based on visual inspection of the scree plot and established criteria (Kaiser, 1960). The item loading was considered large if ≥0.80, moderate if between 0.79 and 0.41, and small if ≤0.40. Cronbach’s alpha was used to assess the internal consistency of each subscale and the overall scale. The identified subscales were interpreted and named to reflect the underlying constructs of the instrument. T-tests, one-way ANOVA were used to assess the relationship between demographic variables and the total scores for the factors ‘perceived quality of care delivered’ and ‘personal satisfaction with care delivered’ and the total ‘quality and satisfaction with care’. Only those demographic variables that were significant in the univariate analysis were included in a standard multiple linear regression analysis to determine the predictors of perceived quality of care, personal satisfaction and total quality and satisfaction with care. The regression model was checked for assumptions of normality, linearity, homoscedasticity, and the absence of multicollinearity. The Beta (β) values and the 95% confidence intervals were calculated in the multiple regression analyses. Statistical significance was set at p<0.05.

3.7 Validity and reliability

Before distribution of the survey, it was pilot tested by a combination of PHC nursing clinicians, nurse academics and policy experts. Some minor formatting and language changes were made to enhance survey readability and flow.

While the tool had been previously used (Borneo et al., 2017), there were no data reported about its validity and reliability. Requests to the Royal College of Nursing and attempts to contact the authors to find further details were unsuccessful. Therefore, we undertook factor analysis to explore the psychometric properties of the instrument.

4. Results

4.1 Participant characteristics

Most of the 359 participants were Registered Nurses (n=320; 86.1%), with only a small number of Enrolled Nurses (n=30; 8.4%) and Nurse Practitioners (n=6; 1.7%). Ninety five percent of participants (n=341) were female. Just under half of participants were employed in general practice (n=167; 46.5%), with the remainder employed in community-based services (n=97; 27.0%) or other PHC settings (n=95; 26.3%). Additional participant demographics are provided in Table 1.
Table 1. Participant Demographics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant Age (Mean 50 years; SD 11.11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤50</td>
<td>156</td>
<td>43.5</td>
</tr>
<tr>
<td>≥51</td>
<td>202</td>
<td>56.3</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Years worked in PHC (Mean 11.82; SD 9.26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤12</td>
<td>226</td>
<td>63</td>
</tr>
<tr>
<td>≥13</td>
<td>129</td>
<td>35.9</td>
</tr>
<tr>
<td>Missing</td>
<td>4</td>
<td>1.1</td>
</tr>
<tr>
<td>Years worked as Nurse (Mean 23.61 years; SD 13.95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤20</td>
<td>158</td>
<td>44</td>
</tr>
<tr>
<td>≥21</td>
<td>200</td>
<td>55.7</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part time</td>
<td>156</td>
<td>43.5</td>
</tr>
<tr>
<td>Full time</td>
<td>126</td>
<td>35.1</td>
</tr>
<tr>
<td>Other (please specify)</td>
<td>77</td>
<td>21.4</td>
</tr>
<tr>
<td>State / Territory of employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New South Wales</td>
<td>159</td>
<td>44.3</td>
</tr>
<tr>
<td>Victoria</td>
<td>79</td>
<td>22</td>
</tr>
<tr>
<td>Queensland</td>
<td>67</td>
<td>18.7</td>
</tr>
<tr>
<td>Other</td>
<td>53</td>
<td>14.8</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Primary workplace location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital city / Metropolitan</td>
<td>222</td>
<td>61.9</td>
</tr>
<tr>
<td>Rural/Remote</td>
<td>137</td>
<td>38.2</td>
</tr>
</tbody>
</table>

4.2 Perceptions of COVID-19 impact
Half of the participants (n=182; 50.7%) rated the care quality currently being delivered at their workplace to non-COVID-19 patients the same as before COVID-19. However, the other half of the participants had varied views on the impact of COVID-19 on care quality. Just under a quarter of participants (n=86; 23.9%) rated care quality slightly or significantly worse than before the pandemic and 22.8% (n=82) perceived that the COVID-19 pandemic had a severe impact on the quality of the care delivered. Most participants (n=289; 80.5%) stated that the focus on COVID-19 has definitely, probably or maybe impacted the detection and/or management of other health issues. While only 14.5% (n=52) participants described COVID-19 as having minimal or no impact on their workplace, some 22.8% (n=82) described a severe impact.
4.3 Validation of the Safe & Effective Staffing tool

The KMO value was .903 and Bartlett’s test of sphericity reached statistical significance ($X^2 (136, N=359) = 2927.7, p<0.00$), demonstrating the suitability of the data for factor analysis (Tabachnick & Fidell, 2014).

Analysis revealed a two-factor solution, accounting for 53.7% of the total variance. Factor loadings for all items were greater than 0.4 and the scree plot revealed a clear departure from linearity consistent with a two-factor solution. Sixteen of the 17 items loaded onto only one of the two factors. The item “I was provided with the appropriate supervision and support” loaded on both factors but was retained on the factor most clinically relevant to the item. The two factors were descriptively named ‘Perception of quality of care provided’ (11 items) and ‘Personal satisfaction with care delivered’ (6 items) (Table 2).

Table 2. Factor Loadings

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>I was too busy to provide the care I would like</td>
<td>0.803</td>
<td>0.124</td>
</tr>
<tr>
<td>Due to the lack of time, I had to leave necessary care undone</td>
<td>0.753</td>
<td>0.044</td>
</tr>
<tr>
<td>I felt satisfied with the quality of care I was able to provide</td>
<td>0.71</td>
<td>0.331</td>
</tr>
<tr>
<td>I had enough time to provide the level of care I would like</td>
<td>0.703</td>
<td>0.247</td>
</tr>
<tr>
<td>I was able to provide the quality of care that I would want to receive as a patient</td>
<td>0.672</td>
<td>0.323</td>
</tr>
<tr>
<td>I felt upset/sad that I could not provide the level of care I had wanted</td>
<td>0.619</td>
<td>0.531</td>
</tr>
<tr>
<td>I was concerned about the skill mix</td>
<td>0.574</td>
<td>0.111</td>
</tr>
<tr>
<td>I had the time to support relatives and those of importance to the patient</td>
<td>0.551</td>
<td>0.35</td>
</tr>
<tr>
<td>Too much of my time was spent on non-nursing duties</td>
<td>0.547</td>
<td>0.185</td>
</tr>
<tr>
<td>I was concerned that support staff were being expected to perform the duties of registered staff without appropriate supervision</td>
<td>0.478</td>
<td>0.156</td>
</tr>
<tr>
<td>I felt positively challenged</td>
<td>0.234</td>
<td>0.822</td>
</tr>
<tr>
<td>I felt fulfilled</td>
<td>0.311</td>
<td>0.791</td>
</tr>
<tr>
<td>I felt exhausted, but I felt positive</td>
<td>-0.138</td>
<td>0.739</td>
</tr>
<tr>
<td>I felt demoralised</td>
<td>0.372</td>
<td>0.69</td>
</tr>
<tr>
<td>I felt exhausted, and I felt negative</td>
<td>0.325</td>
<td>0.687</td>
</tr>
<tr>
<td>I felt satisfied with the care I had provided and the job I had done</td>
<td>0.518</td>
<td>0.54</td>
</tr>
<tr>
<td>I was provided with the appropriate supervision and support</td>
<td>0.428</td>
<td>0.464</td>
</tr>
</tbody>
</table>

The internal consistency for the total instrument was $\alpha = 0.915$. The Cronbach’s alpha for the two subscales ‘Perception of quality of care provided’ and ‘Personal satisfaction with care delivered’ were 0.879 and 0.864 respectively. The mean total instrument score was 61.02.
The mean scores for the subscales ‘Perception of quality of care provided’ and ‘Personal satisfaction with care delivered’ were 38.96 (SD=9.92) and 22.61 (SD=5.38) respectively.

4.4 Perception of quality of care provided
Just over half of the participants (n=186; 51.8%) agreed that they had enough time to provide the level of care that they would like on their last shift (Table 3). Similarly, 47.4% agreed that they had time to support the relatives and those of importance to the patient. Most participants (n=234; 65.2%) felt satisfied with the quality of care that they were able to provide and were able to provide the quality of care that they would want to receive as a patient (n=236; 65.8%). However, despite this, some 19.8% (n=71) participants agreed that they left necessary care undone due to lack of time (missed care). Additionally, 26.2% agreed that they were too busy to provide the care that they would like, and 39% (n=140) of participants agreed that too much time was spent on non-nursing duties.

Only 43.2% (n=155) participants agreed that they were provided with appropriate supervision and support on their last shift. Some 23.4% (n=84) participants agreed and 25.1% (n=90) participants neither agreed nor disagreed that they were concerned about skill mix. A small group of participants (n=51; 14.2%) agreed that they were concerned about support staff being inadequately supervised to perform the duties of registered staff.
### 4.5 Table 3 Safe and effective staffing tool

<table>
<thead>
<tr>
<th>Perception of quality of care</th>
<th>Strongly disagree</th>
<th>Somewhat disagree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat agree</th>
<th>Strongly agree</th>
<th>Missing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>I had enough time to provide the level of care I would like</td>
<td>26</td>
<td>7.2</td>
<td>79</td>
<td>22</td>
<td>31</td>
<td>8.6</td>
</tr>
<tr>
<td>I had the time to support relatives and those of importance to the patient</td>
<td>19</td>
<td>5.3</td>
<td>43</td>
<td>12</td>
<td>88</td>
<td>24.5</td>
</tr>
<tr>
<td>Due to lack of time, I had to leave necessary care undone</td>
<td>128</td>
<td>35.7</td>
<td>61</td>
<td>17</td>
<td>61</td>
<td>17</td>
</tr>
<tr>
<td>I was too busy to provide the care I would like</td>
<td>122</td>
<td>34</td>
<td>56</td>
<td>15.6</td>
<td>48</td>
<td>13.4</td>
</tr>
<tr>
<td>Too much of my time was spent on non-nursing duties</td>
<td>63</td>
<td>17.5</td>
<td>48</td>
<td>13.4</td>
<td>69</td>
<td>19.2</td>
</tr>
<tr>
<td>I was provided with the appropriate supervision and support</td>
<td>36</td>
<td>10</td>
<td>41</td>
<td>11.4</td>
<td>88</td>
<td>24.5</td>
</tr>
<tr>
<td>I was concerned about the skill mix</td>
<td>106</td>
<td>29.5</td>
<td>41</td>
<td>11.4</td>
<td>90</td>
<td>25.1</td>
</tr>
<tr>
<td>I was concerned that support staff were being expected to perform the duties of registered staff without appropriate supervision</td>
<td>142</td>
<td>39.6</td>
<td>45</td>
<td>12.5</td>
<td>82</td>
<td>22.8</td>
</tr>
<tr>
<td>I felt satisfied with the quality of care I was able to provide</td>
<td>13</td>
<td>3.6</td>
<td>41</td>
<td>11.4</td>
<td>33</td>
<td>9.2</td>
</tr>
<tr>
<td>I was able to provide the quality of care that I would want to receive as a patient</td>
<td>15</td>
<td>4.2</td>
<td>31</td>
<td>8.6</td>
<td>39</td>
<td>10.9</td>
</tr>
<tr>
<td>I felt exhausted, but I felt positive</td>
<td>23</td>
<td>6.4</td>
<td>32</td>
<td>8.9</td>
<td>72</td>
<td>20.1</td>
</tr>
<tr>
<td>I felt fulfilled</td>
<td>15</td>
<td>4.2</td>
<td>45</td>
<td>12.5</td>
<td>45</td>
<td>12.5</td>
</tr>
<tr>
<td>I felt positively challenged</td>
<td>15</td>
<td>4.2</td>
<td>31</td>
<td>8.6</td>
<td>61</td>
<td>17</td>
</tr>
<tr>
<td>I felt satisfied with the care I had provided and the job I had done</td>
<td>9</td>
<td>2.5</td>
<td>31</td>
<td>8.6</td>
<td>20</td>
<td>5.6</td>
</tr>
<tr>
<td>I felt demoralised</td>
<td>169</td>
<td>47.1</td>
<td>49</td>
<td>13.6</td>
<td>42</td>
<td>11.7</td>
</tr>
<tr>
<td>I felt exhausted, and I felt negative</td>
<td>125</td>
<td>34.8</td>
<td>63</td>
<td>17.5</td>
<td>56</td>
<td>15.6</td>
</tr>
<tr>
<td>I felt upset/sad that I could not provide the level of care I had wanted</td>
<td>145</td>
<td>40.4</td>
<td>46</td>
<td>12.8</td>
<td>50</td>
<td>13.9</td>
</tr>
</tbody>
</table>
4.6 Personal satisfaction with care delivered
Approximately half of the participants agreed that they felt fulfilled (n=211; 58.8%), exhausted but positive (n=187; 52.1%), and challenged (n=198; 55.2%). Nearly three-quarters of participants reported being satisfied with the care they provided and the job done (n=256; 71.3%). Some 20.6% of participants (n=74) described feeling upset/sad that they could not provide the level of care they wanted. A small group of participants also stated that they felt demoralised (n=56; 15.6%), exhausted and negative (n=71; 19.8%).

4.7 Association between demographics and the factors
Age (≤50 years, ≥51 years), years’ experience as a nurse (≤20 years, ≥21 years), and employment setting (Other, General Practice) were significant in the univariate analysis for ‘Perception of quality of care provided’, and Total quality and satisfaction with care. None of the variables were significant in the univariate analysis for ‘personal satisfaction with care delivered’.

4.6.1 Perception of quality of care provided
The multiple regression model to predict Perceived Quality of Care accounted for 5.5% of the variance (R2 Adj=0.046 F(3, 319)=6.150, p<0.000)(Table 4). Having ≥21 years of experience as a nurse (β=2.62; t=2.02; p=0.044) and working in general practice (β=3.49; t=3.21; p=0.001) were the only predictors of Perceived Quality of Care.

Table 4. Multiple linear regression analyses

<table>
<thead>
<tr>
<th>Perceived Quality of Care</th>
<th>Unstandardized Coefficients B</th>
<th>Standardized Coefficients B</th>
<th>t</th>
<th>Sig.</th>
<th>95% Confidence Intervals for B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>27.918</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.168</td>
<td>.058</td>
<td>.900</td>
<td>.369</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of experience as a RN</td>
<td>2.622</td>
<td>.130</td>
<td>2.021</td>
<td>.044*</td>
<td>.070 5.17</td>
</tr>
<tr>
<td>Employment setting</td>
<td>3.497</td>
<td>.175</td>
<td>3.214</td>
<td>.001*</td>
<td>1.35 5.63</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Quality of Care</th>
<th>Unstandardized Coefficients B</th>
<th>Standardized Coefficients B</th>
<th>t</th>
<th>Sig.</th>
<th>95% Confidence Intervals for B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>45.541</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>2.211</td>
<td>.075</td>
<td>1.163</td>
<td>.246</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years of experience as a RN</td>
<td>4.009</td>
<td>.136</td>
<td>2.107</td>
<td>.036</td>
<td></td>
</tr>
<tr>
<td>Employment setting</td>
<td>3.918</td>
<td>.134</td>
<td>2.456</td>
<td>.015*</td>
<td>.77 7.05</td>
</tr>
</tbody>
</table>
3.6.3 Total scale: Quality and satisfaction with care

The multiple regression model to predict Total quality and satisfaction with care accounted for 4.9% of the variance ($R^2_{Adj}=0.040$, $F(3, 319)=5.525$, $p=0.001$). Having $\geq 21$ years of experience as a nurse ($\beta=4.00$; $t=2.10$; $p=0.036$) and working in a General practice setting ($\beta=3.91$; $t=2.45$; $p=0.015$) were the only predictors of Total quality and satisfaction with care.

5. DISCUSSION

This study highlights the impact that COVID-19 has had on the perceived quality of PHC nursing delivery in Australia through the eyes of PHC nurses. Findings highlight that the COVID-19 pandemic has reduced the engagement of PHC nurses in preventive care practices and the ongoing management of chronic conditions. The participants raised several concerns about care provision that, for some, impacted job satisfaction. Understanding PHC nurses’ experiences during the COVID-19 pandemic is vital to the ongoing optimisation and support of PHC nurses in providing quality care and in meeting the health care needs of the community.

Findings revealed that those with more nursing experience and those working in general practice had significantly better perceptions of the quality of care provided and overall quality and satisfaction with care. This is somewhat surprising given that other research has indicated that general practice nurses were more likely to have experienced decreased work hours than nurses in other PHC settings during the pandemic (Halcomb et al., 2020). The reliance of general practices on funding models to provide quality health services has also been widely recognised (Halcomb et al., 2014). Despite this, previous acute care literature has also linked perceptions about the quality of nursing care provided with the duration of clinical experience (Anzai et al., 2014; Lee et al., 2018). These findings require further investigation in larger studies following the pandemic to further explore findings.

Most participants in this study felt that COVID-19 had “definitely, probably or maybe” impacted the detection and/or management of non-COVID related health issues. This is consistent with the findings reported by Chudasama et al. (2020) who found that approximately a quarter of participants felt that chronic disease management has been poorer since COVID-19 emerged. The impact of the COVID-19 pandemic on the prevention and management of chronic conditions is a serious concern as reports suggest that perceived less urgent aspects of care, such as cancer screening, chronic disease management, minor excisions and health assessments have been deferred or left undone during the pandemic (Halcomb et al., 2020; Wright et al., 2020a). Indeed, cancer screening rates and diagnostic procedures have
markedly reduced during the pandemic (Australian Institute of Health and Welfare, 2020; Cancino et al., 2020). The impact of reduced detection, management and ongoing support for patients with existing chronic conditions remains to be seen. While delays in care may not result in immediate morbidity, the missed opportunity for early intervention to address risk factors or symptoms during the pandemic is likely to result in an increasing backlog of patients in need of both preventative care and illness management post-pandemic (Wright et al., 2020a). Particular consideration is needed for meeting the needs of populations most at risk of COVID-19 and preventive health care such as those with low socioeconomic status or limited access to health care services (Mesa Vieira et al., 2020). The need for a short-term increase in prevention, monitoring and treatment capacity to address this needs to be urgently addressed by workplaces and policymakers.

In our study, less than half of the participants felt that they were provided with appropriate supervision and support on their last shift. Unlike their acute care colleagues, PHC nurses often work in smaller teams or relative isolation from other nurses (Ashley et al., 2018; McInnes et al., 2015). This creates challenges in PHC nurses feeling adequately safe and supported to be delivering care within their day-to-day clinical practice. Support and clinical supervision are of particular importance during respiratory pandemics where nurses are required to rapidly implement new models of care (e.g. telehealth) (Martin & Snowdon, 2020). Protected time for clinical supervision and mentoring needs to be a priority to ensure that PHC nurses receive the required support to undertake their roles during and after the pandemic and to strengthen the nurses’ ability to manage stress, develop effective coping mechanisms and reduce the incidence of burnout (Milne & Martin, 2019).

While in some cases PHC nurses may receive support from multidisciplinary colleagues, challenges are created in settings such as general practice, where the doctor has the dual role of employer and clinical colleague (McInnes et al., 2017). Additionally, supervision should be carried out by others within the same profession who share education, professional accreditation and understanding of practice scope (Halcomb et al., 2017). Satisfaction with supervision and feeling supported has been identified as being related to job satisfaction and career intentions (Halcomb et al., 2018). Therefore, exploring why participants did not feel appropriately supervised and supported and consideration of strategies to enhance this is important in building workforce capacity.

Despite most participants being satisfied with the care that they have provided and feeling fulfilled or exhausted but positive, a small group of participants felt upset that they were unable to provide the care they wanted, demoralised, exhausted and negative. Although these findings show significantly fewer Australian PHC nurses reporting to feel demoralised
compared to acute care nurses in the UK pre-COVID-19 (Senek et al., 2020a), these findings are still of concern. Feelings of being demoralised result from nurses perceiving that they have not been able to provide optimal care for their patients. Feeling demoralised is reported to have a significant impact on both the professional and personal lives of nurses and is considered a measure that can predict nurse intention to leave and actual turnover rates (Senek et al., 2020a). Further research is required to explore this finding in more detail and understand the causative factors. Given the lack of pre-pandemic exploration of these issues in Australian PHC these findings highlight a need for urgent work in this area to inform workforce strategy and capacity building.

5.1 Limitations
This survey was conducted during the second wave of COVID-19 in Victoria, Australia. Potentially more Victorian nurses would have participated without the stressors associated with lockdown and rise in COVID-19 cases. Additionally, most participants were from metropolitan and rural areas. Remote area nurses have less access to resources and support, and therefore may have reported different experiences. Finally, PHC nursing in Australia is a difficult population to access given their disparate employers and diverse clinical settings. This likely impacted the sample size obtained. Despite this limitation, the sample size in this study is comparable with that of other research in this participant group.

6. CONCLUSION
The ‘safe and effective staffing tool’ is a valid and reliable measure of perceived quality of care and nurse well-being. As such this tool can be confidently used to measure these concepts in further research. The COVID-19 pandemic has had a significant impact on the care provided by Australian PHC nurses. Many perceive that there has been an overall reduction in the quality of care delivered and a lack of adequate supervision and support in the workplace. For some, this has resulted in feeling demoralised. It is vital that employers, managers and policymakers ensure that strategies are put in place to support the important clinical work of PHC nurses in both promoting the health and ongoing illness management activities of populations and ensuring the retention of a satisfied and effective PHC nursing workforce.
REFERENCES


