PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	How do care environments shape healthcare? A synthesis of qualitative studies among healthcare workers during the COVID-19 pandemic
AUTHORS	Harrison, Mia; Rhodes, Tim; Lancaster, Kari

VERSION 1 – REVIEW

REVIEWER	Williams Veazey, Leah The University of Sydney, Sydney Centre for Healthy Societies, School of Social and Political Sciences
REVIEW RETURNED	15-Jun-2022

GENERAL COMMENTS	Thank you for the opportunity to review this paper, which presents a critical interpretive synthesis of qualitative research on healthcare workers' experiences of providing care during the early phases of the COVID-19 pandemic. The abstract and introduction clearly and concisely outline the context and framing of the study. Similarly, the methodological sections precisely outlines the process, decisions and rationale for the methods followed, which provides a clear grounding for the reader. The three themes of the findings sections ('the hospital transformed', 'virtual care spaces', and 'objects of care') were well sign-posted in the early part of the paper, giving the manuscripts as a whole a good sense of coherence, which again made it easy to follow. It is no easy feat to synthesise the various results of qualitative studies from such a wide range of contexts, so it is commendable that the resulting paper is – for the most part – clearly and concisely expressed. The findings sections skilfully draw on quotes from the papers included in the studies to illustrate the materiality and spatial elements of care during the COVID-19 pandemic. The findings resonated with my own research on healthcare workers' experiences of providing care during the pandemic, which is itself cited in this synthesis, and I found it interesting to see how that research sits alongside (or contrasts with) other research conducted elsewhere. I have a few suggestions which might improve the final version of the paper. Specifically: a) In the section on 'objects of care' the section about drug treatments and protocols (p25, l28- p26, l31) isn't as clear or convincing as the others. In particular, it's not clear how they fit within the theme of 'objects of care'. The part about focusing attention on the bedside as a site of care is interesting but again fits uneasily in this section. Perhaps it just needs explaining/introducing a bit more carefully, perhaps the section could be cut and/or parts relocated (the bits about remote

	technologies might fit better in 'Virtual Care Spaces' for example), or perhaps you can find another solution. b) The implications for practice beyond pandemic care are not completely convincing (particularly the final point on p31). Attending to the materiality of space and objects as shaping care is clearly important but beyond that assertion, it is not clear what can be learnt from this. Are there any examples of how "enabling and resilient environments of care for healthcare workers as well as patients" could be created (as is suggested in your introduction)? Healthcare environments had to adapt in the extreme circumstances of the pandemic (and did so to varying degrees of success under varying levels of emergency) but it is not clear how this maps on to care beyond the pandemic. These are minor points, which if attended to, would sharpen the flow and contribution of the paper. References I wondered whether this paper, which discusses how hospital spaces are constantly produced through practices, objects and people, might be useful for your introduction/discussion (C. Hooker, S. Hor, M. Wyer, G.L. Gilbert, C.Jorm, R. Iedema. 'Trajectories of hospital infection control: Using non-representational theory to understand and improve infection prevention and control'. Social Science & Medicine, 256 (2020)) – this is a suggestion and no need to include if it's not helpful. I have also recently published a paper, which would not be able to be included in your analysis as it's outside the eligibility range, but which you might find interesting as it focuses on space and pace in pandemic care (again, no need to cite, but you might find it interesting – "Paradoxes of pandemic infection control: Proximity, pace and care within and beyond SARS-CoV-2" Williams Veazey et al. SSM – Qualitative Research in Health 2022.) Minor typographical/lexical queries - P7, line 28: there is a footnote (10) that doesn't appear to lead anywhere - P16, line 47: the word "operations" is ambiguous in this context (does it refer generally to practices etc or to surgical procedures?) – I recommend finding a less ambiguous synonym - P18, line 47: it is not clear what you mean to convey with the word "reticulated" here – is it possible to use another word, or otherwise clarify? - P5, line 23: "develop up efforts" and p33, l57: "developing up enabling care environments" – the "up" seems superfluous here?

REVIEWER	Montgomery, Catherine The University of Edinburgh
REVIEW RETURNED	01-Jul-2022

GENERAL COMMENTS	This is a timely and important review of the qualitative literature on studies of healthcare worker experiences during COVID-19, focusing on materialities of care. The authors rightly observe that reviews to date have focused on the behaviours and experiences of individual actors in the absence of attention to the material environment, and its role in shaping care. This review is a welcome corrective to that; it makes an original contribution to the literature, providing a critical interpretive synthesis of a large body of complex qualitative data. The methodology is sound, the

findings coherent and well-presented, with appropriate conclusions grounded in the data. I only have a few queries, which I hope the authors will find useful in sharpening the paper overall.

Methodology
The Methodology is for the most part very well described. It is gratifying to see a qualitative synthesis in which interpretation and theory generation are foregrounded over reproducibility and simplistic pursuance of being ‘systematic’. The authors articulate their well-founded rationale in respect of this with absolute clarity. There are 2 areas where further clarity could be provided however:

1) Table 1, phases of sampling: how was the sample of 53 articles in phase 2 selected, and on what basis was an n of 53 chosen? Also in phase 2, was the coding done in Endnote, manually or using other software?
2) The Methodology section is largely written in the passive voice and there is no mention of how the work was divided between the authors of the paper. It would be helpful if the authors could provide more detail on this.

Findings
As noted above, the findings are well-drawn and usefully synthesise a substantial body of heterogeneous literature. The three themes across which the synthesising argument is made are sufficiently broad to capture the diversity of settings from the primary literature, whilst also providing a meaningful scaffold for the analysis. While the findings meaningfully synthesise evidence from the primary literature in a way which will be of use to readers of this journal, the generation of theory – which the authors state as an ambition for this work – is underdeveloped. The concept of ‘care’, in particular, is not thoroughly interrogated or extended. The sociological literature on materialities of care is referenced in the introduction, but is not explicitly built on or brought into dialogue with the findings. Given the paper’s orientation to practice, this is understandable, but it would be useful to signal this as a limitation and point to the further theoretical work that needs to be done in this respect.

Discussion
The exhortation to shift attention from individuals and attitudes to environments and materials is well made, and overall, the discussion convincingly moves scholarship forward. I have just a few suggestions:

P29 “Virtual care environments, communication technologies (e.g. whiteboards, radios), hybrid consultations, and other material innovations (e.g. decorated PPE) constituted proxies for care, enabling a different proximity between healthcare worker and patient.” I’m not sure how you are demarcating ‘care’ from ‘proxies for care’. You seem to be creating a moral-ontological hierarchy, but its basis in the primary studies is unclear. Could the authors flesh out the basis for suggesting that use of e.g. communication technologies and PPE improvisations are not care per se but a proxy for it?

P29 “Our analysis shows that spatial and temporal constraints entangle with material practices in healthcare systems…” I would like to push the authors here to articulate more precisely what the relations between time, space and the materialities of

	care are. The word 'entangle' does a lot of heavy lifting in this sentence (and elsewhere in the paper), but ultimately leaves the nature of relations unspecified. P31-32 In the 'Strengths and Limitations' it would be worth reflecting on how interview/survey-based studies will have affected the kinds of knowledge available about the materialities of healthcare environments. Although there is mention of a lack of ethnographic studies, the implications of this (what has been missed?) need to be more clearly spelled out. It would helpful to identify the gaps in the published literature vis-à-vis materialities of care in COVID-19. This would be a useful stimulus for ongoing analyses of the primary datasets researchers have collected from the first waves of the pandemic and provide insight into areas where future studies could usefully focus. The practical implications are sound, clearly derived from the analysis, and present excellent avenues for further research. Overall, this is an impressive paper, which I look forward to seeing published.

VERSION 1 – AUTHOR RESPONSE

Detailed response to Reviewer 1:

1. "In the section on 'objects of care' the section about drug treatments and protocols (p25, l28- p26, l31) isn't as clear or convincing as the others. In particular, it's not clear how they fit within the theme of 'objects of care'. The part about focusing attention on the bedside as a site of care is interesting but again fits uneasily in this section. Perhaps it just needs explaining/introducing a bit more carefully, perhaps the section could be cut and/or parts relocated (the bits about remote technologies might fit better in 'Virtual Care Spaces' for example), or perhaps you can find another solution."
> We have cut back and moved the writing about remote technologies and hybrid care to the Virtual Care Spaces section of the paper (pp. 18–19) and rewritten the section on drug treatments so that it fits in better with the rest of the Objects of Care section (pp. 24–25).

2. "The implications for practice beyond pandemic care are not completely convincing (particularly the final point on p31). Attending to the materiality of space and objects as shaping care is clearly important but beyond that assertion, it is not clear what can be learnt from this. Are there any examples of how 'enabling and resilient environments of care for healthcare workers as well as patients' could be created (as is suggested in your introduction)? Healthcare environments had to adapt in the extreme circumstances of the pandemic (and did so to varying degrees of success under varying levels of emergency) but it is not clear how this maps on to care beyond the pandemic."
> We note that this is the one comment in which the opinions of the reviewers diverge (with the other reviewer, Dr. Catherine Montgomery, describing the practical implications as "sound, clearly derived from the analysis, and present[ing] excellent avenues for further research"). We believe this is due a slight difference in what the reviewers view as the contributions and limits of the paper. With this in mind, and to clarify the contribution of this analysis, we have re-ordered and added a paragraph after the dot points mentioned in this comment to emphasise that while the specifics of our analysis produce insights for how healthcare environments have adapted during pandemic times, our interpretive approach to mapping the material effects of the care environment constitutes an important

first step in designing approaches to care that can be taken up in future research and the appraisal of healthcare systems, including beyond the pandemic (p. 30).

3. “I wondered whether this paper, which discusses how hospital spaces are constantly produced through practices, objects and people, might be useful for your introduction/discussion (C. Hooker, S. Hor, M. Wyer, G.L. Gilbert, C.Jorm, R. Iedema. ‘Trajectories of hospital infection control: Using non-representational theory to understand and improve infection prevention and control’. Social Science & Medicine, 256 (2020)) – this is a suggestion and no need to include if it’s not helpful.”
> Thank you for suggesting this piece. We have signalled how this paper and others relate with our analysis in our Strengths and Limitations section and suggested how future research might further contribute to new materialist literature in this area (p. 31).

4. “I have also recently published a paper, which would not be able to be included in your analysis as it’s outside the eligibility range, but which you might find interesting as it focuses on space and pace in pandemic care (again, no need to cite, but you might find it interesting – “Paradoxes of pandemic infection control: Proximity, pace and care within and beyond SARS-CoV-2” Williams Veazey et al. SSM – Qualitative Research in Health 2022.)”
> Thank you for sharing this paper, which is indeed very interesting and has particular relevance to work we are currently doing.

5. “P7, line 28: there is a footnote (10) that doesn’t appear to lead anywhere”
> This has been replaced with the correct (and correctly formatted) citation (p. 6).

6. “P16, line 47: the word “operations” is ambiguous in this context (does it refer generally to practices etc or to surgical procedures?) – I recommend finding a less ambiguous synonym”
> The sentence has been rewritten to remove this ambiguity (p. 15).

7. “P18, line 47: it is not clear what you mean to convey with the word “reticulated” here – is it possible to use another word, or otherwise clarify?”
> This sentence has been rewritten (p. 17).

8. “P5, line 23: ‘develop up efforts’ and p33, l57: ‘developing up enabling care environments’ – the ‘up’ seems superfluous here?”
> We have removed the word “up” in these examples (p. 4; p. 33).

Detailed response to Reviewer 2:

1. a) “Table 1, phases of sampling: how was the sample of 53 articles in phase 2 selected, and on what basis was an n of 53 chosen?
> We have provided further details about our sampling strategy in Phase 2 in the paragraph directly following Table 1 (p. 9).

b) Also in phase 2, was the coding done in Endnote, manually or using other software?”
> We have noted that coding was done manually (p. 9).

2. “The Methodology section is largely written in the passive voice and there is no mention of how the work was divided between the authors of the paper. It would be helpful if the authors could provide more detail on this.”
> We have edited the “Author Contributions” section to provide further details about how work was divided between authors (pp. 33–34).

3. “While the findings meaningfully synthesise evidence from the primary literature in a way which will be of use to readers of this journal, the generation of theory – which the authors state as an ambition for this work – is underdeveloped. The concept of ‘care’, in particular, is not thoroughly interrogated or extended. The sociological literature on materialities of care is referenced in the introduction, but is not explicitly built on or brought into dialogue with the findings. Given the paper’s orientation to practice, this is understandable, but it would be useful to signal this as a limitation and point to the further theoretical work that needs to be done in this respect.”

> Thank you for this comment. We agree that given the readership of BMJ Open and the orientation of our paper to practice, a more theoretically driven synthesis of findings may not be appropriate for this particular paper. We have acknowledged the limits of our theoretical contribution and signalled the need for further theoretical work in the Strengths and Limitations section of the paper (p. 31).

4. “P29 ‘Virtual care environments, communication technologies (e.g. whiteboards, radios), hybrid consultations, and other material innovations (e.g. decorated PPE) constituted proxies for care, enabling a different proximity between healthcare worker and patient’ I’m not sure how you are demarcating ‘care’ from ‘proxies for care’. You seem to be creating a moral-ontological hierarchy, but its basis in the primary studies is unclear. Could the authors flesh out the basis for suggesting that use of e.g. communication technologies and PPE improvisations are not care per se but a proxy for it?

> Thank you for this comment. We see how describing these material innovations as a “proxy for care” suggests that they should be demarcated from “care,” which is not our intention. We have edited this sentence to clarify that these innovations instead enable a way of doing care differently (p. 28).

5. “P29 ‘Our analysis shows that spatial and temporal constraints entangle with material practices in healthcare systems...’ I would like to push the authors here to articulate more precisely what the relations between time, space and the materialities of care are. The word ‘entangle’ does a lot of heavy lifting in this sentence (and elsewhere in the paper), but ultimately leaves the nature of relations unspecified.”

> We have edited this sentence to more clearly describe these relations (p. 28).

6. “P31-32 In the ‘Strengths and Limitations’ it would be worth reflecting on how interview/survey-based studies will have affected the kinds of knowledge available about the materialities of healthcare environments. Although there is mention of a lack of ethnographic studies, the implications of this (what has been missed?) need to be more clearly spelled out.”

> We have added a sentence to reflect on the implications of these methods (p. 32).

7. “It would helpful to identify the gaps in the published literature vis-à-vis materialities of care in COVID-19. This would be a useful stimulus for ongoing analyses of the primary datasets researchers have collected from the first waves of the pandemic and provide insight into areas where future studies could usefully focus.”

> We have noted this in our addition to the Strength and Limitations section outlined above and have also identified specific areas of focus for future studies (p. 31).