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# The Effect of Hospital Visitor Policies on Patients, Their Visitors, and Health Care Providers During the COVID-19 Pandemic: A Systematic Review

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## ABSTRACT

Health care policymaking during the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic has questioned the precedent of restricting hospital visitors. We aimed to synthesize available data describing the resulting impact on patient, family/visitor, and health care provider well-being. We systematically reviewed articles from the World Health Organization COVID-19 Global Literature on Coronavirus Disease Database published between December 2019 through April 2021. Included studies focused on hospitalized patients and reported 1 or more prespecified main or secondary outcome (coronavirus disease 2019 [COVID-19] disease transmission, global well-being, mortality, morbidity, or health care resource utilization). Two authors independently extracted data into a standardized form with a third author resolving discrepancies. A total of 1153 abstracts were screened, and 26 final full-text articles were included. Ten studies were qualitative, with 7 cohort studies, and no randomized controlled trials. Critically ill patients were the most represented (12 out of 26 studies). Blanket hospital visitor policies were associated with failure to address the unique needs of patients, their visitors, and health care providers in various clinical environments. Overall, a patient-centered, thoughtful, and nuanced approach to hospital visitor policies is likely to benefit all stakeholders while minimizing potential harms.

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SEE RELATED ARTICLES, p 1154 and 1156.

## INTRODUCTION

In western tradition, only early in the 20th century did hospitals begin to allow visitors for paying patients.<sup>1</sup> Fifty years later, after the establishment of newborn intensive

care units (NICUs), visitor policies appeared more familiar to those of modern day with limited visiting hours for all patients.<sup>2</sup> Additional restrictions for infection control is an established practice during respiratory syncytial virus and

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influenza seasons.<sup>3-5</sup> Although not novel, the efficacy and guidance for visitor restrictions remains inconsistent, especially for the coronavirus disease 2019 (COVID-19) pandemic. The Centers for Disease Control and Prevention (CDC) recommended limiting visitors to inpatient facilities “to only those essential for the patient’s physical or emotional well-being and care.”<sup>6</sup> It is reasonable to suspect that practical application of this statement may vary across institutions and practices. Lack of clarity leaves the potential for inequities in implementation and raises ethical questions.<sup>7,8</sup> Restriction of visitors is also discussed as a source of moral distress for health care providers who may not agree with hospital policies.<sup>9,10</sup> Yet, a Cochrane rapid qualitative evidence synthesis review of barriers to health care providers’ adherence to infection control measures found an opposing effect. Health care workers experienced strain from being responsible for visitors’ adherence to infection control measures.<sup>11</sup> The significance of the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) from visitors in hospitals, however, is also questionable.<sup>12</sup> Therefore, we sought to critically appraise the evidence relating hospital visitor restrictions and COVID-19 transmission. We aimed to determine the impact of visitor restrictions on the well-being of hospitalized patients, their visitors, and health care providers during the COVID-19 pandemic.

## METHODS

Further details are available in the PROSPERO protocol associated with this study (CRD42021248603) that was developed in accordance with the preferred reporting items for systematic reviews and meta-analyses (PRISMA) checklist.<sup>13</sup>

## Data Sources and Searches

We searched the World Health Organization (WHO) COVID-19 Global Literature on Coronavirus Disease Database, which includes more than 30 databases, at <https://www.who.int/publications/m/item/quick-search-guide-who-covid-19-database>, using the following search strategy: (ti:(visit\*)) OR (ab:(visit\* AND (restrict\*))) OR (mj:(MH:"Visitors to Patients")).

## Study Selection

We included quantitative and qualitative studies as well as conference abstracts from December 2019 to April 2021. Studies must have focused on hospitalized patients, their families and visitors, or health care providers of all ages in the setting of the COVID-19 pandemic. “Hospital” was defined as a public or academic institution in which a patient was admitted for inpatient medical care. Studies were in English and reported at least 1 of the prespecified main or secondary outcomes (COVID-19 disease transmission, global well-being, mortality, morbidity, or health care resource utilization).

Reviews of existing literature, editorials, and expert opinions were excluded. Studies that did not fit into the conceptual framework of this systematic review or focused on a population other than hospitalized patients were also excluded. Long-term care and skilled nursing facilities were excluded because they are not considered hospitals but places of permanent residence.

Using a systematic review software, Rayyan,<sup>14</sup> 2 independent reviewers screened abstracts based on the predefined criteria. Discrepancies were discussed with a third reviewer until a consensus was reached. This same process was repeated with full articles.

## CLINICAL SIGNIFICANCE

- Restrictive hospital visitor policies have differential effects on various populations, notably critically ill patients, clinicians, and family or support persons.
- There may be challenges with effective and equitable implementation of video conferencing.
- The effect of altering hospital visitor policies on coronavirus disease 2019 (COVID-19) transmission is poorly studied.
- It is prudent to pursue a patient-centered, thoughtful, and nuanced approach to hospital visitor policies accounting for clinical judgment as opposed to blanket rulings produced by administrators.

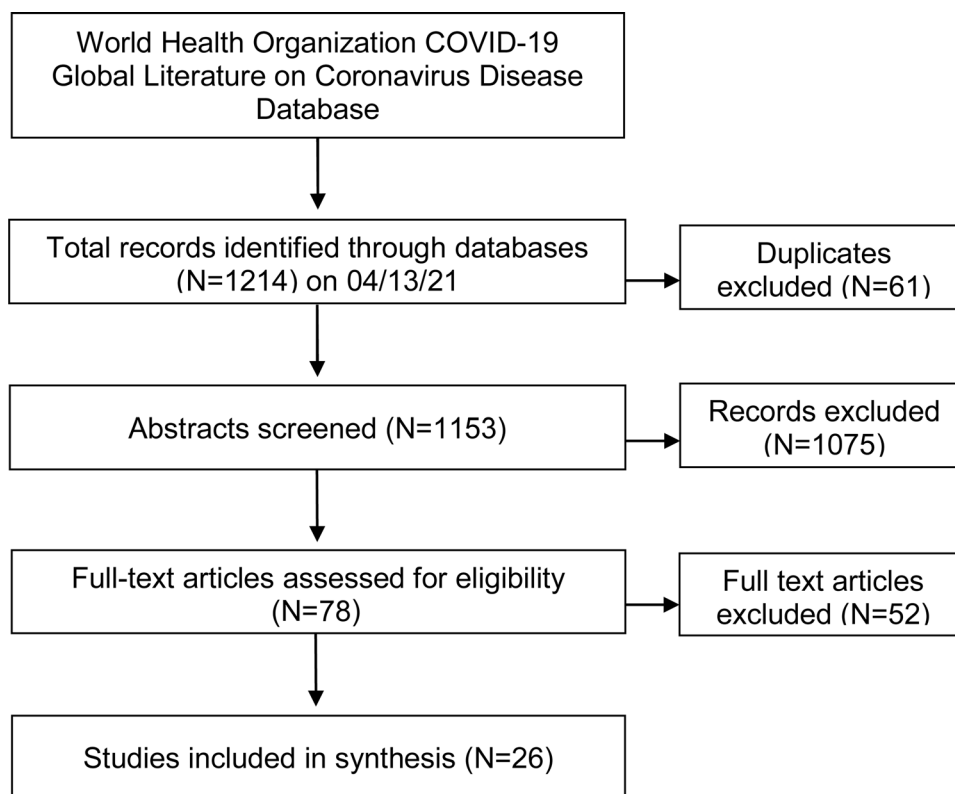
## Data Extraction and Quality Assessment

For each included study, 2 reviewers extracted data independently using a standardized data extraction form (Supplementary Table 1, available online). This process occurred without blinding of study authors, institutions, journals, or results. Discrepancies were resolved by discussion with a third reviewer and the research team, as necessary.

We evaluated the risk of bias using the Cochrane Collaboration’s tool Risk Of Bias In Non randomized Studies of Interventions (ROBINS-I), Critical Appraisal Skills Programme (CASP) appraisal tool for qualitative studies, and Oxford Centre for Evidence-based Medicine quality scheme.<sup>15-17</sup> Two authors ranked each study’s risk of bias separately. Disagreements were resolved by discussion with a third reviewer.

## Data Synthesis and Analysis

Given the heterogeneity in methodologies across the literature, we comprehensively tabulated study characteristics,



**Figure 1** Systematic review protocol workflow. Flowchart is adapted from the PRISMA flow diagram for included studies. PRISMA = Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

permitting critique of design and enumeration of potential biases. Two authors (ANI and JOA) independently made this determination, with input from a third author in the event of a discrepancy (WS). A narrative synthesis was performed including study design, patient population, hospital visitor policy changes, and reported outcomes. Mean COVID-19 transmission rate was the primary outcome. Thorough documentation was prioritized given the paucity of high-quality studies on this emerging topic and with predominance of descriptive outcomes. Studies were grouped by population (eg, neonatal, pediatric, or adult patients), clinical setting (eg, intensive care unit, general floor unit, end-of-life care vs general care, etc.), and visitation policy. Data were handled by groups as opposed to individual participant data.

## RESULTS

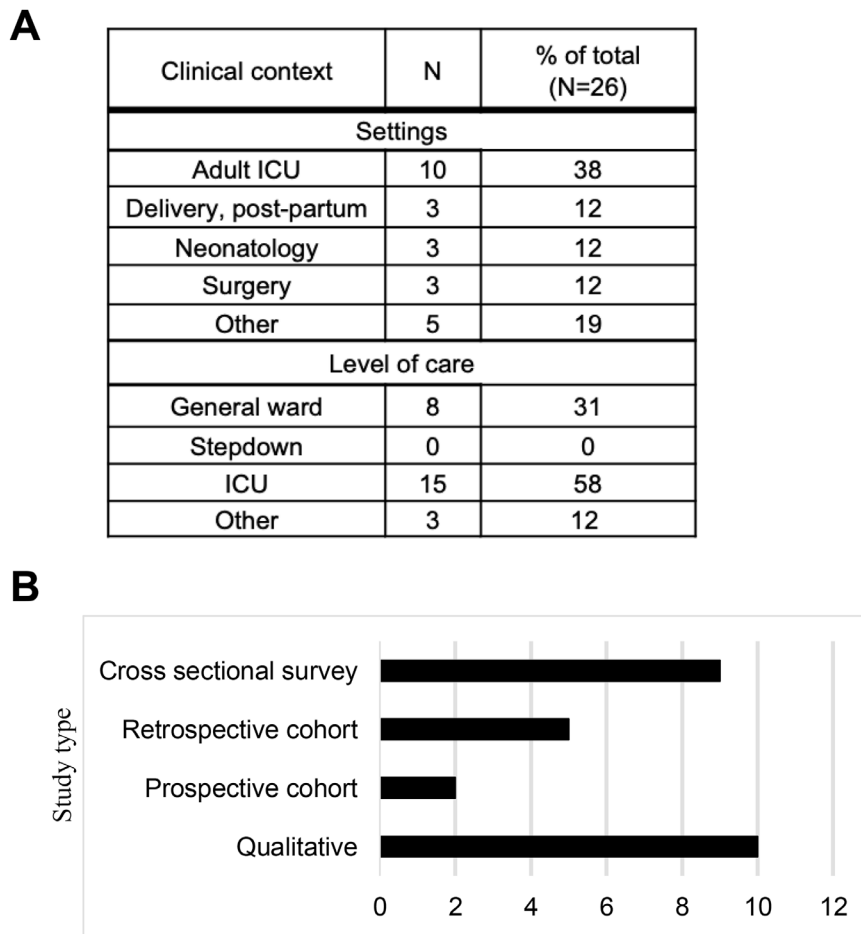
### Description of Included Studies

We identified 1153 abstracts, which were read in full. A total of 78 articles met criteria for screening of the study report. Of these, 26 studies met prespecified criteria for inclusion (Figure 1). Half of the studies were published in 2020, the first year of the pandemic and half in 2021. Most studies took place in North America (46%), specifically the United States, followed by Europe (42%), including the

UK, France, and Italy. Patients were the population of interest in 37% of included studies; family, support persons, or visitors were the focus of 33%; 29% assessed the impact of visitor restrictions on health care providers; and the remaining 11% addressed multiple populations. As may be expected with severe COVID-19 infection, a plurality of studies took place in intensive care units (ICUs) (Figure 2A). Finally, the majority of the included studies were qualitative or survey-based; only 7 of 26 were cohort studies (Figure 2B).

### Inpatient Wards

We found 5 of 26 included studies focused on the inpatient ward setting, and a common theme among them was attention to vulnerable populations with potentially impaired decision-making capacity (Table 1). Visitors or support persons may serve as patient advocates and aid in decision-making if legally authorized.<sup>18</sup> One common cause of impaired capacity in the inpatient setting is delirium. Some suggest that the presence of hospital visitors may protect against delirium development, but this notion was challenged in recent studies.<sup>19,20</sup> A retrospective cohort study of adults who underwent emergency hospital admissions in Japan (N = 6264) found greater odds for developing delirium after pandemic visitor restrictions as compared with unrestricted visitor policies (adjusted odds ratio [AOR] for



**Figure 2** Characterization of included studies. (A) Clinical context of included studies broken down by clinical setting and level of care/acuity with most studies taking place in the ICU. (B) Graph tabulating the number of each study methodology. For all, N = 26. ICU = intensive care unit.

delirium incidence 3.79, 95% confidence interval [CI], 2.70-5.31).<sup>21</sup> Similarly, patients in inpatient psychiatric facilities also represent a vulnerable population because of their often limited autonomy and potentially diminished capacity and were negatively impacted by visitor restrictions.<sup>22</sup> In 1 study of 24 patients in Norway, 80% reported difficulty with not having loved ones present and expressed a need for visitors, 64% believed staff would prevent them from becoming infected with COVID-19, and 88% overall felt safe at the ward. On the contrary, of 140 staff members surveyed at the same facility, 57% feared bringing home COVID-19 from work and 69% were satisfied with measures to mitigate risk of infection (including visitor restrictions).<sup>23</sup> Two additional potentially vulnerable populations include pediatrics and peripartum patients, which are discussed in the [Supplemental Materials](#), available online.

Several studies also concerned end-of-life care. A cross-sectional survey of health care providers regarding deceased patients in the Netherlands found sufficient emotional support was less common for patients for whom

there had been restricted (AOR 0.46, 95% CI 0.29-0.75) or no visitors (AOR 0.23, 95% CI 0.12-0.45).<sup>24</sup> Spiritual care was also less sufficient for patients who were not allowed visitors in the last 2 days of life (AOR 0.21, 95% CI 0.10-0.42). A small focus group (N = 9) of nurses discussed how the need for family involvement increases during end-of-life care, which can strain personnel who are tasked with communicating with families remotely.<sup>25</sup> Similarly, a cross-sectional survey of 328 next of kin of veterans who died in an inpatient unit found themes of “anguish and despair” from not being allowed to see patients.<sup>26</sup>

Overall, the COVID-19 pandemic and visitor restrictions were associated with negative emotions among most inpatients and their families in the studies reviewed, especially in the context of end-of-life care. There was evidence of moral distress for health care providers caring for dying patients; however, some responded positively to visitor restrictions from the perspective of limiting their occupational exposure to the COVID-19 virus.

**Table 1** Summary of Included Studies Focused on the Inpatient Ward Setting\*

First Author	Location	Design	Sample size	Participants	Visitor Policy
Dieset I <sup>23</sup>	Norway	Cross-sectional survey	24 140	Psychiatric inpatient (female: 69%) Staff in an acute psychiatric inpatient unit (nurses: 67%, physicians or psychologists: 26%, other staff: 7%)	No visitors
Kandori K <sup>21</sup>	Japan	Retrospective cohort	6264	Adult emergency admissions inpatients (median age: 74, female: 47%)	No visitors
Onwuteaka-Philipsen BD <sup>24</sup>	Netherlands	Cross-sectional survey	241	Health care professionals (female: 49%) regarding patients who died	Some restriction
Feder S <sup>26</sup>	United States	Cross-sectional survey	328	Next of kin of veterans who died in an inpatient unit (mean age: 76, female: 7%)	No visitors
Maaskant JM <sup>25</sup>	Netherlands	Cross-sectional survey	9	Bedside nurses of inpatient COVID-19 hospital wards (median age: 32, female: 89%)	Some restriction

COVID-19 = coronavirus disease 2019.

\*The "No visitors" designation was reserved for studies that explicitly stated no visitors were allowed under any circumstances, per hospital policy. Gender and mean or median age reported as available.

## Adult ICUs

End-of-life care and vulnerable population discussions are especially pertinent to the ICU setting (Table 2). A large cross-sectional survey (N = 1058) of health care providers in France reported that 31.5% regretted restricted visitation policies that were associated with symptoms of anxiety (odds ratio 1.39; 95% CI 1.03-1.86) and depression (odds ratio 1.49; 95% CI, 1.09-2.04).<sup>27</sup> Clinicians in the UK also expressed dissent with restricting visitors and raised concerns about the detrimental effect on patients, their families, and staff.<sup>28</sup>

Video conferencing is becoming a common means of communicating with families remotely; however, it is uncertain whether this can fully substitute for physical presence. A retrospective cohort of 940 patients with adult descendant subjects found that patient admission after restrictive visitor policy implementation was associated with a significantly longer time to first do not resuscitate, do not intubate, or comfort care order (adjusted hazard ratio, 2.2; 95% CI, 1.6-3.1).<sup>29</sup> Another retrospective cohort study of patients lacking medical decision-making capacity found more frequent changes in patient goals of care for in-person meetings than by video (36% vs 11%,  $P = .0006$ ), implying a potential differential effect of communication modality on outcome.<sup>30</sup> A prospective cohort of 88 families of ICU patients in France assessed the impact of remote communication on reference persons (RPs)—family members as designated points of contact for communication from health care providers. All RPs surveyed described a specific type of "responsibility" with being an RP in a remote-only context, leading RPs to restrict communication to extended family members (67%). Thirty percent of RPs related the situation to a prior traumatic experience.<sup>31</sup> Among all the studies assessed here, restriction of visitors in the ICU setting was associated with distress among patients and their health care providers. A prominent

challenge in this environment was navigating goals of care discussions and it seems that mode of communication may influence the decision-making outcome.

## Patients in the Postoperative Period

Two studies covered the postoperative patient population (Table 3). A retrospective cohort study of 117 postoperative patients who were not allowed visitors found that those in the no-visitor cohort were less likely to report complete satisfaction with the hospital experience (80.7% vs 66%,  $P = .044$ ), timely receipt of medications (84.5% vs 69%,  $P = .048$ ), and assistance getting out of bed (70.7% vs 51.7%,  $P = .036$ ).<sup>38</sup> Qualitative analysis of patient responses highlighted the consistent psychosocial support provided by visitors after surgery (84.5%), and patients in the no-visitor cohort reported social isolation due to lack of psychosocial support (50.8%). A similar study of 541 postoperative patients in Italy, however, found a unique benefit of pandemic precautions for postoperative patients.<sup>39</sup> The measures to reduce the severe acute respiratory coronavirus 2 spread (ie, surgical mask wearing and no visitors allowed) were independently associated with the reduction of all surgery site infections (AOR: 0.316, 95% CI: 0.103-0.970). It seems that psychosocial stress results from limiting visitor access may be somewhat offset by reducing infection risk in the postoperative setting. Interestingly, the transmission of COVID-19 infection was still not assessed.

## Video Conferencing

In lieu of in-person visits, video calls are increasingly prevalent in hospitals. A retrospective survey of families (N = 24) in the UK who received video calls were more likely to be satisfied with the frequency (83%) and quality (83%) of communication.<sup>34</sup> All reported that video calls helped them to stay connected with the patient and health

**Table 2** Summary of Included Studies Focused on the ICU Setting\*

First author	Location	Design	Sample size	Participants	Visitor Policy
Azoulay E <sup>27</sup>	France	Cross-sectional survey	1058	Frontline health care providers (median age: 33, female: 71%)	Some restriction
Azad TD <sup>29</sup>	Maryland, United States	Retrospective cohort	940	Adult decedents	Some restriction
Piscitello GM <sup>30</sup>	Illinois, United States	Retrospective cohort	61	Patients lacking medical decision-making capacity	Some restriction
Cattelan J <sup>31</sup>	France	Prospective cohort	88	Reference persons of patients referred to ICU for COVID-19 (female: 65%, first-degree relatives of the patient: 92%)	No visitors
Chen C <sup>32</sup>	New York, United States	Cross-sectional survey	10	Family members of adult patients with COVID-19 in the ICU	No visitors
Creutzfeldt CJ <sup>33</sup>	Washington, United States	Cross-sectional survey	19	Family members of patients with severe acute brain injury (female: 59%)	No visitors
Kennedy NR <sup>34</sup>	Pennsylvania, United States	Qualitative interview	21	Family members cardiothoracic and neurologic ICU patients (mean age: 56, female: 76%)	Some restriction
			14	Treating clinicians of cardiothoracic and neurologic ICU patients (female: 36%)	
Sasangohar F <sup>35</sup>	Texas, United States	Cross-sectional survey	230	Family members of intensive care unit patients	No visitors
Jeyabraba S <sup>36</sup>	UK	Retrospective survey	24	Families affected by the visitor restrictions during the coronavirus period	No visitors
Rose L <sup>37</sup>	UK	Cross-sectional survey	117 ICUs	217 UK hospitals with at least 1 ICU	Mixed
Azoulay E <sup>27</sup>	France	Cross-sectional survey	1058	Frontline health care providers (median age: 33, female: 71%)	Some restriction
Boulton AJ <sup>28</sup>	UK	Cross-sectional survey	134	ICUs with patients with COVID-19	Some restriction

COVID-19 = coronavirus disease 2019; ICU = intensive care unit.

\*The “No visitors” designation was reserved for studies that explicitly stated no visitors were allowed under any circumstances, per hospital policy. Gender and mean or median age reported as available.

care team. Although another valence-based and manual sentiment analysis of family members of ICU patients found mostly positive responses to video visits, 44% of respondents (25 out of 57) found it challenging to communicate with patients due to being either intubated or undergoing procedures, a pertinent consideration for the critically ill patient population.<sup>35</sup> A small (N = 10) cross-sectional qualitative survey of family members of ventilated patients highlighted this challenge.<sup>36</sup> This group struggled to feel informed, had difficulty understanding information, and found video calls unhelpful. Commonly reported benefits for those patients who could participate in virtual visits across 117 ICUs in the UK included reducing

patient psychological distress (78%) and reorientation of delirious patients (47%).<sup>37</sup>

Qualitative interviews with ICU physicians yielded different results.<sup>38</sup> This study found that telehealth increased clinician workload, technical difficulties limited effective communication, and clinicians struggled to engage family members because of discomfort with technology use and less apparent social cues. Clinicians also were concerned about ability to convey empathy remotely. Family member participants, however, felt empathy was relayed successfully via phone and video. In this same study, respondents viewed phone and video communication as somewhat effective but inferior to in-person communication.<sup>38</sup>

**Table 3** Summary of Included Studies Focused on the Postoperative Setting\*

First Author	Location	Design	Sample size	Participants	Visitor Policy
Zeh RD <sup>38</sup>	Ohio, United States	Retrospective cohort	117	Postoperative surgery patients (mean age: 57.5, female: 56.4%)	No visitors
Losurdo P <sup>39</sup>	Italy	Retrospective cohort	541	Surgical patients (mean age: 62, female: 59.8%)	No visitors

\*The “No visitors” designation was reserved for studies that explicitly stated no visitors were allowed under any circumstances, per hospital policy. Demographic information reported as available.

**Table 4** Evaluation of Study Quality\*

First Author	Location	Design	Modified OCEM Rating	ROBINS-I Score or CASP Rank
Ashini A <sup>40</sup>	Libya	Cross-sectional survey	4	10 (CASP)
Azad TD <sup>29</sup>	United States	Retrospective cohort	3	3 (ROBINS-I)
Azoulay E <sup>27</sup>	France	Cross-sectional survey	4	3 (CASP)
Bembich S <sup>41</sup>	Italy	Cross-sectional survey	4	6 (CASP)
Boulton AJ <sup>28</sup>	UK	Cross-sectional survey	4	9 (CASP)
Bradfield Z <sup>42</sup>	Australia	Cross-sectional survey	4	3 (CASP)
Cattelan J <sup>31</sup>	France	Prospective cohort	3	3 (CASP)
Chen C <sup>32</sup>	United States	Cross-sectional survey	4	2 (CASP)
Creutzfeldt CJ <sup>33</sup>	United States	Cross-sectional survey	4	9 (CASP)
Cullen S <sup>43</sup>	Ireland	Cross-sectional survey	4	6 (CASP)
Dieset I <sup>23</sup>	Norway	Cross-sectional survey	4	7 (CASP)
Feder S <sup>26</sup>	United States	Cross-sectional survey	4	3 (CASP)
Jeyabraba S <sup>36</sup>	UK	Retrospective survey	4	6 (CASP)
Kandori K <sup>21</sup>	Japan	Retrospective cohort	3	1 (CASP)
Kennedy NR <sup>34</sup>	United States	Qualitative interview	4	1 (CASP)
Losurdo P <sup>39</sup>	Italy	Retrospective cohort	3	2 (ROBINS-I)
Maaskant JM <sup>25</sup>	Netherlands	Cross-sectional survey	4	1 (CASP)
Mayopoulos G <sup>44</sup>	United States	Cross-sectional survey	4	3 (CASP)
Muniraman H <sup>45</sup>	UK	Cross-sectional survey	4	3 (CASP)
Onwuteaka-Philipsen BD <sup>24</sup>	Netherlands	Cross-sectional survey	4	6 (CASP)
Piscitello GM <sup>30</sup>	United States	Retrospective cohort	3	3 (ROBINS-I)
Romano-Keeler J <sup>46</sup>	United States	Prospective cohort	3	8 (CASP)
Rose L <sup>37</sup>	UK	Cross-sectional survey	4	4 (CASP)
Sasangohar F <sup>35</sup>	United States	Cross-sectional survey	4	5 (CASP)
Wiener L <sup>47</sup>	United States	Cross-sectional survey	4	1 (CASP)
Zeh RD <sup>38</sup>	United States	Retrospective cohort	3	2 (ROBINS-I)

CASP = Critical Appraisal Skills Programme; OCEM = Oxford Centre for Evidence-based Medicine; ROBINS-I = Risk Of Bias In Nonrandomized Studies of Interventions.

\*Ratings based on Modified OCEM, ROBINS-I, and CASP scoring systems. For ROBINS-I, 0 = not needed, 1 = very low, 2 = low, 3 = moderate, 4 = high assessment of study quality.

Common barriers to virtual visiting included challenges associated with family member ability to use videoconferencing technology or having access to a device.<sup>37</sup> Communication strategies suggested by families and clinicians for productive remote interactions include identifying a family point person to receive updates, frequently assessing family understanding, positioning the camera so that family can see the patient, and allowing time for the family and patient to interact without clinician presence.<sup>38</sup> Interestingly, this model is in contrast to the study in France that reported high levels of stress among RPs who were to field provider calls and updates.<sup>31</sup> Overall, judicious use of video conferencing may be beneficial in some settings. Optimizing communication strategies is important from the provider standpoint. Technical issues and access to technology may limit effective implementation of video conferencing.

## Study Quality

The authors found the included studies were of limited quality (Table 4). Qualitative studies, of which there were several (Figure 2B), were evaluated using the Critical Appraisal Skills Program appraisal tool.<sup>15</sup> Here, the authors found inconsistent use of validated formal assessment measures for coding of subject interviews. Globally, this

contributed to substantial heterogeneity, limiting the ability to synthesize data. Furthermore, the nature of the secondary research questions has a tendency toward qualitative studies which, by nature, precludes most quantitative analyses. Given the uncertain potential risks and benefits of allowing hospital visitors, it might be argued that a randomized controlled trial is justified in this situation to provide further clarity, as was done for a study assessing impact of visitor presence on delirium prevalence in patients in the ICU.<sup>19</sup>

## DISCUSSION

Risk-benefit assessment is the cornerstone of medical and policy decision-making. As our systematic review has shown, there are inadequate studies of sufficient quality to determine whether restrictive policies have been effective in potentially limiting the spread of COVID-19. Although it might be reasonable to speculate that these policies slow spread based on mechanistic understanding of disease, this must be weighed against the potential harms of limiting hospital visitors. Our study highlights the complexity associated with the numerous factors and stakeholders impacted by hospital visitor policies. A review of literature surrounding hospital visitor policies after the 2003 severe acute respiratory syndrome (SARS) outbreak concluded that there



should be a tailored approach to visitor policies depending on the clinical scenario. For example, reasonable exceptions include allowing visitors for the labor and delivery unit, adults with disabilities, children, and dying individuals.<sup>7</sup> Similarly, recommendations from 7 interdisciplinary German palliative care societies argue for making palliative care and dying patients exempt from hospital visitor bans.<sup>48</sup> Specifically, the authors advocate for a patient-centered guidance of visitor policies.<sup>49</sup> Together, this argues for a nuanced approach to hospital visitor policymaking, taking into account clinical setting, patient population, visitor use of personal protective equipment, screening measures, community prevalence, and immunization status.<sup>12</sup> Exceptional circumstances should be included, and policies should be clearly articulated with transparent communication to the public.<sup>7,50</sup>

The CDC now provides visitor recommendations for a variety of scenarios (eg, vaccinated versus unvaccinated status, symptomatic vs asymptomatic, and specific facilities, such as dialysis centers); however, end-of-life care is not addressed.<sup>6</sup> The CDC also recommends using alternative methods of staying connected with patients, such as video calls. Although our findings suggest that increasing availability of video conferencing may be beneficial in certain situations, consideration should be given to how this practice may be practically and equitably applied. Exclusive reliance on technology may differentially impact those at an economic or resource disadvantage. The origin of this potential disparity harkens back to the infancy of hospital visitor policies when only paying patients were allowed to have visitors.<sup>1</sup>

Finally, there is a paucity of reporting for COVID-19 transmission in the context of altering hospital visitor policies and the body of literature is mostly of limited quality. Further retrospective, but importantly prospective or randomized studies, are needed to clarify the risks and benefits associated with limiting hospital visitors. In the meantime, it is prudent to take a patient-centered and thoughtful approach to hospital visitor policies with freedom given to practicing physicians to grant exemptions as opposed to blanket rulings produced by administrators.

## Strengths and Limitations

Strengths of our study include a systematic investigation of the available literature at a period of high policy turnover during the COVID-19 pandemic. Study parameters were prespecified in the protocol to reduce the risk of bias in accordance with accepted systematic review guidelines. Multiple authors independently completed each step to reduce noise among the otherwise heterogeneous data. The most notable limitation was the inability to assess our primary outcome: the impact of visitor policies on COVID-19 transmission. Only 1 included study reported COVID-19 transmission, which was in the context of transmission from mother to newborn.<sup>46</sup> Therefore, it is difficult to comment on whether restriction of hospital visitors significantly

reduced the spread of COVID-19 infection. Second, our analysis was limited by the lack of reporting of COVID-19 status in study participants and pertinent details about the visitor policies in place. This may be due to fluid policies in the face of a rapidly evolving pandemic; however, a few investigators used this as an advantage to perform cohort studies. Notably, these retrospective cohort studies compared groups of patients pre- and postimplementation of visitor policy.<sup>21,29,30,38</sup> Potential downsides to these retrospective studies include biases related to the selection of subjects, recall bias, and confounding factors given lack of randomization.<sup>51</sup> Additionally, 2 prospective cohort studies had relatively small sample sizes and only 1 assessed COVID-19 transmission.<sup>31,46</sup> Finally, the ROBINS-I tool was used, and all authors agreed that these studies were of low quality.<sup>16</sup> Together, the data reflect an early, developing literature exploring the efficacy of policy changes in the face of a challenging pandemic.

## ACKNOWLEDGMENTS

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## References

1. The care of strangers: the rise of America's hospital system. *Ann Intern Med* 1988. [https://doi.org/10.7326/0003-4819-109-11-931\\_2](https://doi.org/10.7326/0003-4819-109-11-931_2).
2. Giganti AW. Families in pediatric critical care: the best option. *Pediatr Nurs* 1998;24:261-5.
3. Peluso AM, Harnish BA, Miller NS, Cooper ER, Fujii AM. Effect of young sibling visitation on respiratory syncytial virus activity in a NICU. *J Perinatol* 2015;35:627-30. <https://doi.org/10.1038/jp.2015.27>.
4. Vain NE. Nosocomial respiratory viral infection in the neonatal intensive care unit. *Am J Perinatol* 2020;37:S22-5. <https://doi.org/10.1055/s-0040-1714081>.
5. Bridges CB, Kuehnert MJ, Hall CB. Transmission of influenza: implications for control in health care settings. *Clin Infect Dis* 2003;37:1094-101. <https://doi.org/10.1086/378292>.
6. Centers for Disease Control and Prevention (CDC). Managing health care operations during COVID-19. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/facility-planning-operations.html>. Accessed December 22, 2020.
7. Antommaria AHM, Monhollen L, Schaffzin JK. An ethical analysis of hospital visitor restrictions and masking requirements during the COVID-19 pandemic. *J Clin Ethics* 2021;32:38-47.
8. Kemp CL. #MoreThanAVisitor: Families as "Essential" Care Partners During COVID-19. *Gerontologist* 2021;61:145-51. <https://doi.org/10.1093/geront/gnaa161>.
9. Daubman BR, Black L, Goodman A. Recognizing moral distress in the COVID-19 pandemic: lessons from global disaster response. *J Hosp Med* 2020;15:696-8. <https://doi.org/10.12788/jhm.3499>.
10. Anderson-Shaw LK, Zar FA. COVID-19, moral conflict, distress, and dying alone. *J Bioeth Inq* 2020;17:777-82. <https://doi.org/10.1007/s11673-020-10040-9>.
11. Houghton C, Meskell P, Delaney H, et al. Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis. *Cochrane Database Syst Rev* 2020;4:CD013582. <https://doi.org/10.1002/14651858.CD013582>.
12. Munshi L, Evans G, Razak F. The case for relaxing no-visitor policies in hospitals during the ongoing COVID-19 pandemic. *CMAJ* 2021;193:E135-7. <https://doi.org/10.1503/cmaj.202636>.

13. Hutton B, Salanti G, Caldwell DM, et al. The PRISMA extension statement for reporting of systematic reviews incorporating network meta-analyses of health care interventions: checklist and explanations. *Ann Intern Med* 2015;162:777–84. <https://doi.org/10.7326/M14-2385>.
14. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan-a web and mobile app for systematic reviews. *Syst Rev* 2016;5:210. <https://doi.org/10.1186/s13643-016-0384-4>.
15. CASP. Critical Appraisal Skills Programme (CASP). Available at: [www.casp-uk.net](http://www.casp-uk.net). Accessed August 22, 2021.
16. Sterne JAC, Hernán MA, Reeves BC, et al. Risk Of Bias In Non-randomized Studies of Interventions (ROBINS-I): detailed guidance. *BMJ* 2016;355:i4919.
17. Oxford Center for Evidence-Based Medicine. Levels of evidence. Available at: <https://www.cebm.ox.ac.uk/resources/levels-of-evidence/oxford-centre-for-evidence-based-medicine-levels-of-evidence-march-2009>. Accessed December 22, 2020
18. Fritsch J, Petronio S, Helft PR, Torke AM. Making decisions for hospitalized older adults: ethical factors considered by family surrogates. *J Clin Ethics* 2013;24:125–34.
19. Rosa RG, Falavigna M, da Silva DB, et al. Effect of flexible family visitation on delirium among patients in the intensive care unit. *JAMA* 2019;322:216–28.
20. Nassar AP, Besen BAMP, Robinson CC, Falavigna M, Teixeira C, Rosa RG. Flexible versus restrictive visiting policies in ICUs: A systematic review and meta-analysis. *Crit Care Med* 2018;46:1175–80. <https://doi.org/10.1097/CCM.0000000000003155>.
21. Kandori K, Okada Y, Ishii W, Narumiya H, Maebayashi Y, Iizuka R. Association between visitation restriction during the COVID-19 pandemic and delirium incidence among emergency admission patients: a single-center retrospective observational cohort study in Japan. *J Intensive Care* 2020;8:90. <https://doi.org/10.1186/s40560-020-00511-x>.
22. Jeste DV, Eglit GML, Palmer BW, Martinis JG, Blanck P, Saks ER. Supported decision making in serious mental illness. *Psychiatry* 2018;81:28–40. <https://doi.org/10.1080/00332747.2017.1324697>.
23. Dieset I, Løvhaug L, Selle M, Kolseth A, Smeland OB, Færden A. Lessons learned from a cross-sectional survey among patients and staff in an acute psychiatric unit during an ongoing pandemic outbreak. *Psychiatry Res* 2021;298:113779. <https://doi.org/10.1016/j.psychres.2021.113779>.
24. Onwuteaka-Philipsen BD, Pasma HRW, Korfage IJ, et al. Dying in times of the coronavirus: An online survey among healthcare professionals about end-of-life care for patients dying with and without COVID-19 (the CO-LIVE study). *Palliat Med* 2021;35:830–42. <https://doi.org/10.1177/02692163211003778>.
25. Maaskant JM, Jongerden IP, Bik J, et al. Strict isolation requires a different approach to the family of hospitalised patients with COVID-19: a rapid qualitative study. *Int J Nurs Stud* 2021;117:103858. <https://doi.org/10.1016/j.ijnurstu.2020.103858>.
26. Feder S, Smith D, Griffin H, et al. “Why couldn’t I go in to see him?” Bereaved families’ perceptions of end-of-life communication during COVID-19. *J Am Geriatr Soc* 2021;69:587–92. <https://doi.org/10.1111/jgs.16993>.
27. Azoulay E, Cariou A, Bruneel F, et al. Symptoms of anxiety, depression, and peritraumatic dissociation in critical care clinicians managing patients with COVID-19 a cross-sectional study. *Am J Respir Crit Care Med* 2020;202:1388–98. <https://doi.org/10.1164/rccm.202006-2568OC>.
28. Boulton AJ, Jordan H, Adams CE, Polgarova P, Morris AC, Arora N. Intensive care unit visiting and family communication during the COVID-19 pandemic: a UK survey. *J Intensive Care Soc* 2021. <https://doi.org/10.1177/17511437211007779>.
29. Azad TD, Al-Kawaz MN, Turnbull AE, Rivera-Lara L. Coronavirus disease 2019 policy restricting family presence may have delayed end-of-life decisions for critically ill patients. *Crit Care Med* 2021;49:e1037–9. <https://doi.org/10.1097/CCM.0000000000005044>.
30. Piscitello GM, Fukushima CM, Saulitis AK, et al. Family meetings in the intensive care unit during the coronavirus disease 2019 pandemic. *Am J Hosp Palliat Med* 2021;38:305–12. <https://doi.org/10.1177/1049909120973431>.
31. Cattelan J, Castellano S, Merdji H, et al. Psychological effects of remote-only communication among reference persons of ICU patients during COVID-19 pandemic. *J Intensive Care* 2021;9:5. <https://doi.org/10.1186/s40560-020-00520-w>.
32. Chen C, Wittenberg E, Sullivan SS, Lorenz RA, Chang YP. The experiences of family members of ventilated covid-19 patients in the intensive care unit: a qualitative study. *Am J Hosp Palliat Med* 2021;38:869–76. <https://doi.org/10.1177/10499091211006914>.
33. Creutzfeldt CJ, Schutz REC, Zahuranec DB, Lutz BJ, Curtis JR, Engelberg RA. Family presence for patients with severe acute brain injury and the influence of the COVID-19 pandemic. *J Palliat Med* 2021;24:743–6. <https://doi.org/10.1089/jpm.2020.0520>.
34. Kennedy NR, Steinberg A, Arnold RM, et al. Perspectives on telephone and video communication in the intensive care unit during COVID-19. *Ann Am Thorac Soc* 2021;18:838–47. <https://doi.org/10.1513/AnnalsATS.202006-729OC>.
35. Sasangohar F, Dhala A, Zheng F, Ahmadi N, Kash B, Masud F. Use of telecritical care for family visitation to ICU during the COVID-19 pandemic: an interview study and sentiment analysis. *BMJ Qual Saf* 2021;30:715–21. <https://doi.org/10.1136/bmjqs-2020-011604>.
36. Jeyabraba S. Optimising family communication during a pandemic: do video calls have a role? *Intensive Care Med Exp* 2020.
37. Rose L, Yu L, Casey J, et al. Communication and virtual visiting for families of patients in intensive care during the COVID-19 pandemic: a UK national survey. *Ann Am Thorac Soc* 2021;18:1658–92. <https://doi.org/10.1513/AnnalsATS.202012-1500OC>.
38. Zeh RD, Santry HP, Monsour C, et al. Impact of visitor restriction rules on the postoperative experience of COVID-19 negative patients undergoing surgery. *Surgery* 2020;168:770–6. <https://doi.org/10.1016/j.surg.2020.08.010>.
39. Losurdo P, Paiano L, Samardzic N, et al. Impact of lockdown for SARS-CoV-2 (COVID-19) on surgical site infection rates: a monocentric observational cohort study. *Updates Surg* 2020;762:1263–71. <https://doi.org/10.1007/s13304-020-00884-6>.
40. Ashini A, Alsoufi A, Elhadi M. Parental perception of neonatal ICU visitation during the COVID-19 pandemic. *Int J Gynecol Obstet* 2021;153:554–5. <https://doi.org/10.1002/ijgo.13650>.
41. Bembich S, Tripani A, Mastromarino S, Di Risio G, Castelpietra E, Risso FM. Parents experiencing NICU visit restrictions due to COVID-19 pandemic. *Acta Paediatr Int J Paediatr* 2021;110:940–1. <https://doi.org/10.1111/apa.15620>.
42. Bradfield Z, Hauck Y, Homer CSE, et al. Midwives’ experiences of providing maternity care during the COVID-19 pandemic in Australia. *Women and Birth* 2022;35:262–71. <https://doi.org/10.1016/j.wombi.2021.02.007>.
43. Cullen S, Doherty J, Brosnan M. Women’s views on the visiting restrictions during COVID-19 in an Irish maternity hospital. *Br J Midwifery* 2021;29. <https://doi.org/10.12968/bjom.2021.29.4.216>.
44. Mayopoulos G, Ein-Dor T, Li K, Chan S, Dekel S. Giving birth under hospital visitor restrictions: heightened acute stress in childbirth in COVID-19 positive women [preprint]. *Res Sq*. doi:10.21203/rs.3.rs-112882/v1, accessed June 12, 2021.
45. Muniraman H, Ali M, Cawley P, et al. Parental perceptions of the impact of neonatal unit visitation policies during COVID-19 pandemic. *BMJ Paediatr Open* 2020;4:e000899. <https://doi.org/10.1136/bmjpo-2020-000899>.
46. Romano-Keeler J, Fiszbein D, Zhang J, et al. Center-based experiences implementing strategies to reduce risk of horizontal transmission of sars-cov-2: potential for compromise of neonatal microbiome assemblage. *Gastroenterology* 2021. [https://doi.org/10.1016/s0016-5085\(21\)01299-3](https://doi.org/10.1016/s0016-5085(21)01299-3).
47. Wiener L, Rosenberg AR, Pennarola B, Fry A, Weaver M. Navigating the terrain of moral distress: experiences of pediatric end-of-life care and bereavement during COVID-19. *Palliat Support Care* 2021;19:129–34. <https://doi.org/10.1017/S1478951521000225>.

48. Münch U, Müller H, Deffner T, et al. Recommendations for the support of suffering, severely ill, dying or grieving persons in the corona pandemic from a palliative care PERSPECTIVE: RECOMMENDATIONS of the German Society for Palliative Medicine (DGP), the German Interdisciplinary Association. *Schmerz* 2020;34:303–13. <https://doi.org/10.1007/s00482-020-00483-9>.
49. Smith L, Medves J, Harrison MB, Tranmer J, Waytuck B. The impact of hospital visiting hour policies on pediatric and adult patients and their visitors. *JBIS Libr Syst Rev* 2009;7:38–79. <https://doi.org/10.11124/jbisrir-2009-181>.
50. Weiner HS, Firm JI, Hogikyan ND, et al. Hospital visitation policies during the SARS-CoV-2 pandemic. *Am J Infect Control* 2021;49:516–20. <https://doi.org/10.1016/j.ajic.2020.09.007>.
51. Geneletti S, Richardson S, Best N. Adjusting for selection bias in retrospective, case-control studies. *Biostatistics* 2009;10:17–31. <https://doi.org/10.1093/biostatistics/kxn010>.
52. Flacking R, Lehtonen L, Thomson G, et al. Closeness and separation in neonatal intensive care. *Acta Paediatr Int J Paediatr* 2012; 101:1032–7.
53. He FB, Axelin A, Ahlqvist-Björkroth S, Raiskila S, Löyttyniemi E, Lehtonen L. Effectiveness of the close collaboration with parents intervention on parent-infant closeness in NICU. *BMC Pediatr* 2021;21:28. <https://doi.org/10.1186/s12887-020-02474-2>.
54. Murray PD, Swanson JR. Visitation restrictions: is it right and how do we support families in the NICU during COVID-19? *J Perinatol* 2020;40:1576–81. <https://doi.org/10.1038/s41372-020-00781-1>.

## SUPPLEMENTARY DATA

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amjmed.2022.04.005>.

## SUPPLEMENTARY MATERIAL

### Pediatric ICUs and Neonatal ICUs

As with adult populations, similar negative associations with visitor restrictions are present in the pediatric population. A cross-sectional survey of pediatric palliative care team members from 80 cities within 39 states in the United States found a high incidence of moral distress among health care providers. This distress was attributed to an inability to provide a desired level of care with existing rules and policies (21 of the reviewed open-ended responses) as well as bearing witness to patient and family suffering enhanced by the pandemic (18 responses). Finally, 6 responses described moral uncertainty and

distress with medical decision-making in context of new rules and policies.<sup>47</sup>

Parent-infant closeness is also an integral aspect of newborn care (Supplementary Table 2, available online). Skin-to-skin contact between parents and their newborns is known to positively impact parent well-being and infant development.<sup>52,53</sup> Likewise, NICUs were historically associated with increased access of hospital visitors.<sup>2</sup> This typical practice was called into question during the COVID-19 pandemic, especially when babies were born to mothers who tested positive for COVID-19. A prospective cohort study of this population (N = 21) found no COVID-19 transmission from mother to infant when separated after delivery. However, this came at the detriments of increased length of hospital stay and decreased breastmilk use.<sup>46</sup> A

**Supplementary Table 1** Data Extraction Form

Criteria	Data Entry
Study characteristics and data quality	
General	Article ID #, First author, Journal, Year of publication
Geographic location	0=USA (please list state[s]), 1=Other country (please list)
Setting	0=General ward, 1=Stepdown, 2=ICU
Level of Care	0=Regular visit, 1=End-of-life care, 2=Other special circumstance
Type	0=Clinical trial/interventional, 1=Observational
Study design	General design, Inclusion criteria, Exclusion criteria
Study quality and risk of bias	GRADE: 0=not needed, 1=very low, 2=low, 3=moderate, 4=high ROBINS-I (if applicable), ROB 2 (if applicable), CASP (if applicable)
Studies of patients	
Sample size	
Patient population	0=Adults (mean age >18), 1=Geriatrics (mean age >65), 2=Neonates (mean age <4 weeks), 4=Pediatrics (mean age >4 weeks, <18 years) Percent male Special population COVID-19 status: 0=Diagnosed, 1=Symptomatic, 2=Suspected, 3=No COVID
Visitation policy	Type and description: 0=Unrestricted, 1=Some restrictions, 2=No visitors
Outcome measures (method and result)	Primary: Global well-being, Quality of life, Satisfaction survey, Moral distress Secondary: Morbidity, Mortality, Health care resource utilization
Studies of health care providers	
Sample size	
Subjects	0=Physician, 1=Student, 2=Nurse, 3=Ancillary staff Percent male
Visitation policy	Type and description: 0=Unrestricted, 1=Some restrictions, 2=No visitors
Outcome measures (method and result)	Primary: Global well-being, Quality of life, Satisfaction survey, Moral distress Secondary: Morbidity, Mortality, Healthcare resource utilization
Studies of family members	
Sample size	
Patient population	0=Adults (mean age >18), 1=Geriatrics (mean age >65), 2=Neonates (mean age <4 weeks), 4=Pediatrics (mean age >4 weeks, <18 years) Percent male Special population COVID-19 status: 0=Diagnosed, 1=Symptomatic, 2=Suspected, 3=No COVID
Visitation policy	Type and description: 0=Unrestricted, 1=Some restrictions, 2=No visitors
Outcome measures (method and result)	Primary: Global well-being, Quality of life, Satisfaction survey, Moral distress Secondary: Morbidity, Mortality, Health care resource utilization

CASP = Critical Appraisal Skills Programme; COVID-19 = coronavirus disease 2019; ICU = intensive care unit; ROBINS-I = Risk Of Bias In Nonrandomized Studies of Interventions.

**Supplementary Table 2** Summary of Included Studies Focused on the NICU and Peripartum Settings\*

First Author	Location	Design	Sample Size	Participants	Visitor Policy
NICU and PICU					
Romano-Keeler J <sup>46</sup>	Illinois, United States	Prospective cohort	21	Newborns in the NICU, born to mothers who were COVID-19 positive	No visitors
Bembich S <sup>41</sup>	Italy	Cross-sectional survey	10	Parents of newborns in the NICU (mothers: 90%)	Some restriction
Muniraman H <sup>45</sup>	United States, UK	Cross-sectional survey	224	Parents of newborns in the NICU (mean age: 32, mothers: 70%)	Some restriction
Ashini A <sup>40</sup>	Libya	Cross-sectional survey	41	Parents of neonate(s) in the NICU (mean age: 32, mothers: 75.5%)	Some restriction
Wiener L <sup>47,†</sup>	United States	Cross-sectional survey	207	Pediatric palliative care team members from 80 cities within 39 states	Mixed
Peripartum/Labor and Delivery					
Cullen S <sup>43</sup>	Ireland	Cross-sectional survey	422	Antenatal or postpartum patients	Some restriction
Mayopoulos G <sup>44</sup>	Massachusetts, United States	Cross-sectional survey	136	Postpartum women (mean age: 32, 68 COVID-19 positive, suspected, or confirmed and 68 COVID-19 negative)	Some restriction
Bradfield Z <sup>42</sup>	Australia	Cross-sectional survey	620	Midwives (age ≥18, female: 98.5%)	Mixed

COVID-19 = coronavirus disease 2019; ICU = intensive care unit; NICU = neonatal intensive care unit; PICU = pediatric intensive care unit.

\*The "No visitors" designation was reserved for studies that explicitly stated no visitors were allowed under any circumstances, per hospital policy. Demographic information reported as available.

†Study included both inpatient ward and ICU settings.

cross-sectional survey of parents of newborns in a NICU in Italy found 54.5% of coded answers expressed dysphoric emotions, in particular sadness and anger associated with restrictive visitor policies. Another 25.5% expressed relational suffering, both as separation from the partner and newborn. A total of 20% of responses reflected adaptation strategies.<sup>41</sup>

A larger-scale international (United States and UK) cross-sectional survey of 224 parents of newborns yielded similar findings.<sup>45</sup> Here, a policy of one visitor restricted to a limited duration was associated with a higher proportion of concerns for lack of bonding and inability to participate in care. A policy of one visitor and unrestricted visit duration was associated with a lower proportion of concerns ( $P < .02$ ). Respondents subject to policy restrictions of one parent for a limited time were more likely to perceive a mild or severe impact compared with those facing less austere restrictions ( $P = .02$ ). Respondents from centers with more restrictive policies reported more negative impacts on breast feeding ( $P = .01$ ). A survey from Libya ( $N = 41$ ) echoed similar findings regarding breastfeeding and addressed some additional concerns.<sup>40</sup> Almost half of parents (46.3%) did not receive status updates about their child, and 7 (17.1%) reported facing difficulties in bringing milk and other supplies to the hospital. Most mothers (85.4%) scored  $>10$  on the Edinburgh Postnatal Depression Scale, which suggested a minor or major depression. Notably, 4 (9.8%) participants reported suicidal ideation.

Limitation of visitors, particularly parents, to the NICU is associated with negative impacts on parent-infant bonding and breastfeeding, overall counter to the well-being of the family unit. Only 1 of the included studies assessed COVID-19 transmission, and it was centered on vertical passage from mother to infant.<sup>46</sup> It remains uncertain whether limiting parental visitation brings enough benefit via curbing COVID-19 transmission to offset the known detrimental effects of parent-child separation, especially with parents who are asymptomatic and negative for COVID-19 infection.<sup>54</sup>

## Peripartum Period

Focusing on the maternal aspect of the mother-child unit, a cross-sectional survey of 422 women in Ireland investigated the impact of visitor restrictions on the peripartum experience (Supplementary Table 2, available online).<sup>43</sup> Most (86.5%) women desired that their partner be permitted to visit while on antenatal ward. However, most (84.7%) also said they had enough staff support on postnatal ward. In contrast, a survey of 620 midwives in Australia revealed that 61.9% thought social distancing impacted their ability to care for mothers and endorsed feeling distressed by seeing women without support of their partners.<sup>42</sup> However, some midwives expressed support for limited visitation because the lack of distraction by visitors gave them more dedicated time with new mothers to work on breastfeeding,

for example. Finally, a cross-sectional survey (N = 136) specifically assessed the impact of visitor limitations on postpartum mothers with COVID-19 infection.<sup>44</sup> Women positive for COVID-19 were 11 times as likely to have no visitors than women who were negative for COVID-19 and reported higher levels of pain in delivery, lower newborn

weights, and more infant admissions to the NICU. Those with no visitors were 6 times as likely to report clinical acute stress in birth than women who were COVID positive and had visitors. Overall, the theme of frustration and sadness of limited access of hospital visitors is continued in the peripartum space.