Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Conditions of Nursing Practice in Hospitals and Nursing Homes Before COVID-19: Implications for Policy Action

Rachel French, PhD, RN; Linda H. Aiken, PhD, RN, FAAN, FRCN; Kathleen E. Fitzpatrick Rosenbaum, BSN, RN, RNC-NIC, CCRN; and Karen B. Lasater, PhD, RN, FAAN

Background: The COVID-19 pandemic has stimulated interest in potential policy solutions to improve working conditions in hospitals and nursing homes. Policy action in the pandemic recovery period must be informed by pre-pandemic conditions. **Purpose:** To describe registered nurses' (RNs') working conditions, job outcomes, and measures of patient safety and care quality in hospitals and nursing homes just before the pandemic. **Methods:** Cross-sectional study using descriptive statistics to analyze survey data from RNs in New York and Illinois collected December 2019 through February 2020. **Results:** A total of 33,462 RNs were included in the final analysis. Before the pandemic, more than 40% of RNs reported high burnout, one in four were dissatisfied with their job, and one in five planned to leave their employer within 1 year. Among nursing home RNs, one in three planned to leave their employer. RNs reported poor working conditions characterized by not having enough staff (56%), administrators who did not listen/respond to RNs' concerns (42%), frequently missed nursing care (ranging from 8% to 34% depending on the nursing task in question), work that was interrupted or delayed by insufficient staff (88%), and performing non-nursing tasks (82%). Most RNs (68%) rated care quality at their workplace as less than excellent, and 41% gave their hospital an unfavorable patient safety rating. **Conclusion:** Hospitals and nursing homes were understaffed before the COVID-19 pandemic, and many RNs were dissatisfied with their employers' contribution to the widespread observed shortage of nursing care during the pandemic. Policy interventions to address understaffing include the implementation of safe nurse staffing standards and passage of the Nurse Licensure Compact to permit RNs to move expeditiously to locales with the greatest needs.

Keywords: Nurse staffing, Nurse Licensure Compact, NLC, hospitals, nursing homes, COVID-19 pandemic, care quality, patient safety, nurse staffing standards

The COVID-19 pandemic put an unprecedented strain on hospitals and nursing homes, requiring registered nurses (RNs) to provide care to critically ill patients under extraordinary circumstances. Indeed, recent evidence describes the moral injury and emotional toll the pandemic has taken on frontline RNs (Al Maqbali, et al., 2021; Havaei et al., 2021; Lake et al., 2021; Rushton et al., 2021; Ulrich et al., 2020). Growing concern about job-related burnout among RNs and nursing care shortages have stimulated stakeholder interest in policy actions that may be effective in addressing the pressing healthcare challenges amid the ongoing pandemic. However, future policy interventions must consider the pre-pandemic conditions that set the stage for today's most pressing healthcare challenges.

In this study, we leveraged a large survey of RNs working in hospitals and nursing homes to describe job-related outcomes, working conditions, and nurse reports of patient safety and quality of care in the pre-pandemic period. Data from RNs were collected in the weeks preceding the first wave of the COVID-19 pandemic, enabling this study to uniquely contribute an evaluation of working conditions and nurse workforce concerns that existed prior to the pandemic. We also evaluate RNs' healthcare policy views related to policy interventions for ensuring safe, high-quality care for patients.

Literature Review

As around-the-clock healthcare providers in hospitals and nursing homes, RNs are well-positioned to evaluate patient safety and quality of care in their organization. A large body of evidence validates nurse reports of safety, quality, and working conditions with patient outcomes of all kinds, including mortality, readmission, and patient satisfaction (Aiken et al., 2012; Aiken, Sloane, et al., 2018; Lasater, McHugh, et al., 2020; Martsolf et al., 2014; Pearson et al., 2006; Sloane et al., 2018). Over decades of research, RNs have consistently identified poor work environments and nurse understaffing as threats to the provision of safe, high-quality patient care. Indeed, empirical evidence from hospitals and nursing homes demonstrates that in settings where RNs (a) care for greater numbers of patients at time, (b)

lack clinical autonomy in practice, (c) have unsupportive leadership that does not respond to RNs' concerns, and (d) poor collegial relationships with physicians, patients are more likely to experience poor health outcomes and RNs are more likely to report burnout, job dissatisfaction, and intent to leave (Aiken et al., 2011; Kutney-Lee et al., 2013; Lake et al., 2019; McHugh et al., 2011; McHugh & Ma, 2014; Needleman et al., 2002; Needleman et al., 2011; Schlak et al., 2021; White et al., 2019; White et al., 2020).

Evidence from panel studies of changes in hospitals over time suggest that improving nurse working conditions may be an interventional target for improving patient safety, quality of care, and nurse job-related outcomes. For example, a study of 737 hospitals between 2006 and 2016 showed that among the hospitals that improved their work environments and staffing, RNs reported improvements in patient safety and care quality (Sloane et al., 2018). Although improving nurse work environments and patient-to-nurse staffing ratios may be key to improving patient outcomes, the evidence suggests that only one in five U.S. hospitals have meaningfully improved their work environments over a 10-year period, whereas approximately 7% of hospitals got worse (Aiken, Cerón, et al., 2018). Improving hospital work environments over time was not only associated with more favorable care quality and safety for patients, but it was also associated with less burnout and job dissatisfaction among RNs (Aiken, Cerón, et al., 2018).

Most of the evidence characterizing relationships between nurse work environments and patient-to-nurse staffing ratios has been generated in the hospital setting, although significant challenges exist in nursing homes, which were also hard-hit by the pandemic. One study found that RNs working in nursing homes reported higher rates of burnout and more job dissatisfaction as compared with RNs working in hospital settings (McHugh et al., 2011). Another study found nursing home RNs' reports of burnout and job dissatisfaction were linked with higher amounts of missed nursing care, and the authors concluded that improved work environments and staffing adequacy may attenuate these effects (White et al., 2019). Nursing homes with poor nurse work environments have been linked to higher rates of pressure ulcers and more hospitalizations among residents as well as greater burnout and job dissatisfaction among RNs (White et al., 2020).

The cumulative evidence generated in both hospital and nursing home settings suggests that although interventions to improve hospital work environments and patient-to-nurse staffing ratios may be key to addressing quality, safety, and nurse workforce concerns, progress was slow prior to the pandemic. Under the onslaught of the COVID-19 emergency, nurse working conditions have only further deteriorated. Large-scale policy intervention is warranted to support organizational improvements in both hospital and nursing home settings.

Methods

Study Design and Data

Data for this cross-sectional study were derived from an emailed survey of all actively licensed RNs in New York and Illinois collected between December 16, 2019, and February 24, 2020 (i.e., RN4CAST-NY/IL). The RN4CAST-NY/IL survey included RNs in New York and Illinois because at the time the survey was conducted, these two states were considering policy legislation to require hospitals and nursing homes to meet minimum safe staffing requirements. The survey asked RNs to report on their working conditions—including staffing, work environments, quality of care, and patient safety—as well as nurse-specific information, including measures of their job-related burnout, job dissatisfaction, intent to leave their employer, and views on healthcare policy actions that could improve quality and safety in healthcare.

The survey took approximately 10 to 15 minutes to complete. Follow-up reminders to complete the survey were sent approximately twice per week for 7 weeks. The overall response rate of the RN4CAST-NY/IL was 18%, reflective of endemic difficulties with survey response rates (National Research Council, 2013) as well as our very large sampling frame consisting of 100% of RNs in two states—some of whom were not actively employed, were retired, or were working in settings other than hospitals and nursing homes. Because the survey included all actively licensed RNs, we have no way of knowing what the response rate was among RNs of interest in this study—i.e., those employed in hospitals and nursing homes. Nevertheless, this approach of surveying RNs via state licensure lists and using RNs as informants of workplace conditions has been demonstrated to yield unbiased estimates of RN working conditions (Lasater et al., 2019).

Sample

RNs were included in this study if they reported being employed in a hospital or nursing home at the time of survey participation. RNs in any position of employment (e.g., direct care staff nurse, nurse manager) were included.

Variables

Our study describes pre-COVID nurse reports of job outcomes, quality of patient care, patient safety, working conditions, healthcare policy views, and demographic characteristics of RNs in hospitals and nursing homes. Nurse demographics included age, sex, race/ethnicity, years of experience as an RN, and educational preparation. Nurse job outcomes included measures of job dissatisfaction, burnout, and intent to leave their employer. Job dissatisfaction was measured using RNs' response to the following question on a 4-point Likert scale, "Overall, how satisfied are you with your job?" RNs who responded either "somewhat dissatisfied" or "very dissatisfied" were defined as being dissatisfied with their job. Burnout was defined using the Emotional Exhaustion subscale of the Maslach Burnout Inventory (Maslach et al., 1997), with "high burnout" defined as a score of 27 or greater (Firth et al., 1985). Intent to leave was a dichotomous variable based on the

survey question: "Do you plan to be with your current employer 1 year from now?"

RNs were asked their healthcare policy views pertaining to potential policy actions that would improve healthcare. For example, RNs were asked, "How do you view allowing RNs to practice across state lines without obtaining additional licenses?" Response options were "generally favorable," "no opinion," or "generally unfavorable." To evaluate healthcare policy views about the most important actions to ensure high quality and safe patient care, RNs were asked to respond on a scale of 0 to 10 about the importance of (a) improving patient-to-nurse staffing in hospitals, (b) reducing burnout among RNs, and (c) improving the working conditions of RNs. Ratings of 8 or higher were categorized as "very high importance."

Organizational quality was assessed by RN responses to questions about their overall rating of quality of care in their organization, their likelihood of recommending where they worked to family/friends needing care, their confidence in patients and their caregivers being able to manage care after discharge, and their confidence that management acts to resolve problems in patient care that RNs identify. RNs rated the work environment of their organization using a global single-item measure with the following options: excellent, good, fair, or poor. This scale was also used on 5 components—each representing one of the subscales of the Practice Environment Scale of the Nursing Work Index (PES-NWI). The PES-NWI is endorsed by the National Quality Forum as a validated instrument for measuring nurse work environments (Lake et al., 2019). The five components evaluated whether RNs agreed that the following aspects were present in their jobs: (a) enough staff to get the work done; (b) administration that listens and responds to employee concerns; (c) a clear philosophy of nursing that pervades the patient care environment; (d) a nurse manager who is a good manager and leader; (e) a lot of teamwork between RNs and physicians.

Measures of nurse-reported patient safety were derived from questions that asked RNs to give their practice setting an overall grade on patient safety and infection prevention. Response options for both questions were excellent (A), good (B), acceptable (C), poor (D), or failing (F). Grades of A and B were categorized as favorable, while C, D, and F were categorized as unfavorable. The institution's culture of patient safety was evaluated using questions derived from the Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture (Sorra et al., 2014). RNs were asked how strongly they agreed with statements about patient safety, including whether (a) their mistakes are held against them; (b) important patient care information is often lost during shift changes or when another provider is covering my patients; (c) things "fall between the cracks" when transferring patients from one unit or care setting to another; (d) staff feel free to question the decisions or actions of those in authority; (e) they discuss ways to prevent errors from happening again; (f) they are given feedback about changes put into place based on event reports; and (g) the actions of management show that patient safety is a top priority. Response options were strongly agree, agree, neither, disagree, and strongly disagree. Agreement was defined by responses of "strongly agree" or "agree."

Operational failures (Tucker & Spear, 2006) were defined by how frequently work was interrupted or delayed by various issues, including the following: (a) missing supplies or broken equipment; (b) missing, incomplete, or incorrect physician/provider orders; (c) missing medications; (d) missing, late, or wrong diet; (e) electronic documentation system problems or errors; (f) insufficient staff; and (g) performing non-nursing tasks (e.g., transportation, housekeeping). Measures of missed nursing care were derived by asking RNs to identify which of 14 routine nursing tasks were necessary but left undone during their last shift due to a lack of time (Lake et al., 2020). Data about patient safety, operational failures, and missed nursing care were from hospital RNs only.

Statistical Analyses

Descriptive statistics (i.e., numbers, percentages, means, standard deviations) were used to describe hospital and nursing home RNs' responses. Tests of significance (i.e., χ^2 statistics and t tests) were used, as appropriate, to test differences between hospital and nursing home RNs' responses. We used STATA to perform the analyses. This study was approved by the University of Pennsylvania Institutional Review Board (Protocol #834307).

Results

The final analytic sample totaled 33,462 RNs, of whom 29,859 (89.2%) were employed in hospitals and 3,603 (10.8%) in nursing homes. Demographic characteristics, job outcomes, and healthcare policy views of these RNs, as well as statistical differences between hospital and nursing home RNs, are reported in Table 1. A large proportion of RNs in both hospitals and nursing homes reported being burned out (41.2% and 44.3%, respectively, $p < 0.001$) and dissatisfied with their jobs (24.6% and 28.05%, respectively, $p < 0.001$). Roughly one in five (20.7%) hospital RNs and one in three (30.0%) nursing home RNs ($p < 0.001$) intended to leave their employer within 1 year.

Most RNs (74.0%) reported being in favor of policies that would allow RNs to practice across state lines without obtaining additional licenses, with favorable views significantly higher among nursing home RNs (76.3%) than hospital RNs (73.7%). The vast majority (more than 90%) of RNs rated improving patient-to-nurse staffing, reducing burnout among RNs, and improving the working conditions of RNs to be of very high importance for ensuring high quality and safe patient care. Hospital RNs were more likely than nursing home RNs to rate staffing as having very high importance (95.1% vs 92.1%, $p < 0.001$), but nearly all RNs in both settings rated staffing as highly important to quality and safety.

Nurse reports of organizational quality and work environments are described in Table 2. Less than one-third (31.8%) of RNs gave their organization an excellent rating on quality of care, with significantly worse quality ratings among nursing home RNs (18.0% gave an excellent rating) as compared to hospital RNs (33.6%, $p < 0.001$).

TABLE 1

Study Sample Characteristics, Job Outcomes, and Policy Views Among Hospital and Nursing Home Registered Nurses

Variable	All Registered Nurses (*N* = 33,462)	Hospital Nurses (*n* = 29,859)	Nursing Home Nurses (*n* = 3,603)	*p*
Nurse Characteristics				
Age in y, mean (SD)	44.6 (13.1)	44.3 (13.1)	47.3 (12.8)	<0.001
Female, *n* (%)	29,637 (88.8)	26,418 (88.7)	3,219 (89.4)	0.169
Race/ethnicity, *n* (%)				<0.001
White	20,869 (62.8)	18,926 (63.8)	1,943 (54.2)	
Black	4,236 (12.8)	3,598 (12.1)	638 (17.8)	
Hispanic	1,839 (5.5)	1,674 (5.7)	165 (4.6)	
Asian	3,254 (9.8)	2,785 (9.4)	469 (13.1)	
Other	3,031 (9.12)	2,663 (9.0)	368 (10.3)	
RN experience in years, mean (SD)	16.2 (13.2)	16.3 (13.1)	15.6 (13.7)	0.003
Baccalaureate (BSN) or higher, *n* (%)	24,674 (73.8)	22,849 (76.6)	1,825 (50.7)	<0.001
Nurse Job Outcomes				
High burnout,[a] *n* (%)	11,871 (41.5)	10,406 (41.2)	1,465 (44.3)	<0.001
Job dissatisfaction, *n* (%)	8,008 (25.0)	7,010 (24.6)	998 (28.0)	<0.001
Intent to leave employer in a year, *n* (%)	6,907 (21.7)	5,850 (20.7)	1,057 (30.0)	<0.001
Nurse Policy Views				
Favorable view of policies that would allow RNs to practice across state lines without obtaining additional licenses, *n* (%)	20,471 (74.0)	17,940 (73.7)	2,531 (76.3)	0.001
Views on Improving Safety and Quality				
Rated the following as very high importance to ensure high quality and safe patient care[b]:				
Improving patient-to-nurse staffing, *n* (%)	31,673 (94.8)	28,365 (95.1)	3,308 (92.1)	<0.001
Reducing burnout among nurses, *n* (%)	31,489 (94.4)	28,096 (94.4)	3,393 (94.6)	0.501
Improving the working conditions of nurses, *n* (%)	30,489 (91.6)	27,228 (91.7)	3,261 (91.1)	0.241

Note. BSN = bachelor of science in nursing. Percentages may not total 100% because of rounding.

[a] High burnout was defined as a score of 27 or greater on the Maslach Burnout Inventory.

[b] Scored on a scale of 0 to 10. Scores of 8 or higher were classified as very high importance.

Only 36.2% of hospital RNs would "definitely recommend" their organization to a family member or friend needing care, compared to as few as 29.4% of RNs in nursing homes ($p < 0.001$). Among hospital RNs, 12.3% were very confident that their organization would solve problems in clinical care identified by RNs, and 8.8% were very confident that patients and their caregivers could manage care after discharge.

With respect to RNs' evaluations of their work environments, 15.0% of hospital RNs and only 12.6% of nursing home RNs rated their environment as excellent ($p < 0.001$). Most RNs did not agree that there were enough staff to get the work done (55.8%). Additionally, 41.8% of RNs disagreed that administration listens and responds to RNs' concerns about patient care, 30.6% disagreed that there was a clear philosophy of nursing that pervaded the patient care environment, 29.0% disagreed that their nurse manager is a good manager and leader, and 19.0% disagreed that there was a lot of teamwork between RNs and physicians.

Hospital RNs' reports of patient safety are described in Table 3. Nearly 41% of RNs gave their hospital an unfavorable patient safety grade (C, D, or F), and 31.4% gave an unfavorable grade on infection prevention. Culture of patient safety ratings were poor, with high percentages of RNs reporting that mistakes are held against them (46.5%), that things "fall between the cracks" when transferring patients from one unit or care setting to another (40.5%), and that important patient care information is often lost during shift changes or when another provider is covering their patients (35.4%). More than one-third (36.0%) of RNs disagreed that staff felt free to question the decisions or actions of those in authority, 26.1% of RNs disagreed that the actions of management show that patient safety is a top priority, 23.7% disagreed that they were given feedback about changes put into place based on event reports, and 11.5% disagreed that they discussed ways to prevent errors from happening again.

Most hospital RNs reported that operational failures were common in their hospital, including having work that was interrupted or

TABLE 2

Nurse-Reported Organizational Quality and Work Environment Ratings

Variable	All Registered Nurses (*N* = 33,462)	Hospital Nurses (*n* = 29,859)	Nursing Home Nurses (*n* = 3,603)	*p*
Organizational Quality	*n* (%)	*n* (%)	*n* (%)	
Excellent rating of quality of care	8,966 (31.8)	8,359 (33.6)	607 (18.0)	<0.001
Definitely would recommend facility to friends/family	9,988 (35.4)	8,998 (36.2)	990 (29.4)	<0.001
Very confident in management to solve problems	-	3,053 (12.3)	-	
Very confident that patients and their caregivers can manage their care after discharge	-	2,121 (8.8)	-	
Nurse Work Environment (single measure)				<0.001
Excellent	4,710 (14.7)	4,261 (15.0)	449 (12.6)	
Good	13,264 (41.4)	11,933 (42.0)	1,331 (37.4)	
Fair	10,169 (31.8)	8,952 (31.5)	1,217 (34.2)	
Poor	3,863 (12.1)	3,302 (11.6)	561 (15.8)	
Nurse Work Environment (five subcomponents)				
Enough staff to get the work done				<0.001
Strongly disagree/somewhat disagree[a]	16,185 (55.8)	13,943 (54.4)	2,242 (66.5)	
Strongly agree/somewhat agree	12,821 (44.2)	11,691 (45.6)	1,130 (33.5)	
Administration listens and responds to employee concerns				<0.001
Strongly disagree/somewhat disagree[a]	12,251 (41.8)	10,985 (42.4)	1,266 (37.2)	
Strongly agree/somewhat agree	17,048 (58.2)	14,910 (57.6)	2,138 (62.8)	
A clear philosophy of nursing that pervades the patient care environment				0.002
Strongly disagree/somewhat disagree[a]	8,883 (30.6)	7,775 (30.3)	1,108 (32.9)	
Strongly agree/somewhat agree	20,134 (69.4)	17,877 (69.7)	2,257 (67.1)	
A nurse manager who is a good manager and leader				<0.001
Strongly disagree/somewhat disagree[a]	8,400 (29.0)	7,567 (29.6)	833 (24.8)	
Strongly agree/somewhat agree	20,564 (71.0)	18,037 (70.5)	2,527 (75.2)	
A lot of teamwork between nurses and physicians				0.002
Strongly disagree/somewhat disagree[a]	5,536 (19.0)	4,828 (18.8)	708 (21.0)	
Strongly agree/somewhat agree	23,573 (81.0)	20,915 (81.3)	2,658 (79.0)	

Note. Due to missing data, the number of all registered nurses ranged from 28,964 to 29,299. For hospital nurses, the range was 25,604 to 25,895. For nursing home and long-term care nurses, the range was 3,360 to 3,404.

[a] Included neutral responses of neither agree nor disagree.

delayed by insufficient staff (88.3%), performing non-nursing tasks such as transportation or housekeeping (81.5%), missing supplies or broken equipment (79.6%), missing medications (66.1%), missing, incomplete, or incorrect physician/provider orders (65.4%), electronic documentation system challenges (54.3%), and missing, late, or wrong diet (51.7%). Hospital RNs reported that on their most recent shift, they did not deliver necessary nursing care to patients because of a lack of time. Missed nursing care included comforting/talking with patients (33.6%), teaching/counseling patients and family (27.4%), adequately surveilling patients (21.0%), administering medications on time (18.5%), and administering treatments and procedures on time (15.3%).

Discussion

Before the COVID-19 pandemic, RNs' working conditions in hospitals and nursing homes were poor. High percentages of RNs in hospitals and nursing homes reported being burned out, dissatisfied with their jobs, and intending to leave their employer within a year. RNs rated patient safety and quality of care in these settings unfavorably. Since the RN4CAST-NY/IL survey was conducted, other research has described the physical and emotional impact of the pandemic on RNs (Al Maqbali et al., 2021; Fernandez et al., 2020; Lake et al., 2021) and detailed the workforce challenges amid the pandemic (Denny-Brown et al., 2020; Behrens & Naylor, 2020). Understanding the pre-pandemic conditions in hospitals and nursing homes, as described in the present study, provides context for the pandemic's impact on nurse working conditions, job-related outcomes, patient safety, and

TABLE 3

Hospital Nurses' Reports of Patient Safety and Organizational Support

Variable	*n* (%)
Overall Safety	
Overall grade on patient safety	
Favorable (A or B)	14,529 (59.1)
Unfavorable (C, D, or F)	10,056 (40.9)
Overall grade on the prevention of infections	
Favorable (A or B)	17,016 (68.6)
Unfavorable (C, D, or F)	7,799 (31.4)
Patient Safety Culture[a]	
Nurses agree that:	
Mistakes are held against them	11,525 (46.5)
Things "fall between the cracks" when transferring patients from one unit or care setting to another	9,968 (40.5)
Important patient care information is often lost during shift changes or when another provider is covering my patients	8,723 (35.4)
Nurses disagree that:	
Staff are free to question the decisions or actions of those in authority	8,874 (36.0)
Actions of management show that patient safety is a top priority	6,407 (26.1)
They are given feedback about changes put into place based on event reports	5,829 (23.7)
They discuss ways to prevent errors from happening again	2,828 (11.5)
Operational Failures	
Work is interrupted or delayed by:	
Insufficient staff	17,860 (88.3)
Performing non-nursing tasks (e.g., transportation, housekeeping)	16,358 (81.5)
Missing supplies or broken equipment	16,145 (79.6)
Missing medications	13,115 (66.1)
Missing, incomplete, or incorrect physician/provider orders	13,137 (65.4)
Electronic documentation system problems or errors	10,787 (54.3)
Missing, late, or wrong diet	8,969 (51.7)
Missed Nursing Care	
Nursing tasks that were necessary but left undone[b]:	
Comfort/talk with patients	10,024 (33.6)
Teach/counsel patients and family	8,177 (27.4)
Adequately document nursing care	6,873 (23.0)
Address ambulation or range of motion	6,860 (23.0)
Participate in team discussions of patient's care	6,526 (21.9)
Adequate patient surveillance	6,272 (21.0)
Address oral hygiene	5,996 (20.1)
Develop or update patient plan of care	5,967 (20.0)
Administer medications on time	5,518 (18.5)
Prepare patient and families for discharge	4,645 (15.6)
Administer treatments and procedures on time	4,577 (15.3)
Provide skin care	4,484 (15.0)
Coordinate patient care	3,749 (12.6)
Pain management	2,472 (8.3)

Note. Percentages may not total 100% because of rounding.

[a] Derived from the Agency for Healthcare Research and Quality's Hospital Survey on Patient Safety Culture.

[b] Nursing tasks were necessary but left undone during their most recent shift due to a lack of time.

care quality and informs the large scale of policy action that will be required to address these long-standing problems in healthcare.

Policy actions that were relevant in the pre-pandemic period continue to be relevant today but carry greater urgency. For example, an existing pre-pandemic policy intervention may have alleviated the need for emergency state policy action during the COVID-19 public health crisis. During the first surges of COVID-19, governors in some states (e.g., New York) used their temporary emergency powers to waive licensure requirements for RNs coming from other states to help with the COVID surge (National Council of State Boards of Nursing, 2020b, 2022). Such emergency powers would not have been necessary had those states been part of the Nurse Licensure Compact (NLC)—a state-level policy that enables RNs licensed in any NLC state to practice in other NLC states via a multistate license. At the time of this publication, 36 U.S. states have already implemented the NLC, and two states and one territory have enacted legislation but are awaiting implementation (National Council of State Boards of Nursing, 2022). However, large states that bore the brunt of the pandemic early on still have not passed the NLC—including New York and California. Additionally, during the pandemic, state boards of nursing experienced substantially delayed processing of applications for licensure, pointing to another vulnerability of our healthcare system in a time of a healthcare or other national emergency. Further adoption of the NLC could facilitate greater mobility of the much-needed nursing workforce across the United States to meet the demand for nursing care (National Council of State Boards of Nursing, 2020b). Such a policy has wide support among RNs and the general public. Our study found that the majority of RNs in hospitals (73.4%) and nursing homes (76.3%) have favorable views of policies such as the NLC that would permit RNs to practice in other states without having to seek state-by-state licenses. A national Harris Poll found that the majority (72%) of the public is also supportive of such legislation (NursesEverywhere, 2020).

Another problem that pre-dated the pandemic is that most RNs report not having enough staff to provide safe care. Understaffing of RNs is a threat to patient safety because high patient-to-nurse staffing ratios are associated with more missed nursing care in hospitals (Ball et al., 2018) and nursing homes (White et al., 2019) and worse outcomes for both patients and RNs (Aiken et al., 2002; Aiken et al., 2011; Aiken, Cerón, et al., 2018; Brooks Carthon et al., 2012; Brooks Carthon et al., 2021; Lasater, Aiken, et al., 2020; Lasater, Sloane, et al., 2020; Lasater, Aiken, Sloane, French, Anusiewicz, et al., 2021; Lasater, Aiken, Sloane, French, Martin, et al., 2021; McHugh et al., 2016; McHugh et al., 2021). Safe nurse staffing legislation is an evidence-based policy intervention that could be adopted at either the state or federal level to ensure there are enough RNs in hospitals and nursing homes to safely care for patients.

In the United States, California is the first (and so far only) state to implement minimum safe hospital nurse staffing requirements (Aiken et al., 2010). Under California's policy, patients in the state receive on average 3 hours per day more nursing care than patients hospitalized in other states (Dierkes et al., 2021). Other studies of the California example demonstrate the staffing legislation has been associated with better nurse job outcomes (e.g., less burnout and job dissatisfaction) and better patient outcomes (e.g., lower mortality) (Aiken et al., 2010). The greatest improvements in nurse staffing were observed among safety-net hospitals (McHugh et al., 2012), which suggests that nurse staffing policies may not only enhance outcomes for patients but may make the distribution of nursing care more equitable for all patients. California has achieved safe staffing minimums despite having fewer RNs per capita (11.3 per 1,000 population) than most other U.S. states (United States Census Bureau, 2021), suggesting the limiting factor to achieving safe staffing has little to do with the supply of RNs. In fact, data from the National Council of State Boards of Nursing indicate that the United States has never had as many new entrants to nursing as it did in 2021 (National Council of State Boards of Nursing, 2020a).

Nursing studies in New York and Illinois, as well as a policy evaluation of staffing legislation in Queensland, Australia, provide empirical evidence that staffing minimums not only save lives but generate cost savings to hospitals through shortened lengths of stay and avoided readmissions (Lasater, Aiken, Sloane, French, Anusiewicz, et al., 2021; Lasater Aiken, Sloane, French, Martin, et al., 2021; McHugh et al., 2021). In the present study, we found that most RNs in hospitals (95.1%) and nursing homes (92.1%) support improving patient-to-nurse staffing as an intervention to ensure safe and high-quality care to patients. This finding is in line with a Harris poll of the public, in which more than 90% of respondents agreed that hospitals and nursing homes should be required to meet safe minimum staffing standards for RNs (NursesEverywhere, 2020).

Limitations

Our study included RNs from two large states—New York and Illinois—and caution is warranted in generalizing our findings to the nation as a whole. Our RN survey has important strengths, including that it provides detailed information from a very large sample of more than 33,000 RNs on their healthcare policy views, job-related outcomes, and organizational quality. Data were collected just before the COVID-19 pandemic and included one of the hardest-hit regions of the country during the first wave—New York City. Our data also include measures from both hospital and nursing home RNs, whereas most of the research to date has focused on hospitals (Fernandez et al., 2020). Although we present data regarding the percentage of RNs who hold favorable views of the NLC, we did not directly evaluate the impact of NLC implementation on workforce mobility, nurse job outcomes, or patient outcomes.

Conclusion

The COVID-19 pandemic has brought to light longstanding threats to healthcare quality and safety in the United States. Our findings show that RNs in hospitals and nursing homes reported poor working conditions, high burnout, and poor patient safety and care quality before

the COVID-19 pandemic. These findings are a sobering reminder of what returning to the pre-pandemic "normal" would mean, and now we know the serious vulnerabilities of our healthcare system during a national emergency if those vulnerabilities are not addressed. State and federal policy action informed by rigorously generated evidence is needed to rebuild the nurse workforce in U.S. hospitals and nursing homes in the aftermath of the COVID-19 pandemic.

References

Aiken, L. H., Cerón, C., Simonetti, M., Lake, E. T., Galiano, A., Garbarini, A., Soto, P., Bravo, D., Smith, H. L. (2018). Hospital nurse staffing and patient outcomes. *Revista Médica Clínica Las Condes, 29*(3), 322–327. https://doi.org/10.1016/j.rmclc.2018.04.011

Aiken, L. H., Cimiotti, J. P., Sloane, D. M., Smith, H. L., Flynn, L., & Neff, D. F. (2011). Effects of nurse staffing and nurse education on patient deaths in hospitals with different nurse work environments. *Medical Care, 49*(12), 1047–1053. https://doi.org/10.1097%2FMLR.0b013e3182330b6e

Aiken, L. H., Clarke, S. P., Sloane, D. M., Sochalski, J., & Silber, J. H. (2002). Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA, 288*(16), 1987–1993. https://doi.org/10.1001/jama.288.16.1987

Aiken, L. H., Sermeus, W., Van den Heede, K., Sloane, D. M., Busse, R., McKee, M., Bruyneel, L., Rafferty, A. M., Griffiths, P., Moreno-Casbas, M. T., Tishelman, C., Scott, A., Brzostek, T., Kinnunen, J., Schwendimann, R., Heinen, M., Zikos, D., Sjetne, I. S., Smith, H. L., & Kutney-Lee, A. (2012). Patient safety, satisfaction, and quality of hospital care: Cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *The BMJ, 344*(7851), 1–14. https://doi.org/10.1136/bmj.e1717

Aiken, L. H., Sloane, D. M., Barnes, H., Cimiotti, J. P., Jarrín, O. F., & McHugh, M. D. (2018). Nurses' and patients' appraisals show patient safety in hospitals remains a concern. *Health Affairs, 37*(11), 1744–1751. https://doi.org/10.1377/hlthaff.2018.0711

Aiken, L. H., Sloane, D. M., Cimiotti, J. P., Clarke, S. P., Flynn, L., Seago, J. A., Spetz, J., & Smith, H. L. (2010). Implications of the California nurse staffing mandate for other states. *Health Services Research, 45*(4), 903–921. https://doi.org/10.1111/j.1475-6773.2010.01114.x

Al Maqbali, M., Al Sinani, M., & Al-Lenjawi, B. (2021). Prevalence of stress, depression, anxiety and sleep disturbance among nurses during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Psychosomatic Research*, *141*. Article 110343. https://doi.org/10.1016/j.jpsychores.2020.110343

Ball, J. E., Bruyneel, L., Aiken, L. H., Sermeus, W., Sloane, D. M., Rafferty, A. M., Lindqvist, R., Tishelman, C., Griffiths, P., & RN4Cast Consortium (2018). Post-operative mortality, missed care and nurse staffing in nine countries: A cross-sectional study. *International Journal of Nursing Studies, 78*, 10–15. https://doi.org/10.1016/j.ijnurstu.2017.08.004

Behrens, L. L., & Naylor, M. D. (2020). "We are alone in this battle": A framework for a coordinated response to COVID-19 in nursing homes. *Journal of Aging & Social Policy, 32*(4–5), 316–322. https://doi.org/10.1080/08959420.2020.1773190

Brooks Carthon, J. M., Brom, H., McHugh, M., Sloane, D. M., Berg, R., Merchant, R., Girotra, S., & Aiken, L. H. (2021). Better nurse staffing is associated with survival for Black patients and diminishes racial disparities in survival after in-hospital cardiac arrests. *Medical Care, 59*(2), 169–176. https://doi.org/10.1097/MLR.0000000000001464

Brooks Carthon, J. M., Kutney-Lee, A., Jarrín, O., Sloane, D., & Aiken, L. H. (2012). Nurse staffing and postsurgical outcomes in Black adults. *Journal of the American Geriatrics Society, 60*(6), 1078–1084. https://doi.org/10.1111/j.1532-5415.2012.03990.x

Denny-Brown, N., Stone, D., Hays, B., & Gallagher, D. (2020, October 18). *COVID-19 intensifies nursing home workforce challenges.* Office of the Assistant Secretary for Planning and Evaluation. https://aspe.hhs.gov/reports/COVID-19-intensifies-nursing-home-workforce-challenges

Dierkes, A., Do, D., Morin, H., Rochman, M., Sloane, D., & McHugh, M. (2021). The impact of California's staffing mandate and the economic recession on registered nurse staffing levels: A longitudinal analysis. *Nursing Outlook*. Advance online publication. https://doi.org/10.1016/j.outlook.2021.09.007

Fernandez, R., Lord, H., Halcomb, E., Moxham, L., Middleton, R., Alananzeh, I., & Ellwood, L. (2020). Implications for COVID-19: A systematic review of nurses' experiences of working in acute care hospital settings during a respiratory pandemic. *International Journal of Nursing Studies*, *111*. Article 103637. https://doi.org/10.1016/j.ijnurstu.2020.103637

Firth, H., McIntee, J., McKeown, P., & Britton, P. G. (1985). Maslach Burnout Inventory: Factor structure and norms for British nursing staff. *Psychological Reports, 57*(1), 147–150. https://doi.org/10.2466/pr0.1985.57.1.147

Havaei, F., Ma, A., Staempfli, S., & MacPhee, M. (2021). Nurses' workplace conditions impacting their mental health during COVID-19: A cross-sectional survey study. *Healthcare, 9*(1). Article 84. https://doi.org/10.3390/healthcare9010084

Kutney-Lee, A., Wu, E. S., Sloane, D. M., & Aiken, L. H. (2013). Changes in hospital nurse work environments and nurse job outcomes: An analysis of panel data. *International Journal of Nursing Studies, 50*(2), 195–201. http://doi.org/10.1016/j.ijnurstu.2012.07.014

Lake, E. T., Narva, A. M., Holland, S., Smith, J. G., Cramer, E., Fitzpatrick Rosenbaum, K. E., French, R., Clark, R. R. S., & Rogowski, J. A. (2021). Hospital nurses' moral distress and mental health during COVID-19. *Journal of Advanced Nursing*, *78*(3), 799–809. https://doi.org/10.1111/jan.15013

Lake, E. T., Riman, K. A., & Sloane, D. M. (2020). Improved work environments and staffing lead to less missed nursing care: A panel study. *Journal of Nursing Management*, *28*(8), 2157–2165. https://doi.org/10.1111/jonm.12970

Lake, E. T., Sanders, J., Duan, R., Riman, K. A., Schoenauer, K. M., & Chen, Y. (2019). A meta-analysis of the associations between the nurse work environment in hospitals and 4 sets of outcomes. *Medical Care, 57*(5), 353–361. https://doi.org/10.1097/mlr.0000000000001109

Lasater, K. B., Aiken, L.H., Sloane, D. M., French, R., Anusiewicz, C. V., Martin, B., Reneau, K., Alexander, M., & McHugh, M. D. (2021). Is hospital nurse staffing legislation in the public's interest? An observational study in New York state. *Medical Care, 59*(5), 444–450. https://doi.org/10.1097/mlr.0000000000001519

Lasater, K. B., Aiken, L. H., Sloane, D., French, R., Martin, B., Alexander, M., & McHugh, M. D. (2021). Patient outcomes and cost savings associated with hospital safe nurse staffing legislation: An observational study. *BMJ Open*, *11*(12). Article e052899. https://doi.org/10.1136/bmjopen-2021-052899

Lasater, K. B., Aiken, L. H., Sloane, D. M., French, R., Martin, B., Reneau, K., Alexander, M., & McHugh, M. D. (2020). Chronic hospital nurse understaffing meets COVID-19: An observational study. *BMJ Quality & Safety*, *30*(8), 639–647. http://doi.org/10.1136/bmjqs-2020-011512

Lasater, K. B., Jarrín, O. F., Aiken, L. H., McHugh, M. D., Sloane, D. M., & Smith, H. L. (2019). A methodology for studying organizational performance: A multistate survey of front-line providers. *Medical Care, 57*(9), 742–749. https://doi.org/10.1097/mlr.0000000000001167

Lasater, K. B., McHugh, M. D., Rosenbaum, P. R., Aiken, L. H., Smith, H. L., Reiter, J. G., Niknam, B. A., Hill, A. S., Hochman, L. L., Jain, S., & Silber, J. H. (2020). Evaluating the costs and outcomes of hospital nursing resources: A matched cohort study of patients with common medical conditions. *Journal of General Internal Medicine, 36*(1), 84–91. https://doi.org/10.1007/s11606-020-06151-z

Lasater, K. B., Sloane, D. M., McHugh, M. D., Cimiotti, J. P., Riman, K. A., Martin, B., Alexander, M., & Aiken, L. H. (2020). Evaluation of hospital nurse-to-patient staffing ratios and sepsis bundles on patient outcomes. *American Journal of Infection Control, 49*(7), 868–873. https://doi.org/10.1016/j.ajic.2020.12.002

Martsolf, G. R., Auerbach, D., Benevent, R., Stocks, C., Jiang, H. J., Pearson, M. L., Ehrlich, E. D., & Gibson, T. B. (2014). Examining the value of inpatient nurse staffing: An assessment of quality and patient care costs. *Medical Care, 52*(11), 982–988. https://doi.org/10.1097/mlr.0000000000000248

Maslach, C., Jackson, S. E., & Leiter, M. P. (1997). Maslach Burnout Inventory: Third edition. In C. P. Zalaquett & R. J. Wood (Eds.), *Evaluating stress: A book of resources* (pp. 191–218). Scarecrow Education.

McHugh, M. D., Aiken, L. H., Sloane, D. M., Windsor, C., Douglas, C., & Yates, P. (2021). Effects of nurse-to-patient ratio legislation on nurse staffing and patient mortality, readmissions, and length of stay: A prospective study in a panel of hospitals. *The Lancet*, *397*(10288), 1905–1913. https://doi.org/10.1016/S0140-6736(21)00768-6

McHugh, M. D., Brooks Carthon, M., Sloane, D. M., Wu, E., Kelly, L., & Aiken, L. H. (2012). Impact of nurse staffing mandates on safety-net hospitals: Lessons from California. *The Milbank Quarterly*, *90*(1), 160–186. https://doi.org/10.1111/j.1468-0009.2011.00658.x

McHugh, M. D., Kutney-Lee, A., Cimiotti, J. P., Sloane, D. M., & Aiken, L. H. (2011). Nurses' widespread job dissatisfaction, burnout, and frustration with health benefits signal problems for patient care. *Health Affairs, 30*(2), 202–210. https://doi.org/10.1377/hlthaff.2010.0100

McHugh, M. D., & Ma, C. (2014). Wage, work environment, and staffing: Effects on nurse outcomes. *Policy, Politics, & Nursing Practice, 15*(3–4), 72–80. https://doi.org/10.1177/1527154414546868

McHugh, M. D., Rochman, M. F., Sloane, D. M., Berg, R. A., Mancini, M. E., Nadkarni, V. M., Merchant, R. M., Aiken, L. H., & American Heart Association's Get with The Guidelines-Resuscitation Investigators. (2016). Better nurse staffing and nurse work environments associated with increased survival of in-hospital cardiac arrest patients. *Medical Care, 54*(1), 74–80. https://doi.org/10.1097/mlr.0000000000000456

National Council of State Boards of Nursing. (2020a). *2020 NCLEX® examination statistics*. https://www.ncsbn.org/2020_NCLEXExamStats.pdf

National Council of State Boards of Nursing (2020b). NCSBN's environmental scan: A portrait of nursing and healthcare in 2020 and beyond. *Journal of Nursing Regulation, 10*(4), S1–S35. https://doi.org/10.1016/S2155-8256(20)30022-3

National Council of State Boards of Nursing. (2022, January 28). *State response to COVID-19*. Retrieved February 16, 2022, from https://www.ncsbn.org/State_COVID-19_Response.pdf

National Research Council. (2013). *Nonresponse in social science surveys: A research agenda*. The National Academies Press. https://doi.org/10.17226/18293

Needleman, J., Buerhaus, P., Mattke, S., Stewart, M., & Zelevinsky, K. (2002). Nurse-staffing levels and the quality of care in hospitals. *New England Journal of Medicine, 346*(22), 1715–1722. https://doi.org/10.1056/nejmsa012247

Needleman, J., Buerhaus, P., Pankratz, V. S., Leibson, C. L., Stevens, S. R., & Harris, M. (2011). Nurse staffing and inpatient hospital mortality. *New England Journal of Medicine, 364*(11), 1037–1045. https://doi.org/10.1056/nejmsa1001025

NursesEverywhere. (2020). *The public wants safe nurse staffing*. Retrieved February 16, 2022, from https://3aaa9248-e569-4da8-ada5-c4c9b14e503e.filesusr.com/ugd/d52815_ea23c1bba67c46eebe9692cf2b69a54b.pdf

Pearson, A., Pallas, L. O., Thomson, D., Doucette, E., Tucker, D., Wiechula, R., Long, L., Porritt, K., & Jordan, Z. (2006). Systematic review of evidence on the impact of nursing workload and staffing on establishing healthy work environments. *International Journal of Evidence-Based Healthcare*, *4*(4), 337–384. https://doi.org/10.1111/j.1479-6988.2006.00055.x

Rushton, C. H., Thomas, T. A., Antonsdottir, I. M., Nelson, K. E., Boyce, D., Vioral, A., Swavely, D., Ley C. D., & Hanson, G. C. (2021). Moral injury and moral resilience in health care workers during COVID-19 pandemic. *Journal of Palliative Medicine*. Advance online publication. https://doi.org/10.1089/jpm.2021.0076

Schlak, A. E., Aiken, L. H., Chittams, J., Poghosyan, L., & McHugh, M. D. (2021). Leveraging the work environment to minimize the negative impact of nurse burnout on patient outcomes. *International Journal of Environmental Research and Public Health, 18*(2). Article 610. https://doi.org/10.3390/ijerph18020610

Sloane, D. M., Smith, H. L., McHugh, M. D., & Aiken, L. H. (2018). Effect of changes in hospital nursing resources on improvements in patient safety and quality of care: A panel study. *Medical Care, 56*(12), 1001–1008. https://doi.org/10.1097/mlr.0000000000001002

Sorra, J., Famolaro, T., Dyer Yount, N., Smith, S. A., Wilson, S., & Liu, H. (2014, April 23). *Hospital survey on patient safety culture: 2014* user *comparative database report.* Agency for Healthcare Research and Quality. https://psnet.ahrq.gov/issue/hospital-survey-patient-safety-culture-2014-user-comparative-database-report

Tucker, A. L., & Spear, S. J. (2006). Operational failures and interruptions in hospital nursing. *Health Services Research, 41*(3), 643–662. https://doi.org/10.1111/j.1475-6773.2006.00502.x

Ulrich, C. M., Rushton, C. H., & Grady, C. (2020). Nurses confronting the coronavirus: Challenges met and lessons learned to date. *Nursing Outlook*, *68*(6), 838–844. https://doi.org/10.1016/j.outlook.2020.08.018

United States Census Bureau. (2021). *State population totals and components of change: 2020–2021*. https://www.census.gov/data/tables/time-series/demo/popest/2020s-state-total.html

White, E. M., Aiken, L. H., & McHugh, M. D. (2019). Registered nurse burnout, job dissatisfaction, and missed care in nursing homes. *Journal of the American Geriatrics Society, 67*(10), 2065–2071. https://doi.org/10.1111/jgs.16051

White, E. M., Aiken, L. H., Sloane, D. M., & McHugh, M. D. (2020). Nursing home work environment, care quality, registered nurse burnout and job dissatisfaction. *Geriatric Nursing*, *41*(2), 158–164. https://doi.org/10.1016/j.gerinurse.2019.08.007

Rachel French, PhD, RN, is Postdoctoral Research Fellow, Center for Health Outcomes and Policy Research, University of Pennsylvania School of Nursing; Fellow, National Clinician Scholars Program, University of Pennsylvania, Philadelphia, PA. **Linda H. Aiken, PhD, RN, FAAN, FRCN,** is Professor of Nursing and Sociology and Founding Director of the Center for Health Outcomes and Policy Research, University of Pennsylvania School of Nursing. **Kathleen E. Fitzpatrick Rosenbaum, BSN, RN, RNC-NIC, CCRN,** is Predoctoral Research Fellow, Center for Health Outcomes and Policy Research, University of Pennsylvania School of Nursing. **Karen B. Lasater, PhD, RN, FAAN,** is Assistant Professor, Center for Health Outcomes and Policy Research, University of Pennsylvania School of Nursing.

Corresponding Author: Rachel French, rachel.french@pennmedicine.upenn.edu

Funding for this work was provided by the National Council of State Boards of Nursing (NCSBN) (Lasater, PI).