Understanding the Gap Between Nursing Workforce in the United States and Population Needs—A Policy Brief

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Abstract

Purpose This report is intended to analyze the root causes for the current gap between the nursing workforce and population needs in the United States. It aims to consolidate what is known about these contributing reasons and provide evidence-based recommendations for action.

Methods The report utilized the Sample, Phenomenon of Interest, Design, Evaluation, Research type framework to develop the research question and the 5 Whys methodology for the root cause analysis.

Results This report highlighted six major causative problems, including workforce market mismatch, poor financing design, inadequate governance, flawed technologies, insufficient research, and suboptimal service delivery. A detailed evaluation of root causes with supported evidence is presented.

Conclusion The report provided seven actionable recommendations based on the analysis: (1) strengthening the nursing role in advancing equity, (2) investing in nursing well-being, (3) changing policies and payment structure, (4) including nursing in technology design, (5) strengthening nursing education, (6) developing a robust public health emergencies preparedness plan, and (7) investing in relevant research.

Keywords

► nursing
► policy
► shortage

Introduction

Nursing is a crucial part of the U.S. health workforce, and without it, achieving the health system outcomes, such as accessibility, quality, and efficiency,¹ would not be possible. This was echoed in the World Health Organization (WHO) report titled: “A Universal Truth: No Health Without A Workforce”². Although the current staffing of 102.6 FTE/10,000 population exceeds the WHO target benchmark of 59.4 (2), there exists a considerable and worsening shortage of over 1 million nurses³ due to an unexpected shift of market forces from equilibrium.⁴ In addition to nursing availability, other domains of the workforce, including accessibility, acceptability, and quality⁵–⁷ are affected (► Fig. 1).

There are several contextual factors⁸ that can explain the gap between the nursing workforce in the U.S. and population needs. These include structural factors (aging population, geography⁹ [► Fig. 2], social determinants of health (SDOH), health inequity, and nursing student loans), situational (coronavirus disease 2019 [COVID-19] and opioid crisis) and cultural factors (traditional view of nursing as a women’s job), and international factors (global nursing shortage).¹⁰

This report outlines a root cause analysis (RCA) to analyze the causes of the aforementioned gap. Then, it will present policy recommendations based on the result of this RCA.

Methodology

The 5 Whys methodology¹¹ was selected for the RCA as it provided an extensive analysis of factors associated with the nursing gap. The Sample, Phenomenon of Interest, Design, Evaluation, Research type format (► Table 1) was utilized for...
Using the Five Whys framework (D) of qualitative research (R), what were the root causes (E) of the inability of nursing workforce (P) to meet population need in the United States (S)?

A literature review of peer-reviewed studies and gray literature was carried out. Three databases were included Medline, EMBASE, and Web of Science, in addition to gray literature sources encompassing governmental and nongovernmental organization reports.

A keyword strategy was applied, which comprised the following: ("nurs" OR "healthcare" OR "hospital" OR "workforce") AND ("shortage" OR "suppl" OR "demand").

Inclusion criteria comprised articles that addressed nursing shortages in the United States and explored their causes. Full-text sources published in English between 2010 and 2021 were assessed, including observational and experimental studies, policy briefs, and commentaries. Studies were excluded if they were abstract, if addressed nursing shortages outside the United States, or if focused on other health care workers.

Fig. 1 This figure shows different aspects of nursing human resources for health including availability, accessibility, acceptability, and quality. Data adapted from Wakefield et al and America’s Health Rankings. FTE: full-time equivalent; RN: registered nurse.

Evidence synthesis, leading to the following research question: “Using the Five Whys framework (D) of qualitative research (R), what were the root causes (E) of the inability of nursing workforce (P) to meet population need in the United States (S)?”
The selected articles were extracted using a standard form detailing the study design, location, and findings. The author (M.A.) assessed the studies for inclusion. Quality assessment was not performed. The WHO building blocks framework was used for grouping causative factors and evidence synthesis.

**Results**

Based on the literature review, a total of 5,043 studies were identified. After excluding duplicates and studies that do not address the nursing shortages in the United States, a total of 245 studies were included. We grouped the causes of the gap between nursing and population needs into the following categories (Table 2).

1. **Workforce market mismatch:** The two major causes are increased demand and reduced supply.
   - The high demand stems from structural factors such as growing population needs (aging, substance use, and inadequate access) and situational factors (ICU shortage during the COVID-19 pandemic). The reduced supply resulted from gender and racial underrepresentation (cultural), low rates of graduating nurses, and high retirement rates (structural), which was augmented by the COVID-19 pandemic (situational) due to staff burnout.
   - Fig. 3 shows labor market forces before and after the pandemic and how COVID-19 worsened the existing nursing shortage.

2. **Poor financing design:** The current finance system limits nurses’ involvement in patient care by not crediting them for work coordinating services, diagnosis, or management. In addition, cuts in federal funding augmented the public health nursing shortage.

3. **Inadequate leadership/governance:** Existing policies do not support building nursing skills to advance equity, providing telehealth, treating substance abuse, delivering babies, or preparing for pandemics, and they restrict nurses’ ability to diagnose and manage patients.

4. **Flawed medical products/technologies:** There are several reasons why technology contributed to the nursing gap. Nurses were not included in the design of many projects. This poor design resulted in them spending significant time with electronic health records rather than clinical duties. This was further compounded by the fact that they deal with excessive alarms leading to burnout and stress. In addition, a lack of safety culture and training led to increased medication errors.

5. **Insufficient information and research:** Inadequate funding of nursing research due to lack of prioritizations from funders has led to fragmented and uncoordinated care, which lacked the focus on evidence-based medicine.

6. **Not optimized service delivery:** Service delivery has suffered from reduced quality, equities, and accessibilities.

![Estimated nursing shortage per state (2030)](image)

**Fig. 2** This figure shows the states with highest estimated nursing shortage. Data adapted from USAHS.

### Table 1 SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, Research type) format for evidence synthesis

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample (S)</td>
<td>Population in the United States</td>
</tr>
<tr>
<td>Phenomenon of interest (PI)</td>
<td>Nursing unable to meet population demand</td>
</tr>
<tr>
<td>Design (D)</td>
<td>5 Whys</td>
</tr>
<tr>
<td>Evaluation (E)</td>
<td>Problem and root causes</td>
</tr>
<tr>
<td>Research type (R)</td>
<td>Qualitative</td>
</tr>
</tbody>
</table>

Note: Data adapted from

Note: SPIDER format for evidence synthesis.
### Table 2 Root cause analysis (5 WHYs) for the inability of nursing workforce to meet population needs across the United States

<table>
<thead>
<tr>
<th>1st Why (causal problem)</th>
<th>2nd Why</th>
<th>3rd Why</th>
<th>4th Why</th>
<th>5th Why (root causes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workforce market shift (mismatch between demand and supply)</td>
<td>Increased demand for nursing</td>
<td>Growing population needs nationwide</td>
<td>Increased medical comorbidities</td>
<td>Aging population, obesity, racial inequality, geographic trends, poverty</td>
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<td></td>
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<td>Increased mental and behavioral illnesses</td>
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<td>Inadequate access to PCP</td>
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<td>High maternal mortality</td>
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<td>Worsening PCP shortages</td>
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<tr>
<td>Clinical specialty needs</td>
<td>Geriatric nursing shortage</td>
<td>Geriatric physician shortage (due to low salaries)</td>
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<tr>
<td></td>
<td>ICU nursing shortage</td>
<td>COVID-19, aging population, increased medical comorbidities, and ECMO</td>
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<tr>
<td></td>
<td>Psychiatric nursing shortage</td>
<td>Increased in mental health (COVID-19, anxiety, depression, and suicide attempts)</td>
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<tr>
<td></td>
<td>Dialysis nursing shortage</td>
<td>Aging population, increased hypertension</td>
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<td></td>
<td>Anesthesia nursing shortage</td>
<td>Aging population, increased comorbidities</td>
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<tr>
<td>Uneven distribution of patient needs</td>
<td>Higher need in rural areas</td>
<td>Lack of transportation, education, and poverty</td>
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<td></td>
<td></td>
<td>Larger physician shortage in rural areas</td>
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<tr>
<td></td>
<td>Insurance status</td>
<td>No universal coverage, out-of-pocket payments</td>
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</tr>
<tr>
<td>Reduced supply of nurses</td>
<td>Increased retirement rates</td>
<td>Large proportion of nurses are Baby Boomers</td>
<td>Shifting U.S. demographics</td>
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<tr>
<td></td>
<td></td>
<td>Long-term impact of COVID-19</td>
<td>Staff burnout, lack of safety culture, reduced PPE supply</td>
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<td>Shifting roles and responsibilities</td>
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<td>Providing end-of-life care</td>
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<td>Impact of human-caused disasters</td>
<td>Insufficient pandemic preparedness knowledge or skills</td>
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<td>No decision-making authority</td>
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<td>Lack of trust with nursing and healthcare administration</td>
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<td>Scarce resources and staffing shortages</td>
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<td>Feeling unsafe due to gun violence, active shooters in hospitals and terrorism</td>
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<td>Cultural and political factors</td>
<td>Social unrest due to political climate</td>
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<td>Systemic racism</td>
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<td></td>
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<td></td>
<td>Underrepresentation and low diversity (gender, race, and ethnicity)</td>
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<tr>
<td>Insufficient number of graduating nurses</td>
<td>Low recruitment and admissions to nursing schools</td>
<td>Increased tuition and diminished financial support</td>
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<td>Absence of short pathways for graduation</td>
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<td>Absence of distance learning opportunities</td>
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<td>Poverty</td>
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<td>Low retention rates in nursing schools</td>
<td>Insufficient nursing training slots</td>
<td>lack of social, emotional, academic, and economic support</td>
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<td>Lack of transparency (passing rate)</td>
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<td>Shortage in nursing faculty (low salaries, lack of diversity, and burnout)</td>
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<td>Inability to adapt to changes in demand (e.g. COVID-19)</td>
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<td>Cost of training</td>
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<td>Absence of distance learning</td>
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<td>Inflexible curricula</td>
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<td>1st Why (causative problem)</td>
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<td>3rd Why</td>
<td>4th Why</td>
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<td>Poor financing design</td>
<td>Fee-for-service system not advancing equity</td>
<td>Nurses not incentivized for cognitive activities and/or coordination</td>
<td>No CPT codes exist for these services</td>
<td>Technology not incorporated</td>
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<td>Financing systems heavily rely on fee-for-service</td>
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<td>Medicare reimburses supervising providers rather than actual providers</td>
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<td>Varying state, school, and local policies</td>
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<td>Complexity and scarcity of funding sources and not taking advantage of currently available ones</td>
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<td>Cut in federal funding by 10% (2010–2019)</td>
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<td>Reduction in local and state funding</td>
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<td>Inadequate leadership/governance response</td>
<td>Government policies not advancing equity</td>
<td>Shortage of staff providing delivery</td>
<td>CNM do not have autonomy for providing birth</td>
<td>State law restriction on providing selected services</td>
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<td>Physicians and public concerns about nursing and NPs abilities to diagnose patients and prescribe medications</td>
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<td>Federal and state laws prohibiting nonphysicians from prescribing treatment (e.g., buprenorphine)</td>
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<td>Unclear if waivers to provide telehealth during the COVID-19 pandemic will continue to exist</td>
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<td>SDOH not prioritized by nursing schools</td>
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<td>Education system not advancing equity</td>
<td>Insufficient integration of SDOH in nursing education</td>
<td>No expanded opportunities to build competencies</td>
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<td>Lack of metrics to measure facilities preparedness</td>
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<td>Nursing education was not prioritized</td>
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<td>Public health policies insufficient for emergency preparedness</td>
<td>Lack of robust national, state and local action plans to address nursing workforce response to disasters</td>
<td>ACA focused on medical and healthcare readiness but ignored nursing preparedness</td>
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<td>Nursing preparedness was not a key policy priority</td>
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<td>Lack of metrics to measure facilities preparedness</td>
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<td>Nursing education was not prioritized</td>
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<tr>
<td>Flawed medical products/technologies</td>
<td>Challenges with adaption to new technologies</td>
<td>Stress from charting and reviewing EHR</td>
<td>Significant time spent with EHR</td>
<td>Nursing not included in EHR selection and implementation</td>
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<td>Suboptimal nursing training on EHR and investment in user interface</td>
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<td>Nursing not included in alert design</td>
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<td>Poorly designed health informatic policies</td>
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<td>Lack of safety culture</td>
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<td>Insufficient technology training programs for nursing</td>
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<td>Nurses are not part of priority setting</td>
</tr>
<tr>
<td>Insufficient information and research</td>
<td>Research gaps in the field of nursing</td>
<td>Uncoordinated and fragmented efforts without evidence-based recommendations</td>
<td>Inadequate funding of nursing research</td>
<td>Lack of alignment between funders' priorities and needed research infrastructure</td>
</tr>
</tbody>
</table>

(Continued)
This is caused by not including nurses in service delivery design, not prioritizing cultural competencies in nursing schools, structural racism, absence of safety culture, financial payment models, limited resources, and state restrictions on nursing scope.\textsuperscript{24}

**Discussion**

In order to overcome the nursing gap, the following policy recommendations for health system reform were developed (\textit{\textbf{Table 3}}) based on the RCA above, the Future of Nursing 2020-2030 report\textsuperscript{6} and other gray literature publications.\textsuperscript{20,27,28}

**Short-Term Recommendations (by 2024)**

1. Investing in the health and well-being of nurses: Focusing on nursing health and well-being should be part of nursing schools and health organizations. Employers should provide an environment that is both physically and psychologically safe (e.g., available personal protective equipment [PPE] and no retaliation), support diversity, and include nurses in key organizational decisions.
<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Specific tasks</th>
<th>Data collection</th>
<th>Indicators</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Short term (by 2024)</strong></td>
<td></td>
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<tr>
<td>Investing in health and well-being of nurses</td>
<td>Nursing programs should incorporate materials on nursing well-being in their curricula</td>
<td>Online surveys of nursing programs</td>
<td>Proportion of programs offering well-being training</td>
<td>Percentage offered &gt;90%</td>
</tr>
<tr>
<td></td>
<td>Employers should provide resilience and well-being programs to nurses</td>
<td>Online surveys of healthcare facilities</td>
<td>Proportion of healthcare facilities offering well-being training</td>
<td>Percentage offered &gt;75%</td>
</tr>
<tr>
<td></td>
<td>Employees should provide a safe environment</td>
<td>Online assessment of nursing perception of work environment</td>
<td>Need to develop a Likert-score questionnaires to measure cultural safety</td>
<td>Percentage staff feeling safe &gt; 75%</td>
</tr>
<tr>
<td>Empowering nurses by changing policies and payment mechanisms</td>
<td>Change CPT codes to reimburse nurses for care coordination, team-based care, school nursing and teleservices</td>
<td>CPT codes are publicly available by CMS</td>
<td>Utilization of specific CPT codes</td>
<td>Increased utilization by &gt; 100% from baseline</td>
</tr>
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<td></td>
<td>Make permanent all COVID-19 nursing scope expansions</td>
<td>Assessment of state regulations for nursing practice</td>
<td>Number of states with permanent expansion of nursing scope</td>
<td>Increase the number of states to 45 (90%)</td>
</tr>
<tr>
<td>Improving the quality and accessibility of nursing education</td>
<td>Nursing programs should add SDOH competencies to their curricula</td>
<td>Online survey of nursing schools</td>
<td>Percentage of schools with SDOH competencies incorporated</td>
<td>Percentage offered &gt;75%</td>
</tr>
<tr>
<td></td>
<td>Nursing schools should provide distance learning opportunities</td>
<td></td>
<td>Percentage of schools offering distance learning</td>
<td>Percentage offered &gt;50%</td>
</tr>
<tr>
<td></td>
<td>Nursing programs should increase diversity among their faculty</td>
<td></td>
<td>Number of minority staff in faculty</td>
<td>Increase by 50% from baseline</td>
</tr>
<tr>
<td></td>
<td>Nursing schools should encourage student civic engagement</td>
<td></td>
<td>Percentage of schools with policies promoting civic engagement</td>
<td>Percentage offered &gt;50%</td>
</tr>
<tr>
<td>Developing a robust public health emergencies preparedness response plan</td>
<td>CDC to develop a nursing hub for nursing disaster preparedness response</td>
<td>CDC external communication</td>
<td>Development of the nursing hub</td>
<td>Hub established</td>
</tr>
<tr>
<td></td>
<td>Nursing schools should incorporate emergency preparedness in curricula</td>
<td>Online surveys of nursing programs</td>
<td>Percentage of schools offering emergency preparedness skills</td>
<td>Percentage offered &gt;75%</td>
</tr>
<tr>
<td></td>
<td>Nursing boards should incorporate emergency preparedness in their licensing exams</td>
<td>Online surveys of nursing boards</td>
<td>Percentage of nursing boards requiring emergency preparedness as part of their licensing exams</td>
<td>Percentage offered &gt;75%</td>
</tr>
<tr>
<td></td>
<td>Healthcare systems should include nurses in their emergency preparedness plans</td>
<td>Online surveys of healthcare facilities</td>
<td>Percentage of healthcare facilities with nursing representation in their emergency plans</td>
<td>Percentage with representation &gt; 90%</td>
</tr>
<tr>
<td>Including nursing expertise in technology design and implementation</td>
<td>Employers should include nurses with technology expertise in their EHR deployment teams</td>
<td>Online surveys of healthcare facilities</td>
<td>Percentage of healthcare facilities with nurses included in their EHR teams</td>
<td>Percentage &gt; 75%</td>
</tr>
<tr>
<td></td>
<td>EHR should capture SDOH data</td>
<td></td>
<td>Percentage of healthcare facilities with EHR features capturing SDOH</td>
<td>Percentage &gt; 50%</td>
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<tr>
<td><strong>Long term (by 2026)</strong></td>
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<tr>
<td>Strengthening the nursing role in advancing equity</td>
<td>Increase the number of nurses with health equity expertise</td>
<td>Online surveys of healthcare facilities</td>
<td>Number of nurses with specific health equity training</td>
<td>Increase from baseline by 100%</td>
</tr>
</tbody>
</table>

(Continued)
## Table 3 (Continued)

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Specific tasks</th>
<th>Data collection</th>
<th>Indicators</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase in the number of nurses in shortage areas</td>
<td>Online surveys of healthcare facilities</td>
<td>Number of specialized nurses in specific areas</td>
<td>Increase from baseline by 100%</td>
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</tr>
<tr>
<td>Develop state programs to advance students from disadvantaged socioeconomic status</td>
<td>Online surveys of nursing schools</td>
<td>Percentage of schools with established policies promoting advancement</td>
<td>Percentage &gt; 75%</td>
<td></td>
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<tr>
<td>Include nursing expertise during state health reforms</td>
<td>Assessment of state regulations</td>
<td>Percentage of states requiring nursing presence in health reforms</td>
<td>Percentage &gt; 50%</td>
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Investing in relevant research

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Specific tasks</th>
<th>Data collection</th>
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<th>Goals</th>
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<tbody>
<tr>
<td>Develop nursing grants to fund priority nursing research</td>
<td>Online surveys of nursing schools</td>
<td>Amount of funding for nursing research</td>
<td>Increase by &gt; 50% from baseline</td>
<td></td>
</tr>
</tbody>
</table>


Source: Data adapted from6,20,27,28

(2) Empowering nurses by changing policies and payment mechanisms: All temporary COVID-19 nursing scope expansions should be made permanent, including telehealth and insurance coverage policies. Payment models should be restructured to allow reimbursement of nurses for care coordination, case management, telehealth, and school nursing.

(3) Improving the quality and accessibility of nursing education: Programs should provide students with knowledge and skills to address equities, provide distance learning opportunities, promote a diverse faculty with experience in SDOH, and encourage civic engagement.

(4) Developing a robust public health emergency preparedness response plan: A national nursing hub6 should be developed to build nursing education and staffing plans during emergencies. School curriculum and licensing exams should emphasize pandemic preparedness. Health care systems should include nursing in their local emergency planning design and implementation.

(5) Including nursing expertise in technology design and implementation: A technology infrastructure should be created to capture the community knowledge and SDOH visualization. Nurses should be incorporated into innovation, optimizing person-centered care, care coordination, and improving equities.

**Long-Term Recommendations (by 2026)**

(6) Strengthening the nursing role in advancing equity: Substantial actions should be taken to increase the number of nurses with a special focus on health equity expertise and specialties with marked shortages (e.g., mental health, geriatrics, maternal health, and school health). This will require investing in nursing education, collaborating with historically Black and Hispanic-serving universities, supporting student loans and scholarships, enabling students from disadvantaged backgrounds, and integrating nursing expertise during health reform planning.

(7) Investing in relevant research: Government funding should increase to strengthen evidence-based nursing research as a significant focus. Research priorities should include the nursing workforce, public health collaboration, improving equities, performance and outcome measures, improving diversity, nursing well-being, eliminating structural racism, restructuring payment models, disaster preparedness, and advancing technologies.

**Conclusions**

In conclusion, there are several root causes for the gap between the nursing workforce and population needs. Addressing these causes requires better responding to the market demand and supply forces, understanding the population’s needs, preparing a competent nursing workforce, optimizing services, technological innovation, funding research, and leadership transformation.

**Conflict of Interest**

None declared.

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