Screening for Social Determinants of Health in Hospitalized Children

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ABSTRACT

OBJECTIVES: Outpatient screening for social determinants of health (SDH) improves patient access to resources. However, no studies have examined if and how inpatient pediatric providers perform SDH screening. We aimed to identify inpatient pediatric provider screening practices for SDH, barriers to screening, and the acceptability of screening for hospitalized patients.

METHODS: We conducted a multicenter descriptive study at 4 children’s hospitals surveying inpatient hospitalists and nurses on the general wards about their SDH screening practices. A survey instrument was developed on the basis of literature pertaining to SDH, content expert review, cognitive interviews, and survey piloting. Descriptive statistics and logistic regression analyses are reported.

RESULTS: Results from 146 hospitalists and 227 nurses were analyzed (58% and 26% response rate, respectively). Twenty-nine percent of hospitalists and 41% of nurses reported screening for \( \geq 1 \) SDH frequently or with every hospitalized patient. Only 26% of hospitalists reported consistently communicating SDH needs with primary care providers. Most respondents (97% of hospitalists and 65% of nurses) reported they do not use a specific screening tool, and only 34% of hospitalists and 32% of nurses reported feeling competent screening for SDH. Lack of time, resources, and a standardized inpatient screening tool were reported as barriers to screening.

CONCLUSIONS: Hospitalization provides an opportunity for SDH screening and connecting patients to resources; however, a minority of pediatric providers currently report screening. Professional development activities training inpatient providers in SDH screening, using a screening instrument, and communicating identified needs to primary care providers may improve the effectiveness of SDH screening in the hospital.

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Social determinants of health (SDH), defined as the social conditions in which people are born, grow, and age, greatly influence children's health and development. These interrelated issues include mental and physical health, access to health care and food, neighborhood safety, the living and work environment, economic stability, and educational opportunities. Although SDH can be prevalent in children across the income spectrum, they disproportionately affect low-income children. In the United States, ∼18% of children <18 years of age were living in poverty in 2016, and >12 million children were living in households without consistent access to food. Statistics suggest that medical providers who care for children may be missing the opportunity to screen for and intervene with SDH. Despite many children coming into contact with the health care system, ∼30% of hospitalized children do not access the food assistance programs for which they are eligible. The importance of screening for SDH at well-child visits in the primary care setting has recently been emphasized, and an increasing number of studies reveal that such screening is effective, is endorsed by patients and families, and improves family access to community resources. Screening for SDH may also increase maternal employment and lower a family’s odds of living in a homeless shelter. Despite this evidence, many physicians do not screen for SDH perhaps because they feel insufficiently trained to address these concerns, lack resources for referral, or are uncomfortable discussing sensitive issues. Additionally, the list of topics to be addressed at well-child visits is “ever expanding,” making other venues where patients and families may have interactions with health care providers appropriate times to screen for SDH. The inpatient setting may provide a unique opportunity to screen for SDH because providers may have frequent contact with the patient and family during a hospitalization, and certain social needs may become more apparent during the inpatient stay. However, there may be specific barriers to screening unique to inpatient providers, including medical acuity and the transient relationship with the patient. To our knowledge, there have been no studies examining if or how providers are screening for SDH in the pediatric inpatient setting. Our objectives of this study are to identify inpatient pediatric health care providers’ screening practices for SDH, identify barriers to screening, and determine the acceptability of SDH screening among providers in the inpatient setting.

METHODS
This was a multicenter descriptive survey-based study on the current SDH screening practices of inpatient hospitalist providers (physicians and advanced practice providers) and nurses on general pediatric wards. A survey instrument assessing screening practices for a variety of SDH and toxic stressors was created on the basis of literature review and expert consensus who reviewed survey items for content validity (Supplemental Information). Experts were selected on the basis of authorship of recent publications on SDH screening. Cognitive interviews with 7 hospitalists and 5 nurses were conducted, and iterative revisions were made to achieve response process validity. Ten hospitalists and 12 nurses representative of the sample population then piloted the survey.

The survey specifically assessed for screening of social needs and toxic stressors including food insecurity, housing and/or housing conditions, school and/or school services, abuse, community violence, bullying, access to health care and/or health insurance, transportation barriers, language barriers, patient education and/or literacy, income source, and immigration concerns. The survey also assessed provider sociodemographic factors, practice characteristics (outpatient experience, years in practice, community hospital work, etc), acceptability of SDH screening, current SDH screening practices, barriers to screening, and previous educational training on SDH. Inpatient nurses were included in the study because they are in frequent contact with patients and may encounter SDH that arise during admission. There is also a growing movement for addressing the root causes of health inequities within the nursing profession. Nurses received a 25-question survey. Hospitalists and advance practice providers received a 26-question survey, including an additional question on whether SDH concerns are discussed with the outpatient pediatrician. For the purposes of reporting, advance practice provider results were grouped with hospitalist results. Through a 5-point Likert scale (with almost every hospitalized patient, frequently [75% of the time], occasionally [50% of the time], rarely [<25% of the time], never) providers were asked how often they screen for SDH, both in general and when clinically indicated. For the purpose of the study, the survey specified that “screening for SDH” included anytime a provider asked a patient or patient's family about unmet social needs. For providers who did report screening, the survey asked whether they used a specific screening tool. Barriers to screening and providers’ views regarding whose responsibility it is to screen were also assessed through a 5-point Likert scale ranging from completely disagree to completely agree.

The survey instrument was electronically distributed to inpatient nurses, advanced practice providers, and hospitalists at 4 tertiary care children’s hospitals selected to represent different regions around the country with large general pediatric hospitalist divisions. Children’s National Medical Center is a 323-bed university-affiliated children’s hospital in Washington, District of Columbia, serving the metropolitan area (DC, MD, VA) with 81 hospitalists in the hospitalist division. Cincinnati Children’s Hospital Medical Center is a >500-bed urban university-affiliated children’s hospital in the Midwest with 73 hospitalists. Children’s Hospital Los Angeles is also a university-affiliated children’s hospital with 390 beds and 48 hospitalists. Phoenix Children’s Hospital is a 430-bed university-affiliated children’s hospital in Arizona with 50 hospitalists. The concept of the survey was first introduced at division meetings and nursing staff meetings at each institution. Surveys were distributed between March and August 2018, with 3 e-mail reminders over the course of 6 weeks. No incentives were provided for participation.
The study and survey were approved by each of the participating institutions’ institutional review boards. Surveys were administered, and study data were collected and managed by using Research Electronic Data Capture hosted by Children’s National Medical Center.14

Nurse and hospitalist responses were analyzed separately. Descriptive statistics, including the number and percent of responses to each question, were reported. Analysis was performed by using SAS (version 9.4; SAS Institute, Inc, Cary, NC). To analyze differences in screening practices, variables were dichotomized into those who screen more frequently (with every hospitalized patient, frequently [≥75% of the time]) and those who screen rarely (<25% of the time), never). This was performed to further evaluate characteristics of those who demonstrated best practices in SDH screening. For analyzing barriers to screening, who is responsible for screening, and factors that would increase screening practices, the Likert scale was dichotomized by coding “completely agree” and “agree” versus all other responses (neutral, disagree, or completely disagree). Logistic regression was conducted with each barrier and demographic factor as predictors in the model. The outcome was screening practices.

**RESULTS**

**Demographics**

Survey responses were collected from 373 participants of the 1127 who received the survey (overall 33.1% response rate), with 146 hospitalists (58% response rate) and 227 nurses (26% response rate) responding. Most hospitalists (77%) and nurses (66%) had finished training (ie, residency or nursing school) in the previous 10 years. Sixty-nine percent of respondents were white (69%) and non-Hispanic (79%). Less than a quarter of respondents (19%, n = 27 hospitalists; 11%, n = 24 nurses) had completed an advanced degree or graduate coursework in which SDH were part of the curriculum. A minority of hospitalists (28%, n = 39) and nurses (17%, n = 37) reported previously working in the outpatient setting. Full respondent demographics are reported in Table 1.

**SDH Screening Practices**

Twenty-nine percent (n = 42) of hospitalists and 41% (n = 94) of nurses reported screening for ≥1 SDH frequently (>75% of time) or with every hospitalized patient. More hospitalists and nurses reported screening when felt to be clinically relevant: 75% (n = 110) and 53% (n = 120), respectively (see Figs 1 and 2). However, the majority of respondents (97% [n = 138] of hospitalists and 65% [n = 143] of nurses) reported they do not use a specific screening tool. Hospitalists who reported more frequent SDH screening had almost fourfold greater odds of having previously worked in the outpatient setting (odds ratio [OR] 3.8; 95% confidence interval [CI] 1.4–9.9). This association was not statistically significant for nurses (OR 2.5; CI 0.96–6.24).

Hospitalists reported screening most frequently for language barriers, access to health care and/or insurance, and transportation barriers. Nurses reported screening most frequently for language barriers but also for abuse and parent education and/or literacy (Table 2). Hospitalists who screened for SDH more frequently had greater odds of reporting that they feel screening is the inpatient physician’s responsibility (OR 5.9; CI 1.6–21.4). Nurses who screened for SDH also had greater odds of reporting that screening is the bedside nurse’s responsibility (OR 3.1; CI 1.5–6.2).

Regarding screening, 78% (n = 112) of hospitalists and 34% (n = 77) of nurses reported being involved in assisting a hospitalized patient or the patient’s family in locating community resources. Only 26% (n = 38) of hospitalists reported consistently communicating SDH needs with primary care providers. Approximately half of hospitalists (47%; n = 68) and nurses (53%; n = 177) reported knowing someone personally (in a nonprofessional capacity) who had benefitted from resources for their social needs; however, this was not found to be associated with increased screening practices (r 0.2, P = .01 hospitalists; r 0.07, P = .32 nurses).

**Barriers to Screening**

Thirty-four percent (n = 48) of hospitalists and 32% (n = 68) of nurses reported feeling competent screening for SDH. However, those who screened for SDH more frequently had higher odds of reporting screening competence (hospitalists OR 4.1 [CI 1.7–9.7]; nurses OR 3.7 [CI 1.8–7.7]). Respondents agreed that they would screen for SDH more often if they had more resources to offer help (83%, n = 120 hospitalists; 79%, n = 178 nurses), felt it would truly make an impact on the patient (73%, n = 105 hospitalists; 71%, n = 158 nurses), had more time (75%, n = 108 hospitalists; 74%, n = 165 nurses), and if there was a social navigation team to help connect patients to resources (95%, n = 137 hospitalists; 83%, n = 187 nurses). Hospitalists and nurses also reported they would screen more frequently if they had a validated screening tool for the inpatient setting (74%, n = 107 hospitalists; 82%, n = 183 nurses). Approximately half of hospitalists (52%; n = 73) and 75% of nurses (n = 168) agreed that they would screen more often if they had prompts in the medical record (see Table 3).

When asked about other potential barriers to inpatient SDH screening, few hospitalists (8%; n = 12) and nurses (20%; n = 45) agreed or completely agreed that the hospitalization is too short. A minority felt the hospitalization was too focused on the acute illness to address SDH (15%, n = 22 hospitalists; 28%, n = 64 nurses) or that parents would not be interested in discussing SDH needs (4%, n = 5 hospitalists; 12%, n = 28 nurses).

**Education About SDH**

Approximately one-third of hospitalists (37%; n = 52) and nurses (35%; n = 76) reported receiving education on SDH during professional training. A majority of hospitalists (86%; n = 121) and nurses (73%; n = 157) reported a desire for training to better screen for SDH, and 85% (n = 120) of hospitalists and 68% (n = 146) of nurses felt SDH education should be provided during professional training.
DISCUSSION

Our results indicate that less than half of hospitalists and nurses routinely screen for SDH. Only a minority routinely communicate identified SDH needs to the primary care provider. The majority of providers do not use a validated SDH screening tool. Most respondents reported not feeling competent in SDH screening but desire additional training. Other identified barriers included providers’ perception that they could not truly make an impact with screening and that there is a scarcity of resources when a patient does screen positive.

The American Academy of Pediatrics recommends periodic screening for social needs for all patients, including food insecurity, housing, safety, and child care. Healthy People 2020, objectives developed by the federal government to improve overall health of Americans, also emphasizes the importance of addressing the social and physical environment by making this 1 of the 4 overarching goals for the decade. The body of research indicating the impact of SDH on the health of children is significant. SDH can affect a child’s ability to perform well in school and put children at higher risk for behavioral and developmental problems in the future. Studies have revealed that children who are food insecure have poorer overall health, are hospitalized more frequently, and recover from illness more slowly, even after controlling for multiple risk factors. In another study of children with asthma, living in areas with lower socioeconomic characteristics was shown to be associated with longer hospital stays, higher hospitalization costs, and a greater likelihood of readmission.

The inpatient setting may provide a unique screening opportunity in that hospitalists and nurses interact with patients and their families several times throughout the course of their stay. During hospitalization, different SDH may be brought to the forefront such as food insecurity, transportation challenges, difficulty obtaining prescriptions at time of discharge, and insurance issues. In addition, patients who are most at risk may experience difficulties attending follow-up visits with their pediatrician because of lapse in insurance coverage or trouble with transportation. This makes screening in the inpatient setting more of a priority because the patients may never receive outpatient screening. Although not all outpatient clinics have access to social workers and case managers, the inpatient setting may have these resources available to assist in addressing SDH. To make a long-term impact, communicating identified SDH to a patient’s medical home is essential but was reported by only 26% of hospitalists in our study.

Despite the evidence supporting the effect of SDH screening on children’s health and hospitalization course, we found that only 29% of hospitalists and 41% of nurses routinely screen for SDH. This is consistent with previous studies in which authors have shown that despite the fact that physicians recognize the effect of SDH on health, few children actually receive an assessment of their social needs.

### TABLE 1  Respondent Demographics

<table>
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<tr>
<th></th>
<th>Hospitalists, n (%)</th>
<th>Nurses, n (%)</th>
</tr>
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<tbody>
<tr>
<td>Response rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall rate: N = 373 (33%)</td>
<td></td>
<td></td>
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<tr>
<td>Breakdown by provider type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>146 (58)</td>
<td>227 (26)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
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<tr>
<td>Female</td>
<td>104 (74)</td>
<td>202 (95)</td>
</tr>
<tr>
<td>Male</td>
<td>34 (24)</td>
<td>9 (4)</td>
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<tr>
<td>Nonbinary or third gender</td>
<td>0</td>
<td>0</td>
</tr>
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<td>Prefer not to say</td>
<td>2 (1)</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
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<tr>
<td>White</td>
<td>88 (62)</td>
<td>169 (82)</td>
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<tr>
<td>South Asian</td>
<td>18 (13)</td>
<td>7 (3)</td>
</tr>
<tr>
<td>African American</td>
<td>8 (6)</td>
<td>5 (2)</td>
</tr>
<tr>
<td>East Asian</td>
<td>7 (5)</td>
<td>4 (2)</td>
</tr>
<tr>
<td>Middle Eastern or Arab</td>
<td>5 (4)</td>
<td>0</td>
</tr>
<tr>
<td>Native American or Alaskan native</td>
<td>1 (0.7)</td>
<td>0</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>9 (6)</td>
<td>16 (8)</td>
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<tr>
<td>Other</td>
<td>5 (4)</td>
<td>6 (3)</td>
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<tr>
<td>Ethnicity</td>
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<tr>
<td>Not Hispanic, Latino, or Spanish origin</td>
<td>129 (91)</td>
<td>187 (79)</td>
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<tr>
<td>Hispanic, Latino, or Spanish origin</td>
<td>4 (3)</td>
<td>29 (14)</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>8 (6)</td>
<td>15 (7)</td>
</tr>
<tr>
<td>Years since graduating residency or nursing school</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–5 y</td>
<td>59 (42)</td>
<td>91 (40)</td>
</tr>
<tr>
<td>6–10 y</td>
<td>49 (35)</td>
<td>49 (22)</td>
</tr>
<tr>
<td>11–15 y</td>
<td>18 (13)</td>
<td>24 (11)</td>
</tr>
<tr>
<td>&gt;15 y</td>
<td>15 (11)</td>
<td>48 (21)</td>
</tr>
<tr>
<td>“I previously worked in the outpatient setting”</td>
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<td></td>
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<tr>
<td>Yes</td>
<td>39 (28)</td>
<td>37 (17)</td>
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<td>No</td>
<td>102 (72)</td>
<td>177 (83)</td>
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<td>Advanced degree or other graduate coursework where SDH were part of the curriculum</td>
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<td>Yes</td>
<td>27 (19)</td>
<td>24 (11)</td>
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<td>No</td>
<td>112 (81)</td>
<td>187 (88)</td>
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</table>

Given the fact that all respondents did not respond to each question because of the survey logic or opting out, there are a different number of responses for some of the questions.
Several barriers to screening were identified in our study. One major barrier to screening was that providers did not feel they could truly make an impact. Providers reported that they would screen more frequently if they felt it would truly benefit the patient, had more time, had more resources to offer help, or if there was a social navigation team to help connect patients to resources. Authors of a recent study of pediatricians found that although the majority felt social needs screening to be important, a minority felt prepared to address social needs appropriately. Building strong social navigation teams and increased resources for hospital social work departments may help encourage screening and facilitate connecting patients to resources. An intervention performed in a Boston outpatient pediatric clinic called “WE CARE” created a survey to screen for an array of SDH needs in <5 minutes. The survey only screened for problems for which community resources were available and was accompanied by a family resource book with information for each screening domain. At the end of the study, parents in the intervention group were more likely to be connected to community resources and less likely to be homeless than the control group. A framework in which providers feel they have the tools to make an impact may be useful to encourage increased screening in an inpatient setting. Authors of a previous study in a large urban city found that social workers indicate that addressing SDH is a top priority in their daily work, with health care services and housing being the most commonly addressed SDH. To properly identify needs and connect patients to resources, further partnerships between inpatient providers, social workers, and case managers will be essential.

Few hospitalists and nurses reported using a specific screening instrument, reflecting that although there are several screening instruments used in the outpatient setting, there are no validated, widely accepted SDH screening tools for the inpatient setting. This may be 1 of the first steps in increasing and standardizing screening practices. Although in our study, we found that more nurses (35%) report using a specific screening tool, this may be a result of screening questions incorporated into the admission electronic health record. Electronic health record prompts may serve as an effective tool for encouraging increased screening because more than half of hospitalists and nurses reported it would encourage them to screen more frequently.

The majority of providers reported not feeling competent with screening, with <40% of respondents receiving SDH screening education during professional training. We also found that those who screen have higher odds of reporting feeling competent in screening. This may indicate that those with more competence feel more comfortable asking questions about social needs and are therefore more likely to screen. Continued education in SDH screening may be a key step in increasing effective SDH screening in the inpatient setting. Recently, pediatric residency programs in the United States have begun to require advocacy training as part of the curriculum, which may be an opportunity for increased SDH education and screening in the future.

Hypothesized barriers to screening in the inpatient setting included the short length of stay and focus on acute illness. However, these were reported by only a minority of respondents to be barriers. Providers also disagreed that parents would not be interested in discussing SDH. Authors of a recent study of food insecurity screening in pediatric emergency department patients found that participants felt more comfortable with completing the screen in the emergency department in comparison to hospitalization.
to their pediatrician’s office, although they reported feeling favorable about screening in both settings. A previous cross-sectional study of caregivers of hospitalized patients also found that caregivers feel their physicians should ask about social needs and that caregivers who have been screened previously have even more favorable views toward SDH screening. Screening in the inpatient setting creates an opportunity to identify these patients, provide appropriate resources, and arrange follow-up, especially when an in-house social worker is available.

There are several limitations to our study. There is a possibility of nonresponse bias given the overall low response rate to our survey. Response rates for nonincentivized surveys among health professionals have been on the decline. Additionally, there is the possibility of bias if those who participated in the survey were more interested in the topic; therefore, screening may actually be overreported in this study. A component of social desirability bias in responses to survey questions may also be present. Those who did not respond to the survey are unlikely to increase overall screening rates reported in this study. Although both physicians and nurses reported to screen for language barriers most often, this may be overestimated because it is common practice to request an interpreter for communicating with patients with limited English proficiency.

Although we included 4 hospitals across the United States that serve a diverse patient population, all hospitals were tertiary care children’s hospitals. The generalizability of our results to community hospitals or nontertiary care centers may be limited. In addition, each children’s hospital surveyed may have different levels of social work support and/or programs created to identify and address SDH. Lastly, in the beginning of our survey, we defined screening for SDH as “anytime a provider directly asks a patient or patient’s family about unmet social needs with or without a screening tool.” Although social needs and SDH are used interchangeably in our study, some may delineate social needs as a “downstream manifestation of the impact of SDH on the community.”

Despite these limitations, to our knowledge our study is the first to assess the SDH screening practices and perspectives of inpatient pediatric providers. In this study, we have also identified barriers to screening in the inpatient setting and highlighted SDH screening as an area for continued professional development.

**CONCLUSIONS**

The inpatient setting presents a unique opportunity to assess families with social needs; however, in our study, a minority of hospitalists and nurses reported routinely screening for SDH. Professional development

| TABLE 2 | Categories of SDH Screened |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| SDH Category    | Hospitalists (N = 143), n (%) | Nurses (N = 220), n (%) |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Abuse (physical, psychological, sexual, neglect) | 35 (25) | 140 (64) |
| Access to health care and/or insurance | 66 (46) | 75 (34) |
| Bullying | 16 (11) | 41 (19) |
| Community violence | 10 (7.0) | 37 (17) |
| Food insecurity | 19 (13) | 60 (27) |
| Housing, housing conditions, and/or utilities | 44 (31) | 64 (29) |
| Immigration concerns | 4 (3) | 10 (5) |
| Income source | 15 (11) | 24 (11) |
| Language barriers | 85 (60) | 194 (88) |
| Parent education/literacy | 27 (19) | 131 (60) |
| School and/or school services | 45 (32) | 78 (36) |
| Transportation barriers | 53 (37) | 116 (54) |

Percentage reporting frequently (≥75%) or with every hospitalized patient. Given the fact that all respondents did not respond to each question because of the survey logic or opting out, there are a different number of responses for some of the questions.

| TABLE 3 | Barriers to SDH Screening |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| Hospitalists and nurses would screen more often if | Hospitalists (n = 144), n (%) | Nurses (n = 224), n (%) |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| I had more resources to offer help | 120 (83) | 178 (79) |
| I felt it would truly make an impact on the patient | 105 (73) | 158 (71) |
| We had a dedicated social navigation team to refer families with needs | 137 (95) | 187 (83) |
| There was a validated screening tool for the inpatient setting | 107 (74) | 183 (82) |
| I had more training | 100 (69) | 170 (76) |
| I had more time | 108 (75) | 165 (74) |
| We had prompts in the electronic medical record | 75 (52) | 168 (75) |

Percentage reporting “agree” or “completely agree.”
activities to train inpatient providers in SDH screening, enhancing existing resources and infrastructure, using a screening instrument, and communicating identified SDH needs to primary care providers may improve the effectiveness of SDH screening performed in the hospital setting. Future studies should evaluate the impact of inpatient SDH screening on patient and/or family referrals and access to resources.

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REFERENCES


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Bryanna Schwartz, Lisa E. Herrmann, Jamie Librizzi, Tamara Gayle, Kevin Waloff, Heather Walsh, Alexandra Rucker, Nicole Herrera and Priti Bhansali
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