Perceived Barriers and Facilitators to Breastfeeding Support Practices in Hospitals and Birthing Facilities in the U.S.

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Declarations

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Ethical standards disclosure: This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving research study participants were reviewed and found exempted by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board (IRB No: 00009842). Written informed consent was obtained from all subjects through completion of the first question of the survey.

Abstract

Objective: The Baby-Friendly Hospital Initiative (BFHI) designation is known to increase breastfeeding rates in the U.S. However, less is known about barriers and facilitators to breastfeeding support practices in BFHI hospitals, and how they differ from non-BFHI hospitals. We examined what barriers and facilitators are perceived to affect breastfeeding practices among BFHI and non-BFHI hospital administrators and further explored factors that presented challenges to the adoption and continuation of breastfeeding support practices.

Design: Cross-sectional study was conducted. We measured whether hospitals were implementing 12 breastfeeding support practices and identified barriers and facilitators to the practices. The survey questionnaire included both structured and open-ended questions.

Setting: This study included hospital administrators from both BFHI and non-BFHI hospitals from all regions of the U.S. to help elucidate potential differences.

Participants: A stratified random sample of 50% of BFHI and 50% of non-BFHI hospitals was obtained. The final sample size included 113 BFHI and 177 non-BFHI hospital administrators.

Results: Low interest among mothers was reported as the most significant barrier to providing breastfeeding support among all administrators. Non-BFHI hospital administrators were more likely to report cost, nursing staff and physician resistance, and hospital infrastructure as barriers to initiating practices. In-person training was cited as the most important facilitator among both groups.

Conclusions: Strengthening prenatal education for mothers and trainings for administrative and nursing staff, and physicians is warranted in BFHI and non-BFHI hospitals. Staff management and hospital infrastructure need to be improved particularly in non-BFHI hospitals to provide adequate breastfeeding support for mothers.

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Introduction

Breastfeeding has numerous health benefits for mothers and children. It reduces maternal risk of some cancers, type 2 diabetes, and hypertension and prevents immediate or long-term disease and illness among children[1]. At the national level, breastfeeding helps prevent premature mortality as well as economic and environmental costs[2, 3]. The 2030 Healthy People Goals established by the U.S. Department of Health and Human Services[4] stipulated two objectives to increase the proportion of infants who are breastfed at 1 year (MICH-16) and exclusively breastfed through 6 months (MICH-15), putting an emphasis on breastfeeding duration. Setting breastfeeding as a national priority and achieving breastfeeding duration requires timely and comprehensive engagement of and commitment from hospitals and birthing facilities because the environment in which a mother gives birth may affect breastfeeding initiation and continuation[5]. However, traditional practices in hospitals, including mother-infant separation and formula supplementation, set obstacles to integrating breastfeeding support practices into routine care.

To enhance maternal and child care and encourage hospitals to employ breastfeeding support practices globally, the World Health Organization (WHO) and UNICEF launched the Baby-Friendly Hospital Initiative (BFHI) in 1991[6]. The initiative aimed to scale up ten evidence-based practices (Table 1) for hospitals and their staff to support successful breastfeeding. Hospitals become designated as Baby-Friendly if they comply with the standards of BFHI and implement the *Ten Steps to Successful Breastfeeding*[7]. Studies have demonstrated that BFHI is effective in promoting breastfeeding and health outcomes among mothers and infants[8, 9]. A systematic review found that adherence to the BFHI Ten Steps was associated with increased likelihood of any or exclusive breastfeeding globally[10]. In the U.S., the BFHI certification was found to be effective in increasing exclusive breastfeeding rates across various demographics[11] and reducing disparities in breastfeeding outcomes[12]. The CDC's Maternity Practices in Infant Nutrition and Care (mPINC) survey data also showed that hospitals with the BFHI designation had 13.6% higher exclusive breastfeeding rates than hospitals without the designation[13].

The total number of BFHI-designated hospitals has substantially increased over the past decade, having more than 1 million infants born each year in BFHI hospitals in the U.S.[14]. Although wide BFHI adoption has contributed to the overall growth in breastfeeding rates,

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progress in breastfeeding appears to have stagnated in recent years. Data in 2020 show that the rates of any breastfeeding (83.1%) are lower than rates from 2015-2019 (83.2-84.1%), and exclusive breastfeeding rates at 3 months and 6 months have also decreased or remained constant since 2016, remaining far below national goals[4, 15, 16]. The 2030 objective (MICH-15) of achieving 42.4% of infants exclusively breastfed for the first 6 months also shows negligible improvement from 2020 data (25.4%)[4]. Furthermore, large geographical and racial disparities in breastfeeding initiation have persisted in the country[17, 18].

Improving breastfeeding support practices in hospitals has the potential to address these gaps in the national trends and disparities[12]. It is thus imperative to identify factors that hamper breastfeeding practices in hospitals. Prior studies revealed that barriers, including maternal exhaustion, family influence, and lack of skilled hospital personnel, affect breastfeeding support practices[19-21]. A few qualitative studies found that breastfeeding education and interprofessional collaboration among staff helped promote breastfeeding in a hospital setting[21, 22]. Nevertheless, there is lack of evidence on how barriers and facilitators to breastfeeding support practices vary by BFHI status, limiting our understanding of the unique needs and circumstances of BFHI and non-BFHI hospitals. Furthermore, little is known about how barriers to on-going practices differ from barriers that prevent hospitals from adopting new initiatives to support breastfeeding. A thorough investigation of factors associated with breastfeeding practice implementation may offer useful information for hospital leadership and health workers to develop strategies that are integrative yet tailored to the hospital BFHI status.

Our study aimed to 1) examine how barriers and facilitators are perceived to affect breastfeeding practices among BFHI and non-BFHI hospital administrators across the U.S., and 2) explore factors that present challenges to the adoption and continuation of breastfeeding support practices among hospitals.

Methods

Study Design

We administered a cross-sectional survey to hospital administrators across the U.S. from fall 2019 to spring 2020 to obtain point-in-time data on facility breastfeeding practices and policies. This study was deemed exempt by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board (IRB No: 00009842).

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Setting

This study included hospital administrators from both BFHI and non-BFHI hospitals from all regions of the U.S. to help elucidate potential differences. Recent evidence found that exclusive breastfeeding rates were higher in BFHI hospitals than non-BFHI hospitals[23]. Geographically, both BFHI designated and non-BFHI hospitals are equally located across regions in the U.S. with higher concentration in areas with high population densities. Despite recent growths in BFHI penetration, however, the percent change in increase in BFHI designation is known to be relatively lower in areas with high socioeconomic disadvantage[23].

Sample

For this exploratory study, the research team mailed electronic surveys using REDCap to a stratified random sample of BFHI and non-BFHI hospitals. The sample included 50% of BFHI hospitals and 50% of non-BFHI hospitals. As there are fewer BFHI than non-BFHI hospitals in the U.S., the sample of BFHI hospitals was smaller than the non-BFHI sample. We stratified the sample based on hospital size (i.e., the number of beds) using American Hospital Association (AHA) data (2019). We categorized hospitals as small if they had one to 99 beds, medium if they had 100 to 299 beds, or large if they had 300 or more beds. We obtained bed size information through online searches if the AHA dataset did not include hospitals' bed size information. We categorized standalone birthing facilities without information on bed sizes as small. We employed equal stratified sampling, where each stratum (size) of hospital was allocated the same sample size, to ensure equal representation in the sample and reduce sampling bias.

All hospitals listed in the AHA database were eligible to be selected. Among the 2,574 hospitals in the database, there were 817 BFHI hospitals and 1,757 non-BFHI hospitals. Of those, we randomly administered electronic surveys to 409 BFHI hospitals and 879 non-BFHI hospitals. After eliminating duplicates from the hospital data, we had a final sample of 1285 birthing facilities. In total, 316 hospitals completed the survey. We removed 26 hospitals prior to analysis because they did not provide consent or complete the survey in its entirety. The final sample size was 290 (113 BFHI and 177 non-BFHI hospitals), with adequate number for each to conduct a statistical test for comparison. The sampling procedure is described in Figure 1 following the STROBE guidelines[24].

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Measurement

To assess perceived barriers to breastfeeding support practices, we first identified hospitals' current practices with 12 questions that entail the *Ten Steps to Successful Breastfeeding*[7](Table 1). These questions reflect the earlier version of the 10 steps to capture practices based on the guidelines hospitals were likely following at the time.

If administrators indicated their hospitals were implementing any of the 12 breastfeeding support practices, we asked them to select all applicable barriers to on-going practices, using a list of nine barrier options. We coded zero for non-selected and one for selected barriers. We then asked administrators to select the most significant barrier. Subsequently, to identify factors that hinder the adoption of new practices, we asked participants to select applicable barriers for the breastfeeding support practices that are not are being implemented, using the same list of nine factors. We categorized responses into zero and one. We then asked administrators to select the most significant barrier. Additionally, we asked participants to describe additional challenges experienced in hospitals, using an open-ended question. Also, we assessed facilitators to breastfeeding support practices by asking participants to indicate resources that had helped their practices. Participants chose all applicable answers from a list of nine suggested facilitators with a binary option. We then asked participants to select the most significant facilitator from the same list. Additional facilitators experienced among participants were collected from write-in responses.

To ascertain perceived barriers and facilitators by hospital status, we asked participants to categorize their hospital's current BFHI designation as either established BFHI, in-process (emerging) BFHI, no BFHI designation, or prior BFHI designation (not renewed). We categorized established and emerging BFHI hospitals as BFHI hospitals and those that did not have or did not renew the designation as non-BFHI hospitals.

The questionnaire was developed for this study. The instrument included several demographic characteristics[25] and questions about selecting the most significant barrier/facilitator[26] informed by previous studies. The questionnaire was reviewed and discussed by the study team to reflect study participants and hospitals it is intended for. We integrated strategies into survey development to prevent potential biases. Our approach to capturing textual information about perceived barriers and facilitators mitigated any bias in providing predetermined options in the survey. Also, using multiple scales (i.e. multiple choices,

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single rank, and free response) reduced potential acquiescence bias in indicating hospital experience with a list of factors.

Data Collection

We sent a letter of invitation and survey description to hospital administrators via e-mail in fall 2019. The administrators included the chief executive officer, the president or vice president, or chief nursing officer. If an e-mail was not delivered and bounced back, we contacted hospitals via phone. We sent reminders each week for up to three weeks. The survey was designed to collect both quantitative and qualitative responses and be completed in 20 minutes. We provided a $20 electronic gift card upon completion of the survey. We obtained informed consent through completion of the first question of the survey. This study did not collect personally identifiable data to ensure confidentiality. Detailed methods of this study are available elsewhere[27].

Data Analysis

We calculated frequencies and percentages for categorical and binary demographic characteristics of administrators and hospitals. We presented these results by BFHI status. We performed exact Pearson chi-squared tests and Fisher's exact tests to examine differences in barriers and facilitators to breastfeeding support practices by BFHI status with a significance level of $\alpha<0.05$. We then used the Bonferroni correction for each analysis to provide conservative alpha values, accounting for multiple testing. Since we had nine single degree of freedom tests within each set of assessment, we adjusted the p-values by multiplying by nine. The adjusted p-values greater than one are considered equal to one in the correction, indicating no evidence for rejecting the null hypothesis. Also, we calculated frequencies and percentages for the most significant barriers and facilitators. We removed missing or incomplete data from analysis (n=26). We conducted statistical analyses using STATA 14.2 for Mac (College Station, TX: StataCorp).

A researcher trained in qualitative research manually conducted summative content analysis[28] for write-in answers by identifying and quantifying the use of certain keywords. The researcher then inductively generated categories and put quotes into themes to infer meaning from frequency counts for each theme. The other team members reviewed the categorization of themes and selected example quotes to iteratively refine results. The team members' mixed levels of experience in research on breastfeeding practices in US hospitals provided both internal

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and external perspectives during analysis and ensured rigorous interpretation of participant report. Moreover, the primary analyst blinded characteristics of participants/hospitals to mitigate biases in the interpretation of data. We conducted qualitative analysis using Excel 16.30 for Mac (Redmond, WA: MicrosoftCorp).

Results

Demographic Characteristics

Table 2 shows administrator and hospital characteristics. Most hospital administrators were female (96.6%). Administrators were mostly White (93.5%), followed by Black (3.1%) and American Indian (1.3%). Among White administrators, 14 (5.0%) were Hispanic/Latinx and 261 were non-Hispanic/Latinx (94.9%). The majority of respondents (85.8%) had completed four-year college or graduate education. Approximately one third of administrators (34.2%) reported having worked in their current hospitals between one and five years, and 39.7% had worked in their hospitals over 10 years. 186 hospitals (64.4%) were associated with a larger health system. The number of hospitals varied across regions. The South Atlantic region had the most BFHI hospitals (21.4%), and the East North Central region had the most non-BFHI hospitals (18.2%).

Barriers to Breastfeeding Support Practices

Administrators from both BFHI (n=22,19.5%) and non-BFHI hospitals (n=49,27.7%) indicated that mothers' low interest in breastfeeding was the most significant barrier to current breastfeeding support practices in which hospitals were engaging (Table 3). Among all hospitals (BFHI and non-BFHI), competing priorities of nursing staff (n=136,46.9%), nursing staff's resistance to change (n=113,39.0%), and physician's resistance to change (n=110,37.9%) were most frequently reported when participants chose all applicable barriers. There were no differences by BFHI hospital status in likelihood of reporting low interest among mothers, nursing staff resistance, cost, and physician resistance as barriers to current breastfeeding support practices.

For breastfeeding support practices that were not currently being implemented, mothers' low interest in breastfeeding was reported as the most significant barrier among BFHI (n=7,6.2%) and non-BFHI (n=33,18.6%) hospital administrators (Table 3). When participants selected all applicable barriers, nursing staff's resistance to change (n=63,21.7%) was reported as the most prevalent barrier, followed by mothers' low interest (n=52,17.9%). Overall, non-BFHI

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administrators were more likely to have perceived barriers to uninitiated practices, compared with BFHI hospital administrators. In particular, mothers' low interest in breastfeeding, $\chi^2(1,290)=14.81$; nursing staff's resistance to change, $\chi^2(1,290)=15.65$; cost, $\chi^2(1,290)=9.42$; and lack of adequate infrastructure, $\chi^2(1,290)=9.62$ were perceived as barriers among non-BFHI hospital administrators.

Facilitators to Breastfeeding Support Practices

Administrators from both BFHI (40.7%) and non-BFHI hospitals (42.9%) demonstrated that in-person training was most helpful for their breastfeeding practices among the list of facilitators (Table 4). When participants selected all applicable facilitators, in-person training (73.8%), online training (54.5%), and free education materials (44.1%) were most frequently reported, and staffing agencies (2.0%) were least often reported as facilitators among administrators (BFHI and non-BFHI combined). Convening a special taskforce was significantly more likely to be perceived as a facilitator among BFHI hospital administrators, $\chi^2(1,290)=14.11$, compared to those in non-BFHI hospitals. No significant differences were found between BFHI and non-BFHI hospital administrators in the rest of the facilitators.

Barriers and Facilitators Emerged from Qualitative Response

Table 5 provides a summary of identified themes and categories that guided qualitative data analyses. Among all participants, 118 provided narrative responses regarding perceived barriers (Table 6). Of those, 34 administrators provided answers unrelated to barriers (e.g. "None", "We do practice initiation") and were excluded from the data analysis. Qualitative responses from 84 hospital administrators were categorized into 5 themes. The most frequently reported answers were mother's resistance, lack of awareness, and sociodemographic factors.

> We have a large Hispanic population, who culturally have beliefs related to colostrum and mature milk. These patients almost always request to bottle and breastfeed while in the hospital. These cultural practices make it difficult for nurses to assist these patients with successful breastfeeding while here. (Participant 16, non-BFHI, small hospital, South-Atlantic)

Issues pertaining to hospital infrastructure, including staff management and funding, were also frequently reported. Some participants reported: "Being a Baby-Friendly hospital requires the hospital to pay for formula and pacifiers. This also requires a yearly fee, which keeps increasing" (Participant 184, BFHI, small hospital, South-Atlantic), and "High turnover of staff on the floor

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also presents a challenge for a consistent knowledge base when lactation is not available. Nursing staff can sometimes feel too overwhelmed to provide the support needed for breastfeeding dyads" (Participant 154, non-BFHI, large hospital, Mid-Atlantic). Also, participants stated that inconsistencies in practices and conflicting interests among health workers became barriers to breastfeeding support practices.

> [Physicians] are not required to receive or to give current evidence-based information regarding the management of breastfeeding and the physiology of lactation. Also, many local pediatricians are opposed to BFHI, which only reinforces the negativity parents see on social media. (Participant 286, BFHI, small hospital, East-South-Central)

In regards to facilitators, 141 participants provided narrative responses (Table 6). Of those, 22 administrators provided non-applicable or unclear answers (e.g., "None", "Still exploring"); responses from 119 hospital administrators were analyzed and subsequently categorized into 5 themes. The most frequently reported facilitators concerned with hospital infrastructure. One participant illustrated the effect of organizing a designated team on breastfeeding within the hospital:

> We have implemented our clinical practice council in January 2020 to elicit our champions to come together from all areas to review, discuss, and plan . . . We have already seen an increase incrementally every month for exclusive breastfeeding rates. (Participant 313, non-BFHI, large hospital, East-South-Central)

Staff training, as well as prenatal education for mothers were also mentioned. Some participants described: "Many staff have attended certified breastfeeding counselor course, which have helped to increase their skills and knowledge, in addition to the 20 hours of education required by baby-friendly" (Participant 100, BFHI, medium hospital, Mid-Atlantic), and "We are offering breastfeeding classes weekly and hoping to capture an audience of not only for the patient but including family or any other support system they have" (Participant 114, BFHI, medium hospital, West-South-Central).

Discussion

In this cross-sectional study of 290 hospitals across the U.S., we explored perceived barriers and facilitators to breastfeeding support practices, and the difference between BFHI and non-BFHI hospitals. We found that low interest among mothers was perceived as the most

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significant barrier to breastfeeding practices among BFHI and non-BFHI hospital administrators. No difference was found between BFHI and non-BFHI hospitals in barriers to current practices. Non-BFHI administrators were more likely to perceive cost, nursing staff and physician resistance, competing priorities of nursing staff, and lack of infrastructure as barriers to adopting new practices, compared with those in BFHI hospitals. Participants cited in-person training as the most significant facilitator.

Our results are consistent with prior evidence that maternal resistance stemming from lack of knowledge, cultural beliefs, and family pressure hinder breastfeeding support practices in hospitals[29, 30]. A review on primary care interventions suggested that BFHI accreditation alone does not increase breastfeeding rates unless system-level support is accompanied by adequate education for mothers and their families[31]. This suggests that strengthening prenatal education, potentially with strategies for promoting family participation, may encourage mothers to promote individual knowledge and minimize pressure from family members, in turn to comply with hospital staff's efforts to initiate breastfeeding. In addition, our findings suggest that maternal resistance prevents non-BFHI hospitals from adopting new breastfeeding practices. We suggest improving current prenatal care programs to address mothers' resistance would offer an opportunity for non-BFHI hospitals to expand their breastfeeding support and care.

It is worth noting that some participants attributed maternal resistance to sociodemographic factors, particularly low-income and Hispanic culture, in their narrative answers. Indeed, some stated that women enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) were more likely to refuse breastfeeding as they received financial incentives for feeding their infants formula, aligning with prior evidence on WIC's challenge in meeting breastfeeding goals[32]. A qualitative study suggested that many formula-feeding WIC participants report feeling judged by health professionals and consequently became isolated, increasing the risk for unsafe bottle-feeding practices[33]. It is thus imperative to take an inclusive approach and provide targeted services for this population by limiting hospital provision of formula at discharge and coordinating available WIC resources, including peer counselors and lactation support providers[32, 34]. Meanwhile, studies found that healthcare providers often held biased assumption that African American and Hispanic women would refuse to breastfeed, leading these women to receive less lactation support and limited assistance when problems arose[35, 36]. This indicates the possibility that our participants' report on certain

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racial groups may be implicitly biased and reflected in our findings. Further research is needed to better understand the association between maternal social determinants and breastfeeding support practices among health workers.

Furthermore, proper training of nursing staff and physicians is necessary for ensuring successful initiation and continuation of breastfeeding practices. We found that resistance to changes and a lack of consistency in breastfeeding practices among nursing staff and physicians were frequently reported as barriers, similar to previous research[37]. Breastfeeding education in the workplace may enhance confidence among hospital staff, facilitating the overall quality of breastfeeding support[38, 39]. Our results showed that in-person and online training, as well as free training and materials were perceived as key facilitators to breastfeeding practices across BFHI and non-BFHI hospitals. In our qualitative data, participants additionally highlighted the role of establishing varying training modalities, ensuring consistent training, and getting lactation certification in improving skills among hospital staff. Since non-BFHI hospital administrators were more likely to perceive cost as a barrier to providing breastfeeding care, health workers in non-BFHI hospitals would particularly benefit from free training programs and materials.

Our study also found that non-BFHI hospitals are more likely to experience organizational barriers, particularly cost, lack of infrastructure, and competing priorities among nursing staff. The results reveal that non-BFHI hospitals are less equipped with the systems and funding needed to provide breastfeeding support and care for mothers. Our qualitative findings complementing this result showed that a lack of lactation specialists or high staff turnover, the use of a nursery, and increased annual fees for BFHI subscription were cited as common organizational barriers. Prior studies presented similar findings. An institutional ethnography of nurses described that staff shortages and policies embracing formula supplementation hindered breastfeeding care provision[38], and a review of research on BFHI implementation indicated that inadequate funding, a lack of strong leadership, and hospital routines interfering with breastfeeding care (e.g., 24-hour rooming-in) have also been commonly reported as obstacles to breastfeeding practices[40]. We recommend non-BFHI hospitals ensure policies that support improved infrastructure, including adequate room configurations, staffing, and systems for training and continuing education. Since non-BFHI hospitals are less likely to have enough funds to establish proper infrastructures and resources, an organizational system to apply for funding from the government may contribute to addressing the barrier.

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However, state-specific strategies may be warranted given that breastfeeding laws and programs vary by state. For example, some states have policies that are more conducive for hospitals to adhere to breastfeeding practices than other states (e.g., California mandates BFHI for acute care and special hospitals, and Florida and Alaska encourage the implementation of BFHI)[41]. Many states also have breastfeeding recognition programs (e.g., the five-star program in Virginia) for hospitals without the BFHI certification. Indeed, the 2022 mPINC survey data from maternity care managers and leaders showed that some states achieved higher scores in breastfeeding practices than the national average score[42]. While this study collected geographical data by census regional division rather than by state, we recommend future studies investigating how the experiences of hospitals differ by state, reflecting policies on BFHI and other similar programs in place.

Our data pertaining to facilitators showed that convening a task force was more likely to be perceived as a facilitator among BFHI hospital administrators, compared to non-BFHI administrators. BFHI designation may have successfully supported hospitals in organizing a committee to systematically identify and tackle problems through a multidisciplinary approach. We recommend that non-BFHI hospitals adopt similar strategies by facilitating a team of diverse stakeholders, including local breastfeeding champions, community partners, as well as clinicians, and administrators, to mitigate some of the identified challenges at the organizational level. Our qualitative data further revealed that organizing an interdisciplinary committee helped increase exclusive breastfeeding rates in a non-BFHI hospital. A designated task force may be effective in developing a strategic plan outlining goals and responsibilities, implementing educational interventions, and ensuring supportive policies in hospitals.

Implications from our findings may extend to hospitals worldwide. Similar to our results, a case study in Australia highlighted the importance of improving funding structures to better embed the BFHI initiative within hospitals, as limited commitment from hospital management and policy support may hinder the implementation of breastfeeding programs[43]. Additionally, resistance to change among medical staff and human resource constraints, such as inadequate staffing and frequent rotation, have been recognized as common barriers to BFHI implementation in Latin American and Caribbean hospitals[44]. Many health facilities from low- and middle-income countries, however, may face greater challenges in implementing and sustaining BFHI, and providing breastfeeding support alone can be difficult due to limited

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infrastructure and resources[45-47]. A review of studies in Sub-Saharan Africa found that essential practices, including rooming-in, are often hindered in overcrowded facilities[46]. Furthermore, insufficient monitoring and high attrition of trained staff have contributed to formula feeding in countries like Niger and Ghana[47, 48]. Although our recommendations to strengthen staff training and management are equally relevant to resource-limited settings, measures that respond to infrastructural gaps are critical. Strategies such as standardized education and messaging for community health workers and volunteers, home-based interventions for mothers with limited access to care (e.g., those who deliver at home due to distance from health facilities), and family involvement in establishing consistent infant feeding guidelines may help foster successful breastfeeding practices.

Overall, our study provided important insights into how challenges and needs vary among hospitals, informing strategies for promoting breastfeeding support practices tailored to the BFHI status. Taking an exploratory approach, our study not only demonstrated the overall U.S. hospitals' experiences of breastfeeding services but also offered opportunities to expand on prior evidence, including mPINC data, as to why enduring disparities in breastfeeding outcomes and breastfeeding support practices exist nationwide, calling for action to address the gaps. We believe our findings inform decision-making among hospital leadership in both types of hospitals.

Limitations

This study has several limitations to note. First, our sample's low response rate (24.5%) raises the issue of generalizability. Yet, our stratified sampling ensured sufficient number of BFHI and non-BFHI hospitals across all regions of the U.S. Since this was an exploratory study, we suggest future research collect a nationally representative sample of hospitals, taking account of geographical factors, to address the generalizability issue. We believe that recruiting hospitals from all states can offer vital information about how a state's enforcement of regulations on BFHI is associated with unique challenges and opportunities in implementing breastfeeding practices in a hospital. Next, our survey was distributed to hospital leadership and administrators, whereas many of our respondents included lactation care providers. Although this yielded more holistic data on hospital practices and needs, the varying extent to which administrators enlisted the help of more specialized personnel to respond to the survey is worthy of attention. We underscore that this partly indicates a lack of mutual understanding of roles and communication

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between administrators and breastfeeding support staff, which calls for transparency and opportunities to collaborate across teams and units[49]. Future studies may merit exploring any divide between the perspectives of hospital leadership and that of other clinical workforce and how operational and administrative decisions correspond to floor-level practices. Third, as this study was conducted prior to the pandemic, we did not capture any shift in breastfeeding support practices (e.g., discontinuation of in-person lactation support) particularly between 2020-2021, as suggested by other studies[50, 51]. Yet, we expect that our findings shed light on hospitals' process of normalizing and improving lactation services within facilities. Lastly, although we attempted to interpret emerging meaning from qualitative responses, our electronic survey was inherently limited in obtaining in-depth participant or hospital experiences. The use of qualitative methods, including in-depth interviews with breastfeeding practitioners, may offer a critical avenue for future researchers to reveal uninvestigated challenges and opportunities.

Conclusions

Breastfeeding is recognized as critical health behavior that brings numerous health benefits to mothers and infants. Although BFHI designation is known to increase breastfeeding rates among mothers, less is known about what barriers and facilitators to breastfeeding support practices remain in BFHI hospitals, and how the factors differ from non-BFHI hospitals. Our study found that mothers' low interest was perceived as the most significant barrier across hospital administrators. Non-BFHI hospitals were more likely to perceive cost, lack of infrastructure, and staff resistance as barriers to initiating breastfeeding practices. In-person training was found as the most significant facilitator among participants. Hospitals should improve prenatal education for mothers and provide regular training with varying modalities for health workers. Securing funding and hospital infrastructures is needed particularly for non-BFHI hospitals.

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Table 1: *A List of Breastfeeding Support Practices*

Have a written breastfeeding policy that is routinely communicated to all health care sta
Train health care staff in the skills necessary to provide optimal breastfeeding-friendly care and support
Inform all pregnant women about the benefits and management of breastfeeding
Help mothers initiate breastfeeding within one hour of birth
Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants
Give infants no food or drink other than breast-milk, unless medically indicated
Practice rooming in – allow mothers and infants to remain together 24 hours a day
Encourage breastfeeding on demand
Give no pacifiers or artificial nipples to breastfeeding infants
Foster the establishment of breastfeeding support groups and refer mothers to them upon discharge from the hospital or birth center
Prohibit marketing of formula to mothers in the form of bags, samples, coupons, or other materials [a]
Do not accept financial incentives from formula companies [a]

[a] We added 2 additional practices to the *Ten Steps* given the issue of accepting free infant formula and materials used for promotion efforts of formula companies among hospitals. These statements were added in compliance with the International Code of Marketing of Breast-milk Substitutes[52].

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Table 2: *Demographic Characteristics of Administrators and Hospitals by Baby-Friendly Hospital Initiative Designation*

Administrator characteristics	All (n=290) [a]	BFHI (n=113) [a]	Non-BFHI (n=177) [a]
	n(%)	n(%)	n(%)
Age			
≤ 34	30 (10.3)	15 (13.3)	15 (8.3)
35-44	82 (28.3)	35 (31.0)	47 (26.6)
45-54	77 (26.6)	23 (20.4)	54 (30.5)
55-64	89 (30.7)	34 (30.1)	55 (31.1)
≥ 65	12 (4.1)	6 (5.3)	6 (2.5)
Gender			
Female	280 (96.6)	107 (94.7)	173 (97.7)
Male	10 (3.4)	6 (5.3)	4 (2.3)
Race			
American Indian or Alaska Native	4 (1.3)	2 (1.8)	2 (1.1)
Asian/Asian American	3 (1.0)	2 (1.8)	1 (0.6)
Black/African American	9 (3.1)	5 (4.4)	4 (2.3)
White or Caucasian	275 (93.5)	105 (92.9)	170 (96.0)
N/A [b]	3 (1.0)	0 (0.0)	3 (1.7)
Hispanic/Latinx ethnicity	15 (5.2)	8 (7.0)	7 (3.9)
Education			
Some college/trade school	1 (0.3)	0 (0.0)	1 (0.6)
Associate (two-year) degree	40 (1.4)	14 (12.4)	26 (14.7)
Four-year college degree	121 (41.7)	44 (38.9)	77 (43.5)
Graduate school degree or higher	128 (44.1)	55 (48.7)	73 (41.2)
Position title			
Department/program director	88 (30.3)	35 (31.0)	53 (29.9)
Nurse/unit manager	67 (23.1)	22 (19.5)	45 (25.4)
President or vice president	9 (3.1)	4 (3.5)	5 (2.8)
Clinical lead/supervisor	36 (12.4)	14 (12.4)	22 (12.4)
Executive leadership	17 (5.9)	10 (8.8)	7 (4.0)
Lactation care provider/nurse	57 (29.7)	19 (16.8)	38 (21.5)
Physician	2 (0.7)	2 (1.8)	0 (0.0)
Unspecified	4 (1.4)	4 (3.5)	0 (0.0)
Position length			
≤ 1 year	27 (9.3)	12 (10.6)	15 (8.5)
1-5 years	96 (33.1)	38 (33.6)	58 (32.9)

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5-10 years	50 (17.2)	22 (19.5)	28 (15.9)
≥10 years	116 (40.0)	41 (36.3)	75 (42.6)
Hospital characteristics	All (n=290) [a]	BFHI (n=113) [a]	Non-BFHI (n=177) [a]
	n(%)	n(%)	n(%)
Health system association			
No	103 (35.5)	33 (29.5)	70 (39.5)
Yes	186 (64.1)	79 (70.5)	107 (60.5)
Region [c]			
New England	13 (4.5)	6 (5.4)	7 (4.0)
Mid-Atlantic	38 (13.1)	17 (15.2)	21 (11.9)
East North Central	47 (16.2)	15 (13.4)	32 (18.1)
West North Central	39 (13.4)	12 (10.7)	27 (15.3)
South Atlantic	50 (17.2)	24 (21.4)	26 (14.7)
East South Central	19 (6.6)	9 (8.0)	10 (5.6)
West South Central	33 (11.4)	11 (9.8)	22 (12.4)
Mountain	25 (8.6)	5 (4.5)	20 (11.3)
Pacific	25 (8.6)	13 (11.6)	12 (6.8)
# of hospital beds [d]			
1 to 99	105 (36.2)	35 (32.1)	70 (40.7)
100 to 299	69 (23.8)	26 (23.9)	43 (25.0)
≥300	91 (31.4)	42 (38.5)	49 (28.5)
Unsure	12 (4.1)	6 (5.5)	6 (3.5)
N/A [e]	4 (1.4)	0 (0.0)	4 (2.3)

[a] Percentages not adding up to 100 are due to missing or check-all-that-apply answers.

[b] Prefer not to answer

[c] New England (CT, ME, MA, NH, RI, VT); Mid-Atlantic (NJ, NY, PA); East North Central (IL, IN, MI, OH, WI); West North Central (IA, KS, MN, MO, NE, ND, SD); South Atlantic (DE, FL, GA, MD, NC, SC, VA, DC, WV); East South Central (AL, KY, MS, TN); West South Central (AR, LA, OK, TX); Mountain (AZ, CO, ID, MT, NV, NM, UT, WY); Pacific (AK, CA, HI, OR, WA)

[d] Total number of hospital beds if a birthing facility is affiliated with a hospital

[e] Birthing facility not affiliated with a hospital

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Table 3: *Perceived Barriers to Breastfeeding Support Practices by Baby-Friendly Hospital Initiative Designation*

Perceived barriers to breastfeeding support practices (being implemented) [a]	All (n=290) n(%) [b]	BFHI (n=113)	Non-BFHI (n=177)	χ^2 [c]	*p*
Cost	44 (15.7)	18 (15.9)	26 (14.7)	0.082	1.000
Low interest in breastfeeding among mothers	105 (36.2)	37 (32.7)	68 (38.4)	0.962	1.000
Nursing staff resistance to changes	113 (39.0)	41 (36.3)	72 (40.7)	0.560	1.000
Physician resistance to changes	110 (37.9)	49 (43.4)	61 (34.5)	2.320	1.000
Management-level resistance to changes	10 (3.5)	4 (3.5)	6 (3.4)	0.005	1.000
Competing priorities of nursing staff	136 (46.9)	51 (45.1)	85 (48.0)	0.231	1.000
Competing priorities of physicians	67 (23.1)	23 (20.4)	44 (24.9)	0.788	1.000
Management-level competing interests	18 (6.2)	6 (5.3)	12 (6.8)	0.256	1.000
Lack of infrastructure	68 (23.5)	23 (20.4)	45 (25.4)	0.988	1.000
Most significant barrier	Low interest among mothers (71, 24.5)	Low interest among mothers (22, 19.5)	Low interest among mothers (49, 27.7)	-	-
Perceived barriers to	All	BFHI	Non-BFHI		

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breastfeeding support practices (not being implemented) [a]	(n=290) n(%) [b]	(n=113)	(n=177)	χ^2 [c]	*p*
Cost	44 (15.2)	8 (7.1)	36 (20.3)	**9.421**	.019
Low interest in breastfeeding among mothers	52 (17.9)	8 (7.1)	44 (24.9)	**14.815**	.001
Nursing staff resistance to changes	63 (21.7)	11 (9.7)	52 (29.4)	**15.651**	<.001
Physician resistance to changes	36 (12.4)	6 (5.3)	30 (17.0)	**8.594**	.030
Management-level resistance to changes	5 (1.7)	1 (0.9)	4 (2.3)	0.770	1.000
Competing priorities of nursing staff	48 (16.6)	9 (8.0)	39 (22.0)	**9.884**	.015
Competing priorities of physicians	20 (6.9)	9 (8.0)	11 (6.2)	0.329	1.000
Management-level competing interests	10 (3.5)	1 (0.9)	9 (5.1)	3.654	.503
Lack of infrastructure	41 (14.1)	7 (6.2)	34 (19.2)	**9.623**	.017
Most significant barrier	Low interest among mothers (40, 13.8)	Low interest among mothers (7, 6.2)	Low interest among mothers (33, 18.6)	-	

[a] Administrators were asked to select as many or few applicable barriers from the list. They were then asked to select the most significant barrier from the same list.

[b] Values refer to the number and percentages of administrators who selected each respective barrier by the status of hospital.

[c] Values in bold are statistically significant at p<.05, adjusted by Bonferroni correction.

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Table 4: *Perceived Facilitators to Breastfeeding Support Practices by Baby-Friendly Hospital Initiative Designation*

Facilitators to breastfeeding support practices [a]	All (n=290)	BFHI (n=113)	Non-BFHI (n=177)		
	n(%) [b]			χ^2 [c]	*p*
Online training	158 (54.5)	67 (59.3)	91 (51.4)	1.727	1.000
In-person training	214 (73.8)	87 (77.0)	127 (71.8)	0.979	1.000
Free training	125 (43.1)	41 (36.3)	84 (47.5)	3.512	.548
Free materials	128 (44.1)	46 (40.7)	82 (46.3)	0.883	1.000
Lectures/grand rounds	73 (25.2)	35 (31.0)	38 (21.5)	3.307	.621
Staffing agencies	6 (2.1)	2 (1.8)	4 (2.3)	0.082	1.000
Working with external organizations	85 (29.3)	39 (34.5)	46 (26.0)	2.419	1.000
Working with external consultant	103 (35.5)	32 (28.3)	71 (40.1)	4.189	.366
Convening a taskforce	82 (28.3)	46 (40.7)	36 (20.3)	**14.110**	.002
Most significant facilitator	In-person training (122, 42.1)	In-person training (46, 40.7)	In-person training (76, 42.9)	-	-

[a] Administrators were asked to select as many or few applicable facilitators from the list. They were then asked to select the most significant facilitator from the same list.

[b] Values refer to the number and percentages of administrators who selected each respective facilitator by the type of hospital.

[c] Values in bold are statistically significant at $p<.05$, adjusted by Bonferroni correction.

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Table 5: *Data Analysis Structure for Qualitative Data*

Theme	Theme Definition	Category	Category Definition
Barriers			
Mothers' resistance, awareness, and sociodemographic factors	Any mention of maternal factors interfering with breastfeeding support practices in hospitals	Cultural and language barriers	Mothers' resistance derived from cultural beliefs or language barriers that hinder communication with hospital staff
		Concerns about costs among low-income mothers	Low-income mothers (e.g., WIC participants) having access to free formula from other programs or their need to go back to work without breastfeeding
		General lack of awareness or misbeliefs about breastfeeding	Mothers' beliefs that (exclusive) breastfeeding is not important or resistance to hospital practices, including rooming in
		Lack of family support	Descriptions of lack of family support in breastfeeding or family pressure to pursue alternative feeding practices
Inadequate hospital infrastructure	Any organizations issues concerning with inadequate hospital	Staff shortages and management	Staff shortages or high staff turnover on the unit floor as well as inadequate staff management, including compensation and training, that limit staff's ability to perform breastfeeding support

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	infrastructure that hamper breastfeeding support practices		practices
		Lack of a designated committee or taskforce	Lack of breastfeeding champions or a designated committee limiting hospital capacity in lactation support
		Lack of facilities or services within a hospital	Descriptions of inadequate supplies or room configuration needed for breastfeeding support
		Costs and funding issues	Comments about challenges concerning with costs for BFHI designation or supplies needed for breastfeeding practices.
Staff resistance or competing interests	Hospital staff's resistance, lack of skills or interest in performing breastfeeding practices	Low interest in adhering to breastfeeding practices	Descriptions of hospital staff, including physicians, nurses, and leadership, showing low interest in breastfeeding support or BFHI designation
		Lack of skills and consistency in practice	Inconsistency in breastfeeding practices among hospital staff or descriptions of current practices being not evidence-based.
Social trends and external factors	Any mention of general social trends or external services that may discourage	External support or programs that conflict with hospital practices	Descriptions of mothers' participation in external programs (e.g. WIC) conflicting with hospital practices or engagement of infant formula companies

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	breastfeeding among mothers and hospital practices	Lack of external resources or services to continue practices	Limited referrals for continuation of breastfeeding practices or lack of state/community-level resources that support breastfeeding practices in hospitals
		Low delivery rates in hospitals	Mention of low frequency of deliveries in hospital leading to challenges in ensuring optimal practices or improving skills among hospital staff
		Social trends (Social media campaign)	Descriptions of general social trends, including social media campaign, conflicting with exclusive breastfeeding recommendations
Hospitals' preference for mother-friendly practices	Hospital leadership or staff's prioritization of mothers' decisions that are often counter to breastfeeding recommendations	Health concerns of mothers.	Hospitals' prioritization of maternal exhaustion or health conditions over practicing rooming in or early initiation of breastfeeding
		Mothers' right to make their own decisions	Hospitals' prioritization of decisions made by mothers even when they are against recommendations
Facilitators			
Improving hospital infrastructure	Organizational factors that support	Adequate staffing and engaging lactation support	Engaging additional staff or lactation support providers to current staff to ensure quality of

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	the implementation of breastfeeding support practices, including funding, staffing, and resources.	providers	care for mothers.
		Organizing a designated committee or taskforce	Organizing a designated committee or taskforce in hospital to collectively develop plans for addressing barriers
		Establishing hospital policies and achieving consensus	Descriptions of the importance of having policies that are communicated across different hospital units or staff with different roles
		Securing and management of funding	Proper management of funding for BFHI designation or medical supplies needed for breastfeeding practices
		Ensuring resources within hospital to support practices.	Descriptions of hospitals equipped with resources (e.g. donor milk, milk warmer) to continue practices
Training staff and providing proper training materials	Description of staff training and provision of educational materials, as well as its connection to education for mothers	Frequent training for staff with varying modalities	Regular training required for hospital staff. Mention of the need to utilize varying modalities for training
		Providing materials for education for mothers	Providing staff with education materials that can improve the quality of counseling for mothers
		Monitoring staff performance and linkage to maternal education	Performing a chart audit to track progress of breastfeeding practices among staff and linkage to education for mothers

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		Encouraging staff to obtain lactation certification	Hospital-level support for staff in obtaining lactation certification
Strengthening pre/postnatal services for mothers and family	Any mention of services or resources available for mother and family that promote breastfeeding support practices	Providing early and continued education for mothers and their family	Descriptions of the need of early and continued education for mothers and family
		Implementing different modalities for education	Employing different training modalities (e.g., video, QR code, fliers, posters) to expand mothers' access to breastfeeding information
		Free or low-cost services for low-income mothers	Mention of integrating free or low-cost services that deliver information targeted to low-income mothers and family
		Providing tailored services and resources at discharge	Offering flexible approaches suited for mothers' conditions (e.g., rooming in upon mothers' acknowledgement of safety instructions) and providing resources at discharge
Managing relationships between mothers and hospital staff	Benefit of maintaining a good relationship and communication between mothers and	Staff's respect for mothers' concerns	Descriptions of the need to respect mothers' decisions to maintain good relationships and improve care for mothers
		Establishing multiple communication channels	Availability of different communication channels that mothers can contact health

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	hospital staff in breastfeeding support	between mothers and care providers	providers when they experience challenges in breastfeeding
		Working with mothers' family	Mention of the importance of a partnership between staff and mothers' family
Building partnerships with stakeholders	Any mention of the importance of working with diverse stakeholders to encourage breastfeeding practices	Building a partnership among multiple stakeholders	Descriptions of the engagement of stakeholders, including researchers, regional coalitions, clinicians, and administrative staff to address barriers at multiple levels
		Utilizing external programs and services	Engagement of external services (e.g. WIC peer counselors) to continue and improve existing services

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Table 6: *Common Themes of Perceived Barriers and Facilitators from Qualitative Responses*

Perceived barriers (n=86) [a]	n(%)
Mothers' resistance, awareness, and sociodemographic factors [b]	27 (31.4)
Inadequate hospital infrastructure (e.g., funding, staff management, support group) [b]	26 (30.2)
Staff resistance or competing interests [b]	14 (16.3)
Social trends and external factors	9 (10.5)
Hospitals' preference for mother-friendly practices	8 (9.3)
Others (e.g., health conditions of infants) [c]	2 (2.3)
Perceived facilitators (n=136) [a]	**n(%)**
Improving hospital infrastructure (e.g., budget, staffing, policies) [b]	49 (36.0)
Training staff and providing proper training materials [b]	39 (28.7)
Strengthening pre/postnatal services for mothers and family [b]	32 (23.5)
Managing relationships between mothers and hospital staff	7 (5.1)
Building partnerships with stakeholders	6 (4.4)
Others (e.g., attitudes) [c]	3 (2.2)

[a] Answers not related to perceived barriers or facilitators were removed from the total number of respondents.

[b] Answers applicable to more than one theme were double-coded and reported in all respective categories.

[c] Responses for 'Others' were not categorized into any salient themes identified.

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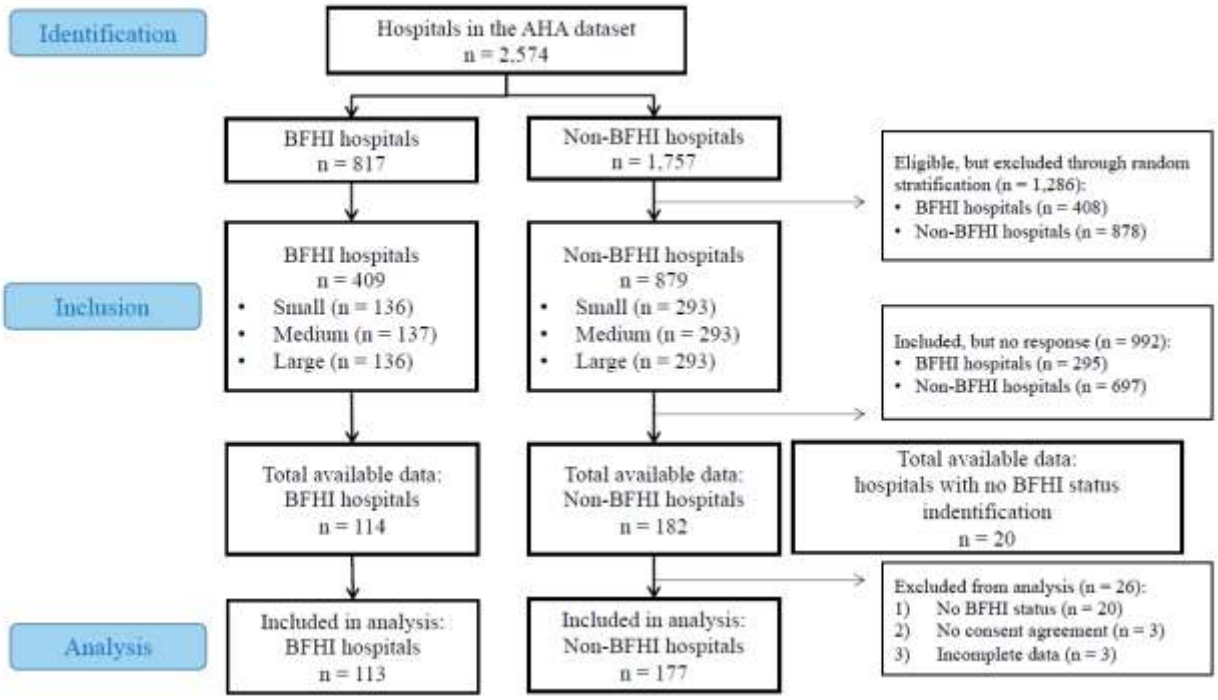

Figure 1: *Flowchart of Participants*

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