



Nursing home leaders' perceptions of a research partnership

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Abstract

Background/objective Partnerships between healthcare providers and researchers may accelerate the translation of interventions into widespread practice by testing them under real-world conditions, but depend on provider's willingness to engage with researchers and ability to fully implement an intervention.

Aim To understand nursing home leader's motivations for participating in a research study and perceptions of the process and value.

Methods After a feasibility study of tuned lighting in a nursing home, we conducted semi-structured telephone interviews with six facility leaders. Interviews were audio-recorded, transcribed, and independently coded by four investigators.

Results Three themes emerged: (1) The importance of the nursing home's culture and context: the facility had stable leadership, clear processes for prioritizing and implementing new initiatives, and an established interest in the study's topic. (2) The importance of leader's belief in the value of the intervention: leaders perceived research generally and the intervention specifically as positively impacting their facility and residents. (3) The importance of ongoing collaboration and flexibility throughout the study period: leaders served as champions to catalyze the project and overcome implementation barriers.

Conclusion Nursing home leader's perspectives about their participation in a feasibility study underscore the importance of establishing strong researcher–provider partnerships, understanding the environment in which the intervention will be implemented, and employing pragmatic methods that allow for flexibility in response to real-world implementation barriers. We recommend eliciting qualitative information to understand the environment in which an intervention will be implemented and to engage opinion leaders who can inform the protocol and champion its success.

Keywords Nursing home · Pragmatic research · Embedded research · Stakeholder engagement · Qualitative

Introduction

Studies in which healthcare providers, not research staff, implement interventions may accelerate the translation of efficacious interventions into wide-spread practice, because they involve testing interventions under real-world conditions that increase generalizability [1–3]. However, the

success of such studies, known as embedded pragmatic trials, depends on provider's willingness to engage in research and their ability to implement research protocols; if interventions are not fully adopted, it is not possible to determine whether or not they are effective and can (or should) be broadly scaled [4]. Providers must actively partner with researchers throughout a study and assume ownership for everything from allocating resources needed to implement the intervention to incorporating any changes to workflow and processes, monitoring implementation, and overcoming barriers that arise.

Little is published to characterize nursing home staff experiences with participating in research, despite a need for effective research partnerships to test and disseminate interventions that can improve care for people residing in this care setting [5]. More than 1.2 million residents [6], many of whom are frail older adults [7], reside in approximately 15,000 nursing homes across the US [6]. While government

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agencies have long highlighted opportunities to improve quality and outcomes for nursing home residents, [8, 9] the severe impact of the novel coronavirus pandemic on nursing home residents has heightened the urgency to test and disseminate effective interventions for this population. Residents have been disproportionately impacted by COVID-19, both directly (i.e., infection and death) [10] and indirectly, as a result of infection precautions (e.g., isolation). This has catalyzed numerous studies on topics, such as infection prevention, telehealth, and advance care planning, as well as elevated the importance of research on long-standing priorities (e.g., dementia care [11] and workforce issues) [12, 13].

To successfully partner with nursing homes on research, regardless of the topic, interventionists need to understand provider's motivations for participating in research and perceptions of the process and value. They must also work with providers to address challenges that arise during implementation. To characterize one nursing home's experience collaborating on research, a Brown University team interviewed leaders from a California facility after completing a feasibility study of tuned LED lighting.

Methods

Research study

Leaders from a 99-bed, not-for-profit nursing home in northern California sought a research partnership to conduct a feasibility study of tuned LED lighting. Using a crossover design, we randomized the facility's three long-term care residential corridors to employ either tuned or static lighting for two months, and then switch to the other lighting condition for another two months. The tuned lighting condition involved lighting that changed in color and intensity over the course of the day and night; the static lighting condition mimicked the fluorescent lighting in place at the facility prior to installation of the tunable fixtures. Nursing home staff was responsible for implementing the lighting conditions. Researchers then used validated instruments to assess the feasibility of evaluating the impact of such an intervention on resident's sleep disturbances and dementia-related behaviors [14].

Data

To understand the perspectives of key nursing home stakeholders, two members of the research team interviewed the six nursing home leaders responsible for establishing the research partnership and implementing the lighting intervention: the Medical Director, Chief Operating Officer (COO), Administrator, Director of Nursing (DON), Activities Director, and Director of Plant Operations. We conducted these

interviews via phone using structured interview guides with open-ended questions focused on the nursing home's organizational culture and context, as well as leader's perceptions of and experiences during the study. We audio-recorded each interview and transcribed the recordings.

Analysis

Four research team members conducted a content analysis. We developed a coding scheme based on the questions posed in the interview guide, and then each team member conducted independent analyses of the transcripts to code content. We refined the coding scheme as we analyzed the transcripts and met as a group to reach agreement, settle any divergence in our analyses, and identify major themes. We documented decisions and the analytic process with an audit trail and applied the final codes using nVivo (QSR International, Burlington, MA).

Because staff participated in the interviews in a professional capacity and did not provide personal information other than name and title, this analysis is not considered human subject's research or subject to Institutional Review Board approval.

Results

Analysis of the nursing home leader's interviews identified three overarching themes regarding the importance of (1) the nursing home's culture and context, (2) alignment of the study topic with staff priorities and motivations, (3) collaboration and flexibility throughout the project.

1. The importance of the nursing home's culture and context

The facility's decision to engage in the research partnership was made in the context of stable leadership, a well-articulated mission, and established processes for making decisions and rolling out new changes. The six interview participants were the leaders responsible for making the decision and/or for implementing the lighting protocol; while some of their roles changed over time, five had been employed between three and eight years at the time of the interviews; the sixth, several months. The Medical Director noted some turnover among frontline staff, but downplayed the impact and emphasized the facility's stability.

There was a fair amount of staff turnover. I think you know that it's been harder and harder to find staff, because everybody's got a job now [...]. So there was some staff turnover. [...] I don't know that it's any different than any other facility in

the country. I would say that there weren't huge changes in the facility. That, to me, would be one of the important things, is how consistent was your environment. (Medical Director)

Participants expressed clear and consistent understanding of the facility's mission and goals, and described decision-making consonant with these goals.

We have three strategic goals: to be recognized as the premier home-away-from-home healthcare provider for long-term and post-acute, to be recognized as the employer of choice by staff, healthcare professionals, and the community, [and] to ensure the financial resources necessary to support our mission and vision. (COO) We have a strategic matrix aligned to the resident goals of family, our mission, our vision. So we tie all that in, it kind of tabulates, and there's this score that we get and based on this score is what we prioritize. (Administrator)

Participants also described well-established processes to pilot test new initiatives and to monitor ongoing ones.

We'll [design] a plan, some type of a strategy for how we're going to approach the plan. Then, we'll create a timeline so that we have a rollout period. Then, generate sort of outcome measures and countermeasures to try to guard against the negatives of any new project. Then, we roll it out and there's usually an education piece to the staff. Then, there's usually the rollout periods where we do [rapid-cycle improvement] and make adjustments along the way. (Medical Director)

[We] have all of these metrics that we go over on a monthly basis. So annually, we do a high-level review, and then on a monthly basis we're taking a look at those things systematically. (COO)

2. The importance of alignment of the study topic with staff priorities and motivations

Participant's interest in lighting was established prior to the study and fueled their desire to form the research partnership. They attributed this interest, in large part, to the Medical Director's belief that light exposure could improve sleep and other resident outcomes.

About a year ago, [we met with the Medical Director] and we talked about how the importance of light is for a resident to help them sleep better at night. I guess there's a lot more science behind it. (Activities Director)

With the Medical Director serving as a champion, leaders had previously implemented several lighting ini-

tiatives, ranging from installing new tunable LED fixtures—the fixtures leveraged for the research project—to prescribing light therapy and scheduling outdoor activities.

(The Medical Director) started writing orders for light therapy. So we started seeing a change in the type of orders we were receiving, and the type of activities, and where the location was—mostly outdoors. (Administrator) (We) started what we called the morning Sunshine Group. Every morning, Monday through Friday, at 8:30, these residents are gathered together and, weather-permitting, of course, we take them outside, where they are getting sun and light and music and we do a social and/or physical activity with them. (Activities Director)

Participants couched their motivation to participate in lighting research in the context of these ongoing initiatives. The Medical Director himself also reported that he catalyzed the research project: after being introduced to the research team by a mutual collaborator interested in establishing the evidence base for tuned lighting, he proposed the study design, helped to define the research question, and obtained buy-in from the other leaders.

I came up with the idea of wanting to test this further and try to understand what we can do. See if it works. If it does work, good. There's a big investment anytime you're going to change your lights and how you change them. There's just a lot of questions to be answered about tunable lighting. (Medical Director)

Participants expressed intellectual curiosity about participating in research. They reported that the project was aligned with the facility's mission and felt it presented an opportunity to objectively assess the impact of tuned lighting.

One of the things we looked at to be a premier provider is to prove our physical plan to create a safe, functional, and attractive home-like environment. Underneath there comes the study with the lighting and how that benefits our residents. (Administrator) Being the premiere provider in the industry, you want to try things outside of medication to help with behaviors and frequent patterns. [...] I am pretty sure that is what drove the company] to say: Let's go for it because [because the researchers] are going to track everything for us and let us know if it's actually effective. And if it is, we are going to roll it out to all of our units." (DON)

While acknowledging that it was the researcher's role, not theirs, to formally evaluate the tuned lighting, participants were interested in the tuned lighting's effect and believed it to be associated with a range of observed changes, from fewer dementia-related behaviors to better sleep and increased daytime alertness.

I think that residents who had the lights dimming I think had far less moods and behaviors than those who had the super bright lights still. A few of the (certified nursing assistants) have told me that it's been a more peaceful evening and easier to work with the residents, because they seem more calm and relaxed. (Activities Director)

I think we're still learning more. I think that's why this is such a great area of research: to see how we can move the bar towards better sleep and overall better quality of life, by changing the environment. (Medical Director)

One anecdote, in particular, linked a resident's sleep habits with exposure to the tuned vs. static lighting conditions.

One resident would not sleep in his bed and he'd always sleep in his wheelchair. And he also had a lot of psychotropic medication. And when we implemented the (tuned lighting), he started sleeping in his bed and we were able to reduce the number of psychotropic medications he was using. And then (he) and his roommate did not get along, and so he requested to move out of that room, and the room he moved into did not have the (tuned lighting) and he reverted to the old habits of sleeping in his wheelchair. (Administrator)

While their primary goal was to improve quality of life and outcomes for residents, participants also considered how lighting affected frontline staff.

In the past, our dietary department had to leave actually two pots of coffee for night shift. And (with) the new lighting, that went away. So the blue light was keeping them awake and they did not have a need for coffee. (Administrator)

While the lighting intervention did not require any behavior change from frontline staff, its evaluation did involve them speaking with researchers about resident's sleep and behaviors. Staff participating in data collection interviews were sometimes off the floor for several hours, which was made possible because leaders understood the value of the information being captured and helped to coordinate and support staff's participation.

It's difficult to have staff off the floor for hours at a time. Especially the (frontline) staff. But I understand the other side, too, because where else will we get the information outside [of] the people doing the work? (DON)

3. The importance of collaboration and flexibility throughout the study

Although there was strong leadership support for the research project and an automated intervention, implementation barriers arose. Leaders independently navigated some of these barriers, such as staff's initial resistance to changing the lighting.

The staff, at first, was kind of resistant, especially at the nurse's station. They felt that it was too dim. In reality, it was [an assumption] versus the reality of it. It was not really too dim; they could still read. (Director of Plant Operations)

Prior to the research project, the fluorescent lighting in the nurse's station was bright overnight, despite the close proximity to the rooms in which residents were sleeping, and corridor lighting was "dimmed" by turning off every other fixture. The research protocol involved dimming the lighting at the nurse's station and on the corridors (with the corridor's hue and intensity varying based on randomization to tuned vs. static lighting conditions).

When we had fluorescent lights, there was a switch mounted in the hallway so only every other light would be on. We couldn't get (staff) to stop, so we actually had to disconnect the switch so they couldn't do that anymore... We (also) had some people jimmying open the little box that was on the cover and changing the lighting because they thought it was too dim. (Director of Plant Operations)

Other barriers required and underscore the importance of ongoing collaboration between healthcare providers and researchers and the need for flexibility in response to barriers that emerge. The most significant barrier occurred when the lighting settings accidentally deviated from the protocol—a problem that was detected when members of the research team visited the facility to collect data and noticed that the settings were incorrect. Together, leaders and researchers determined the most likely cause, a software problem, and implemented strategies to remedy it and for researchers to monitor the lighting remotely. The Director of Plant Operations referenced these mid-course corrections when commenting on how to improve the research experience.

We would run all the cables at the same time, we would set it all up just right in the protocol because, you know, your protocol, you had to reset it because the lighting wasn't right, different things weren't working properly. (Director of Plant Operations)

Leaders were receptive to ongoing communication throughout the project and willing to collaboratively troubleshoot when barriers arose. Their perspective was informed by the commitment to quality embedded in their mission and their quality improvement approach to implementing initiatives. That desire to self-reflect and continuously improve was clear in respondent's comments about what could have gone better during the project.

The only question I would have is reversing everything you're saying and asking: was there anything we could do better on our end during this journey of the study? Anything I can take back to the team on what we did well, or any opportunities for improvement or not? I'd love to know. (Administrator)

Discussion

Several themes emerged from our interviews with nursing home leaders after completing a feasibility study of tuned lighting, focused on organizational culture, commitment to the intervention, and nature of the collaborative relationship. Taken together, the themes describe a high-functioning nursing home with significant interest and investment in both the topic and the research. These findings contextualize a partnership between our research team and facility leaders that enabled the study to overcome implementation barriers; despite the fact that the protocol in this feasibility study—tuned LED lighting—seemed simple and easy to implement, we encountered barriers, including technological challenges, that we were able to overcome, thanks to the active engagement of the nursing home's leaders.

Our findings complement and support studies discussing the role of nursing home organizational culture [15] and staff champions in provider's ability to implement interventions [16–20]. However, much of the prior literature focuses narrowly on barriers and facilitators to specific interventions. In contrast, we captured qualitative data more broadly relevant to leader's decision-making regarding when and how to engage in research. We believe that these findings speak to the importance of eliciting similar qualitative information prior to initiating a research partnership and are relevant for topics unrelated to tuned lighting.

Two models provide helpful context for our findings. The first is the learning health system model, which emphasizes partnerships between healthcare systems that embrace continuous quality improvement principles and interventionists whose research questions emerge from health system's needs [20, 21]. In our study, leaders described clear processes for prioritizing and implementing new initiatives, as well as an established interest in the study's topic (lighting). The medical director recounted outreach to researchers to initiate the study and proposing the crossover design. Leaders also discussed working collaboratively with the research team to adapt the protocol to the local environment and obtain buy-in from nursing staff. When we realized that the lighting did not adhere to the protocol, researchers and leaders likewise successfully collaborated to investigate the reason and implement solutions.

The second model, the Readiness Assessment for Pragmatic Trials (RAPT) model, asks interventionists to qualitatively assess their intervention from low to high readiness for a pragmatic trial [4]. The model's nine domains include one focused on provider's willingness to adopt the intervention (acceptability) and another on the extent to which an intervention can be implemented under existing conditions (feasibility). Both acceptability and feasibility speak to the needs to engage providers as key stakeholders throughout an intervention's lifecycle and to understand the conditions that affect implementation. In our study, leaders expressed a strong belief in the value of the intervention, attesting to acceptability. They also described how ongoing collaboration informed mid-course corrections that increased adherence to the protocol, translating to improved feasibility by the end of the study period.

We conducted our interviews at the end of the study period and participant's responses therefore reflect their recollection of experiences during the project, and may be subject to recall bias. Yet, the fact that participants separately and repeatedly described similar experiences gives us confidence that the themes we identified accurately reflect their perceptions of their organization and of their collective experiences with this study. Our findings are also limited by the fact that they reflect the perspectives of a small group of nursing home leaders from one high-performing facility after participating in a single study. That said, we believe our results speak to the importance of widely applicable considerations, such as carefully selecting research sites and engaging all of the members of the leadership team or staff who can inform the study's planning and execution and champion its success. These considerations can ensure that an intervention is embraced and implemented.

In conclusion, nursing home leader's perspectives about their participation in a feasibility study of tuned lighting emphasize the importance of researchers establishing strong relationships with provider partners, understanding the

environment in which the intervention will be implemented, and employing pragmatic methods that allow for flexibility in response to real-world implementation barriers. We recommend that interventionists conducting pragmatic studies in nursing homes—and other settings—elicit similar qualitative information prior to initiating a research partnership, to characterize the organization's culture and context and to assess alignment of their intervention with the organization's goals.

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Author's contributions DRG, EM, RRB, and TW participated in the study concept and design. RU and TW conducted the interviews. EM, RRB, RU, and TW conducted the qualitative analysis. All authors participated in interpreting the data and preparing the manuscript.

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Data availability The interview guides are available upon request from the corresponding author.

Declarations

Conflict of interest The authors have no conflicts of interest or competing interest to declare.

Ethical approval Because staff participated in the interviews in a professional capacity and did not provide personal information other than name and title, this analysis is not considered human subject's research or subject to Institutional Review Board approval.

Consent for publication While this analysis is not considered human subjects research, we have not included any identifiable details other than respondent's role in the facility and consent for publication is therefore not necessary. All respondents knew at the time of the interviews that we intended to publish study findings.

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