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Collaborative development of an innovative virtual research recruitment strategy through an academic/clinical partnership

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ABSTRACT

Purpose: Recruitment for research studies is the crucial first step and often the most challenging one. A major shift in recruitment methods for research was necessitated by the onset of the COVID-19 pandemic. Our goal is to describe lessons learned and the success rate of virtual research recruitment compared with other research recruitment strategies employed by our Academic/Clinical Partnership research team.
Methods: A descriptive design was employed to assess the success of in-person, mailed introductory letters with follow-up telephone calls and virtual recruitment strategies. The potential participants (N = 144) were parents caring for technology-dependent children (e.g., mechanical ventilation, feeding tubes) at home. To meet recruitment goals the Academic/Clinical Partnership research team (academic project team, hospital-based research nurses) collaboratively developed creative recruitment strategies and a framework to assess recruitment strategy success; percentage who agreed to be contacted by the academic partner, total time for recruitment visit, efficiency, and adherence to ethical recruitment principles.
Results: Virtual recruitment via telehealth visits was highly successful meeting all recruitment strategy benchmarks. Importantly, 91.7 % of potential participants that were approached agreed to be contacted for enrollment in a time efficient manner while adhering to ethical recruitment principles. Best practices and lessons learned were identified.
Conclusions: The transition to virtual study recruitment due to the pandemic was an innovative and successful strategy. An Academic/Clinical Partnership research team benefits both partners: (1) enhances study recruitment by increasing research capacity at the clinical site; and (2) provides mentoring by nurse scientists to facilitate nurse research scholar knowledge and skills.

1. Introduction

Recruitment for research studies is the crucial first step and often the most challenging of the research process (Beck et al., 2020; Refolo et al., 2015). Only 31 % of randomized controlled trials reached planned enrollment goals and one-third required a time extension to meet those goals (Bower et al., 2009; Campbell et al., 2007). A research team can avoid this pitfall by careful examination of several factors during the selection of the most appropriate recruitment strategies and by thinking creatively about other ways to reach the target population. While the newer strategy of social media advertisements targets certain populations efficiently and cost-effectively resulting in high recruitment rates (Brøgger-Mikkelsen et al., 2020; Shere et al., 2014), this may not be the case with all populations. A major shift in research recruitment strategies was necessitated by the onset of the COVID-19 pandemic public health measures such as lockdowns and social distancing. However, this shift resulted in important positive outcomes from this unprecedented global health crisis. To date, the feasibility of virtual recruitment via telehealth video chat platforms remains largely unexplored (Ali et al., 2020). Therefore, our goal is to describe the lessons

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learned and success rate of virtual research recruitment compared with other recruitment strategies employed by our Academic/Clinical Partnership research team that enabled continued study enrollment in a randomized controlled trial tailored for parents caring for children dependent on lifesaving technological devices (e.g., mechanical ventilation, feeding tubes) at home during the COVID-19 pandemic.

Patients can be recruited for an Institutional Review Board (IRB)-approved research study that includes volunteering and consenting to participate in a specific data collection and follow up protocol with the goal of analyzing results. Alternately, patients can be recruited to participate in health programs that are typically exempt (non-IRB approved). For purposes of this article, we are describing recruitment for research study enrollment. Such recruitment efforts require adherence to the Belmont Principles of respect for persons, beneficence, and justice (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1978). The principle of justice requires fair and equitable recruitment across various demographic characteristics of eligible, potential participants and respect for persons relates to the need to appropriately approach and inform them of the research study while maintaining their right for confidentiality and privacy (Gyure et al., 2014). Beneficence is the consideration of the recruitment experience risk, burden, and benefit (Gyure et al., 2014).

An important recruiting principle is that a recruitment strategy is futile if the target population is unable to hear your message. Selection of a recruitment strategy is often decided by the type of research, environment (physical, geographical), participant age and accessibility (travel and time burden) of potential participants (Beck et al., 2020). Over time, several recruitment strategies have been developed and employed. Active and direct recruitment techniques traditionally include in-person, telephone and the contemporary use of telehealth that features virtual recruitment via a video chat platform. Passive and indirect recruitment techniques include the use of letters, visual media such as flyers posted at places frequented by the targeted population and advertisements in newsletters, on city buses, or the contemporary use of electronic media postings on platforms such as Facebook, Twitter, or websites (Nolte et al., 2015; Wilson & Usher, 2017). Specifically, active recruitment includes direct person-to-person interaction while passive recruitment does not (Estabrooks et al., 2017). Mixed-mode recruitment, however, combines both active, direct, and passive, indirect, or contemporary recruitment techniques (Camden et al., 2019).

Widespread internet connection capacity plus the increased usage of social media provides new approaches for research recruitment, particularly social networking sites, such as Facebook, Twitter, and Google+. This allows researchers to recruit large and diverse samples of potential participants specifically during rapidly evolving global or regional health crises such as the COVID-19 pandemic, when other in-person recruitment strategies are no longer a safe option (Ali et al., 2020). These online recruitment strategies have also proved to be superior to traditional recruitment in terms of time efficiency and cost-effectiveness (Brøgger-Mikkelsen et al., 2020). Trust, however, is an integral, key factor related to the research participation decision that is important to consider with online recruitment (Kerasidou, 2017). For the potential participant to trust the recruiter, they must believe the research team has goodwill towards them and society, much like the healthcare provider/patient relationship (Kerasidou, 2017). Potential participants are much more likely to enroll if they were informed of the study by their healthcare provider versus an invitation from a website or Facebook (Corey et al., 2018) and less likely to enroll in pharmaceutical and federally sponsored research than university-led research due to lack of trust in the organization (Pratap et al., 2019). The public is also wary to share their personal information due to data security concerns. Another consideration to utilizing these contemporary research recruitment techniques is the population of interest. Targeting a specific, narrowly defined population of potential participants, such as parents caring for children dependent on medical technology (e.g., mechanical ventilation or feeding tubes) at home, using social media recruitment has been unfruitful due to security issues, inaccessibility to monitored sites or the navigation of networking sites to reach this niche group of parent caregivers. Typically, in-person recruitment has been the optimal strategy to reach this population (Toly et al., 2019), however, the COVID-19 Pandemic restrictions and/or hesitation of parents to attend in-person clinics with their child made it impractical.

The use of telehealth via video chat platforms, an alternative modality for in-person healthcare visits, has increased exponentially since the onset of the COVID-19 Pandemic (Spaulding & Smith, 2021). Video chat platforms enable face-to-face, real-time interactions with a provider via synchronous video (Kichloo et al., 2020). This modality is rated as highly acceptable by the participants as it has many benefits over traditional strategies, such as the ability to speak freely with a healthcare provider outside the confines of a clinic setting and reduces the barriers to participation in research, including financial barriers related to travel expenses or time off from work, and physical disabilities preventing mobility plus concern over exposure to pathogens such as COVID-19 (Barnes et al., 2020).

Few studies have analyzed the effectiveness of telehealth virtual visit protocols compared to in-person protocols. One study examined the effectiveness of telehealth postoperative rehabilitation protocols compared to in-person protocols (Rizzi et al., 2020). Findings include that each protocol strategy had similar outcomes. Moreover, patients reported a high level of satisfaction with rehabilitation via telehealth with an increased adoption of virtual, video chat platform visits and subsequent improvement in virtual study recruitment (Rizzi et al., 2020).

2. Academic/Clinical Partnerships

The Academic/Clinical Partnership Model guided the research team development. The model is based on a collaborative relationship between a nursing education program and a care setting with knowledge shared among partners conducting joint research (AACN, 2012). The partnership helps to strengthen nursing practice, education, evidence-based practice, and research (Albert et al., 2019; Wynn, 2021). The clinical partner, a free-standing Children's hospital, is not part of an academic medical center. The hospital's Nurse Research Scholar program is a research training program that provides dedicated time for research activities and mentoring by the hospital's nurse scientist. The varied clinical areas represented by the Nurse Research Scholars provide strong linkages across the hospital's geographic footprint. The Academic/Clinical Partnership research team consisted of the principal investigator (a faculty member), project manager and research assistant on the academic side, and site principal investigator (nursing research director/nurse scientist), clinical research nurse, and three Nurse Research Scholars on the clinical side who were not involved in the direct care of the potential participants' children.

Past studies of Academic/Clinical Partnerships involving telehealth as a mode for healthcare delivery found it to be a feasible and acceptable strategy, specifically for individuals residing in rural locations (Wynn, 2021). These partnerships are fruitful and rewarding for all parties involved (staff, patient care, faculty) such that both parties benefit, greater than the sum of each part, from their combined efforts (Davis & Boland, 2019). Many hospitals may not be part of an academic medical center. Therefore, the benefit for the clinical partner is the expertise of nurse scientists and funding sources from the academic partner. The academic partner benefits from the knowledge of the clinical partner's ability to navigate their healthcare system, including obtaining approval from their IRB for collaboration with the academic partner on research recruitment as well as the recruitment protocol. Of particular importance, the clinical partner is responsible for the identification of potential participants to protect patients' privacy and allow for ethical compliance with HIPAA protections and IRB standards. The partnership creates a capacity to collaboratively problem-solve recruitment issues and find innovative solutions (Albert et al., 2019).

3. Methods

A descriptive design was employed to assess the success of in-person, mailed introductory letters with follow-up phone calls and virtual recruitment strategies. The clinical partner team members recruited from August 2020–March 2022 potential participants meeting the following inclusion criteria: [1] parent caregiver (biological, adoptive, or foster mother, father, grandmother, or grandfather) for a technology-dependent child based on the Office of Technology Assessment (OTA, 1987) Group 1–3 classification criteria (Group 1, mechanical ventilators; Group 2, intravenous nutrition/medication; Group 3, respiratory or nutritional support); [2] at least 18 years of age; [3] able to speak and understand English and [4] technology-dependent child age ≤17 years and receiving care in the home from his/her parent. Parents of children with a cancer diagnosis were excluded due to the potentially terminal nature of the illness and the grief reactions associated with the diagnosis. Participants were recruited from outpatient clinics (pulmonology, gastroenterology, physiatry, etc.) and schools staffed by the clinical partner school nurses.

3.1. Recruitment strategy assessment

The framework for measuring the success of each recruitment strategy included assessment of the percentage of approached potential participants who agreed to be contacted by an academic partner team member (benchmark- 90 % or better), total time spent for recruitment contact including travel to/from the clinic and wait time in the clinic (benchmark- 20 min or less), efficiency (benchmark- one attempt needed to establish contact) and ease of adherence to ethical recruitment principles of justice, respect for persons, and beneficence (benchmark- all principles maintained). The data was analyzed using descriptive statistics.

3.2. Potential participant recruitment process

There were several steps to the identification and recruitment of potential participants. Each of the recruitment strategies, whether in-person, virtual or mailing introductory letters to parents, follow a similar process (Table 1). The process to identify pediatric patients meeting the study inclusion criteria (dependence on technological devices) was conducted by a clinical partner team member using the electronic medical record (EMR) system Epic (Epic Systems Corporation, Verona, WI). We found that using the schedule tab for targeted clinics (e.g., physiatry, pulmonology) was the best technique to facilitate identification of eligible patients. The Epic program for scheduling allows for a review of patients being seen in a clinic each day as well as each patient's future appointment dates. Our research team discovered that examining one week of schedules at a time was optimal; this task took an average of 2 hours per week. The recruitment team member would communicate any potential recruitment opportunities to other clinical partner team members after completing the weekly review. If a recruitment team member was unavailable for a potential patient appointment, a list was created to facilitate either follow up at a future appointment or communication with the parent or guardian via a mailed letter.

Table 1
Steps in recruiting potential participants.

Steps	
1	Choose hospital department to review
2	Review appointment schedule
3	Create list of patients with eligible age and technological devices
4	Open patient chart if age and technology criteria met
5	Review all eligibility criteria; continue if meets all criteria
6	Add to patient inclusion log and track type and number of contacts
7	Identify next scheduled appointment and location/type
8	Approach at appointment (in-person, virtual) to obtain permission to share contact information with study team
9	If not met at appointment, send recruitment letter and follow up with phone calls to obtain permission to share contact information with study team
10	Send contact information via secure email to academic study team

4. Results

A total of 144 potential participants were approached during the 19-month recruitment period.

4.1. Recruitment in person

Following identification of eligible patients and retrieval of appointment details from the EMR using the IRB-approved protocol, a clinical partner recruitment team member would meet the parent/guardian in the specialty clinic. Typically, the child's parent/guardian would be approached following clinic registration after check-in while they were waiting for their child's appointment with the healthcare provider. The clinical partner recruitment team member talked with the potential participant in a private area of the waiting room so they would not be overheard by others. This limited interruptions to the clinic flow and allowed the potential participant to focus on the conversation. Other clinics preferred that the recruiter wait until after the healthcare providers met with the patient and their parent/guardian. However, this procedure varied by clinic and space limitations particularly with the start of the COVID-19 pandemic and took 25 min due to time to travel to the clinic (5 min) plus the wait (15 min) to speak with the parent. The in-person meeting included a concise 2–3-minute introduction of the study in a private area, however, it was difficult at times to find a private area large enough to meet COVID-19 distancing requirements which hindered adherence to ethical recruitment principles (justice, respect for persons, beneficence). Overall, this recruitment strategy required only one attempt for contact if the potential participant arrived for the appointment, however there was the risk of them not arriving for the appointment due to COVID-19 hesitancy and restrictions. If the parent/guardian expressed interest in hearing more about the study, they were asked to provide contact information along with the best times for contact (2 min). In-person recruitment became more difficult at the start of the COVID-19 pandemic due to the need for physical spacing, closure of many outpatient clinics and reduced scheduling when sites eventually reopened.

4.2. Recruitment by mail

Another research recruitment strategy employed was recruitment by mail. Eligible parents/guardians were sent an IRB-approved introductory letter containing a brief description of the study and an invitation to contact the clinical partner recruitment team. The letter explained that their participation is voluntary and that a research team member would follow up via telephone if no contact was made by them in two weeks. Most parents who agreed to proceed in the study (n = 49; 71.4 %) were recruited with the first follow up call and the remainder were recruited by the third phone call. When the recruitment team member reached the potential participant, final screening questions were posed to verify the child's age and type of technological devices used, to confirm eligibility. This procedure has had some success in the past; however, parents often do not respond to telephone calls or voicemail due to unfamiliarity with the recruitment team member's telephone number or the research study. Many parents claim they never received the introductory letter. The total time for this recruitment was 15 min for the phone call attempt(s). The adherence to ethical recruitment principles was challenging due to the inability to determine who answered the telephone, who may be in room with the potential participant during the telephone conversation or who may have received or opened the introductory letter other than the potential participant.

4.3. Virtual recruitment

Due to the COVID-19 Pandemic there was the need to pivot from primarily in-person recruitment to include virtual recruitment via telehealth as a strategy to safely contact parents/guardians of patients meeting IRB approved eligibility requirements. This was a vitally important recruitment strategy because of the exponential increase in telehealth visits when outpatient clinics closed. The clinic staff were briefed on our research study by a clinical partner recruitment team member prior to the introduction of virtual recruitment. Our procedure included sending an email to the clinic healthcare provider scheduled to see the patient via telehealth notifying them that their patient met the study inclusion criteria. An internal chat message was then sent through the eligible patient's EMR on the day of the appointment. This message reminded the healthcare provider to speak with the parent/guardian at the end of the visit regarding the study and invite them to speak with a clinical partner recruitment team member after the telehealth visit. If the parent/guardian was agreeable, the healthcare provider would send a link to the clinical partner recruitment team member to join the telehealth visit and discuss the study. The recruiter briefly described the study to parents/guardians using the IRB approved information sheet. If they were interested in hearing more about study enrollment, they were asked to provide contact information for the academic partners. The total time for the clinical partner recruitment team member contact with the potential participant using the virtual recruitment strategy was 5 min. Only one attempt for contact was needed. This strategy promoted adherence to ethical recruitment principles (justice, respect for persons, beneficence) because it fostered privacy and confidentiality for the discussion and was a non-intrusive, brief interaction. The main challenge with this strategy was that healthcare providers occasionally forgot to invite the parent/guardian to hear about the study at the conclusion of their visit. However, the internal chat message helped to ameliorate this issue.

4.4. Outcomes for agreement to be contacted by the academic partner

The percent of approached potential participants who agreed to be contacted by an academic partner team member for each recruitment strategy (in-person, mail, and virtual) is detailed in Table 2. For in-person recruitment, 63 of the 64 parents spoken to in person (98.4 %) agreed to provide contact information for the academic partner. Letters were mailed to a total of 68 parents/guardians and 28 were successfully recruited. Eleven of the twelve participants (91.7 %) approached via virtual appointments wanted to hear more about the study from the academic partner. When schedules did not allow for virtual or in-person recruitment visits, lists of potential participants were saved and rescreened at a later date so that letters could be sent, and follow-up phone calls completed. Overall, personal contact with potential participants, either in-person or virtually yielded the best outcomes.

5. Discussion

Our goal was to describe the lessons learned and success rate of virtual research recruitment compared with other research recruitment strategies employed by our Academic/Clinical Partnership research team.

5.1. Benefits of virtual recruitment and lessons learned

Several benefits of virtual recruitment were noted during the transition away from in-person recruitment during the pandemic. First, our research team members saved a considerable amount of time typically spent waiting in a clinic for the healthcare providers to finish or a potential participant who may not show up for an appointment. Second, the relative ease of coordination in accessing the telehealth visit with healthcare providers. An additional benefit of telehealth virtual recruitment is a healthcare provider's introduction of the clinical partner recruitment team member that increased the potential participant's trust and helped to facilitate the conversation regarding study participation. Finally, virtual recruitment expanded the recruitment area outside of the 60-mile radius from the academic partner's institution following the study transition from in-person data collection to primarily virtual procedures for recruitment, consenting, and data collection.

There were several lessons our research team learned regarding recruitment best practices. Most notably, we learned that Academic/Clinical Partnerships facilitate recruitment. Through our collaborative work, we discovered multiple opportunities to identify potential participants in the hospital, outpatient clinics or in community settings such as schools that were contracted with the clinical partner. Additionally, we learned that virtual recruitment via telehealth was highly successful when compared with the minimal response received from mailing letters and follow up phone calls or voice mail messages. Furthermore, while the EMR is vital in confirming participant eligibility, it requires adept navigational skills and is time consuming. Another lesson learned was that recruitment at shorter clinic visits is best performed at the time of clinic check in. We also found that the clinic staff introduction facilitated the conversation and enhanced trust. Finally, we developed a standard protocol for communicating the contact information of potential participants from the clinical to the academic partner in a HIPAA compliant manner via secure email.

In our assessment of the benchmarks for recruitment strategy success, over 90 % of potential participants approached using both in-person and virtual recruitment strategies agreed to provide contact information to the academic partner to hear more about the research study, meeting our established benchmark of success. Virtual recruitment was the only strategy that met the benchmark of success for a total time of 5 min for each recruitment contact. Both in-person and virtual recruitment strategies were efficient; only one attempt for potential participant contact was necessary. While all recruitment strategies facilitated adherence to the ethical recruitment principles of justice and beneficence virtual recruitment was the only strategy that consistently did so for the principle of respect for persons; right for privacy and confidentiality. Based on this assessment, virtual recruitment was the only strategy that met all the established benchmarks of success.

6. Implications/conclusions

One of the key takeaways from our collaboration was that Academic/Clinical Partnerships enhance study recruitment. In particular, the formation of a cohesive academic/clinical team that met virtually on a monthly basis increased research capacity for recruitment at the clinical site. In addition, the clinical research team met and communicated on a regular basis to discuss recruitment options amid changing COVID-19 restrictions. Furthermore, mentoring by the nurse scientist facilitated

Table 2
Outcomes by type of recruitment strategy.

Type of contact	Potential participants approached	Provided contact information	Mailings	Telephone calls	In-person	Telehealth
Mail with follow-up calls	68	28 (41.2 %)	68	89	–	–
In-person	64	63 (98.4 %)	–	–	64	–
Telehealth	12	11 (91.7 %)	–	–	–	12
Total	144	102 (70.8 %)	–	–	–	–

the nurse research scholar knowledge and skill development for future studies. Another key takeaway was that the transition to virtual study recruitment due to the pandemic was an innovative, successful strategy based upon meeting the established benchmarks of success. This innovation enabled a research team member to access the telehealth visit via a visit link from the provider to discuss the study with potential participants in a more time efficient manner than the in-person and the mail and follow-up phone call recruitment strategies. Virtual recruitment afforded an opportunity to continue participant recruitment to achieve our research study enrollment goals. Studies comparing virtual and traditional recruitment success and satisfaction of participants are warranted. Given the exponential increase in telehealth visits, virtual recruitment is a contemporary, novel strategy that is well suited for future research studies.

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CRediT authorship contribution statement

Valerie Boebel Toly: Conceptualization, Methodology, Investigation, Writing - Original draft, Writing-Review and editing, Supervision, Funding acquisition. **Aris Eliades**: Conceptualization, Methodology, Formal analysis, Resources, Writing- Original draft, Writing - Review and editing, Supervision, Project administration. **Amber Miller**: Investigation, Writing - Original draft, Writing - Review and editing, Visualization. **Shelley Sidora**: Investigation, Writing - Original draft, Writing - Review and editing, Visualization. **Jessica Kracker**: Formal analysis, Investigation, Resources, Writing - Review and editing, Visualization, Project administration. **Marisa Fiala**: Investigation, Resources, Writing - Original draft, Writing - Review and editing. **Tahani AlShammari**: Investigation, Writing - Original draft, Writing - Review and editing.

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