



Clinical Methods

Strategies to enhance participant recruitment and retention in research involving a community-based population

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ARTICLE INFO

Article history:

Received 26 November 2013

Accepted 15 February 2014

Keywords:

Recruitment

Retention

Clinical trials

Farmers

Noise induced hearing loss

ABSTRACT

Challenges associated with recruiting and retaining community-based populations in research studies have been recognized yet remain of major concern for researchers. There is a need for exchange of recruitment and retention techniques that inform recruitment and retention strategies. Here, the authors discuss a variety of methods that were successful in exceeding target recruitment and retention goals in a randomized clinical trial of hearing protector use among farm operators. Recruitment and retention strategies were 1) based on a philosophy of mutually beneficial engagement in the research process, 2) culturally appropriate, 3) tailored to the unique needs of partnering agencies, and 4) developed and refined in a cyclical and iterative process. Sponsoring organizations are interested in cost-effective recruitment and retention strategies, particularly relating to culturally and ethnically diverse groups. These approaches may result in enhanced subject recruitment and retention, concomitant containment of study costs, and timely accomplishment of study aims.

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1. Introduction

An estimated 1.5 million farmers are exposed to farm hazards as farm residents, farm family workers, or hired workers (Tak, Davis, & Calvert, 2009). Farmers experience frequent exposure to high noise and have among the highest prevalence rates of hearing loss among all categories of workers (Tak & Calvert, 2008). Despite their risks, farmers are rarely served by an Occupational Safety and Health Administration (OSHA)-mandated hearing conservation program (OSHA, 1997; Pryor, Carruth, & LaCour, 2005). Farmers are commonly exposed to hazardous farm noise from an early age, and have frequent exposure to recreational noise, such as ATVs and firearms (Marlenga et al., 2012).

Noise exposure is a leading cause of noise-induced hearing loss and tinnitus, negatively impacting the physical, emotional, social, and employment life of affected persons. Hearing loss has also been associated with increased risk for injury among farmers (Choi et al., 2005; Sprince et al., 2003). Hearing conservation has been identified as a high priority agenda item by agriculture- and non-agriculture-related agencies (DHHS, 2010). Use of hearing protectors is an effective method of preventing noise-induced hearing loss when engineering or administrative controls are not feasible or economical (National Institute for Occupational Safety & Health (NIOSH), 2009). However, use of hearing protectors among farm operators is

low (McCullagh, Ronis, & Lusk, 2010). Epidemiological studies show a need for interventions to increase hearing protector use among farmers (Gates & Jones, 2007; McCullagh, Lusk, & Ronis, 2002; McCullagh et al., 2010). Here, the authors report on their experiences with recruitment and retention challenges and solutions in an intervention effectiveness study with farm operators.

2. Background: Recruitment of farm operators

Similar to other clinical trials, recruitment and retention of study subjects was critical to accomplish the study aims and advance the health status of the farming population. Unsuccessful recruitment and retention of participants in clinical trials threaten the depletion of study financial resources; this often forces the investigators to extend the period of enrollment, add incentives and recruitment personnel, and otherwise struggle to meet enrollment targets (Trewick et al., 2013). Studies that are not successful in overcoming these challenges are likely to be under-powered, or fail to achieve statistical significance due to inadequate enrollment or retention. In a recent study by Oregon Health Sciences University researchers, one third of all studies terminated between 2005 and 2009 at OHSU had low enrollment (zero to one participant), costing the institution nearly \$1 million annually (Kitterman, Cheng, Dilts, & Orwoll, 2011). Similarly, a study of oncology clinical trials revealed that over half of the studies reviewed closed prematurely due to low enrollment (Schroen & Petroni, 2010).

Only a few studies have focused on issues of recruitment and retention of farm operators as study subjects. Horsburgh and Langley (Horsburgh & Langley, 2011) were successful in recruiting 24%

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of a population of farm owners to a New Zealand study using advertisements, mailed letters, local research assistants, cash incentives, and telephone contacts. They reported the largest number of participants dropping out at the written consent stage, primarily due to time pressures. Stoecklin and colleagues (Stoecklin-Marois, Hennessy-Burt, & Schenker, 2011) recruited a population-based sample of Hispanic farm workers for interviews using home visits. Only 1% of eligible households refused to participate, primarily due to distrust of researchers or lack of time. Neither of these reports included details of recruitment or retention methods. No studies were located that systematically tested recruitment or retention strategies in a sample of farm operators.

Previous investigators have noted challenges associated with recruitment and retention of non-farming, underrepresented, hard-to-reach, and minority populations. Barriers in these groups include but are not limited to mistrust of government and research institutions, transportation issues, economic and time constraints, high disease burden, personal biases, lack of clarity on the risks and benefits of participating in the study, lack of access to computers and telephone, and language and cultural differences (Ejiogu et al., 2011; Griffin, O'Connor, Rooney, & Steinbeck, 2013; Harrigan et al., 2013; Nagler, Ramanadhan, Minsky, & Viswanath, 2013; Taylor-Piliae, Boros, & Coull, 2013; Tramm, Daws, & Schadewaldt, 2013). Although these studies have focused on diverse populations such as African Americans, individuals of low socioeconomic status, and older adults, several of the barriers and approaches to recruitment and retention are similar to those of other groups.

3. Methods

The HEAR on the Farm study was designed to compare the effectiveness of several approaches to promote hearing protector use among farm operators. One goal of this study was to compare the effectiveness of various interventions in influencing hearing protection device use behavior. The project involved a partnership between the authors' affiliated university and a major farmer organization. Results of this study are expected to be used to inform future research-to-practice studies to increase hearing protector use among farm operators. Increased use of hearing protection devices is expected to reduce rates of noise-induced hearing loss and other damaging effects of high noise exposure, and improve quality of life in this high-risk and underserved worker group.

Study procedures were reviewed and approved by the authors' institutional review board. Participants logged on to a designated Web site where baseline data were collected and participants were randomly assigned to one of five intervention groups. Participants were offered a variety of strategies (e.g., online information, or mailed hearing protectors, or both); participants returned (with reminders) to the Web site at 6 and 12 months for monitoring of their use of hearing protection and related attitudes and beliefs.

3.1. Recruitment and retention strategies were based on a philosophy of mutual benefits, knowledge building, and translation

In a systematic review of community-based participatory research, De Las Nueces and colleagues (De Las Nueces, Hacker, DiGiralamo, & Hicks, 2012) reported that community-based participatory research approaches were effective in increasing participation in research of hard-to-reach populations such as racial and ethnic minorities. Community-based participatory research involves mutual benefits, partnership, knowledge building, and translation (Horowitz, Robinson, & Seifer, 2009).

The HEAR on the Farm study focused on noise-induced hearing loss, a public health problem that is of concern to farmers. The study incorporated an ecological perspective in that it addressed the

multiple determinants of hearing protector use behavior previously identified in research, i.e., hearing protector-specific attitudes and beliefs, as well as gender (McCullagh et al., 2010).

While the study team gained valuable research data from participation of farm operators, the study design also incorporated benefits for farm organizations. For example, some farm organizations were attracted to the opportunity to offer free programming for their members. Benefits to the research team included access to members through organization newsletters, Web sites, and field representatives. Study team members facilitated communication with members by educating farmer organization staff about the study aims and mechanics in individual conversations, presentations at farm organization staff meetings and webinars, and preparing sample newsletter and Web items. Consequently, farmer organizations had increased capacity to provide member services, while researchers obtained access to persons who were eligible to participate in the study.

In the planning stages of the study, we identified several factors that favored the feasibility of a successful recruitment program. First, the project was based on a long-standing partnership between the principal investigator and a large farmer advocacy organization. Second, the investigator had developed recruitment strategies with similar groups that proved successful in previous studies. Third, the investigator sought support early in the planning stage for the project from representatives of a large national farmer organization.

The study built on existing strengths and resources within the farming community. All partnering state affiliates had a safety program in place, and one or more staff members assigned to that program. The state organization had large numbers of members, an organizational hierarchy, and established media for communication with members. Safety program officers became the organizational gatekeepers to, liaisons with, and cultural brokers between, the study team and farm operators. Farm operators had already demonstrated their altruism toward health and safety research in previous studies with this investigator. However, like previous study populations, the prospective subjects in this study were quite unfamiliar with clinical trials. This necessitated some explanation to organization representatives, their communication department staff, and prospective study participants.

Members from the farming community were invited to participate in the project from the earliest phases of project development, and invitations were also extended to members of expert panels and in vanguard tests. Prior to launching of subject recruitment, the study team worked individually with each local affiliate to develop a marketing plan specific to that organization. A variety of resources were developed and made available to the safety program officers, including strategies for introducing the study to farm organization members, motivating them to participate, and connecting with enrollment mechanisms. The study team developed a variety of electronic, print, and visual messages that were designed to appeal to an array of farm operators, and a logo branding the project was included on recruitment and retention messages. Finally, the study team created a variety of incentives to motivate participants to enroll and complete the study, and designed recruitment messages to appeal to potential participants' diverse motivations for enrolling. These motivations included interest in the cash incentive to individual enrollees, opportunity to learn hearing protection strategies, and interest in advancing the goals of the collaborating farm organization through monetary award programs for meeting study completion quotas. Study personnel primarily used personal contacts (rather than electronic methods) to communicate with farm organization representatives. Furthermore, the study team negotiated individually with each farm organization representative to develop strategies for working with the organization.

A four-part system of incentives was developed to address a variety of influences on study participation. First, individual participants were eligible to receive a cash award at completion of each of three data collection points (baseline, 6 months, and 12 months). Disbursement of each portion was semi-automated and processed

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