Research recruitment: A marketing framework to improve sample representativeness in health research

Running Head: Marketing to improve sample representativeness

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ABSTRACT

Aims

This discussion paper proposes a five-part theoretical framework to inform recruitment strategies. The framework is based on a marketing model of consumer decision-making.

Background

Respondents in surveys are typically healthier than non-respondents, which has an impact on the availability of information about those most in need. Previous research has identified response patterns, provided theories about why people participate in research and evaluated different recruitment strategies. Social marketing has been applied successfully to recruitment and promotes focus on the needs of the participant, but little attention has been paid to the periods before and after participant-researcher contact (during advertising and following completion of studies). We propose a new model which conceptualises participation as a decision involving motivation, perception of information, attitude formation, integration of intention and action and finally evaluation and sharing of experience.

Design

Discussion paper

Data sources

This discussion paper presents a critical review. No literature was excluded on date and the included citations span the years 1981 - 2017.

Implications for nursing

The proposed framework suggests that researchers could engage a broader demographic if they shape research design and advertising to perform functions that participants are seeking to achieve. The framework provides a novel and useful conceptualisation of recruitment which could help to inform public engagement in research design, researcher training and research policy.

Conclusion

This framework challenges researchers to investigate the goals of the potential participants when designing a study's advertising and procedures.

SUMMARY STATEMENT

Why is this research or review needed?

- Sample representativeness is difficult to achieve and it is the people at greatest risk of ill-health that tend to be underrepresented in research studies focused on prevention of risk behaviours and/or ill-health.

- There is a lack of research considering how the decision to participate is influenced by an individual's personal and social factors.

What are the key findings?

- Focus on response patterns or strategy effectiveness underplays the complexity of response behaviour.

- Without understanding the psychological and social influences on participation, efforts to improve recruitment may increase overall response but not necessarily sample representativeness.

- Marketing theories may provide useful insight because they suggest how to shape research and place advertisements so that potential participants are more likely to see, attend to and respond positively to invitations to participate.

How should the findings be used to influence policy/practice/research/education?

- The proposed theoretical framework should be used to communicate to researchers how time and resources should be used to improve the recruitment of inclusive samples.

- The framework provides a useful visualisation of recruitment which could be valuable in researcher training.

- These findings should influence research practice by encouraging researchers and policy makers to plan for sufficient time to involve underrepresented groups in pilot work to inform recruitment strategies.

INTRODUCTION

The ability of a survey to provide generalisable data about a population depends on the participation rate (Mindell, Aresu, Becares, & Tolonen, 2012). Declines in response are not inherently problematic unless non-respondents differ from respondents with respect to behavioural and social determinants of health, which then may affect the validity of the findings. A body of research shows that individuals who complete health surveys are generally healthier than those who do not. For example Tolonen et al. (2010) used personal codes assigned to respondents and non-respondents to link survey response to national mortality records for the same individuals. Non-respondents experienced excessive mortality compared with respondents. Moreover, cause of death records suggested that non-respondents were at higher risk of serious illness and more likely to engage in health risk behaviours such as excessive alcohol consumption. Such findings mean that to reduce bias in estimates of health risk, statistical methods of adjustment are needed to compensate for the non-random differences between the sample and target population. While these adjustment methods are useful to reduce bias, their accuracy depends on the data which are available to inform the statistical methods (Brick, 2013). A more robust method is to achieve a balanced sample by design rather than relying on post-hoc adjustments.

Background

A range of research approaches have been employed to explain participation in health surveys (Keusch, 2015). One strategy to develop theories about response behaviour has been to identify sociodemographic characteristics of respondents, by comparing study samples with population estimates for the same geographical area and time period (Howcutt, Barnett, Barbosa-Boucas, & Smith, 2017). Research participation has been associated with higher education, being female, older, in a relationship and not being defined as lower or manual

social class (Keeble, Baxter, Barber and Law, 2015). Identification of the sociodemographic profiles of underrepresented groups is useful for understanding who is missing from data, but these findings do not themselves explain why people participate in health research.

A second research strand, aggregated in systematic reviews, has evaluated methods to increase participation, such as questionnaire distribution (web, telephone or paper completion) or remunerating participants (Bonevski *et al.* 2014; Edwards *et al.* 2009; Treweek *et al.* 2010). However, this testing of design features implies that there are simple causal relationships between study design and response behaviour. When evidence to recruit socially disadvantaged groups has been aggregated, the findings about strategy effectiveness have been inconclusive, making it unclear which strategies researchers should select for a given project (Bonevski *et al.*, 2014). A further limitation of this strand of research is that they often use sampling strategies with narrow inclusion criteria which limit the generalizability of evidence concerning strategy effectiveness. Notably, specific sampling frames mean that some underrepresented groups, such as those with lower income or education are excluded. Such sampling frames include student groups with an interest in research (e.g. Rosenbaum, Rabenhorst, Reddy, Fleming, & Howells, 2006), church congregations (e.g. Herring et al., 2014; Yancey et al., 2008), employees of a specific organisation (e.g. Greene, Speizer, & Wiitala, 2008) or people who have already volunteered for parent studies (Rocheleau et al., 2012).

A further research direction has emphasised the importance, to recruitment, of the interaction between researcher and participant (Keusch, 2015). For example, leverage-salience theory (Groves, Singer and Corning 2000) suggests that recruitment can be increased by the researcher's behaviour. Using cues from their interactions with participants, data collectors can choose to promote the information which they perceive will make participation more attractive. This theory could explain why one recruitment method may not be effective with

a broad demographic, but is less helpful for studies which cannot use personal contact by experienced researchers.

Other contributions to improving recruitment have centred on appraisal of cost and benefit by potential participants. Williams, Entwistle, Haddow and Wells (2008) argue that researchers should actively include messages about altruism in advertising, using mass media campaigns to reach a broad audience and to increase the social value of research. Nevertheless, altruism may be less powerful than anticipated by Williams and colleagues. As an intangible reward, it is easily displaced by more immediate costs, such as travel expenses (McCann, Campbell and Entwistle 2010; Mein *et al*. 2012). If costs are relatively greater for underrepresented groups, then mass approaches may simply perpetuate or increase bias by engaging greater numbers in overrepresented groups.

This summary of recruitment research has highlighted several concerns. Study of response patterns or testing for strategy effectiveness underplays the complexity of response behaviour. Without understanding the psychological and social influences on participation, efforts to improve recruitment may increase overall response but not necessarily sample representativeness. This commentary therefore proposes a new theoretical framework for recruitment which draws on social marketing, due to its recognition that promoting a voluntary behaviour, such as participation, calls for in-depth understanding of the influences on decision-making.

Data Sources

This paper presents a critical review of literature investigating how to improve recruitment to research (Grant & Booth, 2009). This approach was adopted to present a synthesis of the theory and empirical findings underpinning the proposed theoretical framework. In January 2015, the Cochrane database was searched first to identify systematic reviews on recruitment

to health research. Later searches were conducted between January and November, 2015 in PubMed, PsychINFO, Medline and Embase and no records were excluded on date. Searches were updated regularly until June 2017, using automatic search alerts for each database. Search terms included 'recruitment', 'response rates', 'representativeness', 'participation' and 'non-response'. The cited sources span the years 1981-2017.

DISCUSSION

Social marketing for recruitment

Grier and Bryant (2005, p. 319) define social marketing as 'the use of marketing to design and implement programs to promote socially beneficial behaviour change'. The approach poses three questions (Hastings, 2007):

1. What range of positions (attitudes, beliefs and behaviours) might people take in relation to the behaviour we are proposing?

2. What factors cause adoption of those positions?

3. How might we encourage people to adopt the behaviour we are promoting?

Research identifying sociodemographic patterns of response reveals some aspects of the current positioning of individuals (question one), although it does not elucidate why they are positioned in that way. To address question two, we must understand the personal and social processes that encourage some individuals to participate more than others. Only then can we select the right approaches to improve sample composition (question three).

The application of marketing to recruitment likens the relationship between participant and researcher to that between consumer and retailer. Reciprocal benefit underpins this relationship. In commercial contexts, the consumer is seeking a new product and the retailer hopes for profit and future custom; in research, the researcher profits from new data but the gain for the respondent is harder to identify. Health research may not be perceived as

personally beneficial, although benefit may be easier to establish in studies to reduce the effects of ill-health, than in research that targets behaviours that are enjoyed, such as consuming alcohol. Moreover, considerable barriers to participation in health research can exist because there can be discomfort in discussing health with professionals and topics such as illegal substance use, mental health and sexual behaviour can carry stigma in certain communities (Fry, 2008). Consequently, the difficulty in providing benefit and reducing barriers may explain why certain individuals are more likely to refuse participation than others (question two).

Therefore, marketing models have been applied to recruitment because marketing science effectively combines behavioural science with the psychology of persuasion and decision-making to increase understanding of health behaviour choices, communication and responses to health promotion messages (Evans, 2006). For example, the 7Ps Marketing Mix (Booms & Bitner, 1981) specifies factors to consider when promoting services: product, promotion, price, place, people, process and physical environment. Reciprocal benefit comes from the orientation away from the retailers' goals towards the consumers' needs. By suggesting how to tailor and place messages to engage intended audiences, the seven parts of this model conceptualise how to promote perceived benefit and reduce the barriers, Galli et al. (2014) describe how the 7Ps Marketing Mix usefully informed the design of recruitment to the *Text2Stop* study. The marketing approach highlighted the importance of learning and adapting strategies through monitoring of recruitment progress. Similarly, Kobayashi, Boudreault, Hill, Sinsheimer and Palmer (2013) used a reduced Marketing Mix of 4Ps (product, price, place and promotion) to engage a difficult to reach population of deaf individuals to a controversial study involving genomic testing. These researchers supplemented the Marketing Mix with an extra element which they termed 'Messaging' (Kobayashi *et al*. 2013, p. 5) where advertisements were designed to meet the current needs

of the deaf community being asked to participate. This was only possible due to the knowledge brought by research team members who were also part of this community.

These successful examples demonstrate how marketing theories can be applied to increase recruitment of specific groups. Yet the models, described above, only touch on a factor of great importance, namely the motivation for potential participants to pay attention to information about the study. Without this initial attention, the required interaction between researcher and participant cannot even begin.

The proposed framework

The summary of research above identified the challenge of developing recruitment strategies to appeal specifically to underrepresented groups. In social marketing, targeting certain groups is often accomplished by tailoring messages to segments of the population with common needs (Grier & Bryant, 2005). However, this segmentation suggests that people within a segment will behave in a similar way. Moreover, commercial marketers are moving away from attempts to shape behaviour (by using persuasive messages and larger remuneration) to consider the functions that their product performs to draw in a broad audience. For example, Christensen, Cook and Hall (2009) describe a milkshake company who wanted to reach new customers. When they surveyed consumers, they found that despite differences in the customer base, most people wanted the milkshake to serve as a breakfast that could be eaten during commutes. By finding the common function for the specific product, advertising could emphasise what most people would search for. This commercial approach can develop social marketing theories by showing that we need to understand consumers' (participants') lives. This is arguably a more ethical response to recruitment challenges, because it shifts action from manipulating behaviour to fulfil researcher goals, to transforming the research to achieve reciprocal benefit.

Therefore, we propose a theoretical framework that applies commercial marketing theory to increase the appeal of research participation to reach and engage a broader demographic in health studies. It extends Kobayashi *et al.*'s (2013) 'Messaging' to start from the functions that participants need research to perform. This framework (Figure 1) is based on a marketing model by Belch, Belch, Kerr and Powell (2012).
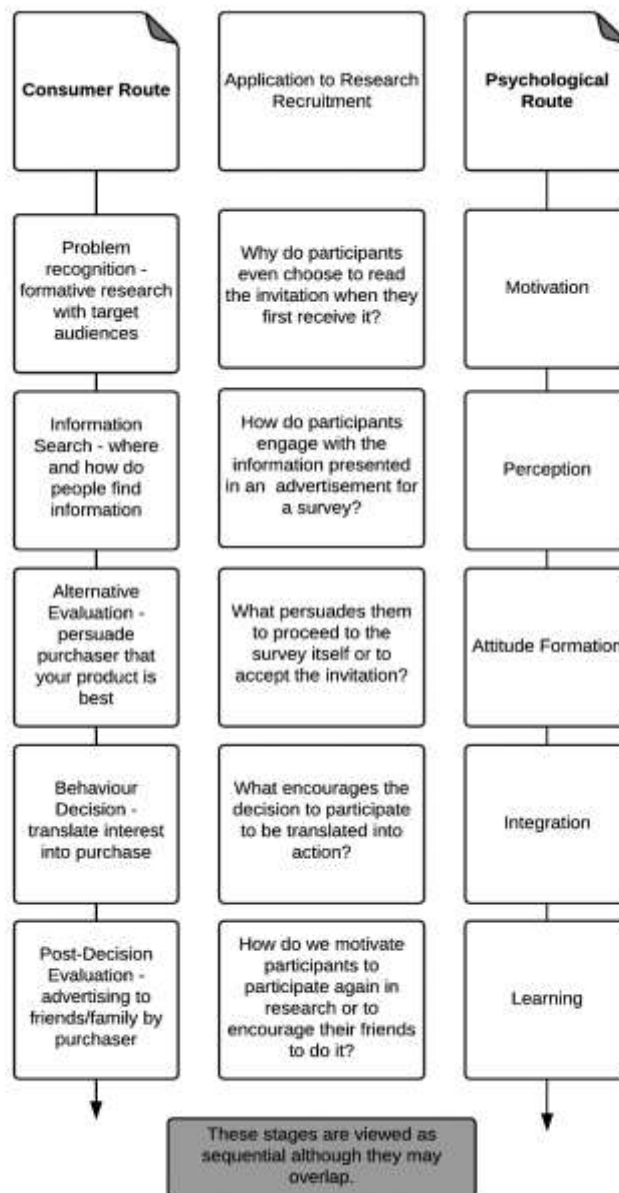
Figure 1: Proposed conceptual framework applying the decision-making process of a consumer to research recruitment, adapted from Belch et al. (2012)

When applied to recruitment, the 7Ps Marketing Mix shows how to create mutual, beneficial exchange for researcher and participant. However, this framework conceptualises recruitment as a decision, allowing for exploration of the period before contact between researcher and participant (to elicit the function of participation). It further considers the social environment that is created for future recruitment as a result of the participant's current participation experience.

Belch *et al*. (2012) proposed five stages of a consumer's decision-making process (the consumer route in Figure 1). These stages are linked in the original model to five psychological constructs (the psychological route in the figure).

Motivation – For the consumer, the first stage is to recognise a problem, or function for the product to perform. Advertisers identify this by talking with their customer base to tailor advertisements and the product to fulfil that need. As researchers, we may need to listen to our target population before planning a study. Current approaches often use remuneration, in the form of vouchers. While this strategy does provide a practical exchange relationship between researcher and participant, other, more symbolic benefits may also be influential in the decision-making process (Bagozzi, 2013). For example, the chance to talk informally with clinicians or combining the study with social activities, may be prized more than money. Indeed Mein et al. (2012) found that a motivation for participants in a longitudinal cohort study (*Whitehall II*), was the ability to maintain relationships over a long period of time. Therefore, they offered appointment times which coincided with those of friends to provide a social backdrop to the clinic visits. Until the current social and personal needs of the target population are explored, it is difficult to know how to design a study to create an equitable and acceptable exchange. Moreover, we are targeting a voluntary behaviour and so must be

aware of the other options that may be chosen (Hastings, 2007), because individuals can *choose* not to participate. By identifying the problems and competing solutions, information can be tailored to catch attention.

Perception – After problem (or function) recognition, Belch *et al.*'s model suggests that the consumer will search for information. For the research participant, the information search involves sensing that the advertisement is there, then paying attention to the information within it. The role for the researcher is to facilitate the availability of the information to the senses. In a similar way to the motivation stage, researchers must understand current functions being performed, so that the optimum placement of key information is selected. For example, it may be ineffective to position posters in corridors where people are passing rapidly, their task being to reach another destination rather than to pay close attention to information in their surroundings. Once information is sensed, it is important to consider how the information is interpreted. Psychological theories of persuasion, such as the Elaboration Likelihood Model (Petty & Cacioppo, 1986) or the Heuristic-Systematic Model (Chen & Chaiken, 1999) suggest that the information search is influenced by an individual's processing style (such as the desire for facts to facilitate considered decision-making), but could also be altered by the nature of the decision, or once again the function being performed. If research participation is low in terms of time commitment or difficulty, or if the respondent's task is to achieve something to relieve immediate boredom, the opportunity to make a quick decision may be prioritised over the ability to read about the background and need for the research. Given the complex interplay between a person's cognition and current tasks that they need to perform, it may be difficult to engage whole audiences with one approach. Consultation and collaboration with potential participants could suggest how diverse needs may be met. Hure and colleagues (Hure, Smith, & Collins, 2008), in their helpful summary of how they improved recruitment in a pregnancy study, argued that they

needed to put themselves into the position of participants to improve the readability and appeal of study documentation when their first attempt was too complex and sent the wrong messages to the intended audience. The participant's position will be difficult to adopt, if researchers are looking for people with which they have limited familiarity, such as different ethnic communities.

Attitude formation – Once the consumer has noticed a product, they need to be persuaded that the item will perform the required function. Social marketing theorists argue that marketing differs from other forms of behaviour change because it acknowledges that there is an exchange of effort and benefit for both promoters and audience (Maibach 2002). Therefore, persuasion needs to understand the specific benefits of participation so that these can be emphasised in advertising. Similarly, the costs must also be known so that they can be reduced. Appraisal of benefit and costs may be tied to changing influences. Barden terms this changeability as 'a series of occasions' (2013, p. 64) because the same information could be presented on different occasions and a different decision made, according to the current functions that the individual wishes to perform. For example, a participant may not consider it excessive to pay for travel and parking at a hospital when visiting a close relative. From the visit, they may gain a sense of altruism for making their relative feel more positive. However, if asked to spend the same amount of money with similar rewards for a visit to a research clinic, they may not appraise the costs of money and time in the same way against the possible rewards gained from attendance. This may explain why persuasive strategies, which seem sufficient at the time of planning (from experiences of previous studies or observations of behaviour), may not account for participants' responses in a new study. Therefore, as Galli *et al.* (2014) suggest, constant monitoring of recruitment patterns and consultation with potential participants are needed to react dynamically to participants' changing appraisals.

Integration – In this stage in the consumer's decision process, the consumer acts on the intention to buy a product. Choice becomes action. In research, this is an important stage where the participant moves from interest to contact with the researcher. It is the task of the researcher to maintain engagement and facilitate the start and completion of the research. This stage is reminiscent of theories of behaviour change, such as the Theory of Planned Behaviour (Ajzen, 1985) where it is recognised that, before a new behaviour is adopted, there needs to be the intention to change which is then converted to action. Once again, however, the researcher will need to collaborate with the target population to understand what barriers to turning interest into contact may exist, so that they can be reduced as far as possible. For example Chan and So (Chan & So, 2016) note that in their cancer screening research, knowledge of cultural and religious practices was fundamental to recruitment, because participation would not possible for South Asian women when they needed to care for children, pray or cook for the family, since interruptions to these duties would be upsetting to the women. By removing the worry about the women fulfilling their responsibilities, these researchers increased the willingness of women to be involved. Knowledge of the groups could also improve study completion by influencing the methods chosen for the research. An example of this is Bradby et al. (Bradby et al., 2007) where the researchers needed to use hypothetical vignettes of child mental health issues to facilitate conversations about a sensitive topic because beliefs in the population (in this case British Asian families), would have made discussion of personal experience a difficult starting point.

Learning – For the consumer the final stage represents an evaluation of whether the product has been effective to perform the required function. For the research participant, this involves appraisal of their participation experience. It is likely that this evaluation will involve communication with others. Indeed, retailers rely on such peer advertising, as can be seen from advertising strategies employing social media networks (Nicholls, 2012). It may

be useful for researchers to adopt similar approaches, such as has already been explored in adaptations of snowball sampling for recruitment (Sadler, Lee, Lim, & Fullerton, 2010). A research participant may know precisely the function that someone in their social networks would like to perform at a given time. Strategies could include forms of chain-referral sampling, or peer promotion of an advertisement, either by word of mouth or by reviews and sharing via social media platforms. Moreover, positive evaluations of participation experiences, may reduce the barriers created by the fear of research or the low social value in certain communities placed on helping official organisations.

Implications for Nursing

The proposed theoretical framework could support nurses by helping them to structure interactions with the public (for example through patient and public involvement groups) in a way which is most constructive for a study's development. Each stage of the framework, outlined above, calls for detailed knowledge of the people to be involved in the research, but the knowledge required at each stage is slightly different.

Motivation - Before study development, researchers should meet with potential participants informally to ascertain information about their lifestyles to find out how a research study will be perceived and how it needs to be presented to compete against other activities which may be selected over participation.

Perception - Information about lifestyles of potential participants could also inform where advertisements can be placed to reach intended audiences. By looking at products and activities that do engage the participant group, the advertising can also be shaped to use a style and appearance that delivers information in an appropriate way for the full range of the demographic sought for the study.

Attitude formation and integration - Researchers must also ask about practical barriers and the appraisals that participants may adopt when evaluating the invitation to participate in their study. This understanding can also be used to inform the data collection procedures so that the functions that participants want to perform can be aligned with data collection in a way that reduces the perceived costs.

Learning - After participation, evaluation of the experience with participants could show where mistakes have been made to improve the current process but could also show how to make chain referral methods (such as snowballing outlined in Sadler et al., 2010) easier for participants so that future recruitment approaches do generate a larger, more representative sample for researchers.

In addition to informing public involvement in research design, the theoretical framework could help to develop effective training programs for new nurse and midwife researchers. According to a focus group study by Newington & Metcalfe (2014), recruitment skills teaching would be appreciated by inexperienced researchers in clinical research teams. This theoretical framework could, therefore, provide a useful visualisation of the recruitment process to help researchers to take the participants' viewpoint during the design of studies and their interactions with study populations.

Finally, it can be seen from the discussion above that much more preparatory work is being suggested by this framework. Therefore, it also has implications for nurses and midwives involved in the development of policy related to research design and ethics. A reconceptualization of the recruitment process may necessitate funding and monitoring bodies to allow for a longer period at the start of the study, to conduct the necessary exploratory work to engage underrepresented individuals.

CONCLUSION

Poor sample representativeness threatens the ability of research to generate valid data to inform development of effective health interventions and could therefore perpetuate health inequalities. Participation in research is a voluntary behaviour and therefore researchers need to be mindful of competition for participants' attention and interest. This commentary has proposed a theoretical framework of five stages, starting prior to contact between researcher and participant and continuing until after participation has ended. This framework adds to current knowledge about recruitment because it moves away from the focus on increasing overall response to a consideration of how individuals make the decision to participate. It challenges researchers to consult and collaborate with target populations to discover what potential respondents may need at the time and place that they are going to encounter the study invitation. By tailoring the product (participation) to the consumer's (participant's) needs, a positive experience can be created which could also reduce the barriers to future participation. Future research should evaluate the practical application of this framework to health research, to ascertain the feasibility and effectiveness of this conceptualisation of recruitment.

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