



Original article

The use of multiple languages in a technology-based intervention study: A discussion paper



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ABSTRACT

Background and objectives: With an increasing number of racial/ethnic minorities in the U.S., nursing research frequently involves the use of multiple languages, especially to promote the understanding of educational materials related to nursing care. Furthermore, with a recent emphasis on innovation in health-related research, the use of technology is prominent in nursing research. However, practical issues in the use of multiple languages, especially in technology-based intervention studies, have rarely been reported and/or discussed in nursing literature. The purpose of this paper is to identify practical issues in conducting a technology-based intervention study using multiple languages among Asian American breast cancer survivors.

Methods: In a large-scale technology-based breast cancer intervention study, research team members wrote memos on issues in translation process and plausible reasons for the issues. Then, the memos and written records were analyzed using a content analysis. By using individual words as the unit of analysis, line-by-line coding was done, and idea categories representing practical issues were extracted from the codes.

Results: Six themes representing the practical issues were extracted. Issues were found in recruiting and retaining bilingual research team members; maintaining consistency in translation process; keeping cultural and conceptual equivalence; repeating IRB protocol modifications; finding and using existing translated versions; and arranging technological aspects related to electronic multiple-language versions.

Conclusion: The use of multiple languages in a technology-based intervention study is feasible. However, it is necessary to effectively manage unforeseen challenges through various strategies.

What is already known about the topic?

- The use of multiple languages facilitates racial/ethnic minorities' understanding of questionnaires or educational materials, which subsequently improves their participation in research.
- The use of multiple languages could result in some systematic or potential bias because the use of multiple languages requires more than just translation.

- The use of multiple languages is further complicated by other contextual factors including the characteristics and roles of translators.

What this paper adds?

- All the issues reported in traditional formats of intervention studies (e.g., fact-to-face interventions) are found in a technology-based intervention study using multiple languages.

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- It is important to recruit and retain qualified bilingual translators even in a technology-based intervention study when multiple languages are adopted.
- Although the phonetic translation of foreign words into Asian languages is sometimes criticized as the influences of Chinglish, Konglish or Japanenglish, there is no way to translate some English terms into these languages.

1. Background

With the population growth of racial/ethnic minorities in the U.S., the use of multiple languages becomes essential in nursing research among the U.S. populations (Angel, 2013; Squires, 2009; Wong & Poon, 2010). The use of multiple languages facilitates racial/ethnic minorities' understanding of questionnaires or educational materials, which subsequently improves their participation in research (Angel, 2013; Squires, 2009; Wong & Poon, 2010).

At the same time, however, it could result in some systematic or potential bias because the use of multiple languages requires more than just translation (Angel, 2013). For instance, due to the complexity and subjectivity of languages in different contexts of culture, it is sometimes very difficult to find the right words that have perfect equivalence of concepts in different languages (Angel, 2013; Squires, 2009). In addition, the use of multiple languages is further complicated by the characteristics and roles of translators (e.g., qualifications of translators) (Angel, 2013; Harkness et al., 2010; Kessler & Ustun, 2008; Squires, 2009; Wong & Poon, 2010).

With an increasing number of racial/ethnic minorities in the U.S., nursing research in the U.S. frequently involves the use of multiple languages, especially to promote the understanding of educational materials related to nursing care (Angel, 2013; Harkness et al., 2010; Kessler & Ustun, 2008; Simpson, 2005; Squires, 2009; Wong & Poon, 2010). Furthermore, with a recent emphasis on innovation in health-related research, the use of technology is prominent in nursing research (Hesse et al., 2005; Hong, Pena-Purcell, & Ory, 2012; Huang, Hung, Chang, & Chang, 2009; Klemm et al., 2003; Wan et al., 2008; Wang et al., 2006; Yoo et al., 2005). However, practical issues in the use of multiple languages, especially in technology-based intervention studies, have rarely been reported and/or discussed in the literature.

The purpose of this paper is to identify practical issues in conducting a technology-based intervention study in multiple languages among three sub-ethnic groups of Asian American breast cancer survivors and to propose directions for future technology-based research using multiple languages. First, the study that is the basis for this paper is concisely described. Then, issues raised during the study process are identified through a content analysis of the minutes and memos of research team meetings, and the issues are discussed in the context of the current literature. Finally, based on the identified issues, suggestions are proposed for technology-based research using multiple languages.

2. The study as the basis for discussion

The study that was the basis for discussion on the issues aimed to determine the efficacy of a technology-based information and coaching/support program on Asian American breast cancer patients' survivorship experience. Based on the Bandura's theory (Pautler et al., 2001), the program included group and individual coaching/support from registered nurses (RNs) and peers and provided information related to the breast cancer survivorship to change the survivors' attitudes, self-efficacy, perceived barriers, and social influences. The participants included Chinese, Koreans, and Japanese. Chinese are the largest sub-ethnic group among Asian Americans (Hoeffel, Rastogi, Kim, & Shahid, 2012; U.S. Census Bureau, 2011). Koreans are the most rapidly increasing sub-ethnic group among Asian Americans (Hoeffel et al., 2012; U.S. Census Bureau, 2011). Japanese have the highest risk of breast cancer among Asian Americans (American Cancer Society,

2013; Miller, Chu, Hankey, & Ries, 2008; National Cancer Institute, 2008, 2014). Subsequently, four languages (English, Mandarin Chinese [simplified and traditional Chinese], Korean, and Japanese) were used because they are the major languages among the sub-ethnic groups.

The study adopted a randomized repeated measures pretest/posttest control group design. A total of 330 Asian American breast cancer survivors aged over 21 years who had had a breast cancer diagnosis in the past 5 years were targeted to be recruited through online support groups and communities/groups for Asian Americans. For 3 months, the control group was asked to use only the information on breast cancer in multiple languages by the American Cancer Society (ACS) while the intervention group was asked to use both the intervention and the information by the ACS. The intervention included three parts. First, social media sites were included to provide culturally tailored coaching/support by bilingual RN interventionists through web and mobile devices. The participants could interact and share their own experience with culturally matched peers and RN interventionists through the online forum in the sites as well. Second, 15 online education modules were provided, which included information on general topics (e.g., pain management and sleep disorders) and ethnic specific topics (e.g., Chinese herbal medicine for Chinese Americans and Red Ginseng for Korean Americans). Finally, online resources related to breast cancer survivorship were included in the intervention. The study was approved by the Institutional Review Board of the institute where the study was conducted.

Background factors included 14 questions on gender, education, religion, family income, and disease factors, and 8 items on general health, diagnosis of breast cancer, length of time since diagnosis, and stage of cancer. Outcome variables included the needs for help, psychological and physical symptoms, and quality of life. The instruments included the Support Care Needs Survey-34 Short Form (Rutten, Squires, & Hesse, 2006), the Memorial Symptom Assessment Scale-Short Form (Portenoy et al., 1994), and the Functional Assessment of Cancer Therapy Scale-Breast Cancer (Brady et al., 1997). The psychometric properties (reliability and validity) of all the instruments in multiple languages were tested in Asian Americans (Cronbach's alphas = 0.76–0.96 in Asian Americans). The data were analyzed using an intent-to-treat linear mixed-model growth curve analysis with SAS Proc Mixed (Littell, Milliken, Stroup, Wolfinger, & Schabenberger, 2007).

In this study, translation of the study materials was done using the Translation, Review, Adjudication, Pre-Testing and Documentation (TRAPD) (De Leeuw & Dillman, 2008). The research team set the standards for translation as: (a) the standard-back translation process for the questionnaires and (b) the accuracy check on educational materials by a different bilingual researcher. The questionnaires included the known feasible number of items that could be translated using the standard-back translation process. However, the educational modules included a high volume of materials that could not be easily done using the standard-back translation process, and the standard-back translation would be meaningless because the accuracy check of the content by another bilingual RN was more important than the accuracy of word translation. Cha, Kim, and Erlen (2007) supported that combining techniques without a back-translation method or a team approach could be effective in translation depending on study environments and resources such as accessibility and availability of bilingual people and research questions (Cha et al., 2007). From the beginning of the study, the standards were in place for the translation process, and we kept the consistent methods.

3. Methods

During the research process, the research team members kept the records of research team meetings, and wrote research memos on practical issues in conducting a technology-based intervention study among Asian American breast cancer survivors using multiple

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