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Review

Cultural relevance in medication adherence interventions with underrepresented adults: Systematic review and meta-analysis of outcomes

Vicki S. Conn *, Maithe Enriquez, Todd M. Ruppar, Keith C. Chan

Sinclair School of Nursing, University of Missouri, Columbia, MO 65211, USA

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ABSTRACT

Objective. This meta-analysis systematically compiles intervention research designed to increase medication adherence among underrepresented adults.

Method. Comprehensive searching located published and unpublished studies with medication adherence behavior outcomes. Studies were included if samples were adults living in North America who had any of the following backgrounds or identities: African American, Native American, Latino, Latino American, Asian, Asian American, Pacific Islander, Native Alaskan, or Native Hawaiian. Random-effect analyses synthesized data to calculate effect sizes as a standardized mean difference and variability measures. Exploratory moderator analyses examined the association between specific efforts to increase the cultural relevance of medication adherence studies and behavior outcomes.

Results. Data were synthesized across 5559 subjects in 55 eligible samples. Interventions significantly improved medication adherence behavior of treatment subjects compared to control subjects (standardized mean difference = 0.211). Primary studies infrequently reported strategies to enhance cultural relevance. Exploratory moderator analyses found no evidence that associated cultural relevance strategies with better medication adherence outcomes.

Conclusion. The modest magnitude of improvements in medication adherence behavior documents the need for further research with clear testing of cultural relevance features.

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* Corresponding author at: S317 Sinclair School of Nursing, University of Missouri, Columbia, MO 65211, USA.
E-mail addresses: conn@missouri.edu (V.S. Conn), enriquezm@missouri.edu (M. Enriquez), ruppart@missouri.edu (T.M. Ruppar), chankc@missouri.edu (K.C. Chan).

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Introduction

Effective medication adherence (MA) is an important component of individuals' behavior to prevent disease and management their acute and chronic illnesses (Christensen, 2004; Pigott, 1994; Viswanathan et al., 2012). Even so, around 50% of patients do not consume medications as prescribed (Dunbar-Jacob et al., 2000). High levels of nonadherence occur across diverse diseases and samples (Christensen, 2004; Garg et al., 2008). Multiple studies document lower MA rates among underrepresented groups than the majority population (Jin et al., 2008; Lewis et al., 2012; Saha et al., 2008; Sewell and Velayos, 2013). Health disparities are common among diseases that require MA to achieve health outcomes, such as hypertension and diabetes. Population differences in MA may contribute to health outcomes (Heisler et al., 2007).

The need for culturally relevant health behavior change interventions for underrepresented populations is important for diverse societies (Bernal and Domenech Rodriguez, 2012; Kreuter and McClure, 2004; Resnicow et al., 1999; Sanders Thompson et al., 2008). Lower rates of MA among underrepresented adults may reflect lack of culturally relevant interventions by health care providers. Culturally relevant interventions reflect the target group's beliefs, norms, values, practices, and patterns (Bernal and Domenech Rodriguez, 2012; Kreuter and McClure, 2004). These interventions use people, locations, and language familiar to participants (Kumanyika and Yancey, 2009; Resnicow et al., 1999). Culturally relevant interventions reflect an understanding of the psychological, familial, social, environmental, cultural, and historical context of health behavior (Resnicow et al., 1999). For example, interventions could attend to cultural values such as spirituality, verbal communication and testimony, communalism, commitment to family, knowing through intuition and experience, and expressiveness (Kreuter and McClure, 2004; Resnicow et al., 1999). Despite the potential importance of cultural relevance, no standards or common terminology exist (Kumanyika and Yancey, 2009; Resnicow et al., 1999). Although many interventions have been tested in underrepresented participants, scant evidence is available about how best to achieve cultural relevance for health behavior interventions (Sanders Thompson et al., 2008).

The importance of MA combined with strong evidence of insufficient MA has prompted multiple trials testing interventions to improve this behavior. Findings have been mixed across intervention studies in underrepresented samples. Some studies report higher MA among treatment groups than control subjects (Mann, 2001; Simoni et al., 2007; Walker, 2000; Werner, 1979), though other studies do not report better MA outcomes among treatment subjects (Bogart et al., 2012; Burrelle, 1986; Harper, 1984; McPherson-Baker et al., 2000). The importance of MA, the proliferation of primary research testing MA interventions among underrepresented populations, and inconsistent results across trials justify efforts to summarize and synthesize findings. Few previous reviews have attempted to summarize findings. Manias and Williams (2010) reviewed seven studies of underrepresented population samples and reported an MA outcome odds ratio effect size of 0.81 for the five studies with dichotomous outcomes, and a standardized mean difference effect size of 0.22 for the two studies with continuous outcomes. Neither effect size was statistically significant, perhaps due to the very small sample size. Bailey et al. (2009) reviewed four studies with interventions designed to be culturally relevant to underrepresented children and adults with asthma, but they did not report MA outcomes. Other reviews of MA intervention trials in the general population have mentioned the importance of underrepresented populations without addressing the findings of studies testing interventions in such groups (Viswanathan et al., 2012).

This systematic review and meta-analysis were designed to fill gaps in knowledge by quantitatively synthesizing primary research testing MA interventions and by exploring the association between strategies to increase the cultural relevance of interventions and outcomes. Primary study participants included underrepresented adults with prescribed medications. Study interventions were designed to increase MA. This project focused on comparisons between treatment and control group MA behavior outcomes. The research questions were: 1) What are the overall average effects of interventions designed to increase MA among underrepresented adults on MA behavior outcomes? 2) Do effects of interventions vary depending on strategies to increase the cultural relevance of interventions?

Materials and methods

Widely accepted systematic review (including PRISMA guidelines) and meta-analytic methods were used for the project (Cooper et al., 2009; Liberati et al., 2009). Searching, screening, and coding procedures were conducted as part of a larger meta-analysis. The review protocol may be obtained by contacting the corresponding author.

Eligibility criteria

Studies interventions designed to increase MA were eligible for inclusion. MA was defined as the extent to which medication-taking behavior is consistent with health care provider recommendations (World Health Organization, 2003). Since meta-analysis converts primary study outcomes to unitless standardized indices, studies with varied MA measures (e.g., pill counts, pharmacy refill, electronic bottle cap devices, self-report) were included. Diverse MA interventions were included. Studies of medications prescribed by health care providers were included. Sexual or reproductive function medications, immunizations, smoking or other substance abuse cessation drugs, and medications administered exclusively by health care providers were excluded. Some prescribed medications, such as immunizations, are typically administered by health care providers and not patients. These medications are often administered during outpatient health care visits. While patients must consent to these medications, the process of administering the medication is different from those administered by patients. The reasons underrepresented adults may not obtain ambulatory health care may differ from reasons they are not adherent with self-administered medications at home. Interventions to address MA in substance abuse patients likely differ from medications for other nonpsychiatric medications. Some patient decisions about consuming or ceasing sexual and reproductive medications based on the intended effects are expected. Nutraceuticals, supplements, and vitamins were excluded unless they were prescribed by health care providers.

Intervention research studies were included if they reported adequate data to calculate effect sizes. Corresponding authors of reports without adequate data were contacted to provide effect size information. Both published and unpublished studies were included to avoid bias because the most consistent difference between published and unpublished research is the statistical significance of the findings (Burdett et al., 2003). Pre-experimental and small-sample studies were included, with smaller studies given less weight in analyses than larger studies.

Only studies with predominantly underrepresented participants were included. Studies with less than 70% underrepresented subjects were excluded. For this study, underrepresented refers to individuals living in North America or Hawaii who have any of the following backgrounds or identities: African American, Native American, Latino, Latino American, Asian, Asian American, Pacific Islander, Native Alaskan, or Native Hawaiian (Conn et al., 2012). Studies of children, incarcerated or institutionalized persons, or subjects with psychiatric problems such as schizophrenia or clinical depression were excluded. Studies reported in 1960 or more recently were eligible for inclusion.

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