



Review

A systematic review of community-based interventions to improve oral chronic disease medication regimen adherence among individuals with substance use disorder

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ABSTRACT

Background: Poor medication adherence has been shown to cause medical complications, death, and increased healthcare costs and may be of particular importance in patients with substance use disorder (SUD). Concerns regarding adherence in this population may influence a healthcare provider's decision to prescribe a medication requiring high adherence. Guidance defining best practices that promote adherence among individuals with SUD is lacking.

Methods: A review of English articles in Medline and PsycINFO databases, published between October 1, 1994 and October 31, 2017, was conducted in order to identify studies of interventions intended to improve adherence to oral chronic disease medication regimens among patients with SUD. Randomized controlled trials, quasi-experimental study designs, and case series were included. Article quality was assessed.

Results: A total of 854 abstracts were retrieved, of which 24 met inclusion criteria. Adherence interventions were categorized as those: 1) addressing the chronic disease state; 2) addressing SUD; or 3) both. Studies varied greatly with respect to intervention length, method of measuring adherence, and quality. Statistically significant improvement in adherence was observed in 12 of 24 studies (50%). Specific interventions that improved adherence included incentive-based interventions, directly observed therapy, and telephonic/home visits. Counseling-based interventions such as motivational interviewing and cognitive behavioral therapy presented mixed results.

Conclusions: While effective interventions were identified, heterogeneity of study designs and study quality preclude determination of optimal interventions to promote adherence in this population. Further evaluation with sound study design may inform the development of best practices for treating chronic disease in patients with SUD.

1. Introduction

The World Health Organization defines adherence as the degree to which the patient's behavior is in agreement with the healthcare provider's recommendations (Sabaté, 2003). Working toward adherence is a collaborative approach between the patient and the provider in which the patient's values, lifestyle, and beliefs coincide with the provider's clinical assessment, medical advice, and opinion. Adherence to medications is crucial in many chronic diseases such as diabetes, cardiovascular diseases, human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS), mental illness, and hepatitis C virus

(HCV) infection (Benner et al., 2002; Bitton et al., 2013; Bosworth et al., 2011; Hamdidouche et al., 2017; Haddad et al., 2014; Ho et al., 2009; Lo Re et al., 2013; Sabaté, 2003). Poor adherence to medication therapy has been shown to cause health complications, death, and increased healthcare costs (McDonnell and Jacobs, 2002; Rodgers and Ruffin, 1998; Schiff et al., 2003; Senst et al., 2001).

Although medication adherence is challenging for many patients, the issue can be particularly significant in certain patient groups, such as those with a substance use disorder (SUD). SUD is defined as recurrent use of alcohol and/or drugs that causes clinically and functionally significant impairment and failure to meet major

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responsibilities at work, school, or home (American Psychiatric Association, 2013). Factors contributing to poor medication adherence in this population include complex medication regimens, interactions with alcohol or illicit drug use, negative attitudes regarding treatment, poor judgment, and the desire to use substances again (Dennis and Douaihy, 2014).

For healthcare providers, the presence of SUD may factor into the decision to prescribe a medication for a condition that requires high adherence to optimize healthcare outcomes. While studies have documented lower adherence among individuals with SUD compared with other patients, evidence suggests individuals with SUD can adhere similarly to medication regimens when support is provided (Dennis and Douaihy, 2014). The high prevalence of many co-occurring chronic diseases among individuals with SUD, such as cardiovascular disease, hepatitis C, and mental illness underscores the need to understand strategies to improve medication adherence in this population (Fernandez-Sola, 2015; Howard et al., 2004; U.S. Department of Health and Human Services, 2010; Vidot et al., 2013).

Various strategies have been evaluated and demonstrated to be effective in improving treatment adherence among individuals with SUD, including directly observed therapy (DOT), financial incentives, motivational interviewing, and case management (Penzenstadler et al., 2017; Durvasula and Miller, 2014; Herrmann et al., 2017). While some of these studies focused on improving adherence to medications among individuals with SUD and specific co-occurring chronic diseases such as HIV, HCV, and mental illness, there has not, to date, been a review summarizing the body of evidence for adherence interventions among individuals with SUD and any co-occurring chronic disease. The objective of this systematic review is to identify interventions that have been conducted to improve adherence to oral chronic disease medication regimens among individuals with comorbid SUD and appraise and summarize the evidence. Dissemination of this evidence to healthcare providers treating patients with SUD is of utmost importance to improve long-term outcomes of individuals with chronic diseases and to ensure efficient use of healthcare dollars.

2. Material and methods

2.1. Article selection

We conducted a search in PubMed/Medline and PsycINFO/Ovid to identify studies published between October 1, 1994 through and October 31, 2017 that were designed to improve adherence to oral medication regimens for chronic disease management among individuals with SUD. References of the studies meeting inclusion criteria were also reviewed to identify additional studies. The dates were chosen to identify a wide range of interventions yet focus on those designed to improve adherence to medication regimens that are current with standard of care. Initial search terms were reviewed by two university librarians and revised based on their suggestions. We followed PRISMA guidelines for systematic reviews (Moher et al., 2009). The PRISMA checklist is included in Appendix A in Supplementary materials. The search was limited to peer-reviewed papers; non-published papers were not identified, and grey literature was not searched. The final search terms were keywords relating to medication adherence; intervention studies; treatment outcome; program evaluation; pilot projects; follow-up studies; cohort studies; comparative studies; trials; substance-related disorders; and SUD. The search strategy is reported in Appendix B in Supplementary materials.

2.2. Eligibility criteria

Studies were selected using the following inclusion criteria: 1) study population consisting exclusively of patients with active or former SUD and a chronic disease requiring 30 days or more of continuous pharmacotherapy, 2) community-based intervention to improve adherence

to an oral medication regimen, 3) randomized controlled trial (RCT), quasi-experimental, or case series study design, 4) medication adherence as a study outcome, and 5) English language. Exclusion criteria consisted of: 1) studies evaluating chronic disease medication regimens of less than 30 days, 2) interventions evaluating injectable medication regimens, because adherence to an injectable medication, which may involve physician administration, is different than adherence to oral medications, and 3) interventions based in an inpatient facility. No age criteria were applied. Studies that did not limit study inclusion to individuals with SUD, but that did examine adherence in subgroups of patients with SUD, were not included in this review.

2.3. Data collection

Studies were reviewed in a three-stage process. Study titles were first screened to identify those that met inclusion and exclusion criteria. All titles that met criteria according to at least one of the reviewers proceeded to abstract review. All abstracts that met criteria per at least one of the reviewers then proceeded to full-text review, which determined final inclusion in the systematic review. Throughout each stage of review, at least two co-authors (K.C., T.H., M.T., and B.G.) independently reviewed each title, abstract, and full-text article.

For each study meeting inclusion criteria, two co-authors independently abstracted (onto a defined template) the salient study details with respect to study design, population, sample size, intervention, comparator condition, intervention duration, primary adherence outcome, adherence assessment method, and key results. Article quality was assessed with the Effective Public Health Practice Project (EPHPP) quality assessment tool for quantitative studies (Armijo-Olivo et al., 2012; Thomas et al., 2004). Component ratings included selection bias, study design, confounders, blinding, data collection methods, and withdrawals and dropouts. The quality assessment was conducted by four co-authors (K.C., T.H., M.T., and B.G.). Two co-authors independently reviewed each study to assign a global rating of strong (no weak component ratings), moderate (one weak component rating), or weak (two or more weak component ratings). Between-reviewer discrepancies with respect to study inclusion, study details, and study quality were all resolved through consensus.

2.4. Analytical approach

After data extraction, the interventions were reviewed. A narrative synthesis of studies is presented, with similar types of interventions grouped together (Popay et al., 2006).

3. Results

3.1. Article selection and study characteristics

The search yielded a total of 854 article titles. Based on title review, 153 abstracts were retrieved and reviewed, of which 52 were maintained for full-text article review. Of the 52 articles reviewed, 23 were included in the final review. One additional study was identified through review of the references of the 23 included studies (see Fig. 1 for details). The summary of study characteristics and EPHPP quality assessment ratings is displayed in Table 1. Interventions were conducted in various community settings and ranged from eight to 156 weeks in length. Common SUDs included those of opiates, cocaine, and alcohol; however, some studies did not specify the particular type of SUD. Some interventions were conducted among participants who were currently receiving treatment for substance use, while others did not. Additionally, study participants were sometimes classified as to whether they had engaged in substance use within six months of the intervention.

The methodology for measuring adherence varied greatly among studies and included self-report, direct observation, electronic

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