Journal of Substance Abuse Treatment xxx (2017) xxx–xxx

Contents lists available at ScienceDirect

Journal of Substance Abuse Treatment

Quality of life as an outcome of opioid use disorder treatment: A systematic review

Jeremy W. Bray [a,*], Brandon Aden [b,c], Ashley A. Eggman [c], Leah Hellerstein [c], Eve Wittenberg [d], Bohdan Nosyk [e,f], Judy C. Stribling [g], Bruce R. Schackman [b,c]

[a] Department of Economics, The University of North Carolina at Greensboro, PO Box 26170, Greensboro, NC 27402, United States
[b] Department of Medicine, Weill Cornell Medical College, 409 E 60th Street, New York, NY 10022, United States
[c] Department of Healthcare Policy & Research, Weill Cornell Medical College, 425 E 61st Street, New York, NY 10065, United States
[d] Center for Health Decision Science, Harvard T.H. Chan School of Public Health, 718 Huntington Avenue, Boston, MA 02115, United States
[e] British Columbia Centre for Excellence in HIV/AIDS, 608-1081 Burrard Street, Vancouver, B.C. V6Z 1Y6, Canada
[f] Faculty of Health Sciences, Simon Fraser University, 8888 University Drive, Burnaby, B.C. V5A 1S6, Canada
[g] Samuel J. Wood Library, Weill Cornell Medical College, 1300 York Avenue, New York, NY 10065, United States

ARTICLE INFO

Article history:
Received 15 August 2016
Received in revised form 30 January 2017
Accepted 30 January 2017
Available online xxxx

Keywords:
Opioid use disorder treatment
Health-related quality-of-life
Systematic review

ABSTRACT

Background and aims: The recent opioid epidemic has prompted renewed interest in opioid use disorder treatment, but there is little evidence regarding health-related quality-of-life (HRQoL) outcomes in treatment programs. Measuring HRQoL represents an opportunity to consider outcomes of opioid use disorder treatment that are more patient-centered and more relevant to overall health than abstinence alone. We conducted a systematic literature review to explore the extent to which the collection of HRQoL by opioid treatment programs is documented in the treatment program literature.
Materials and methods: We searched PubMed, Embase PsycINFO and Web of Science for papers published between 1965 and 2015 that reported HRQoL outcome measures from substance abuse treatment programs.
Results: Of the 3014 unduplicated articles initially identified for screening, 99 articles met criteria for further review. Of those articles, 7 were unavailable in English; therefore 92 articles were reviewed. Of these articles, 44 included any quality-of-life measure, 17 of which included validated HRQoL measures, and 10 supported derivation of quality-adjusted life year utility weights. The most frequently used validated measure was the Addiction Severity Index (ASI). Non-U.S. and more recent studies were more likely to include a measure of HRQoL.
Conclusions: HRQoL measures are rarely used as outcomes in opioid treatment programs. The field should incorporate HRQoL measures as standard practice, especially measures that can be used to derive utility weights, such as the SF-12 or EQ-5D. These instruments provide policy makers with evidence on the impact of programs on patients' lives and with data to quantify the value of investing in opioid use disorder treatments.

1. Introduction

Opioid misuse and opioid use disorders are pervasive public health problems globally. Worldwide, an estimated 28.6–38.0 million people used heroin or prescription opioids in the past year (United Nations Office on Drugs and Crime, 2015) and approximately 69,000 died from opioid-related overdose in 2012 (World Health Organization, 2014). In the US, the rate of opioid overdose death in the US increased 200% from 2000 to 2014 and opioids killed an estimated 47,000 people in 2014 (Rudd, Aleshire, Zibbell, & Gladden, 2016). As a result, new policy efforts are being directed towards opioid use disorders (Blendon, McMurtry, Benson, & Sayde, 2016; Office of the Press Secretary, 2016) and the number of evidence-based therapies to address opioid use disorders is increasing (Amato et al., 2005; Brooks et al., 2010; Campbell et al., 2012; Carpenter et al., 2009; Mattick, Breen, Kimber, & Davoli, 2014; Sullivan et al., 2006). Treatment programs are increasingly adopting many of these therapies (Andrews, D'Aunno, Pollack, & Friedmann, 2014) and program evaluations suggest they are effective in helping clients achieve and maintain abstinence (Sheehan, Oppenheimer, & Taylor, 1993; Wittchen et al., 2008).

Yet abstinence from opioids is not the only relevant outcome of opioid use disorder treatment. Many policy makers view health-related quality-of-life (HRQoL) and quality adjusted life years (QALYs) as important treatment outcomes and as critical inputs for decision-making, particularly for economic evaluations such as cost-effectiveness analyses (CEAs). The US Food and Drug Administration encourages the use of patient-reported outcome measures, a group of outcomes that includes validated HRQoL measures. Several non-profit organizations

* Corresponding author.
E-mail addresses: jwbray@uncg.edu (J.W. Bray), bra2002@med.cornell.edu (B. Aden), eggerash@gmail.com (A.A. Eggman), lhh45@cornell.edu (L. Hellerstein), ewittenb@hsph.harvard.edu (E. Wittenberg), bohdan_nosyk@sfu.ca (B. Nosyk), jcs2002@med.cornell.edu (J.C. Stribling), brs2006@med.cornell.edu (B.R. Schackman).

http://dx.doi.org/10.1016/j.jsat.2017.01.019
0740-5472/

and professional societies in the US have recently introduced initiatives to measure the value of prescription drugs via CEAs that use QALYs (Neumann & Cohen, 2015). Despite controversy in the US surrounding the use of QALYs in economic evaluations (Neumann & Weinstein, 2010), the US Preventive Services Task Force (USPSTF) is charged with reviewing "…the scientific evidence related to the effectiveness, appropriateness, *and cost-effectiveness* of clinical preventive services… [emphasis added]" when it ranks preventive services (U.S. Preventive Services Task Force, 2015). Furthermore, the USPSTF lists HRQoL as a relevant health outcome and QALYs as a measure of disease burden (U.S. Preventive Services Task Force, 2015). The US Medicare program also considers CEA evidence when determining coverage for preventive services (Chambers, Cangelosi, & Neumann, 2015).

In the UK, the National Institute for Health and Care Excellence (NICE) explicitly includes CEA considerations in its development of clinical guidelines and requires the use of QALYs in CEA (National Institute for Health and Care Excellence, 2013). NICE also requires that the evidence is relevant to the patient populations that will be treated, which supports the need for treatment programs to collect HRQoL. For example, in its review of CEA evidence in support of methadone and buprenorphine for the management of opioid dependence, NICE states that "Although most of the included papers were considered to be of high quality, none used all of the appropriate parameters, effectiveness data, perspectives and comparators required to make their results generalisable to the NHS and personal social services (PSS)" (National Institute for Health and Care Excellence, 2007).

In light of the increased policy focus on opioid use disorder treatment and the importance to policy makers of HRQoL as a health outcome measure, we contend that opioid treatment programs should routinely collect HRQoL as a standard measure of treatment outcome, and should use an HRQoL measure that can be used to calculate QALYs. Measuring HRQoL in opioid use disorder treatment programs represents an opportunity to consider outcomes that are more patient-centered and more relevant to overall health than abstinence alone, and to expand the definition of treatment benefits. Some clinical trials of opioid use disorder therapies measure HRQoL outcomes, and in particular QALYs, so that economic outcomes can be compared to those from studies of other health conditions (Byford et al., 2013; Campbell et al., 2012; Nosyk et al., 2011; Polsky et al., 2010). Measurement of these patient-centered and economic outcomes in "real world" program settings is also needed to support greater adoption of evidence-based services.

We conducted a systematic review of the opioid use disorder treatment program literature to explore the extent to which the reporting of HRQoL and/or QALYs by treatment programs is documented in the literature. We therefore focused our review on studies reporting data collected from extant, fully operational opioid treatment programs. Given the current opioid epidemic and resulting policy attention, we focus our review solely on opioids and do not consider other substances to better inform the responses to the current opioid-related public health crisis. We report the results of this systematic review and conclude with a discussion of how HRQoL and QALYs can be effectively incorporated into treatment program quality metrics.

2. Materials & methods

We conducted a systematic review to identify published studies that reported any quality of life (QoL) measure (encompassing but broader than HRQoL measures) as an outcome of substance abuse treatment programs. Systematic review procedures were conducted in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, Altman, & Group, 2009).

We searched PubMed, Embase PsycINFO and Web of Science between June 2014 and July 2015 for published papers reporting QoL outcome measures of substance abuse treatment programs. To capture grey literature such as government reports, working papers, and presentations, we searched conferences and meetings in Web of Science and we searched the New York Academy of Medicine's Grey Lit Report. We identified the broadest search terms relevant to our goals and used database-specific search terms reflecting the search term mapping of each database. PubMed MeSH terms and Boolean connectors included 'opioid-related disorders OR drug users' AND 'substance abuse treatment centers OR community health centers OR therapeutic community' AND 'incidence OR follow-up studies OR mortality'. Embase Thesaurus descriptors used included: 'opiate addiction OR drug dependence' AND 'rehabilitation centers OR therapeutic community' AND 'incidence OR follow-up OR mortality'. PsycINFO Thesaurus descriptors used included: 'drug usage OR drug addiction OR opiates' AND 'rehabilitation centers OR therapeutic community' AND 'followup studies OR prediction OR mortality'. Natural language searching in Web of Science consisted of the following: 'opiate addiction or drug addict or drug dependence' AND 'drug rehab center OR rehabilitation center OR community health center OR therapeutic community' AND 'incidence OR follow up studies OR follow up OR prediction OR (prediction AND forecasting) OR mortality.'

Articles were screened by one co-author and review-relevant information on each was entered into a spreadsheet (Microsoft Excel 2013). Information collected on screened articles included: country in which the treatment program was located; type of study (e.g., observational); primary substance studied (e.g., heroin); type of substance use disorder treatment, classified as methadone, buprenorphine (Subutex), buprenorphine/naloxone (Suboxone), medical or psychiatric care, and behavioral therapies including counseling and group therapy; HRQoL outcome measures reported, including reporting of QALYs or health utilities; additional treatment-related outcomes reported (e.g., abstinence); and any other social or psychosocial well-being measures reported (e.g. family support status, mental health status, housing status, etc.).

Articles were included in full-text review if they described heroin, prescription opioid, or a combination of heroin and prescription opioid use and described QoL measures as a treatment program outcome. The review of full-text articles was conducted by three co-authors: one co-author reviewed all articles and two co-authors each reviewed one-half of all articles. Articles selected for full-text review were subsequently excluded if they did not report QoL results, did not have an abstract available in English, were a review article, or reported results from a randomized control trial. We excluded articles reporting trial results because these studies likely do not report data being collected routinely by the involved treatment programs.

Included articles were qualitatively analyzed for their use of HRQoL measures. Included articles were classified as including a validated non-health-related quality of life (QoL) measure or another HRQoL/QoL measure. Studies classified as using validated HRQoL measures were sub-classified as to whether they used measures that can be transformed into QALYs (e.g., SF-12, SF-36, or EQ-5D) (Brazier, Roberts, & Deverill, 2002; Brazier & Roberts, 2004; Shaw, Johnson, & Coons, 2005). We defined validated HRQol/QoL measures as those that encompass multiple facets of an individual's perceived physical and mental health and have a peer-reviewed validation study that was published separately from the article under review.

3. Results

Fig. 1 shows the PRISMA flow diagram for our review. A total of 3731 papers were identified electronically. After removing duplicates, abstracts for 3014 articles were screened for inclusion. Of those, 99 articles were identified as potentially including QoL measures, 7 of which were excluded because they were not available in English. The full-text of the remaining 92 articles was reviewed. Of those, 39 were excluded because they did not include QoL as a treatment outcome measure, 7 were excluded that described clinical trial results only, and 2 were excluded

Please cite this article as: Bray, J.W., et al., Quality of life as an outcome of opioid use disorder treatment: A systematic review, *Journal of Substance Abuse Treatment* (2017), http://dx.doi.org/10.1016/j.jsat.2017.01.019