



## Results from a psychometric assessment of a new tool for measuring evidence-based decision making in public health organizations



Katherine A. Stamatakis<sup>a,\*</sup>, Adriano Akira Ferreira Hino<sup>b</sup>, Peg Allen<sup>c</sup>, Amy McQueen<sup>d</sup>, Rebekah R. Jacob<sup>c</sup>, Elizabeth A. Baker<sup>e</sup>, Ross C. Brownson<sup>c</sup>

<sup>a</sup> Department of Epidemiology, College for Public Health & Social Justice, Saint Louis University, 3545 Lafayette Avenue, St. Louis, MO 63130, United States

<sup>b</sup> Department of Physical Education, School of Health and Biosciences, Pontifícia Universidade Católica do Paraná, Curitiba, PR, Brazil

<sup>c</sup> Prevention Research Center in St. Louis, Brown School, Washington University in St. Louis, One Brookings Drive, St. Louis, MO 63130, United States

<sup>d</sup> Health Communications Research Laboratory, Washington University in St. Louis, 700 Rosedale Avenue, St. Louis, MO 63112, United States

<sup>e</sup> Department of Behavioral Science and Health Education, College for Public Health and Social Justice, Saint Louis University, 3545 Lafayette Ave., St. Louis, MO 63130, United States

### ARTICLE INFO

#### Article history:

Received 14 January 2016

Received in revised form 25 July 2016

Accepted 4 August 2016

Available online 12 August 2016

#### Keywords:

Evidence-based decision making

Public health

Measurement

Confirmatory factor analysis

### ABSTRACT

**Background:** In order to better understand how to improve evidence-based decision making (EBDM) in state health departments, measurement tools are needed to evaluate changes in EBDM. The purpose of this study was to test the psychometric properties of a new measurement tool to assess EBDM in public health practice settings.

**Methods:** A questionnaire was developed, pilot-tested and refined in an iterative process with the input of public health practitioners with the aim of identifying a set of specific measures representing different components of EBDM. Data were collected in a national survey of state health department chronic disease practitioners. The final dataset (n = 879) for psychometric testing was comprised of 19 EBDM items that were first examined using exploratory factor analysis, and then confirmatory factor analysis.

**Results:** The final model from confirmatory factor analysis includes five latent factors representing components of EBDM: capacity for evaluation, expectations and incentives for EBDM, access to evidence and resources for EBDM, participatory decision making, and leadership support and commitment.

**Conclusions:** This study addresses the need for empirically tested and theory-aligned measures that may be used to assess the extent to which EBDM is currently implemented, and further, to gauge the success of strategies to improve EBDM, in public health settings. This EBDM measurement tool may help identify needed supports for enhanced capacity and implementation of effective strategies.

© 2016 Published by Elsevier Ltd.

## 1. Background

State health departments (SHD) are important organizational settings for the promotion of statewide and local evidence-based preventive practices in chronic disease that address some of the most pressing health issues facing the US population. Numerous resources are now available for identifying research-tested

prevention programs and interventions to improve effectiveness of SHD practices on community health (National Cancer Institute, 2013; The Cochrane Collaboration, 2016; US Preventive Services Task Force, 2011; Zaza, Briss, & Harris, 2005). However, previous work has identified substantial gaps in the dissemination and implementation of evidence-based interventions (EBIs) among state and local public health practitioners (Brownson, Fielding, & Maylahn, 2009). Prior work in the study of best practices in public health settings suggests that improving certain organizational processes may facilitate organizational uptake of EBIs (Dodson, Baker, & Brownson, 2010; Jacobs, Dodson, Baker, Deshpande, & Brownson, 2010; Jacobs, Jones, Gabella, Spring, & Brownson, 2012; Maylahn, Fleming, & Birkhead, 2013).

Evidence-based decision making (EBDM) involves a number of relevant components, including: summarizing the findings from the best available peer-reviewed evidence, using data and information systems, applying program planning frameworks, engaging the

**Abbreviations:** EBDM, evidence-based decision making; EBI, evidence-based interventions; SHD, state health department; EFA, exploratory factor analysis; CFA, confirmatory factor analysis; SEM, structural equation model; D&I, dissemination and implementation; EIDM, evidence-informed decision making; KTE, knowledge translation and exchange.

\* Corresponding author.

**E-mail addresses:** [kstamata@slu.edu](mailto:kstamata@slu.edu) (K.A. Stamatakis), [akira.hino@pucpr.br](mailto:akira.hino@pucpr.br) (A.A. Ferreira Hino), [pegallen@wustl.edu](mailto:pegallen@wustl.edu) (P. Allen), [amcqueen@dom.wustl.edu](mailto:amcqueen@dom.wustl.edu) (A. McQueen), [rebekahjacob@wustl.edu](mailto:rebekahjacob@wustl.edu) (R.R. Jacob), [bakerpa@slu.edu](mailto:bakerpa@slu.edu) (E.A. Baker), [rbrownson@brownschool.wustl.edu](mailto:rbrownson@brownschool.wustl.edu) (R.C. Brownson).

community in assessment and decision-making, conducting sound evaluation, and synthesizing science and communication skills with common sense and political acumen for dissemination to other stakeholders and decision makers (Brownson, Fielding, & Maylahn, 2013). EBDM is central to the notion of evidence-based public health practice in general, emphasizing processes undertaken not only by organizational leaders, but also, perhaps more importantly, by program managers and staff responsible for administering specific programs and interventions (Brownson et al., 2009, 2013, 2014; Kohatsu, Robinson, & Torner, 2004). Some of these processes are included among administrative evidence-based practices set forth by Brownson, Allen, Duggan, Stamatakis, and Erwin (2012), which defines a set of core competencies for public health administrators in five domains: workforce development, leadership, organizational climate and culture, relationships and partners, and financial processes (Brownson et al., 2012). Standards employed by the national accrediting body in public health also address many components of EBDM as crucial for a well-functioning public health agency (Public Health Accreditation Board, 2013). The essential goal of measuring EBDM is to capture an important organization driver of public health practice that ultimately results in the implementation of effective interventions that improve population health status (Aarons, Ehrhart, Farahnak, & Sklar, 2014; Brownson et al., 2012; Klaiman, Chainani, & Bekemeier, 2016; Pettman, Armstrong, Jones, Waters, & Doyle, 2013; Yang & Bekemeier, 2013).

A core issue for research examining the dissemination and implementation (D & I) of evidence based interventions involves stronger measurement of the multiple dimensions of EBDM, as well as the multiple levels at which decisions are made and implemented in SHDs (Proctor & Brownson, 2012). There are numerous theories and frameworks in D&I science that can inform the development of a model for measuring EBDM in the SHD setting (Tabak, Khoong, Chambers, & Brownson, 2012). These include diffusion of innovations, theories for knowledge transfer and exchange in work settings, and institutional theory (Kramer & Cole, 2003; Kramer, Cole, & Leithwood, 2004; Kramer et al., 2013; March & Olsen, 1983; North, 1990; Rogers, 2003; Scott, 2008). While there has been some previous research in conceptualizing and developing theory-based measures for studying dissemination and implementation of EBIs in public health organizational settings (Barrett, Plotnikoff, Raine, & Anderson, 2005; Elliott et al., 2003; Stamatakis et al., 2012; Yousefi-Nooraie, Dobbins, & Marin, 2014), there are few measurement scales for EBDM that have been empirically tested in these settings and mapped closely to a conceptual framework.

While organizational structure varies across state health department (SHD) settings, generally chronic disease programs have a dedicated unit with administrative leaders overseeing program managers and other staff in charge of implementing specific programs (e.g., tobacco control, diabetes prevention, asthma control, cancer screening) (Alongi, 2015; Association of State & Territorial Health Officials, 2014). Developing measures to assess the ability of these program managers and staff to use EBDM is key to understanding how to improve implementation of evidence-based interventions in SHDs. The purpose of this study was to assess the construct validity of a newly-created measure of EBDM through a systematic examination of its psychometric properties.

## 2. Methods

### 2.1. Study design and data

The context for the current study is a multi-phase dissemination study with a cluster randomized trial component that was designed to examine the effect of dissemination strategies on enhancing organizational capacity and support for evidence-based

chronic disease prevention in SHDs. In this analysis, 2013 data from the trial's national survey with SHD staff working in chronic disease from all 50 states and Washington, D.C. were analyzed. Allen et al. (2013) described the larger study, including the adapted theoretical framework which informed overall survey development, based partly on Kramer and Cole's conceptual framework for research knowledge transfer and utilization (Allen et al., 2013).

The adapted framework for dissemination of evidence-based public health, a distinct concept with a related set of constructs to EBDM, (figure published in Allen et al. (2013)) placed workplace context and work unit resources as key drivers of research utilization. Each of these hypothetically predictive factors included a number of components that are incorporated in descriptions of EBDM (e.g., access to research evidence, evaluation data, supervisory support and expectations, etc.), but that were not theoretically formulated into defined constructs with specific measures. Therefore, the purpose of this study was to identify a set of specific measures representing different components of EBDM, confirming the factor structure of these measures, estimating the relationships among these factors, and demonstrating overall goodness of fit for the resulting measurement models.

### 2.2. Measures

The measurement items included in the current analysis were part of a national SHD online survey questionnaire that contained a total of 68 items and was developed from the study team's previous research (Jacobs, Dodson, Baker, Deshpande, & Brownson, 2010; Stamatakis et al., 2012; Jacobs et al., 2012), a literature review (Brownson, Allen, Duggan, Stamatakis, & Erwin, 2012), and five rounds of study team review. Details describing the overall study are published elsewhere (Allen et al., 2013; Jacob et al., 2014). The 7-point Likert scale survey items on EBDM were from two previously tested sets of questions developed by our research team for use with local health departments. First, the items derived from administrative evidence-based practice (A-EBP) constructs were developed for a national survey of local health department directors by several co-authors based on literature review findings (Brownson et al., 2012). Reliability test-retest analyses with 38 local health department administrators showed substantial A-EBP reliability intra-class correlation coefficients (ICC) of 0.66–0.85 and internal consistency Cronbach alpha values of 0.69–0.81 (Authors). Secondly, additional items were adapted from a set of questions on stages of EBDM dissemination developed and tested for local health department obesity prevention staff to answer in response to a single local respondent-selected intervention (Reis et al., 2014). Wording of these items was modified to reflect plurality as state health departments promote a number of evidence-based strategies.

For the national SHD survey, cognitive-response testing was conducted with 11 former state health department chronic disease directors or program managers. As a result two items were deleted and the wording of several others was refined. Test-retest reliability was then conducted with 106 current state health department employees working in chronic disease prevention, resulting in the removal of two additional items and slight rewording of three items. Of the remaining items, most had ICCs  $\geq 0.70$  and Cronbach alpha values  $\geq 0.70$  reflecting adequate reliability and internal consistency. The final survey had 23 items in the EBDM section. Respondents were asked to record their agreement with the item statements, from 1 = strongly disagree to 7 = strongly agree.

### 2.3. Data collection

The national survey was conducted March–May 2013 among US state health department chronic disease prevention practitioners from the 50 US states, Washington, D.C., and US territories via

Download English Version:

<https://daneshyari.com/en/article/4930971>

Download Persian Version:

<https://daneshyari.com/article/4930971>

[Daneshyari.com](https://daneshyari.com)