Patient Education and Counseling xxx (2015) xxx–xxx

Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou

Review article

The necessity–concerns framenjbwork predicts adherence to medication in multiple illness conditions: A meta-analysis

Holly Foot*, Adam La Caze, Gina Gujral, Neil Cottrell

School of Pharmacy, The University of Queensland, Brisbane, Australia

ARTICLE INFO

Article history:
Received 14 June 2015
Received in revised form 4 November 2015
Accepted 5 November 2015

Keywords:
Beliefs about medicines questionnaire
Health Belief Model
Medication adherence
Medication beliefs
Meta-analysis
Necessity–concerns framework

ABSTRACT

Objective: This meta-analysis investigated whether beliefs in the necessity and concerns of medicine and the necessity–concerns differential are correlated with medication adherence on a population level and in different conditions.

Methods: An electronic search of Web of Science, EMBASE, PubMed and CINAHL was conducted for manuscripts utilising the Beliefs about Medicines Questionnaire and comparing it to any measure of medication adherence. Studies were pooled using the random-effects model to produce a mean overall effect size correlation. Studies were stratified for condition, adherence measure, power and study design.

Results: Ninety-four papers were included in the meta-analysis. The overall effect size(r) for necessity, concerns, and necessity–concerns differential was 0.17, −0.18 and 0.24 respectively and these were all significant ($p < 0.0001$). Effect size for necessity was stronger in asthma and weaker in the cardiovascular group compared to the overall effect size.

Conclusion: Necessity and concerns beliefs and the necessity–concerns differential were correlated with medication adherence on a population level and across the majority of included conditions. The effect sizes were mostly small with a magnitude comparable to other predictors of adherence.

Practice implications: This meta-analysis suggests that necessity and concern beliefs about medicines are one important factor to consider when understanding reasons for non-adherence.

Contents

* Corresponding author at: School of Pharmacy, Pharmacy Australia Centre of Excellence, University of Queensland, Level 4, 20 Cornwall St., Woolloongabba, Queensland 4102, Australia. Fax: +61 07 3346 1999.
E-mail address: h.ross1@uq.edu.au (H. Foot).

http://dx.doi.org/10.1016/j.pec.2015.11.004
0738-3991/

1. Introduction

Non-adherence to medication remains a significant barrier to improved health outcomes [1]. Adherence is a complex behaviour that is influenced by many factors [1,2]. There is a large amount of literature suggesting some of the key factors that may be involved in medication adherence and these include age, patient–physician relationship, condition-related factors and patient-related factors [1]. Patient-related factors play a strong role and include the beliefs or perceptions individuals hold about their treatment, their illness and the health-care system [1–3]. Particular focus has been placed on the relationship between medication adherence and the beliefs that a person holds towards their medicines [2,4]. Medication beliefs most clearly influence adherence when medication non-adherence is not accidental or random, but rather a decision made by the patient to take their medicines in a different way [5]. Medication beliefs are also likely to play a role when there are other factors influencing the patient's adherence, such as the symptoms the patient is experiencing, or when making decisions regarding altering their dose to reduce side effects or using their medicines sparingly because of financial reasons [6,7].

The Beliefs about Medicines Framework is derived from the Health Belief Model, which describes how beliefs about medicines might affect medication-taking behaviour [4]. The Health Belief Model proposes that an individual chooses a particular behaviour through a cost-benefit analysis where the perceived benefits (e.g. improvements in health) are balanced against the perceived costs (e.g. physical pain, loss of time) [8–10].

A number of tools exist to elicit medication beliefs, including the Brief Medication Questionnaire [11], The Adherence Estimator [12] and the Beliefs and Behaviour Questionnaire [13]. The most widely used tool is the Beliefs about Medicines Questionnaire (BMQ) which stems directly from the Beliefs about Medicines Framework [14,15]. The BMQ has two subscale domains: necessity and concerns. A high score on the necessity subscale suggests an individual has strong beliefs in the *necessity* of their medicine and a high score on the concerns subscale suggests the individual has strong *concerns* about the negative effects of taking medicines [4,14]. *Necessity* beliefs were thought to promote adherence, while *concern* beliefs were thought to hinder adherence [4].

Another method of relating medication beliefs to medication adherence is by subtracting the BMQ concern score from the BMQ necessity score to generate a *necessity–concerns* differential. A positive score indicates the individual has stronger beliefs in the *necessity* of medication relative to *concerns* [4]. The *necessity–concerns* differential is an important aspect of the Beliefs about Medicines Framework as it is a method of illustrating the cost-benefit analysis individuals make in their adherence-related decisions as described in the Health Belief Model [4].

Scores from the BMQ have been correlated to medication adherence across a number of different conditions including asthma [16–21], cardiovascular disease [22–27], mental illness [28–31] and cancer [32–34]. Of the papers relating beliefs about medicines to a measure of medication adherence, some report only *necessity* beliefs are correlated to medication adherence [19,21,22,35–38] while others have found only *concern* beliefs to be correlated to medication adherence [30,39–43]. In some studies, the *necessity–concerns* differential was shown to have a stronger correlation with adherence than *necessity* or *concern* beliefs alone [4,20,44,45]. From these findings, it is unclear whether each of these scales – *necessity, concerns* and the *necessity–concern differential* – correlate with adherence on a population level. A recently published meta-analysis by Horne and colleagues [46] found the relationship between *necessity* and *concern* beliefs and medication adherence remained significant when stratified by country published, sample size and type of adherence measure used. It was not clear in their post-hoc analysis whether this relationship was different between patient conditions.

It is important to confirm whether in specific conditions the relationship between *necessity* and *concern* beliefs and medication adherence is changed. Each condition has its unique set of challenges, which can be due to the use of different medicines, symptoms of the condition or treatment, expected or actual outcomes and how it affects an individual's quality of life. All these factors can affect the way in which an individual conceptualises their condition, its associated symptoms, the treatment and treatment outcomes [47]. Given these distinct differences between illnesses, it would be expected that the way *necessity*, *concerns* and/or the *necessity–concerns* differential correlate to adherence is also different. The condition in itself may be one variable that influences how medication beliefs affect an individual's adherence. By exploring whether the condition an individual has impacts the relationship between medication adherence and *necessity* and *concern* beliefs may improve our understanding in this area.

This meta-analysis investigated whether *necessity* beliefs, *concern* beliefs and the *necessity–concerns* differential are associated with medication adherence on a population level. We also set out to assess whether the correlation between BMQ subscales and adherence varied across different conditions. This study also provides an opportunity to extend the findings presented by Horne et al. [46] who did not assess the relationship between the *necessity–concerns* differential and adherence.

2. Method

This study was conducted and prepared in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement [48].

2.1. Eligibility criteria

Peer-reviewed manuscripts indexed in Web of Science, EMBASE, PubMed or CINAHL utilising the BMQ were included if they were full text original research published in English, participants were aged 18 years or older and the paper reported the relationship between any measure of adherence and beliefs about medicines. All study designs were included. Studies that changed, added or removed questions from the BMQ without

Please cite this article in press as: H. Foot, et al., The necessity–concerns framework predicts adherence to medication in multiple illness conditions: A meta-analysis, Patient Educ Couns (2015), http://dx.doi.org/10.1016/j.pec.2015.11.004