Research Briefs

Intending to adhere or to not adhere: Results from an experiment in healthy subjects testing illness perceptions and behavioral intentions in asthma

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Abstract

Background: Although illness perceptions have been theorized to predict medication adherence, evidence has been limited to cross-sectional studies.

Objective: This study evaluated the impact of illness identity, consequence, cause and personal control on medication adherence intentions in healthy subjects exposed to a scenario describing asthma-related illness perceptions.

Methods: An experimental design ($2 \times 2 \times 2 \times 2$ factorial design) was used to create 16 asthma patient scenarios. University students with no asthma experience were recruited for the study. The Medication Adherence Report Scale for Asthma (MARS-A) was modified as intention statements consistent with the scenarios. Also, a medication adherence intention statement was included. Factor analysis was used to assess the construct validity of the modified MARS-A. Three intentions to adhere measures were identified: (1) intention to adhere related to symptoms, (2) intention to adhere in general, and (3) intention to not adhere. Each of these three intention measures served as dependent variables in multiple regression analysis with the illness perception constructs.

Results: There were 149 completed responses. Personal control ($\beta = 0.43$) and illness consequence ($\beta = 0.14$) significantly predicted intention to adhere in general (adjusted $R^2 = 0.26$). Personal control ($\beta = -0.25$) and illness consequence ($\beta = -0.23$) significantly predicted intention to not adhere (adjusted $R^2 = 0.11$).

Conclusion: Researchers are advised to consider intention to not adhere and intention to adhere to medication as distinct constructs. This has practical and research implications.

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Keywords: Medication adherence; Illness perception; Asthma; Experimental design

Background

The regular use of inhaled corticosteroids (ICS) is widely accepted medication therapy for controlling asthma symptoms; yet adherence rate to ICS ranges from 40 to 50%.[1] There are many reasons for medication non-adherence, including

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patients' beliefs. The Common Sense Model (CSM) can be a useful framework to study medication adherence decisions, including asthma.[2] The CSM describes patients' response to a health threat after forming illness perceptions that include (1) symptoms associated with disease (identity), (2) timeline (chronicity or duration), (3) consequences, (4) cause, and (5) control. The response to the health threat can be problem-solving related behaviors such as medication adherence.[3]

Illness perceptions and their impact on intentions to adhere and current adherence with asthma medication has been tested using survey methodology.[4,5] Horne and Weinman (2002) predicted a positive relationship between illness consequence and medication adherence; however, their results found the opposite. These findings were explained to possibly be the result of medication adherence, resulting in controlled asthma and thus a negative relationship between illness consequence and medication adherence.[4] These studies were cross-sectional and recruited patients with many years of asthma experience. It is unknown how illness perceptions of persons with recent diagnosis can impact intentions to take medication. The purpose of this research was to test the theoretical relationships between illness perceptions and intentions to adhere to medication using an experiment in healthy subjects. This will allow researchers to gain additional insight into the illness perceptions-medication adherence intention relationships.

Methods

A four-factor experimental design study was used to test the relationship between illness representation factors and medication adherence intentions.[6] Illness identity, consequence, cause, and personal control were factors tested in this experiment. Each subject received one scenario containing background information for the subject then followed by illness perception statements. For example, in Fig. 1, subject receiving Scenario 1 would read the three paragraphs describing the 20-year old college student, then statements expressing the illness perceptions would follow- no association of symptoms with asthma, no consequences associated with asthma, belief that asthma was caused by pollution, and no perceived control over asthma. Adding timeline would have resulted in 32 scenarios (2^5).

Study measures

Illness perception measures were based on the Illness Perception Questionnaire-Revised (IPQ-R) for Asthma. This instrument has been demonstrated as valid and reliable in patients with asthma.[7] Illness identity was measured by asking the subjects to identify the asthma-related symptoms the patient in the scenario is experiencing. Illness consequence and personal control were multi-item latent constructs measured on a 5-point, Likert-type scale. Internal cause and external cause were measured using single items each. The IPQ-R for asthma is available at http://www.uib.no/ipq/.

Medication adherence intentions was measured with the modified Medication Adherence Report Scale for Asthma (MARS-A). The original MARS-A has 10 items that express non-adherent behavior to minimize social desirability bias. Cohen et al (2009) assumed by asking subjects about their agreement to statements regarding non-adherence, social desirability (the need to agree with more desirable statements) would be minimized.[8] MARS-A was validated in patients with asthma with an electronic medication adherence-monitoring tool. The current study modified wording to elicit intention ("I would try to avoid using my inhaler"). Three questions about deciding to miss a dose, altering the dose, and forgetting to take the medicine were not included in the current study since the patient in the scenario is newly diagnosed and has not yet started the inhaler. Finally, a medication adherence statement was added ("I would use the inhaler as instructed by the doctor"). The questions used in the current study are listed in Table 1. The 8 questions were measured on a 5-point, Likert-type scale.

Sample size calculation

Subjects were recruited using the university clinical trials website and through University student organizations. The inclusion criterion was age between 18 and 30 years similar to the subject in scenario. The exclusion criteria were persons with history or current asthma and the use of prescription medication for chronic health condition, excluding oral contraceptives and medication for seasonal allergies. The sample size was calculated to estimate regression equation statistics for 10 parameters at 90% power and 0.20 effect size ($\alpha = 0.05$). Minimum sample size is 113. Each subject was randomly assigned to one