Investigating the factor structure of the Illness Perception Questionnaire-Revised for substance dependence among injecting drug users in China

Phoenix K.H. Mo [a,b], Joseph T.F. Lau [a,b,c,*], Kit Man Cheng [a], Winnie W.S. Mak [d], Jing Gu [e], Anise M.S. Wu [f], Jinghua Li [a]

[a] Centre for Health Behaviours Research, JC School of Public Health and Primary Care, The School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong, Shatin, Hong Kong
[b] The Chinese University of Hong Kong Shenzhen Research Institute, Shenzhen, China
[c] Centre for Medical Anthropology and Behavioral Health, Sun Yat-sen University, Guangzhou, China
[d] Department of Psychology, The Chinese University of Hong Kong, Shatin, Hong Kong
[e] Department of Medical Statistics and Epidemiology, School of Public Health, Sun Yat-sen University, Guangzhou, China
[f] Department of Psychology, University of Macau, Macao, China

ARTICLE INFO

ABSTRACT

Background: The Illness Perception Questionnaire-Revised (IPQ-R) has commonly been used to measure illness representations of various diseases. The present study examined whether the original factor structure of the IPQ-R could be confirmed or a new structure could be established on substance dependence among injecting drug users (IDU) in China.
Methods: A total of 257 IDU completed the 38-item IPQ-R on substance dependence.
Results: Results of confirmatory factor analysis (CFA) showed that the 7-factor structure as proposed by the original IPQ-R reported poor goodness-of-fit statistics. Although removal of 12 items improved the model fit, the goodness-of-fit statistics were still below acceptable standards. Furthermore, factors obtained from the exploratory factor analysis (EFA) of the IPQ-R were not interpretable.
Conclusions: The CFA found that the original IPQ-R factor structure fit the data poorly. Factors derived from EFA were also not interpretable. Use of the IPQ-R for assessment of illness representations of substance dependence among IDU in China is cautioned until further validation.

© 2015 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

Drug use is a serious public health threat and a driving force of the HIV epidemics (Mathers et al., 2008). According to the China National Narcotics Control Commission, there were approximately 1.27 million registered heroin users in China in 2012 (China National Narcotics Control Commission, 2013). A systematic review estimated that there are 2.35 million injecting drug users (IDU) in China, which is the largest number in the world (Mathers et al., 2008). To design effective interventions, it is important to understand how IDU perceive issues related to substance dependence and how such perceptions affect behavioral and health outcomes. To achieve the purpose, conceptual models and measurement tools are both required.

Conceptually, there is a growing interest in understanding how people perceive various types of diseases, a concept known as illness representations. Illness representations include cognitive and emotional components, which are inter-related and influence coping and health outcomes jointly (Weinman and Petrie, 1997). According to Leventhal's Common Sense Model (CSM), individuals construct schematic representations of illness based on various idiosyncratic symptoms and illness episodes, and information obtained through social and cultural associations (Weinman and Petrie, 1997). The CSM specifies that illness representations have five dimensions: *identity* (identifying its symptoms), *cause* (attributing likely causes of the illness), *timeline* (considering whether the illness is acute or chronic), *consequence* (assessing the severity of the illness), and *control* (considering whether the illness is under volitional control). Meta-analysis shows that these

* Corresponding author at: The Chinese University of Hong Kong, JC School of Public Health and Primary Care, Faculty of Medicine, 5/F., School of Public Health, Prince of Wales Hospital Shatin, Hong Kong, China. Tel.: +852 2637 6606; fax: +852 2645 3098.
E-mail address: jlau@cuhk.edu.hk (J.T.F. Lau).

dimensions are empirically distinct but are correlated with each other, while the strength of the correlations may differ according to specific disease conditions (Hagger and Orbell, 2003).

Regarding measurement tools, the Illness Perception Questionnaire (IPQ) (Weinman et al., 1996) was developed, based on the five aforementioned dimensions. The IPQ-Revised (IPQ-R) (Moss-morris et al., 2002) includes three additional constructs, namely the *timeline-cyclical* (considering whether the symptoms fluctuate over time), *illness coherence* (overall comprehensibility of the illness), and *emotional representations* (emotions that are evoked from the illness). Also, the original dimension of control was separated into two subscales: *treatment control* (beliefs about the treatability of the illness) and *personal control* (beliefs about personal ability in controlling the illness). The Chinese IPQ-R is available and has been validated among Chinese patients with hypertension (Chen et al., 2008) and Myocardial infarction (Song et al., 2007).

It is an important empirical question whether the factor structure proposed by the IPQ-R is applicable to a particular disease condition and a particular population. While relevant studies have reported that the factor structured proposed by the IPQ-R could be replicated in various conditions such as cancer (Giannousi et al., 2010), hypertension (Chen et al., 2008), depression (Cabassa et al., 2008), renal disease (Chilcot et al., 2012), cervical screening (Hagger and Orbell, 2005) and traumatic brain injury (Snell et al., 2010), its factor structure could not be confirmed on some conditions including musculoskeletal pain disorders and atopic dermatitis (Wittkowski et al., 2008; Nicholls et al., 2012). Other studies showed that the factor structure of IPQ-R could only be confirmed after removal and re-specification of some items (Brzoska et al., 2012). The authors of the IPQ and IPQ-R encouraged researchers to adapt their tools to study different disease conditions (Weinman et al., 1996; Moss-morris et al., 2002).

The importance of illness representations can be seen by their associations with health outcomes such as medication adherence (Horne and Weinman, 2002; Ross et al., 2004; Chen et al., 2011), self-care activities (Reynolds et al., 2009), psychological distress and depression (Broadbent et al., 2011; Scollan-Koliopoulos et al., 2011; Dempster et al., 2012; Paddison et al., 2010; Paschalides et al., 2004; Knibb and Horton, 2008) across conditions such as hypertension (Chen et al., 2011; Ross et al., 2004), cancer (Dempster et al., 2012), allergy (Knibb and Horton, 2008), diabetes (Mc Sharry et al., 2011; Paddison et al., 2010), and HIV (Reynolds et al., 2009). Such associations have also been investigated among healthy individuals (Mo and Lau, 2014; Figueiras and Alves, 2007). Importantly, illness representations can be used as a means of health promotion as they are modifiable (Weinman and Petrie, 1997). It is potentially important to understand illness representations on substance dependence, which is a chronic and often relapsing disease that causes compulsive substance seeking and use, despite harmful consequences to the individuals (National Institute on Drug Abuse, 2012). Illness representations on substance dependence have strong implications on health outcomes and interventions among IDU. It is an important but totally unexplored concept.

Substance dependence is a disease as well as a behavior. According to the Fourth Edition and Text Revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) published in 2000, substance dependence is based on presence of three or more of seven criteria (such as tolerance, withdrawal symptoms, use of a substance in a larger amount) during a 12-month period (American Psychiatric Association, 2000). In the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) published in 2013, the term substance use disorder was used. Classification of substance use disorder is based on eleven criteria (such as craving, tolerance, withdrawal symptoms), in which a minimum of two to three criteria is required for mild substance use disorder diagnosis, while four to five is moderate and six to seven is severe (American Psychiatric Association, 2013). At the time of the study, DSM-5 was not issued; the study was hence guided by DSM-IV-TR.

It is understood that some IDU may not be classified as substance dependence according to DSM-IV-TR, although they may be at high risk of substance dependence. It is important to understand illness representations of substance dependence among IDU as such perceptions are potentially related to their high risk behaviors, service utilization and mental health. Previous studies on illness representations among people who are potentially but not yet suffering from a disease are meaningful and have been conducted (Mo and Lau, 2014; Figueiras and Alves, 2007). Drug use is illegal in China and offenders are arrested and sent to compulsory detoxification institutions, where personal freedom is deprived for retention of 3 to 6 months. Repeat offenders are sentenced to a re-education through labor (RTL) center for 1 to 3 years (Cohen and Amon, 2008). As drug use may be considered as a bad habit, personality flaw, or moral weakness instead of a medical disorder which needs medical intervention in China (Tang and Hao, 2007), there are reasons to suspect that the factor structure of the IPQ-R for substance dependence may be different from that of the original structure of the IPQ-R.

As the first step to utilize the concept of illness representations on substance dependence, we need to possess a validated measurement tool. We investigated whether the factor structure of the IPQ-R on substance dependence can be confirmed by confirmatory factor analysis (CFA), or established by exploratory factor analysis (EFA) in a population of IDU in China.

2. Subjects and methods

2.1. Study population and sampling

The study was conducted in Dazhou, Sichuan province, China, which has a total population of 6.5 million and more than 5000 registered drug users according to official data (Gu et al., 2008c). One study has shown that 74.4% of the drug users in Sichuan injected drugs and 98.2% of whom used heroin (Liu et al., 2006). Inclusion criteria were: (1) aged 18 or above, (2) having heroin as the major mode of drug use, and (3) having injected heroin at least once in the last six months.

As there is no sampling frame for drug users living in the community, snowball sampling was used to recruit the participants. A few peer IDU educators of three syringe exchange centers served as seeds and were briefed about the study. They approached their peer IDU and invited them to participate in the study. Screening questions, including timing of prospective participants' last injection and types of drug used, were asked to establish participant's eligibility to join the study. Snowballing referrals were then performed. Similar methods have been applied in our previous studies to recruit IDU living in the community (Gu et al., 2008c). A cash reimbursement of RMB 30 (about US$ 6) was provided to the participants as a compensation for their time. A total of 266 eligible participants were interviewed, among whom 257 completed the questionnaire (96.6%).

Face-to-face interviews were implemented in privacy ensured places such as the syringe exchange sites, respondents' home and tea parlors (Gu et al., 2008c). All interviewers were trained doctors of the local Center for Disease Control and Prevention (CDC), who were experienced in outreach work and data collection among IDU. As drug use is illegal in China, to protect the participants' confidentiality, written consent was not used in the study. Instead, the interviewers signed a form pledging that they had explained the study to the participant in detail and have obtained verbal informed consent before the interview started (Gu et al., 2008a,b). Ethics approval was obtained from the Chinese University of Hong Kong.