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Major article

Sociocognitive determinants of self-reported compliance with standard precautions: Development and preliminary testing of a questionnaire with French health care workers

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Background: Inconsistent compliance of health care workers with standard precautions has already been documented. The objective of this study was to develop a questionnaire to investigate the sociocognitive determinants of compliance with standard precautions based on the theory of planned behavior.

Methods: To construct the Standard Precautions Questionnaire (SPQ), items were selected using a systematic review of literature and semistructured interviews with 54 health care workers. Thirty-five items were selected for a draft questionnaire. These questionnaires were sent to 649 health care workers in 3 medical specialties (pediatrics, geriatrics, and intensive care) in a French University hospital. A total of 331 valid questionnaires were analyzed.

Results: Factor analysis yielded a final 7-factor solution with an explained variance of 66.51%, with 24 items. The 7 dimensions were the following: attitude toward standard precautions, social influence facilitating organization, exemplary behavior of colleagues, organizational constraints, individual constraints, and intention to perform standard precautions. Some differences were observed between medical specialties on attitude toward standard precautions, social influence, and individual constraints.

Conclusion: The SPQ met the conditions of reliability and validity in accordance with psychometric demands and could be used to evaluate attitudes and intention to perform standard precautions among medical and nursing staff.

Effective methods for changing the infection control practices of health care workers are needed to reduce health care–associated infections and improve patient safety. To reduce infection rates, the Centers for Disease Control and Prevention revised its guidelines for infection control practice in 1996, replacing universal precautions with standard precautions. Standard precautions are infection prevention practices that apply to all patient care, regardless of the suspected or confirmed infection status of the patient, in any setting where health care is delivered.[1,2] Their aim is to reduce the risk of cross-transmission of microorganisms to ensure the safety of patients and caregivers by reducing contact with blood and body substances through the implementation of safe work practices and protective barriers. They include the following: (1) hand hygiene; (2) using disposable gloves; (3) using appropriate personal protective equipment during procedures and patient-care activities; (4) appropriate procedures for contaminated material; (5) transport and management of waste; and (6) cleaning and disinfection of contaminated surfaces.[1-4]

The compliance of health care workers with hygiene practices has been extensively investigated in the last 10 years, with

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compliance ranging from <30% in hand hygiene to >90% in appropriate disposal of sharps.[5-7] In recent observational audits in France, adherence to hand hygiene practice after removal of gloves varies from 17.5% during nursing procedures to 93% when bathing dependent patients, with a compliance of 63.6% with standard precautions.[8]

Although health care workers recognize standard precautions as an important health care–associated infection prevention measure, putting them into routine practice could be jeopardized by work conditions (lack of time), infrastructure (lack of equipment, poor facility design), type of patient contact, inadequate training and knowledge, social environment (superiors, colleagues, patients), and safety climate.[9] Studies of health care workers' compliance with standard precautions have found that knowledge and social factors (eg, safety climate, organizational campaigns) have a positive influence on attitudes and behaviors regarding infection control and prevention.[10-12]

The interdependence of individual factors, environmental constraints, and organizational climate could play a major role in behavioral intentions regarding hygiene precautions.[13,14] To understand attitudes to and strategies of compliance, a large number of studies have investigated the determinants of compliance with hygiene practice. Some of these studies have used the theory of planned behavior[15,16] as a theoretical framework to develop a model of adherence to hygiene recommendations.[17,18] This theory of planned behavior appears to offer an appropriate way of predicting behavior.[19] This theory postulates that behavioral intention (an individual's readiness to perform a behavior) is determined by 3 intermediate variables: attitude toward the behavior, subjective norms, and perceived behavioral control. Attitude concerns the degree to which an individual has a favorable or unfavorable evaluation of the behavior or perception that this behavior may or may not be beneficial to them. Subjective norms are related to perceived social pressure, the perceived behavior of others, and beliefs about what people think about the behavior. Perceived behavioral control is related to the perceived ease or difficulty of performing the behavior. These intermediate variables are predicted by the strength of the person's beliefs about the outcomes of the behavior, normative beliefs (perception of the expectations of peers or other social groups), and control beliefs (ability of the person to overcome obstacles or to enhance resources to facilitate the behavior). The theory of planned behavior provides a systematic framework that can be used to identify the factors associated with adherence to hygiene practice recommendations.

A number of researchers have developed questionnaires measuring the sociocognitive determinants of compliance with hand hygiene guidelines, based on the theory of planned behavior.[13,17-21] For example, Wandel et al[21] created a questionnaire to identify the determinants of compliance with hand hygiene procedures in intensive care units. The results showed that the predictors of poor adherence were low control beliefs and negative attitudes related to lack of time and high workload. McLaws et al[20] showed that adherence to hand hygiene behavior depends on peer pressure, including the exemplary behavior of senior physicians. Pittet et al[13] demonstrated that hand hygiene compliance could also vary by medical specialty and type of patient contact. Finally, predictors of intent to apply hygiene recommendations may vary across studies and care settings.

A critical analysis of the literature reveals that all existing questionnaires measure attitude and intention to perform hygiene behavior. Nevertheless, to reduce infection rates and the risk of cross-contamination, it is important to understand the factors that facilitate and hinder compliance with all aspects of standard precautions. This article reports the development and preliminary validation of a questionnaire to measure the sociocognitive determinants of compliance with standard precautions among French health care workers.

METHODS

We followed the 4 steps generally used for the development and preliminary validation of a questionnaire[22]: (1) specify construct domain (literature review and selection of questionnaires); (2) generate sample of items (in-depth interviews and test face validity using experts); (3) collect data (quantitative study among a representative sample); and (4) purify measure (analyze internal reliability and construct validity).

Specify domain of construct

The construction of the questionnaire involved 2 steps: a systematic literature review, and a qualitative study with a sample of French health care workers (in-depth interviews). For a systematic literature review, we followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.[23] We conducted a systematic search for original articles in the MEDLINE, PsycINFO, PsycARTICLES, and Psychology & Behavioral Sciences Collection databases. Only English language articles and peer-reviewed journals were selected. The major key words used to search from 1995-2013 were *standard precautions* and *theory of planned behavior* and *scale development* or *handwashing* and *theory of planned behavior* and *scale development*. The last search was run on December 16, 2013. We selected items from the Integrated quality Criteria for systematic Reviews Of Multiple Study designs[24] tool to assess the quality of the included studies: clear aims and justification, reliable questionnaire measure, questionnaire with adequate and rigorous data analysis, absence of selective outcome, and limitation addressed. The literature search was performed by 2 authors working independently of each other. The validated instruments retrieved by the literature search were mostly related to sociocognitive determinants of hand hygiene.[13,17-21,25,26] No validated questionnaire measuring the sociocognitive determinants of the full spectrum of standard precautions for all health care workers was found. The few existing questionnaires related to standard precautions measured attitudes among nurses or nursing students (and not all members of medical staff) and did not evaluate the sociocognitive determinants of the full spectrum of standard precautions.[26] To construct the sociocognitive determinants of the standard precautions questionnaire, we had to generate specific items.

Generate sample of items

In the second step, a psychology research assistant conducted interviews with health care workers (N = 54) in 3 medical specialties: pediatrics (n = 17), geriatrics (n = 19), and intensive care (n = 18). These specialties were selected because patients in these units are particularly vulnerable to health care–associated infections. The severity of their illness, the presence of a high number of invasive devices, and frequent contact with health care workers are common risk factors.[17] Semistructured interviews with different caregivers (registered nurses, assistant nurses, physicians and charge nurses) were carried out around 3 themes related to the sociocognitive determinants of behavioral intention: (1) attitudes, (2) subjective norms, and (3) behavioral control. For attitudes, participants were asked if they knew the standard precautions recommendations, what they thought about their application in hospital, and what they thought about the importance of applying standard precautions. For subjective norms, participants were asked if their colleagues encouraged (or did not encourage) them to