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# Compliance with standard precautions among baccalaureate nursing students in a Saudi university: A self-report study

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**Summary** Meticulous observance of standard infection control precautions by health care providers is strongly recommended for every patient encounter. Assessment of nursing students' compliance should be carried out regularly in order to ensure adherence to protocols. Thus, this study was conducted to assess self-reported compliance with standard precautions among baccalaureates in nursing students in a Saudi university. A convenience sample of 236 nursing students was surveyed in this cross-sectional, self-reported study, using the Compliance with Standard Precaution Scale Arabic version (CSPS-A). Independent *t*-test and one-way analyses of variance (ANOVA) were performed to examine the differences on compliance. A multiple regression analysis was performed to identify the factors affecting compliance. The overall compliance rate was 61.0%. The students reported highest compliance in disposing used sharp instruments and other sharp objects into sharps-only boxes, while the lowest compliance rate in using water only for hand washing. Significant differences in compliance were observed when respondents were grouped according to their demographic characteristics. Cultivating a supportive culture of

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adherence to infection control precautions among nursing students is of paramount importance. The clinical environment should be supportive of a culture where strict compliance with the control and prevention of infection is of prime importance.
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## Introduction

Healthcare professionals continue to deal with the challenges of increasing incidence and emergence of infectious diseases around the globe. Health care-associated infections (HAIs) affect hundreds of millions of patients each year, with 7 in developed and 10 in developing countries acquire at least one HAI in every 100 hospitalized patients at any given time [1]. In the United States of America, the estimated incidence rate was 4.5% in 2002, corresponding to 9.3 infections per 1000 patient-days. In Saudi Arabia, a similar situation is observed with HAIs, with an incidence rate of between 2 and 13.7 per 1000 patient days in the period 2010—2012, and a case fatality rate of 2.3—14.4% [2—4]. Despite the advancement in infection prevention and control in health care facilities, poor adherence to practices continues to be linked with HAIs [5]. Healthcare workers, most specifically nurses, have the greatest risk of causing cross-infection among patients and fellow healthcare workers, because of their high visibility and their direct interaction with patients while performing their nursing activities [6—8]. This may be occurring if infection control procedures are ineffectively implemented.

Many initiatives, including standard precautions, have been set up to implement evidence-based interventions with the aim of reducing HAIs [9]. Meticulous observance of standard infection control precautions by health care providers is strongly recommended for every patient encounter [10]. However, adherence to standard precautions was practiced inconsistently in various studies [11—13]. Specifically, compliance was reportedly lower among younger and less clinically experienced healthcare professionals [14,15]. In a previous study conducted among medical students in Saudi Arabia using a questionnaire developed by the researchers, the overall knowledge scores for standard precautions were low with mean score of $19.3 \pm 9.1$ out of 41 points (where 24 out of 41 points considered as knowledgeable), especially in the domains of hand hygiene, management of sharp objects, and personal protective equipment [16]. Another study conducted among Taiwanese nursing students reported that practice of proper infection prevention and control was quite inadequate [10]. Moreover, various studies have also revealed the significant deficit in knowledge of, and compliance with, the components of infection control among nursing students [10,17—21].

Ensuring strict compliance with standard precautions by all healthcare workers, including nursing students, is with utmost importance in preventing occurrences of HAIs, and upholding patients' safety in hospitals [22,23]. However, despite the abundance of studies conducted on this topic in other parts of the world [24—26], such studies are quite limited in Saudi Arabia. A comprehensive assessment on compliance with standard precautions among Saudi nursing students is warranted. Thus, this study was conducted to assess the self-reported compliance with standard precautions among baccalaureate nursing students in a Saudi university. It also examined factors that likely influenced their level of compliance.

## Methods

### Design

A descriptive, cross-sectional, self-report design was used in this study in assessing the self-reported compliance with standard precautions among baccalaureate nursing students in a Saudi university. The design facilitated the data collection from a sample of Saudi nursing students in a single contact period using a self-administered questionnaire.

### Setting and participants

The study was conducted in the nursing department of the College of Applied Medical Sciences of a university situated in Riyadh province, Saudi Arabia. A convenience sample of 236 Bachelor of Science in Nursing (BSN) students participated in this study during the second semester of the academic year 2015—2016. A priori power analysis was conducted using the software, GPower version 3.1 [27]. Because no previous study explored

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