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Research Paper

Determinants of health-related quality of life in international graduate students

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ABSTRACT

Introduction: International graduate students often experience additional levels of stress due to acculturation. Given the impact of stress on health outcomes (both physical and mental), this study examined the health-related quality of life (HRQoL) in international graduate students to determine its association with acculturative stress, perceived stress, and use of coping mechanisms.

Methods: A cross-sectional, self-administered survey was designed and sent to 38 student chapters within the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) student network. HRQoL [physical component summary (PCS) and mental component summary (MCS)] was measured using the 12-item Short Form (SF-12) while coping mechanisms were assessed using the Brief COPE Scale. Acculturative and perceived stress were assessed using the Acculturative Stress Scale for International students [ASSIS] and Graduate Stress Inventory-Revised (GSI-R), respectively. Demographic and personal information (e.g. age, religion) were also collected. Descriptive statistics (mean \pm SD and frequency) and hierarchical multiple regression analysis were conducted.

Results: The average PCS and MCS were 60 ± 9 and 44 ± 13 , respectively, indicating that while the physical health was above the United States (US) general population norm (50), mental health scores were lower. Findings from the hierarchical multiple regression showed that perceived and acculturative stress significantly predicted mental health. Acculturative stress was also a significant predictor of physical health.

Conclusion: The results from this study support the hypothesis that international students in the US experience both perceived and acculturative stress that significantly impacts their HRQoL. Universities should consider providing education on stress reduction techniques to improve the health of international graduate students.

Introduction

In the 2014–2015 academic year, the number of international students in the United States (US) was 974,926, which represented a 10% increase from the previous academic year.¹ It is estimated that this increasing trend will continue to about eight million students in 2025.^{2,3} With current international policy changes in the US proposed by President Trump, it is possible that these figures will change over time. Currently, the largest number of international students in the US originate from Asia (64.2%), followed by

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students from the Middle East and North Africa (10.5%), Europe (9.8%), Latin America and the Caribbean (8.2%), Sub-Saharan Africa (3.5%), and North America (3.2%). Graduate students make up approximately 43% of this international student population,¹ and will eventually make up a significant portion of the United States workforce.^{4,5}

For graduate students, the ability to excel in graduate school is, by itself, formidable in the challenging environment of post-graduate education. Compounding the rigors of postgraduate education with the environmental and cultural differences of a new country may result in additional stress in international students. Stress is, therefore, a term often used by individuals in a variety of social, academic, and employment settings. Studies have reported that international students are faced with several challenges that can hinder their adjustments to a new culture.^{6,7} Further, several authors have suggested that international students experience more stressors that impact both their physical and mental health outcomes than their US counterparts.⁸⁻¹⁰ The main contributory factors to these stressors were identified as language barriers,¹¹⁻¹⁴ effects of social adjustment and culture shocks,^{9,15} and separation from family support systems.¹⁶ Other studies have postulated that high anxiety,⁹ pessimism, fear, frustration,^{8,17} perceived discrimination,¹⁴ and psychosomatic disorders¹⁸ are responsible for these adjustment problems. These stressors experienced by international students can lead to a kind of stress regarded as “acculturative stress.”^{19,20}

Acculturative stress can be defined as a resultant effect of psychological constraints of adapting to a new culture,²¹ or psychosocial stressors from dealing with unfamiliar social norms and customs.²² Managing any type of stress, especially acculturative stress, may entail the use of coping strategies. Therefore, it is important to understand the coping strategies utilized by international graduate students.

Although a substantial number of studies have examined acculturative stress in international students²³⁻²⁹ and in pharmacy students,³⁰⁻³⁶ there is limited literature on the associations among acculturative stress, perceived stress, the use of coping mechanisms, and health-related quality of life (HRQoL) in international graduate students in pharmacy-related programs. Further, studies have reported that stress experienced during university years may lead to poor HRQoL among students, regardless of their country of origin.^{23,37-39} Also, international students encounter additional stressors as a result of adjusting to their environment. These stressors may manifest as depression, anxiety, suicidal ideations, and poor academic performance.^{23,28,35,40} By understanding the determinants of HRQoL in international students, school programs can provide resources to combat these sources of stress and healthcare providers can tailor resources to cater to this growing student population.

The objectives of this current study were to assess HRQoL among a cohort of international graduate students and to examine the relationships between acculturative stress, perceived stress, the use of coping mechanism and HRQoL. In addition, this study hypothesized that in addition to experiencing perceived stress, international students also encounter other sources of stress (i.e. acculturative stress) that can impact their HRQoL.

Methods

Study design

This was a cross-sectional, non-experimental study that utilized survey methodology. Data were collected between March and April 2014. The study was reviewed and approved (2013-12-0014) by the Institutional Review Board (IRB) at The University of Texas at Austin. Informed consent was obtained from all individual participants included in the study.

Participants, setting, and procedures

The population sampled in this study consisted of graduate students from the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) Student Network. The ISPOR Student Network is a consortium of 66 ISPOR student chapters representing North America, Europe, Asia, and Africa. ISPOR student chapters are organizations for professional and graduate students interested in pharmacoeconomics and health outcomes research. ISPOR student chapters are within colleges and consist of graduate (i.e. MS and PhD students) and PharmD students in mostly pharmacy-related programs (e.g. public health and pharmacy administration, pharmaceutical policy, health outcomes, and pharmacoeconomics and pharmacoepidemiology). Students in the sample were from ISPOR student chapters located at colleges and universities in the US and Canada.

Data collection

The survey was pilot-tested with a convenience sample of international graduate students ($n = 15$) from one ISPOR student chapter. The purpose of the pilot test was to identify issues with the format, instructions, and relevance/completeness of items. Students pretesting the survey were asked to provide comments and suggestions that were used to modify the survey. After the pretest, only minor modifications were made (e.g., providing space for respondents to include comments).

This study of international graduate students was part of a larger investigation of stress and HRQoL among both domestic and international graduate students. Fig. 1 provides an overview of the study sample recruitment for the larger investigation. Following the pilot test, the names and contact information of current ISPOR student chapter presidents in North America (US and Canada) were obtained from the chair of the ISPOR Student Network. A cover letter was emailed to the ISPOR student chapter presidents. The cover letter explained the purpose of the study, solicited their participation, and asked for the number of current members in their respective chapter. Packets with the appropriate number of cover letters, consent forms, and surveys as well as pre-paid, self-addressed return envelopes were sent to chapters. Chapter presidents distributed the cover letters, consent forms, and surveys to their respective

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