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## INDEPENDENT FACTORS AFFECTING PERCEIVED STRESS IN UNIVERSITY STUDENTS!

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### ABSTRACT

Stress related anxiety and depression in medical personnel are being progressively reported more in literature. The perceived stress scale (PSS) is the most commonly used psychological instrument for measuring the perception of stress. It is needed to assess perceived stress in any local population using appropriately translated version of PSS. A high level of personal and particularly perceived stigma associated with depression was found amongst medical students, especially those displaying higher levels of stress. A stress coping style is a comparatively constant tendency to apply precise methods of coping with a situation perceived as stressful. The aim of this study is to investigate associations between numerous factors that affect perceived stress among university students.

**Key words:** Stress, Interns, Medical education, Coping.

### INTRODUCTION

The Perceived stress questionnaire (PSQ) elicited a hierarchical bi-factor structure in Spanish dental students. Using the questionnaire as a uni-dimensional scale was helpful in discriminating perceived stress levels. The sub-factors aided to refine perceived stress analysis and improve therapeutic processes [1]. In undergraduate resistance training students, stress assessed either as life event stress or perceived stress, moderated the recovery trajectories of muscular function and somatic sensations in a 96 hour period after strenuous resistance exercise suggesting that, under conditions of inordinate stress, individuals need to be more mindful about observing an appropriate length of recovery [2]. In a study done on medical student self-perceived stress levels and on student exam performance within an Asian context, switching to a distinction / pass / fail (D/P/F) grading system alleviated stress and peer competition without compromising knowledge. This fostered a "learning orientation" rather than an "exam orientation," and contributed to inculcating lifelong learning skills [3]. In a study done on students in the dental school environment in Saudi Arabia, students displayed relatively high perceived stress scores. Female, advanced and married, compared with male, junior and single students showed higher stress.

Changes in certain environmental factors and coping strategies had an independent affect on the perceived stress score suggesting that strategies for stress management must be incorporated into dental education to ensure the output of effective dentists [4]. The study done by using University of São Paulo Reasons for Smoking Scale (USP-RSS) showed addiction, pleasure from smoking, and social smoking were important factors for adolescent smoking. Comparison with adult smokers stressed the importance of the component of social smoking suggesting that identification of distinctive factors that drive teenagers to smoke will help in making decisions dealing with interventions aimed at smoking cessation and control [5].

Perceived stress score using PSS-10 was considerably high among medical students and interns in a teaching hospital. No significant difference was found between the subgroups (male/female, intern/student) [6]. The Malay version of the PSS-10 showed adequate psychometric properties indicating it as a benevolent instrument for measuring stress among medical students in Malaysia [7]. Study findings indicated a high level of personal and particularly perceived stigma associated with depression amongst Australian medical students, especially those displaying higher levels of stress. Adequate support

and screening for psychological stress might de-stigmatize depression and improve mental health [8]. Among young people, the percentage of frequent smokers was higher in boys (32%) than in girls (25%). Significant relation was elucidated between tobacco smoking and selected stress-coping styles as well as the strain from mental complaints suggesting that parallel to the rising frequency of smoking, the tendency increases to apply emotion-oriented, distraction-oriented and social diversion-oriented styles [9]. The practice of meditation alleviated psychological stress responses and improved cognitive functions. The effects were more pronounced with practice of meditation for a longer duration of one month [10].

### Health sciences courses

Students from physical therapy, communication disorders, and nutrition sciences programs perceived similar levels of stress. The academic factor the most important source of stress by students from the three departments [11]. Mental toughness mitigated the relationship between high stress and depressive symptoms in adolescents. The interaction between stress and mental toughness elucidated 2% of variance in the adolescent sample and 10% of variance among young adults [12]. A cross-sectional questionnaire survey in students confirmed that many were aware of tinnitus and that they may be susceptible to stressful environments. Trait anxiety was associated with tinnitus. Because both tinnitus and anxiety can affect the daily lives and health of children same as with adults, an in depth strategy for the management of tinnitus in children must be implemented [13]. Compared to medicine, sports and psychology programs had a lower risk for perceived stress. Personal and environmental risk factors and coping strategies modified the relation between academic program and perceived stress, suggesting that developing efficient coping strategies and improving academic environment could contribute to prevent the potential deleterious consequences of stress in students [14]. In the first hour after strenuous resistance exercise, both life event stress and perceived stress moderated the recovery of muscular function, but not psychological responses [15].

### In Asian countries

No significant difference was noted in changes in stress levels before and after the intervention between the two groups among junior secondary school students. The potential health benefits of Tai Chi could not be detected owing to the restrictions imposed by the research setting and study limitations [16]. Nepalese students studying in South Korea experienced a considerable amount of perceived and acculturative stress and was negatively related with their health related quality of life. Provision of culture specific counseling and orientation programs may benefit the students [17]. Perceived stress scale (PSS) levels had an independent association with bullying and victimization, indicating need for further studies to clarify

the psychobiological links between stress, cannabis use and bullying behaviours among secondary school students [18]. Among Korean nursing students, gastro intestinal (GI) symptoms were significantly associated with the perceived stress level. This suggests high perceived stress to be considered a risk factor for GI symptoms. To reduce perceived stress, stress management programs including cognitive reappraisal training are compulsory in nursing curriculum [19]. Taijiquan classes for college students were associated with increased mindfulness and improved sleep quality, mood, and perceived stress, but not self regulatory self efficacy [20]. PSS-10 scores were higher among Arabic university students with higher stressful life events recorded scores [21].

A hierarchical regression analysis concluded that when controlling for generic life stress, perceptions of discrimination contributed an additional 10% of variance in trauma related symptoms among black students, and racial climate contributed an additional 7% of variance in trauma symptoms among asian students [22]. Severe or extreme exposure, older age and female gender increased the risk for post traumatic distress. Perceived support from family members and friends was found to be protective [23]. Young people with chronic health problems were at a higher risk of poor school adjustment. A weak relationship was found between family socio economic status and the prevalence of chronic diseases in the population of school children. Family economic status modified the relationship between chronic diseases and perception of school demands suggesting that the way a sick child functions in the school environment must become a wider part of discussion among teachers, parents and pediatricians [24].

### American and European studies

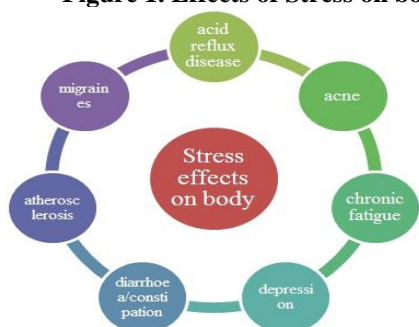
Study done on residents of large, urban, tertiary care academic medical centres located in the USA, demonstrated that ensuring residents are able to find time for personal needs had significant consequences with respect to resident perceptions of well being and can be an effective strategy to promote career satisfaction and prevent burnout [25]. The Internet sources, especially Google, the plastic surgeon's Web site, and portal Web sites were very important to patients aged 20 to 50 in their search for information on breast augmentation surgery (BA). Educational and reality TV had less influence on this particular group than was previously thought. Patients were well educated, are part of the workforce, and seem to be independent and private thinkers when it comes to decision making. Referral sources such as the primary care provider had a much smaller role in the search for information [26]. The Thai version of the PSS-10 demonstrated excellent goodness of fit for the two factor solution model. Good reliability and validity for estimating the level of stress perception was shown with in Thai population [27]. Amount of time spent studying and future concern about the impact of examinations were the specific pressure variables that contributed to stress regulation during the

examination week. By demonstrating measures of chronic examination stress, these findings provided a new insight into the complex relationship between examination stress, cortisol, and immune functioning [28]. Higher level of anxiety and depressive symptoms are more related to perceived need for help and help-seeking behavior, in a study carried out on university students using the Stress-Related Vulnerability Scale (SVS), Beck Depression Inventory-II (BDI-II) and Beck Anxiety Inventory (BAI) [29]. Academic stress affected periodontal health, as shown by more plaque accumulation, gingival inflammation and increased amounts of interleukins IL-6, IL-10 in gingival crevicular fluid and cortisol in saliva [30]. A higher level of perceived stress was reported by the students, showing the relation of main stressors to academic and psychosocial domains [31]. Lecturing resulted in a significant increase in the secretion of alpha-amylase. No significant difference was found in trait and state anxiety between men and women. No gender differences for heart rate variability or alpha amylase activity were found [32]. Among internal medicine residents, higher levels of fatigue and distress were independently associated with self-perceived medical errors [33]. Senior students who perceived a higher level of stress from taking care of patients, choose problem solving strategies. Senior students with no religious belief and perceived a higher level of stress from teachers and nursing staff used avoidance strategies [34].

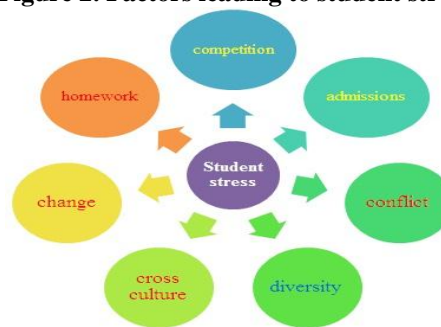
The study done on knowledge, attitudes and practices of medical students in Karachi suggests that superior knowledge about healthy lifestyle do not necessarily lead to better practices [35]. A study done using Acculturative Stress Scale for International Students in USA showed a few students reported experiencing acculturation stress. Responses to four open-ended questions indicated most students perceived experience of acculturation stresses related to discrimination, feelings of loneliness, and academic concerns [36]. The prevalence of sleep deprivation and sleep disturbance among Hong Kong adolescents was similar to other countries, suggesting the need to consider an intervention program for sleep problems in adolescents [37]. The results of study done on dental students suggested emotional intelligence might be a psychosocial risk marker influencing the self reported oral health status and behaviour [38]. Study findings confirmed

a moderate weight gain during first year at university, which was associated with higher levels of perceived stress in female students at University College London [39]. Patient deaths was emotionally powerful experience to medical students even when they were not close to the patients. Many students felt inadequately supported as the debriefing sessions with students were rare [40]. Study done on medical students at all medical schools in Norway showed that the young physicians who were the most satisfied in their work were those whose fathers are physicians and those who have a high level of perceived clinical skills at the end of medical school. Differences were found in regard to predictors of job satisfaction among men and women suggesting the medical schools to invest substantial effort in clinical skills training, especially important among female students [41]. In a community sample of African-American adolescents, majority of students were not overly stressed by indirect exposure to the events of 9/11/01, perhaps owing to the temporal, social, or geographical distance from the event. Those who reported greater negative impact appeared to be experiencing higher levels of current anger and also exhibited a characterologic style of higher overt anger expression [42]. Indian male students experienced greater stress than females, indicating that a congenial environment needs to be created for dental education and parents mainly need to be counseled against forcing their children to join an educational program that is not of their choice [43]. Dental students perceived a higher level of stress prior to the test, which declined afterwards. Pre test stress scores were associated with high salivary cortisol, but not IgA or CgA. Students with higher levels of perceived stress, generally had poorer test results [44]. A new scale, CAST (Cognitive Appraisal Stress Test), was developed to testing in university students. This had a 10 point self rating of perceived coping incapacity (PCI) using 16 questions on different aspects of perceived demands versus perceived capabilities [45]. The medical students were found to have the same spectrum of perceived problems as the other health science courses students, but complained of these problems significantly more intensely on 35 items of inventory. Married students responded to the problem items with significantly lesser intensity than the single students [46].

**Figure 1. Effects of Stress on body**



**Figure 2. Factors leading to student stress**



## CONCLUSION

Doctors who were satisfied with their careers had less stress and burn out and less likely to make medical errors and more likely to provide a higher quality of patient care. Academic examination stress was reported to increase physiological and self report measures of stress and decrease immune functioning capacity. Non resident status,

female sex, and conflictual family climate were more related with severe anxiety and depressive symptoms. Fatigue and distress have been separately shown to be associated with medical errors. Debriefing sessions that teach about death, emotions and coping with stress can be benevolent and possibly improve medical education.

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