International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391

Assessment of Resilience against Stress in Medical Students

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Abstract: ***This is a cross-sectional study conducted among medical undergraduate students with the aim to assess resilience against stress in each year of education. Self-efficacy in terms of college education and social functioning has also been assessed and its relationship with perceived stress examined. Results indicated that resilience varies directly with stress up to a limit beyond which it becomes almost constant. College going self efficacy is weakly related to both stress and resilience while social self efficacy contributed to both stress and resilience in both male and female students.***

Keywords: stress, resilience, self-efficacy

1. Introduction

"It is not the strongest of the species that survives, nor the most intelligent, but the one most responsive to change" – Darwin

When facing adversity, being able to positively adapt represents resilience. The quality of resilience is frequently attributed to individuals who, in difficult situations, are able to adapt and restore equilibrium to their lives and avoid the potentially deleterious effects of stress [1].

Adolescence is best described as a transitional period in which individuals experience major physical, cognitive, and socio-affective changes. Other life events (e.g., family structure changes, school changes, and accidents) also can affect adolescents' well-being. Some children adapt successfully and in some ways are stimulated by these life events whereas others experience adjustment problems [2].

The study of these individual differences may provide information on potential protective factors that may help adolescents even in at-risk contexts. Central to this approach is the concept of resilience, which stems from observations that some high-risk individuals unexpectedly show no clear signs of psychological distress. Although there is a reasonable amount of research on resilience in childhood, few have studied the individual differences in the stress-distress relation during the transition from childhood to adulthood [2].

Herman-Stahl and Petersen (1996) have proposed the creation of 4 distinct groups of adolescents by crossing indices of depressive symptoms and frequency of negative life events: (1) well adjusted (low on both indices), (2) resilient (high on level of stress and low on depression), (3) vulnerable (high on both indices), and (4) non-adjusted (low on level of stress and high on depression). They found that adolescents from the well-adjusted group had higher optimism, more active coping, and more positive relations with parents and peers than adolescents in the 3 other groups. They also found that resilient adolescents scored higher than vulnerable adolescents on the preceding variables. This result is important in that it suggests that resilient adolescents may develop normally even if they have experienced difficult environments [2, 17].

Medical education is one such rigorous experience in many lives. With longer course duration, vast amounts to study, high competitive demands and difficult hours at work, adding to it, the ever increasing demands of one's social and personal life, and the doctors of the future need to be highly resilient to survive this training process and to perform to their full potential during training and later in practice.

This study attempts not only to assess resilience levels among medical under-graduate students, but also examines self efficacy in terms of college education and social functioning and their possible relation with an individual's perceived stress level.

2. Literature Review

Resilience embodies the personal qualities that enable one to thrive in the face of adversity. Research over the last 20 years has demonstrated that resilience is a multidimensional characteristic that varies with context, time, age, gender, and cultural origin, as well as attributes within an individual when subjected to different life circumstances [9, 10, 12, 13].

One theory for this variability was developed by Richardson and colleagues, who proposed the following resiliency model [14, 15].

Beginning at a point of bio-psycho-spiritual balance (homeostasis), one adapts body, mind, and spirit to current life circumstances. Internal and external stressors are ever-present and one's ability to cope with these events is influenced by both successful and unsuccessful adaptations to previous disruptions.

In some situations, such adaptations, or protective factors, are ineffective, resulting in disruption of the Bio-psycho-spiritual homeostasis. In time, response to this disruption is a re-integrative process, leading to one of four outcomes:

(1) The disruption represents an opportunity for growth and increased resilience, whereby adaptation to the disruption leads to a new, higher level of homeostasis;

(2) A return to baseline homeostasis, in an effort to just get past or beyond the disruption;

(3) Recovery with loss, establishing a lower level of homeostasis;

(4) A dysfunctional state in which maladaptive strategies (e.g., self-destructive behaviors) are used to cope with stressors. Resilience can thus also be viewed as measure of successful stress-coping ability.

The clinical relevance of resilience and related constructs has been noted previously. Maddi and Khoshaba theorized that resilience was an index of mental health [11] and recent data has supported this hypothesis [18]. Tsuang [2000] emphasized the substantial clinical implications that follow a better understanding of the forces that mould resilience [19]. With regard to trauma and posttraumatic stress disorder (PTSD), it has been shown that resilience contributes to protection against developing chronic PTSD after combat [20, 21]

The growing focus on health promotion and wellbeing, shifting emphasis away from pathology and problem-orientation, provides an opportunity to revisit the role of resilience in health. Yet there is relatively little awareness about resilience or its importance in clinical therapeutics. Conventionally, therapeutic trials have focused more heavily on measuring morbidity, although quality of life elements are now included in many trials [2]

3. Method

This was a cross-sectional, analytical study conducted among students pursuing undergraduate medical education (4 years training followed by one year of rotatory internship) at Bharati Vidyapeeth Deemed University Medical College and Research Centre; a private tertiary care hospital in Pune, India. A total of 100 students, both male and female, participated, 20 students selected randomly from each batch. Students with pre-existing or ongoing medical, surgical or psychiatric illnesses were excluded. A written informed consent was taken from all participants. A specially designed questionnaire comprising of the following assessment tools was provided to the participants and their responses were analyzed.

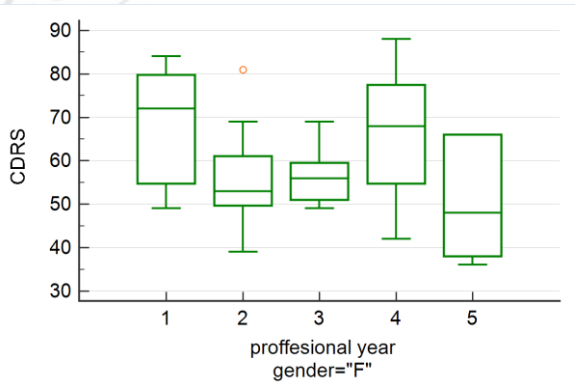
1. **Connor- Davidson Resilience scale (CD-RISC)**: The Connor-Davidson Resilience scale (CD-RISC) comprises of 25 items each rated on a 5-point scale (0–4), with higher scores reflecting greater resilience.
2. **Perceived Stress Scale**: most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives.
3. **Social Self Efficacy Scale (Muris, 2001)**: 8-item scale that measures youths' self-assessments of their ability to negotiate social situations and produce successful social interactions.
4. **College-going Self Efficacy Scale**: 14 items measuring attendance and 16 items measuring persistence on a 4 point scale (0-3), to assess adolescents' college going beliefs.

4. Results

Out of a total of 100 participants, 50 males and 50 females; 63 above the age of 20 years and 37 below the age of 20 years, stress was seen to exist in both age groups and genders. However, perceived stress scores in students less than 20 years was significantly higher than those above 20 years of age (p=0.023). Female students exhibited slightly higher perceived stress scores than male students though this difference was not statistically significant (p=0.40). Stress scores were seen to be the highest during the second professional year (median 28.00) followed by the fourth professional year (median 23.50) and lowest during internship (median 20) p<0.001 on Kruskal-Wallis test indicating stress scores in second year and internship to be different from the rest.

In male students the perceived stress scores tended to vary very little with advancing professional years, p=0.003 on Kruskal-Wallis test indicating stress scores in the second year to be different from the rest. Whereas in female students stress scores varied with advancing professional years to a greater extent p=0.0008 on Kruskal-Wallis test indicating stress scores in second year, fourth year and internship to be different from the rest.

Similar observations were made in Resilience scores on Connor-Davidson Resilience Scale with respect to advancing professional years in male and female students. Whiles in males, resilience scores tended to vary little (p=0.75), female students showed resilience scores varying significantly with advancing years; p=0.018 with highest resilience scores in first year (median 72.00) followed by fourth year (median 68.00) and minimum during internship (median 46.00).

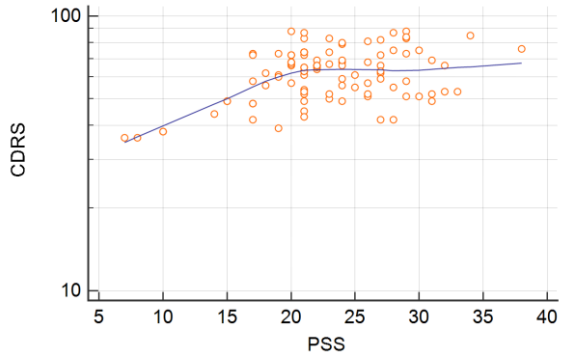


Resilience scores on Connor-Davidson Resilience Scale were seen to be unrelated to age (p=0.45) but had a correlation with gender, with male participants exhibiting higher mean scores (65.4, SD 12.01) than females (59.8, SD 13.53, p=0.031).

College- going self efficacy scores were similar in males (mean 49.20, SD 17.71) and females (mean 42.80, SD 15.94) and the correlation was statistically insignificant (p=0.06) while social self efficacy scores were significantly higher in females (mean 28.90, SD 3.96) than male (mean 24.22, SD 6.25) students (p<0.001).

Perceived stress scores were noted to have an insignificant correlation to college going self efficacy and social self efficacy among both males (p=0.15, p=0.13) and females (p= 0.79, p=0.94).

However resilience scores were seen to be weakly related to college going self efficacy scores in both males (Spearman's rank correlation=0.287, p=0.043) and females (Spearman's rank correlation=0.291, p=0.040). Resilience was also seen to be significantly related to social self efficacy (p=0.03) in both males (p=0.005) and females (p=0.01).



Relationship of perceived stress scores with log of resilience scores obtained on Connor-Davidson Resilience scale has been shown above. The overall perceived stress scores were weakly related to resilience scores (Pearson coefficient=0.360, p<0.001). However on a closer look, it was observed that resilience scores vary directly with perceived stress scores up till a limit beyond which resilience scores were noted to become almost constant with increasing stress. The resilience scores with stress levels more than or equal to 27 (known lower limit for severe stress) had a correlation coefficient r=0.112, p=0.5. But resilience scores with stress levels less than or equal to 20 (moderate stress) had a correlation coefficient r=0.744, p<0.001, while at stress scores less than or equal to 13 (mild stress) correlation coefficient r=0.962, p=0.03.

5. Discussion

The above results add to the already established multi-dimensionality of resilience as a construct, clearly showing it to be affected by gender. (Correlation to personality has not been undertaken here though well established in existing literature) and also by one's environment, varying directly in proportion with mild to moderate stress beyond which it rises no further. Also, students with low perceived stress levels also exhibited low resilience scores which begs the question, is some amount of stress necessary to build resilience?

Also examining two known attributes of resilience, educational self efficacy and social self efficacy, a rather disturbing picture has emerged from the above results, with both social and college going self efficacy exhibiting poor correlation with stress levels, and college-going self efficacy revealed insignificant to resilience in both male and female students, one cannot help but wonder, what, if not academics, is contributing to their stress?

Also, if academic performance and beliefs in their own efficacy makes a significant contribution, neither to these students' stress levels, nor to their ability to cope with it, the real importance of academic self reliance to today's medical students is in a questionable position.

Social self-efficacy, on the other hand, has emerged as a significant attribute to resilience in both male and female students, indicating the importance of establishing their individual identity and comfort in their social sphere, whose presence of is a source of positivity while its absence, a cause of discomfort.

6. Future Scope

In the above study there has emerged, a section of students who have high stress levels and are ill-equipped in terms of resilience to cope with them. These students may not manifest visible psychological disturbances, but are liable to decompensate at any point in the future. Identification of such individuals and reaching out to them with necessary interventions (identification of modifiable stress factors, stress management, coping skills training, etc) can help in prevention of psychiatric illnesses in such vulnerable populations, also reducing future disease burden of stress related psychiatric illnesses.

Also, in order to raise adequately resilient students in the future generations, the stress exerted in terms of academics and other environmental factors is recommended to be regulated to remain within the limits of eustress to be able to provide a constant stimulation and an achievable challenge, interspersed with positive reinforcement, rather than minimized.

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