

A Mediation Analysis of the Effect of Perceived Stress on the Relationship between Self Efficacy and Quality of Life in Medical Students

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Abstract

Stress in medical students is caused by tenacious medical programs, which may have physical and psychological effects on the quality of life of medical students. The study aimed to examine the relationship between self efficacy and quality of life in medical students. In addition, we examined the mediation role of perceived stress on relationship between self efficacy and quality of life. The study was conducted on hundred medical students (64 male and 36 female) of Institute of medical sciences, Banaras Hindu University, Varanasi in the age range of 19 to 22 years (Mean age= 20.36, SD= 1.26). The data was collected by using the self efficacy scale (Sud et al, 1992), perceived stress scale (Cohen et al 1983) and WHOQOL-26 BRIEF. Results showed that most of the dimensions of QOL as well as the total scores of QOL were correlated positively with self efficacy and negatively with perceived stress. To examine the mediation role of perceived stress in self efficacy-QOL relationship a mediation analysis was carried out. In the total sample, self efficacy predicted QOL in an initial regression model ($\beta = 0.37$, $p < 0.001$). When perceived stress was added to the model, however, self efficacy was attenuated less and insignificant ($\beta = 0.11$, NS). A Sobel test of significance confirmed a mediated effect ($p < 0.01$). Self efficacy is associated with QOL in medical students, and this relationship is mediated by perceived stress.

Key words: *perceived stress, Quality of life, Self efficacy*

Introduction

At present, there is increasing interest in the study of self esteem and quality of life. In today's changing and competitive scenario the term stress received a great attention among the medical students. Medical students, who are in a phase of transition from adolescence to adulthood, are in the most challenging phase of life. Most medical students are away from home, trying to adjust in new environment and anxious enough for their future¹. Self-efficacy is a theoretically and empirically robust motivation belief that has been shown to play

an important role in the learning and development of new skills in medical students. Bandura's social cognitive theory suggests that self-efficacy—defined as the confidence to carry out the courses of action necessary to accomplish desired goals and it plays an important role in influencing achievement outcomes through its dynamic interplay with environmental and behavioural determinants². Although skills and knowledge provide the raw materials for student success in medical education, beliefs about personal capabilities to use these raw materials can spell the difference between success and failure. Self-efficacy beliefs are goal-oriented, context specific and future-oriented judgments of capabilities that change according to the task involved^{3, 4}.

There is growing concern about quality of life of medical students during medical study. The World Health Organization (WHO) defined Quality of Life (QoL) as "an individual's perception of their position in life, in the

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context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns”⁵. QoL is comprised of multiple aspects, including psychological health, physical well-being, social relationships, and environmental conditions⁶. It is shown by many of the study that decreased QoL scores among medical students during their training years, which is associated with several future adverse effects, including an unhealthy lifestyle, variable psychological problems, academic failure, and other negative impacts on the students’ professional development^{7,8,9,10,11}. Different types of stress can affect quality of life of medical students such as a stressful clinical visit, continuous attention when interacting with patients, peer competition for academic excellence, the overwhelming load of new and massive information to learn, and of course difficulty^{12,13,14}. Studies with medical students have found that during the first year of medical school students had a deficit in hours of sleep, physical activity, and social interactions^{15,16}.

It is evident from the review that self efficacy is associated with enhanced quality of life. Although research on the self efficacy of medical students is of great interest in medical education, no attempts have been made to systematically review the research and examine the role of self efficacy on quality of life of medical students. Previous research did not present the mechanism of perceived stress on relationship between self efficacy and quality of life of medical students. Whereas self efficacy is directly facilitate the quality of life. The observation credits indirect support to our contemplation that the beneficial effect of self efficacy may be mediated by the perceived stress. However, there is lack of literature in this area and most of the previous studies on self efficacy–QOL were conducted on non professional population.

Method

Sample: The present study was conducted on 100 medical students (1st year and 2nd year) from institute of medical sciences, Banaras Hindu University and Heritage institute of medical sciences, Varanasi. They were consists of 64 male and 36 female. Age of participants ranged from 19 to 22 years (Mean age= 20.36, SD= 1.26). Self efficacy, Perceived stress and quality of life scale were administered on these students. None of the participants reported any present or prior

history of medical or psychiatric illness in a semi-structured interview conducted before the administration of the tools for the present study.

Tools

1. Hindi version of General self efficacy scale¹⁷: The Hindi adaptation of generalized self-efficacy scale, adopted by SonaliSud¹⁷, was used for measuring self-efficacy, which comprises 10 items. The German scale was developed by Mathias Jerusalem & Ralf Schwarzer¹⁸. It assesses optimistic self belief used to cope with difficult situation in life. The coefficient of internal consistency, estimated by Cronbach’s alpha was determined to be 0.91.

2. WHOQOL-26 BRIEF Hindi version¹⁹: The 26-item WHO’s QoL Instrument-Short Version (WHOQOLBREF) was used to measure QoL. The scale consisted of 2 items about overall QoL and general health perception and 24 items about QoL satisfaction that are divided into four domains, including physical QoL, psychological QoL, social relationships, and environmental QoL. The total score is the sum of the domains and ranges from 20 to 80. Domain scores indicate an individual’s perception of QoL in each domain. The Cronbach’s coefficients of the total and each domain in a study were from .58 to .90.

3. Perceived stress scale²⁰: It is a 14 -item scale which measures the degree to which situations in one’s life is appraised as stressful during the past month. There are seven negative and seven positive questions for which the subjects were required to choose from a scale of 5 alternatives ‘never’ ‘almost never’ ‘sometimes’ ‘fairly often’ ‘very often’ relating to their feeling of being stressed on a 0-4 scale.

Procedure

The participants were approached after taking permission from the respective hospitals. They were contacted individually and explained the purpose of study. The medical students have signed the informed consent letter which signified their voluntary participation in the research. All participants were requested to ensure that they have responded to each items of all scale. The obtained data were analyzed by using bivariate correlation and mediation analysis.

Results and Discussion

To ascertain the relationship of self efficacy with various domains of Quality of life and perceived stress bivariate correlation coefficients were computed. The obtained results have been displayed in Table 1.

Table 1:Correlations of total quality of life as well as various dimensions of quality of lifewith perceived stress and self efficacy

Measures	Perceived Stress	physical	Psychological	Social relations	Environmental	Total QOL
Perceived Stress	---	-0.44**	-0.48**	-0.54**	-0.40**	-0.71**
Self efficacy	-0.38**	0.28**	0.21*	0.18	0.26**	0.37**

* $p < 0.05$, ** $p < 0.01$

Table-1 shows correlations among study variables. The perceived stress is negatively strongly correlated significantly with quality of life as well as all the dimensions of quality of life($r = -0.44$, $r = -0.48$, $r = -0.54$, $r = -0.40$ and $r = -0.71$, $p < 0.01$). Self efficacy is significantly positively correlated with total quality of life and all dimensions of quality of life except social relations ($r = 0.28$, $r = 0.21$, $r = 0.18$ NS, $r = 0.26$ and $r = 0.37$, $p < 0.01$). Thus, the observed pattern of correlation suggests that This perceived stress may affect both physiological and psychological health negatively and lead to decline in the quality of life of medical students. It means life as medical students is often stressful. This finding is consistent with a previous review; high perceived stress levels of students can have negative effects on QoL and healthy lifestyle, and their experience of depressive episodes could easily lead to decreased QoL²¹. Even burnout, have been documented in pharmacists, physicians, nurses, and dentists^{22,23,24,25}.

It is evident from Table-1 that opposite pattern of correlations was also obtained between various dimensions of quality of life and self efficacy. All

dimensions of QOL (except social relation) positively and significantly correlated with self efficacy ($r = 0.28$, $p < 0.01$, 0.21 , $p < 0.01$, 0.18 NS, 0.26 , $P < 0.01$, 0.37 , $P < 0.01$). The findings of the present study empirically support the notion that Self-efficacy proposed by Bandura plays an important role in modulating health behaviors and in turn positively affecting life qualities. Many studies have indicated that patients with higher self-efficacy are more effective in the self-management of hypertension²⁶. Person with high self-efficacy would be more likely to deal with life stressors with confidence and engage in the necessary behaviors to preserve or restore health²⁷.

It is also evident from the finding of the present study that higher level of self efficacy is associated with higher level of quality of life and lower perceived stress. This pattern of relationship among self efficacy, perceived stress and quality of life support our assumption that healthy effect of self efficacy is likely to be mediated by the perceived stress. However, we have tried to empirically test this mediational effect on self efficacy-quality of life relationship which is presented in **table-2 and fig-1**

Table-2:Mediation effect of using social media on positive ageing perception–loneliness relationship

Testing step in mediational model	R	R2	R2 Change	F change	B	Beta	t
Testing step I Path a							
Predictor to mediator	0.38	0.15	0.15	16.64**	-0.72	-0.38**	4.09**
Testing step II Path B							
Mediator to outcome	0.71	0.51	0.51	101.33**	-1.28	-0.71**	10.06**
Testing step III Path C							
Predictor to outcome	0.37	0.14	0.14	15.30**	1.24	0.37**	3.91**
Testing step IV path C' mediation effect							
Predictor to outcome After mediation	--	--	--	--	0.37	0.11 NS	1.46NS

1. Self efficacy							
2. Perceived stress	0.72	0.52	0.52	52.33**	-1.21	-0.67**	8.79**

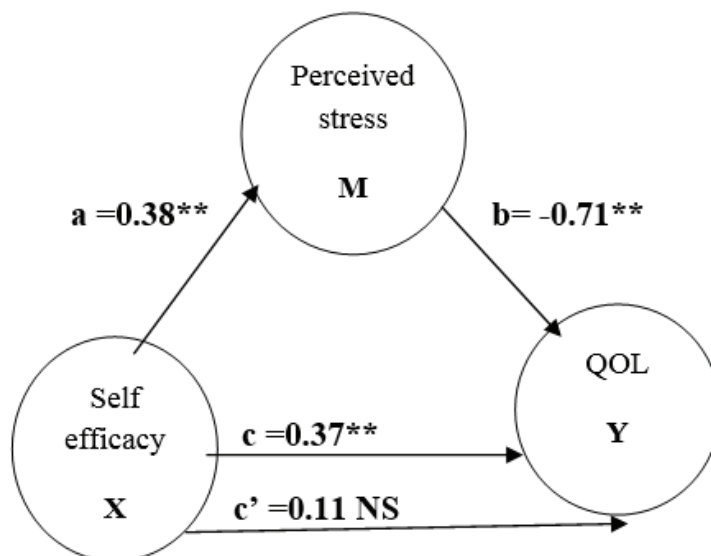


Fig-1 Path diagram of the mediation role of perceived stress

In the hierarchical regression model, the relationships between the self efficacy and QoL contributed significantly to the model, indicating that the self efficacy was a strong predictor of QoL ($c = 0.37$, $p < .001$). However, after adding perceived stress in the

model, the coefficient of self efficacy was diminished ($c' = 0.11$, NS), suggesting the mediating effect of perceived stress. Additionally, the Sobel test was conducted to examine the significance of the mediator effect by using the following formula

$$Z\text{-value} = ab / \sqrt{b^2 X s_a^2 + a^2 X s_b^2}$$

a = raw (unstandardized) regression coefficient

sa = standard error of a.

b = raw coefficient for the association between the mediator and the DV

sb = standard error of b.

The Sobel test showed highly statistically significant result with $Z=3.796$, $p<0.001$. Results indicate that the relationship between self efficacy and quality of life was fully mediated by perceived stress. It suggests that Medical students may experience stressful condition due to their curriculum burden and career responsibilities. Adverse physical and mental health leads to impaired quality of life of medical students which may affect their learning and academic capabilities during medical education. This finding is consistent with a previous review that psychosocial consequences such as depression anxiety as well as stress can reduce the quality of life of medical students²⁸. Study-related stressors experienced by medical students include high workloads, tight time schedules, dissection of corpses, contact with severely ill, suffering and dying patients, and financial problems, as well as language barriers, communication difficulties and cultural differences especially for south Indian to north Indian²⁹. To produce successful doctors, stress needs to be tended to at the early stages of training. Students who enter medical colleges are less likely to be depressed than students in other fields; however, this statistic is reversed by the second year of medical school. Addressing medical student perceived stress right away is essential to stave off depression and anxiety that students often experience.

Conclusion

In sum, the results of this study highlight the negative association between stress and QoL and positive association between self efficacy and quality of life in medical students. Also pointed that factor as perceived stress can maximize this negative association, deteriorating even more the QoL. Self efficacy belief determine our manner of perceiving the work environment in such a way that doctors who believe themselves to be effective face challenging educational demand with efforts. It means self efficacy is powerful personal resource that predicts the quality of life in doctor professionals in positive way but this effect decreases when stress is perceived by doctors. It is

pointed out, the reduced number of studies that address the raised issues together i.e., self efficacy, stress and QoL in medical students. Medical studies are perceived to be characterized by competition, lacking time for leisure activities or social contacts and schedules that demand exclusive dedication, all of which can lead to reduced quality of life. Therefore, if we want to improve self efficacy, we must work to reduce stress level.

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