

Research Paper

Perceived Stressors as Determinants of Quality of Life among the Undergraduates in Medical Education

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ABSTRACT

Medical education involves multiple challenges which can take a toll on the quality of life and elevates the stress levels. This can have detrimental effects on mental health, relationships, productivity and accomplishments. This study aims to determine the effect of perceived stressors on Quality of Life among the undergraduate students in medical education. The study sample was 517 students of medical and dental courses selected from a Medical College in central Kerala. The tools used are Source and Severity of Stress Scale and WHOQOL-BREF. Overall stress score was found to have a significant association with the quality of life domains. Further, Health & Value conflict domain of stressors was seen to have a significant association with physical and social components of quality of life. Other stressor domains namely 'Academics', 'Self-expectations', 'Relationships' & 'Living Conditions' are found to cause a progressive decline on all the 4 components of quality of life.

Keywords: *Perceived Stressor, Quality of Life, Medical Undergraduates*

Though it is a very coveted course and is attached with a lot of prestige, medical education is not without its share of challenges which can be often draining both physically and psychologically. In the Indian scenario, too much content is delivered in a short span of time and the students are required to undertake too many examinations (Abraham et al. 2007). They are also required to develop lot of social, interpersonal, as well as problem solving skills, with little or no preparation. The stress of medical training stems from academic pressure, perfectionist standards, and demanding nature of medical practice which involves the most personal or emotionally draining aspects of life namely human suffering, death, sexuality, fear, and medico-legal issues (Morrison and Moffat, 2001). The transition from adolescence to adulthood and its accompanying responsibilities and challenges also contribute to the stress.

Stress, especially when it is prolonged can have a telling effect on the quality of life. Quality of life is generally understood as a sense of wellbeing enjoyed by the individuals,

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Received: January 31, 2019; Revision Received: February 21, 2019; Accepted: February 24, 2019

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organizations and societies. Quality of life is defined as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (WHO, 1993). Standard indicators of the Quality of life include not only wealth and employment, but also the built environment, physical and mental health, education, recreation and leisure time and social belonging (Derek, Johnston, Pratt, 2009).

Effects of stress can be quite detrimental as seen in its impact on both physical and psychological health of individuals ranging from headaches, gastrointestinal discomfort, poor memory and difficulty with concentration (Waghachavare 2013). Research on stress in nursing students has found stress to interfere with learning and contribute to poor mental health (Melo and Ross, 2010). Stress is seen to be directly affecting quality of life in a negative way. Stressful academic events and other stressful life events may negatively affect one's health-related quality of life in the physical and mental domains of life (Awadh et al. 2013). It is in this background that the study has aimed to determine the effect of Stress on Quality of Life among the undergraduate students in medical education, and also to find the differences if any on gender, stream of medical education, and the year of study

METHODOLOGY

Design and Sample

Design of the study was analytical cross sectional. Medical and dental undergraduate students studying in a Medical College Campus in Kochi, Kerala (n= 517; men-women ratio was 1:2.7; response rate was 80.93%) were administered with WHOQoLBref to assess the Quality of Life along with Source and Severity of Stress Scale (S3S) to find about the nature of stressors. The study duration was 5 months. Institutional Ethics Committee sanction and informed consent from the students were obtained.

Tools

S3S: The validated Source and Severity of Stress Scale (Cherkil, Gardens, and Soman, 2015) identified stressors that were grouped under 5 different Stressor Domains (SD) - *Academics, Self-Expectations, Relationships, Living Conditions, and Health & Value Conflict*. The third domain has 3 subdomains, - family, faculty and peer. Likewise the 5th domain consisted of 4 sub domains of romantic relations, substance abuse, physical health, and stigma. S3S quantifies stress levels experienced under each domain, and also gives an overall stress score. This tool was tested rigorously for its psychometric properties, which were found to be good (Cherkil, Gardens, Soman, 2013). Response to each item is required to be on a Likert type scale ranging from 0 to 4, with a choice of zero as indicative of 'no stress', one as 'mild stress', two as 'moderate stress', three as 'high stress' and four as 'severe stress' (Cherkil, Gardens, and Soman, 2015). The overall stress score for an individual is taken as the highest score acquired in any one of the domains. The rationale behind this is that stress when present in any of the domains is capable of bringing about an impact in almost all the walks of life.

Below is a chart wise description of stress domains (D), subdomains (SD).

Sl.No.	Domain Name	Sub domains
Domain 1	Academics	
Domain 2	Self-Expectation	

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Sl.No.	Domain Name	Sub domains
Domain 3	Relationships	Family, Faculty, Peer
Domain 4	Living Conditions	
Domain 5	Health and Value Conflicts	Romantic relations, Substance abuse, Physical health, Stigma

WHOQoLBref: The WHOQOL-BREF is a shorter version of the original instrument that may be more convenient for use in large research studies or clinical trials (Murphy et al. 2000). WHOQoLBref is a generic instrument which is used to explore physical, psychological, social and environmental profiles. The WHOQoLBREF comprises of 26 items, which measures the following broad domains: physical, health, psychological health, social relationships and environment (WHO,1993). Apart from these 4 broad domains, there are also 2 items Q1 and Q2. Q1 asks about overall health related quality of life and Q2 asks about general health. The four domain scores denote an individual's perception of quality of life in each particular domain. Domain scores are scaled in a positive direction (i.e. higher scores denote higher quality of life). The mean score of items within each domain is used to calculate the domain score. Mean scores are then multiplied by 4 in order to make domain scores comparable with the scores used in the WHOQoL-100 (WHOQoL group, 1998).

Statistical analysis

Gender wise comparison and the differences between dental and medical students on the components of Quality of life using t test were done using t test. One way ANOVA was used to determine the differences between the components of Quality of life and Year of the Study. Correlation between the 5 domains of stress and components of WHOQoL BREF was determined using Spearman Rank Correlation Coefficient. Level of Significance was established at $p=0.05$.

RESULTS

Gender-wise comparisons showed that men have a better quality of life in physical and psychological components of Quality of Life ($p=0.002$ and 0.006). However on social and environmental components of Quality of Life no significant differences were seen between the gender.

Table 1 Gender wise comparison of QoL

GENDER		N	Mean	Std. Deviation	p-value
<i>Physical</i>	Male	140	65.76	16.21	0.002
	Female	377	61.04	14.75	
<i>Psychological</i>	Male	140	57.33	17.79	0.006
	Female	377	52.76	16.36	
<i>Social</i>	Male	140	61.81	21.86	0.454
	Female	377	63.34	20.05	
<i>Environmental</i>	Male	140	55.80	17.88	0.064
	Female	377	52.64	15.10	

$p=0.05$

The medical students showed a significantly high QoL on physical ($p<0.001$) and environmental components than the dental students as depicted in Table 2 ($p=0.002$). Marginal significance attained on psychological component at $p=0.051$.

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Table 2 Study course wise comparison of QOL

STUDY COURSE		N	Mean	Std. Deviation	p-value
<i>Physical</i>	MBBS	322	65.33	14.30	<0.001
	BDS	195	57.35	15.60	
<i>Psychological</i>	MBBS	322	55.12	16.37	0.051
	BDS	195	52.13	17.53	
<i>Social</i>	MBBS	322	63.05	20.41	0.860
	BDS	195	62.72	20.81	
<i>Environmental</i>	MBBS	322	55.19	15.99	0.002
	BDS	195	50.69	15.50	

p =0.05

Year of the study was found to be significant only with the *Psychological* component of QoL (p=0.014), as seen in Table 3

Table 3 Year wise comparison of QOL

Year of study		N	Mean	Std. Deviation	p-value
<i>Physical</i>	1	121	60.89	15.74	0.168
	2	135	63.54	14.07	
	3	130	64.04	14.21	
	4	131	60.69	16.90	
<i>Psychological</i>	1	121	58.06	15.35	0.014
	2	135	53.67	15.17	
	3	130	53.16	16.90	
	4	131	51.40	19.18	
<i>Social</i>	1	121	63.53	24.24	0.486
	2	135	63.99	18.26	
	3	130	63.67	19.61	
	4	131	60.48	19.93	
<i>Environmental</i>	1	121	54.13	15.79	0.802
	2	135	52.74	16.15	
	3	130	54.29	14.72	
	4	131	52.90	17.12	

p =0.05

Table 4 depicts the association overall perception of stress has with all the components of quality of life (p=0.001; p<0.001)

Table 4. Stress level comparison of QOL (overall stress)

Overall stress		N	Mean	Std. Deviation	p-value
<i>Physical</i>	Mild	31	72.45	13.47	<0.001
	Moderate	143	65.98	13.17	
	High	236	61.38	14.95	
	Severe	107	56.57	16.59	
<i>Psychological</i>	Mild	31	63.76	14.62	<0.001
	Moderate	143	58.47	14.34	
	High	236	53.15	16.69	
	Severe	107	47.05	18.05	
<i>Social</i>	Mild	31	69.62	16.81	0.001
	Moderate	143	66.82	17.02	
	High	236	62.34	20.29	

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Overall stress		N	Mean	Std. Deviation	p-value
<i>Environmental</i>	Severe	107	57.17	24.53	<0.001
	Mild	31	65.02	14.31	
	Moderate	143	58.80	13.08	
	High	236	52.47	14.58	
	Severe	107	45.33	18.24	

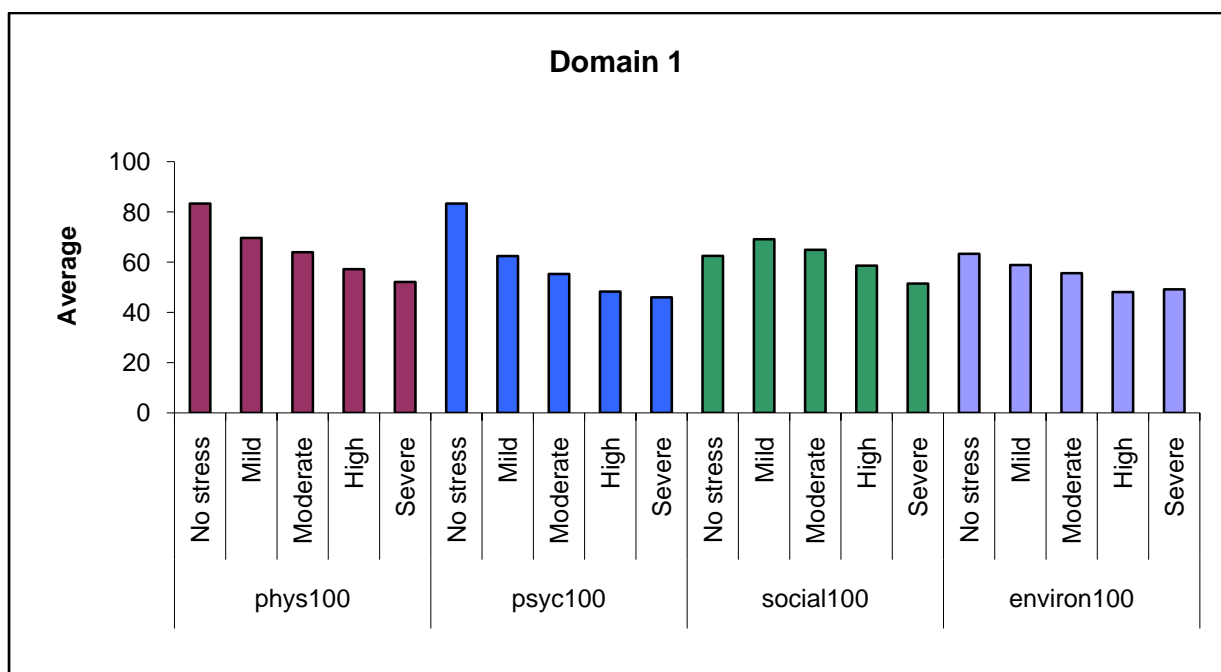
p =0.05

All the stress domains showed a significant but negative low correlation with different components of WHO QoL BREF Scale as shown in Table 5. Association between the degrees of stress and quality of life is studied for its statistical significance by applying Spearman’s Rank correlation. Except for Domain 4 - Living Conditions – and Q2 – Health related quality of life – which shows no significant correlation, all the other domains showed a low, but significant correlation with the other components of WHOQoL BREF Scale.

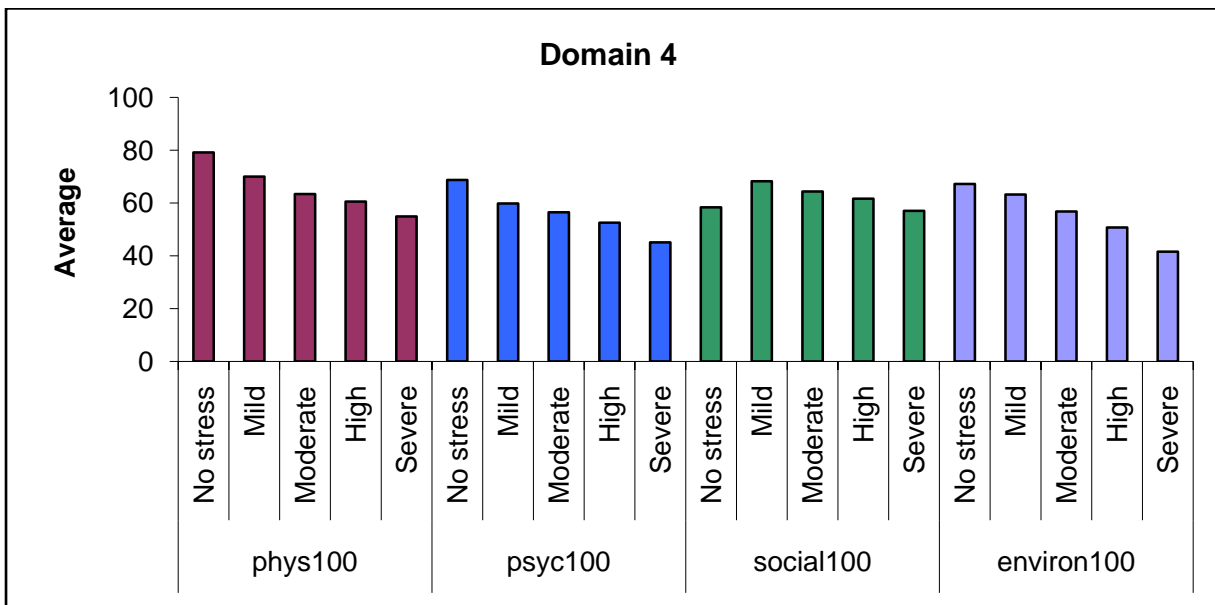
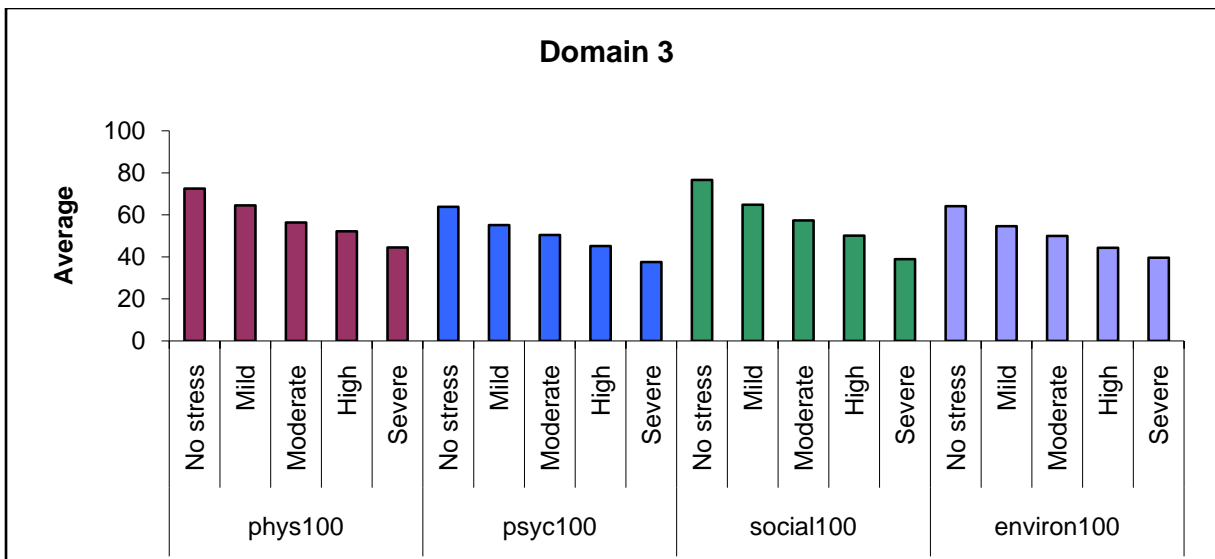
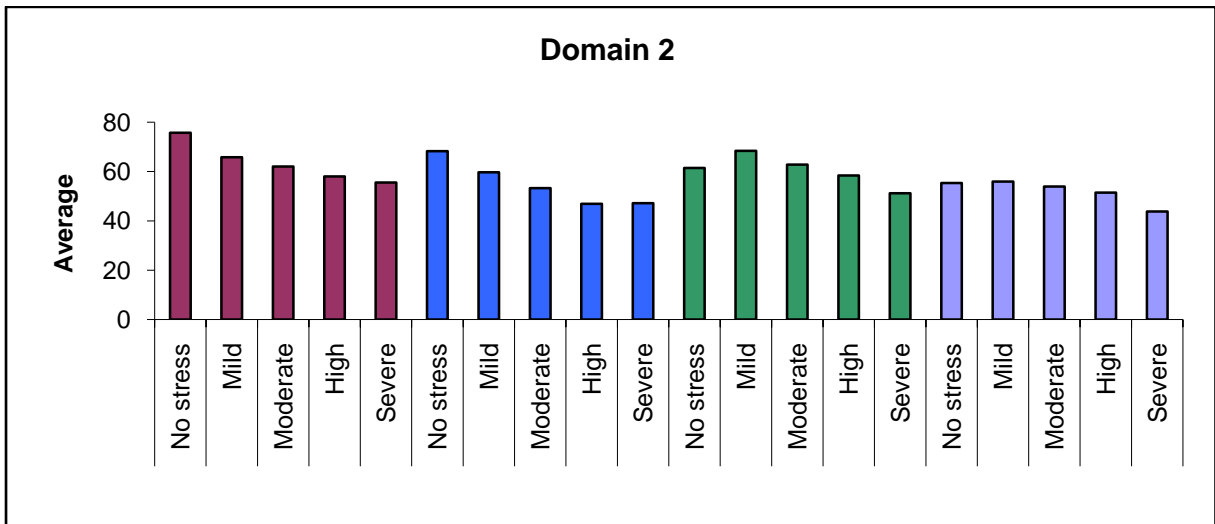
Table 5 Correlation between stress domains and quality of life components

Stress Domains	WHO QoL BREF – Components					
	Physical	Psychological	Social	Environmental	Q1	Q2
Domain 1	-0.299	-0.316	-0.191	-0.254	-0.222	-0.117
Domain 2	-0.247	-0.317	-0.191	-0.185	-0.177	-0.104
Domain 3	-0.383	-0.276	-0.288	-0.272	-0.172	-0.144
Domain 4	-0.320	-0.291	-0.163	-0.441	-0.154	-0.086
Domain 5	-0.319	-0.116	-0.242	-0.118	-0.118	-0.247
Total	-0.412	-0.382	-0.276	-0.372	-0.234	-0.175

Stress domains- ‘Academics’, ‘Self-expectations’, ‘Relationships’ & ‘Living Conditions’ are found to cause a progressive decline on *all the 4 components* of QoL (p≤0.001 depicted in the graphs.



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However, interestingly on ‘SD- *Health and Value Conflict*’, significant decline on QoL was found on *Physical and Social* components ($p < 0.001$). In other words, stress in the area of health and value conflict does not somehow affect psychological and environmental components of QoL – especially psychological component as one would expect (Table 6). However, this stress domain is seen to be having an effect on physical and social components of quality of life.

Table 6 Association of Health and Value conflict – Domain 5- with QoL components

Domain5		N	Mean	Std. Deviation	p-value
<i>Physical</i>	No Stress	104	67.90	14.78	<0.001
	Mild	335	62.33	14.22	
	Moderate	62	57.37	16.52	
	High	14	43.75	17.66	
	Severe	2	54.17	11.79	
<i>Psychological</i>	No Stress	104	57.32	15.95	0.209
	Mild	335	53.48	16.97	
	Moderate	62	51.47	17.60	
	High	14	52.68	17.03	
	Severe	2	56.25	2.95	
<i>Social</i>	No Stress	104	68.71	17.90	<0.001
	Mild	335	63.03	20.29	
	Moderate	62	57.51	22.19	
	High	14	44.94	21.82	
	Severe	2	41.67	11.79	
<i>Environmental</i>	No Stress	104	56.15	14.92	0.218
	Mild	335	53.35	15.81	
	Moderate	62	50.34	16.93	
	High	14	52.23	20.67	
	Severe	2	46.88	17.68	

p =0.05

DISCUSSION

The study aimed to find the impact of perceived stress on the quality of life of students of medicine and dentistry. On the physical and psychological components of quality of life, men seemed to have fared better than their women counterparts. Studies on quality of life has time and again showed that women tend to be more susceptible to poor quality of life, across different parameters of various studies. A study by Gisberts et al. (2015) on gender differences in health-related quality of life in patients undergoing coronary angiography, concluded that women reported lower HRQOL than men throughout all indications for coronary angiography and regardless of coronary artery disease severity or treatment. Females with brain tumor tend to report worse QOL and more distress compared to males in a study by Neimela (2011). Where students are concerned, in a 2013 study significant gender differences within the student group was reported, with female students rating their health status less favorably than male students (Edvy). On psychological front, Paro et al. (2010) reported women medical students to have lower scores than males.

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On physical and environmental components of quality of life, medical students showed significantly high quality of life than the students of dentistry. In consensus with this finding, medical students are reported to have better quality of life on WHOQoL BREF by Zhang et al. (2012). One factor that could be contributing to this could be that in India medical education is considered to be prestigious and there is greater employment and salary prospects to justify the academic and other burden that they suffer. In the case of dental students physical health domain was seen to have a greater impact on the quality of life ratings (Andre, Pierre, and McAndrew (2017). Physical fitness is required for the profession and often the profession demands on physical exertion which can result in easy fatigue. High individual variation in working capacity is a unique determining factor in physical QoL in dentistry.

The first year students enjoys good quality of life in psychological component compared with 2nd third and final year students. This was true for both medical and dental students. Aboalshamat, Hou, Strodl (2014) in a longitudinal study which explored quality of Life of medical and dental students in Saudi Arabia found that third year students' psychological health improved in terms of depression, anxiety, stress, and life. However this was not true for the sample understudy. This could be because of the implementation anti ragging laws which ensures the physical and emotional protection and psychological support received from the college and teachers alike by the first year students. Curriculum tends to get difficult as the students advance in the years of study. Added responsibility of patient handling and accountability can bring down the quality of life, especially during the phase where the students are learning to handle the challenges of the same. Expectations from teachers and from self to be more independent, and the impediments in striving to be so also can contribute to poor quality of life in senior students when compared with that of the first year students.

Stress domains of academics, relationship, self-expectations, living conditions and health & value conflicts all tend to lower the physical, psychological, environmental and social components of quality of life. These stress domains tend to affect the health related quality of life also, without having a direct or causal impact on general physical health. It was found that there was a significant, but low negative correlation between the stress domains and the components of WHOQoL BREF. No correlation was obtained between the stress domain Living Conditions with the health related quality of life which was assessed through a single question in WHOQoL BREF. This could be because the hostels that house the medical students do meet up with the minimal requirements of comfort and convenience of living. Understandably stress domains of Academics, Self-Expectations, Relationships, Living Conditions has an effect on the physical, psychological, social and environmental components of quality of life. Additionally, these domains, except Living Conditions, also tend to affect the general health of the participants.

Stress domain of Health & Value conflict was found to have a strong association with the physical and social components of quality of life. While the association of health with physical component of quality of life is direct, association of health and value conflict on social component of quality of life is thought provoking. Social component of quality of life includes personal relationships, social support and sexual activity. The value system one holds determine the extent to which a person will develop personal relationships, avail of social support and indulge in sexual activity. For a young adult, who is just leaving the comfort zone of protected adolescence, having to adopt a set of values that may not be in

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synchrony with what he/she had imbibed can cause much of subjective distress. The decision to indulge in or abstain from the social component of quality of life can definitely determine the quality of life determined in that area.

The cumulative score of the stress domains was seen to have a telling effect on all the components of quality of life of the entire sample. As seen from different studies across different study sample, as the stress increases, the quality of life suffers (Mosadeghrad, Ferlie & Rosenberg, 2011; Yang et al., 2009; Shafipour et al., 2010). When this happens in medical education, it can directly affect the stress tolerance, decision making, and problem solving abilities of the professionals who pass out of the current medical education system.

This study is not without its limitations. Main limitations are: 1) The population is not demographically diverse enough to generalize the findings, as the sample was drawn from only one regional institution. More meaningful and generalizable results could have been arrived at if the study was multicentric. 2) Usage of multivariate analysis could have given insights into the confounding factors.

CONCLUSIONS

The study shows that there are definite stressors at work where medical education is concerned and these stressors can have an effect on the quality of the students. As identified using the S3S scale, it will be greatly beneficial for the students as well as for medical education to take a hard look at the Academics, Self-Expectations, Relationships, Living Conditions, and Health and possible Value Conflicts of the students. Programs targeted at the enhancement of quality of life of the students throughout the medical and dental course at different points in time will be beneficial in terms of stress management and coping.

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Acknowledgements

The authors profoundly appreciate all the people who have successfully contributed in ensuring this paper is in place. Their contributions are acknowledged however their names cannot be able to be mentioned.

Conflict of Interest

The authors colorfully declare this paper to bear not conflict of interests

How to cite this article: Cherkil.S, Gardens.S.J, & Deepak.K.S (2019). Perceived Stressors as Determinants of Quality of Life among the Undergraduates in Medical Education. *International Journal of Indian Psychology*, 7(1), 519-528. DIP:18.01.058/20190701, DOI:10.25215/0701.058