Original Article

Stress Levels in Medical Residents of a Teaching University in the Province of Sindh, Pakistan: its effects on the Quality of Life of Residents

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ABSTRACT:

Stress and stress-related illnesses are common in medical residents. If remain unattended, these illnesses might have serious repercussions affecting the quality of patient health care and physician's well-being.

In this study, we evaluated the stress levels of medical residents in a teaching university (Liaquat University of Medical and Health Sciences, LUMHS) and compared them with those observed in postgraduate students pursuing M. Phil or Ph. D. degrees in basic sciences (University of Sindh). We used Perceived stress Scale of Cohen et al and well-being Scale of Kaplan et al for the measurement of stress. A total of 100 questionnaires (50 per group) were given out. The recovery rate was 73%.

Our data on Perceived Stress Scale indicated that there was statistically significant differences between the two groups (p=0.006), indicating that the medical residents were facing higher levels of stress as compared to postgraduates in basic sciences. However, we failed to detect male to female differences in either group. Similarly, there were significant differences on well-being Scale between the two groups (p=0.002).

Our results confirmed the previous findings that medical residents experience higher levels of stress. However, we did not observe any significant differences between and female residents. When under stress, the respondents tend to neglect the normal activities of life, became reclusive and had self-doubts. The later may have some serious consequences on patient health care.

INTRODUCTION

Stress is a factor that generally results in negative thoughts and perceptions that, in turn, may adversely affect the performance of an individual. People react differently to stressful situations. Some become more sensitive to a stressful situation while others envisage the same situation as "challenge" and in them; stress may evoke a sense of competence [1]. Stress amongst the medical residents has been a topic of concerns for medical academicians in many developed countries of the globe for more than 2 ½ decades [2,6].

Higher than normal stress levels in medical residents may gave serious repercussions, affecting patient's well being. It may also have an effect on resident's dreams and aspirations. On the personal level, the residents may have mood swings [7], sleep disturbance [7], burnout [5], depression [7,12], alcohol stress levels among the medical trainees and residents as compared to trainees in other academic domains[8,3].

Pakistan society is a conservative one, as its people believe in traditions and customs that are in practice for ages. The society gives great respect and prestige to physicians and surgeons, and hence, the medical education is considered a status symbol and it commands respect among the common people. Doctors are considered as privileged class because they are the "healers". Therefore, the competition to enter a medical school, he/she has an enormous amount of complex materials to learn and they face competition against other brighter students.

The duration of medical education and training is also a factor that contributes to stress in medical trainees. The medical school training in Pakistan is relatively long. It requires 5 years of schooling after completing 12 years of secondary and

post-secondary education, 1 year of house job, and a minimum of 4 years (varies between 4 to 6 years) of residency training in a teaching hospital affiliated to a University.

The stress is augmented once they enter into their residency program. There may be intense competition in the selection of a field of their choice, and long hours in the world [1]. This could affect the overall performance of the physicians and surgeons and that in turn may lead to a cascade of events at both personal and professional levels [12].

A few studies have been conducted in Pakistan on this subject [1,4], but they were conducted at medical universities situated in big metropolitan cities with relatively well established social structure and affluence. The situation is different in rural areas of Sindh.

In this study, we investigated the stress levels amongst the medical residents of a teaching hospital (Liaquat University of Medical and Health Science, LUMHS), Jamshoro, situated in a relatively less populated and comparative less affluent area of Sindh. We compared the data with that of students pursuing postgraduate studies (M. Phil / Ph.D) in basic sciences in a non-medical university (University of Sindh, Jamshoro) and evaluated changes in the quality of life of these two groups.

MATERIALS AND METHODS:

This cross sectional comparative study was performed on the medical residents of LUMHS, and postgraduate students of University of Sindh (Department of Chemistry). LUMHS, and the University of Sindh are situated in the city of Jamashoro, within the proximity of about 5 km. the survey started on May 14, 2007, just before the final examinations and the start of summer vacations, and was completed on July 31, 2007.

A 3-part, self-administered questionnaire was used. The Perceived Stress Scale-10, (PSS) developed and validated by Cohen S, Kamarck T, and Mereslstein R (1983)[2] and Self-Administered Quality of Well-Being Scale-18 items (QWB-SA) developed and validated by Kaplan RM, Ganiatd TG, Sieber WJ and Anderson JP (1998)[13] were used.

Also, included in the questionnaire were three additional questions related to the impact of stress on individual life, mechanism for copying with stress and the worthiness of stress in their professional or student life. A total of 100 volunteers, 50 in each groups, were expected to fill and return the questionnaires. The volunteers from both universities were instructed to concentrate only on "work/study-related stresses only" ignoring the familial, social, political and health-related issues.

The nature of survey, the applicability of its results and volunteers' confidentiality were explained to the participants and an Informed Consent was obtained from each participant. Prior to submission of questionnaires to the volunteers, the approval from the Ethic Committee of LUMHS was obtained.

The data, thus collected, was verified by hand, tabulated and fed into SPSS-version 10 computer programs for analyses. Descriptive analysis of demographic data (age) was performed by calculating mean, median, mode and range. For inter and intra group comparisons, Wilcoxon's paired t test was performed to assess variability, the confidence intervals of 95% and p-value of 0.05 were determined as the acceptable criteria for statistical significance.

RESULTS

Demography

Of the 100 questionnaires provided to the volunteers, 39 out of 50 (78%) questionnaires were returned by the medical residents of LUMHS whereas 34 out of 50 (68%) questionnaires were returned by the postgraduates of Sindh University (overall response rate 73%). Of the 39 residents of LUMHS, 21 were male (54%) and 18 were female (46%). In Sindh University group of 34 volunteers, 22 (65%) were male and 12 were female (35%).

The demographic information on the two groups is presented in Table 1. The mean age of LUMHS residents group was 30.46 ± 4.18 and that of Sindh University was 28.76 ± 6.36 years. In the LUMHS group, the mean age of males was 32.33 ± 4.74 and that of females was 28.28 ± 1.81. This difference was found to be statistically significant. In the case of Sindh University group, the mean age of males was 28.76 ± 5.25 and that of females was 31.90 ± 8.13.

Table 1: Demography: Age of the Participants

	LUMHS group n=39	Sindh group n=29	LUMHS n=18	LUMHS n=21	Sindh n=10	Sindh n=19
Mean age	30.46	29.77	28.28	32.33	31.90	28.76
Median	30.00	28.00	28.50	30.00	28.00	27.00
Mode	30.00	25.00	30.00	30.00	27.00	25.00
St. Deviation	4.18	6.36	1.81	4.74	8.13	5.25
Minimum	25.00	24.00	25.00	27.00	25.00	24.00
Maximum	45.00	47.00	31.00	45.00	47.00	43.00

Perceived Stress Scale (PSS)

Table 2 compares the PSS scores of medical residents of LUMHS with the postgraduates of Sindh University. The Cohen's scale depicted a direct relationship between PSS score and the severity of stress, i.e., higher the score, higher the stress levels. The results indicated that medical residents had significantly higher scores on PSS. This was confirmed in group-to-group comparison as well, indicating statistically significant differences (p=0.006) between the two groups. Male-to-male comparison (between LUMHS residents and Sindh University postgraduates) also exhibited significant differences (p=0.002), favoring LUMHS resident. However, female-to-female group comparison indicated no remarkable difference. Also, female-to-male comparison of inter group comparison also remained insignificant.

Table 2: Comparison of Perceived Stress Scores of Medical Residents And postgraduates.

	LUMHS Residents	Sindh University Postgraduates	P values	95% confidence Interzvals	Statistical Significance
	Mean scores ± SD	Means scores ± SD			
Groups	18.44 ± 6.49	14.32 ± 5.49	0.006	1.31 – 6.93	Significant
Male	17.90 ± 6.35	14.90 ± 6.58	0.151	-1.19 – 7.19	NS
Female	17.33 ± 5.53	13.25 ± 3.11	0.055	-1.00 – 8.27	NS

Quality of Well-being Scale (QWB)

The QWB Scale was developed as a generic index of population health status by Kaplan et al (1996) and since then has been in use for quality of life measurements of various diseases. The self-administered form of QWB, known has psychometric properties[13].

QWB-SA divides the total score into categories, for example, scores of 81-110 is considered to have positive well-being, 71 to 80 is indicative of low positive, 56-70 as having stress problems and 0-25 as having severe stress problems. The analysis of data obtained from QWB-SA questionnaire is shown in Table 3. The group-to-group comparison indicated significant differences between the two groups (p=0.022) indicating that medical residents were having significantly higher levels of stress than postgraduates of basic sciences. Male-to-male comparison exhibited no significance difference, however, female-to-female comparison between the two groups had significant difference (p=0.008).

Table-3:Depicts the well being scores of two groups

	LUMHS Residents	Sindh University Postgraduates	95% Confidence Intervals	P values	Statistical Significance
	Mean scores ± SD	Means scores ± SD			
Groups	66.29 ± 17.15	79.88 ± 11.94	-21.93 – -5.25	0.002	Significant
Male	69.82 ± 17.16	77.27 ± 12.45	-17.15 – 2.25	0.125	NS
Females	64.83 ± 14.47	83.83 ± 9.21	-32.00 – -6.00	0.008	Significant

When the total scores of QWB-SA scale was analyzed according to Kaplan's classification, the following information was obtained (Table 4).

Table 4: Distribution of QWB-SA scores according to Kaplan categories.

	LUMHS Residents No. of Percentile Residents n=39		Sindh University Postgraduates No. of Post-Percentile graduates n=34	
Positive well being	9	23	17	50
Low positive	3	5	6	18
Marginal	5	11	4	12
Stress Problem	12	33	6	18
Distress	9	23	1	3
Serious	0	0	0	0
Severe	1	3	0	0

The data indicated that only 23% of LUMHS residents had positive well being feelings about themselves at time of filling the questionnaire as compared to 50% of postgraduates of Sindh University. Summing-up scores of those feeling stressed,

distressed or had severe stress problems amounted to 59% in the case of LUMHS residents as compared to 23% in Sindh University postgraduates.

DISCUSSION

Stress amongst the medical residents is a well known fact. Studies, to evaluate the level of stress on medical students have been conducted in many countries over the last 30 years. Firth (1986) [6] noticed that medical residents had higher stress levels than other groups in the general population in the UK. In the US, Collier et al (2002)[7] noted an alarming number of recent residents who were depressed and showed increased level of cynicism and decreased levels of humanism. The authors attributed this to increases in their educational debts. Similar observations were made in Canada by Buckley and Harasym (1999)[10], Toews et al (1997)[11]. They concluded that medical students and residents either perceived (Buckley and Harasym)[10] or experienced higher levels of stress than acceptable (Toews et al)[11]. Similar observations were made by researchers in the Netherlands (2003)[5], Norway (2006)[8], Pakistan (2003, 2004)[4,14], Saudi Arabia (2000)[9] and Canada (2005)[2,1].

The results of our study confirmed the observations of others as it indicated that medical residents are under considerable stress. The working conditions in rural medical university (fewer staff, long working hours, demanding schedules, night duties etc); compounded by lack of appropriate technical, financial and auxiliary support has contributed to stressful situation for the medical residents. Such a situation has not been encountered by postgraduates of basic sciences.

Our results did not demonstrate any statistical difference between male and female residents of LUMHS groups (p=0.696) and between male and female postgraduates of Sindh University groups (p=0.974) on PSS scores. This is contrary to the observations of Cohen and Patten (2005)2, Collier et al (2002)7 and Al Bedaiwi (2001)8. Cohen and Patterns2 noted that in their survey, females reported stress more frequently than males (40 % vs 27%). Time factor (working hours) was identified as number one factor which contributed to stress (44% of male and 57% of females). Collier7 observed that 67% of female residents were increasing cynicism as compared to 56% of males. Al Bedaiwi8 stated that there was an association between being a female and a higher level of minor psychiatric morbidity. This, he attributed to conflicts between career and home. In our study females were as stressed as males.

On QWB-SA we noted a statistically significant difference between the two groups (p=0.002). Again, we detected no gender difference either in the LUMHS residents or in Sindh University postgraduates. Furthermore, there was no difference between males residents of LUMHS and male postgraduates of Sindh University (p=0.151) nor between females of LUMHS and females of Sindh Universities groups (p=0.055).

However, when the QWB-SA, scores were broken down according to Kaplan's classification, a sizable percentage (59%) of LUMHS residents were found to be having stress problems, they were clearly distressed or having severe emotional and minor psychiatric morbidity problems in comparison to Sindh University postgraduates where only 23% of students had either stress problems or were distressed.

This disparity in the mean scores on QWB-SA may be attributed to the fact that the medical residency is a long and arduous process. An average resident spends between 22-24 years of his life in medical school, clinic and hospital as compared to basic sciences postgraduate (18-20 years). Then, there are other pressures such as clinical practices, residency training, and pressures to pass final examinations. The basic science postgraduates do no have to go through similar situations.

We also inquired as to what methods the respondents would employ to relieve their stress. Majority of male respondents indicated that they got involved with "leisure activities" some indicated "chatting with friends" as the mechanism to relieve their stress. In comparison, majority of female respondents preferred "chatting with friends" and some getting in leisure activities. Similar responses were received from the postgraduates of Sindh University. Therefore, the stress copying mechanisms, employed by the participants of the two groups, were similar.

We, therefore, believe that higher stress levels amongst the medical residents may have serious effects on patient's welfare as well as physician's well being. A jittery and aggressive physician making erratic decisions could cause serious problems for the patients under his/her treatment. For the physician, lack of self-confidence, seclusion and general personal

neglect might have serious effects on their personal and social life.

CONCLUSION

The study confirmed the findings that medical residents are under more stress that students following higher degrees in basic sciences. Significant differences existed between the medical residents and postgraduates in basic sciences on PSS and QWB-SA scales. Higher levels of stress my affect patient welfare and physician's well-being.

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