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ORIGINAL ARTICLE

Assessing Emotional Intelligence, Workplace Stress, and Health Outcomes in Clinical Postgraduate Trainees: A Study in Lahore's Tertiary Care Hospitals

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ABSTRACT

Background: Emotional intelligence (EI) plays a vital role in influencing general health (GHQ) and workplace stress across various professions, especially in healthcare. Clinical postgraduate trainees often experience high stress due to patient demands, emotional strain, and poor working conditions. Research suggests that individuals with higher EI manage stress better and enjoy improved health outcomes.

Objectives: This study aimed to assess the relationship between EI, workplace stress, and general health status among clinical postgraduate trainees in Lahore's tertiary care hospitals. It also evaluated gender and age differences and compared outcomes between high- and low-EI groups.

Methods: A correlational, cross-sectional study was conducted at the University of Health Sciences, Lahore, from May to December 2015. A total of 241 FCPS trainees from various tertiary hospitals were included. Data were collected using validated questionnaires measuring EI, workplace stress, and GHQ.

Results: Mean age was 28.86±2.57 years; 51.5% were male. EI was negatively correlated with stress but showed no correlation with GHQ or age. GHQ positively correlated with age. No significant gender differences were found in EI, stress, or GHQ.

Conclusion: EI is inversely associated with workplace stress among clinical postgraduate trainees, regardless of age, gender, or general health, suggesting EI may buffer stress in demanding medical environments.

Keywords: Emotional Intelligence, Stress, General Health, Postgraduate trainees, General health quality (GHQ).

INTRODUCTION

Healthcare related professions are regarded as very stressful. Stress experienced in this occupational group, especially by physicians and nurses results from their responsibilities for health and well-being of other people, patient's behavior (sometimes demanding and aggressive) and complaints coping with death, injury and victims[1].

Emotional intelligence has become an accepted measurement in the corporate world and is becoming more a focus in health education and healthcare related professions[2]. It is suggested that emotional intelligence is important for effective practice, particularly with respect to delivering patient centered care[3]. In recent years, there has been an increasing interest in how emotional intelligence affects everyday life transactions. For example, it has been claimed that emotional intelligence is an important factor in determining life success and psychological well-being[4,5]. Fitness argued that emotional intelligence plays an important role in intimate relationships and marriage for the first time followed by others[6-10] Duke provided evidence for direct link between emotional intelligence and academic achievement[11].

Among the areas with the strongest connection to emotional intelligence is the occupational environment. Another area of study, where the effect of emotional intelligence might be influential is occupational stress[12]. Stress is conceived mainly as an emotional reaction (usually negative) to various environmental stimuli. According to the contemporary meaning, occupational stress results from discrepancies between demands in the workplace and individual properties of workers. Stress occurs when a perceived demand exceeds one's perceived ability to cope. This approach explains why stressful stimuli may evoke different reactions in different people[13].

A recent meta-analysis investigating the relationship between emotional intelligence and health by Schutte et al. indicates that overall, there are significant relationships between emotional intelligence and mental health, psychosomatic health and physical health[14].

Therefore, the purpose of this study is to explore the correlation between emotional intelligence and perceived stress in workplace and health related consequences in clinical post graduate trainees in tertiary care hospitals of Lahore, Punjab.

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METHODOLOGY

Clinical Post Graduate Trainee: A medical graduate registered with the Pakistan Medical and Dental Council (PMDC) for training in a recognized postgraduate clinical course at a teaching hospital, under the supervision of the College of Physicians and Surgeons Pakistan (CPSP), as per PMDC Postgraduate Medical & Dental Education Regulations (2010).

Tertiary Care Hospital: A major hospital offering comprehensive services including general medicine, obstetrics, gynaecology, paediatrics, surgery sub-specialties, and psychiatry. These hospitals manage referrals from primary and secondary care facilities for advanced procedures, specialist consultations, and intensive care.

Occupational Stress or Perceived Workplace Stress: Stress arising from a mismatch between job demands and individual capacities. It includes physical, mental, and chemical responses such as anxiety, fear, excitement, or anger triggered by workplace challenges (Oginska-Bulik, 2006).

Study Design and Setting: A correlational, cross-sectional, observational, and descriptive study conducted at the Department of Behavioral Sciences, University of Health Sciences (UHS), Lahore. It was approved by the Ethics Committee and Advanced Studies and Research Board (ASRB), and completed over 8 months following synopsis approval.

Participants Selection: Participants included Post Graduate Residents (PGRs) undergoing FCPS clinical training in various tertiary care hospitals across Lahore, selected based on inclusion criteria.

Sample Size: The study included 241 participants. The sample size was calculated based on existing literature and determined using a standard statistical formula.

$$N = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2}{\frac{1}{4}\left[\log_e\left(\frac{1+r}{1-r}\right)\right]^2} + 3$$

Where;
N. issample size
$Z_{1-\alpha/2}$ is Z score: level of significance = 5%
$Z_{1-\beta}$ is Z score: power of the study = 90%
r: correlation coefficient= 0.22 (Oginska-Bulik, 2005)

According to this formula, the calculated number of partipantswas213. However the sample was further increased by about 10% to account for contingency such as non responsive or recording error so the final number was 241.

Sample Technique: The sample population of PGRs was selected with the help of convenient, non-random sampling technique.

Inclusion Criteria: Post Graduate trainees (Fellowship) of different clinical specialties.

Exclusion Criteria: A convenient, non-random sampling technique was used to recruit 241 FCPS trainees from public tertiary care hospitals in Lahore. After consent, participants completed three validated questionnaires assessing emotional intelligence, workplace stress, and general health. Socio-demographic data were also collected. All tools had Cronbach's alpha > 0.7.

Statistical Analysis: Data were analyzed using SPSS 20.0 with descriptive statistics, correlation tests (Pearson/Spearman), and t-tests to assess associations and gender differences in emotional intelligence, workplace stress, and general health status.

RESULTS

Overall Age Distribution: In the study population of 241 subjects, mean (±S.D) age was 28.86±2.57 (95% Confidence Interval = 28.54 – 29.19) years. Minimum and maximum ages of the participants were 24 and 39 years respectively with a 15 years range between the two. Median age was 28 years and Interquartile range (IQR) was 3 years, as the median and IQR were close to mean and standard deviation (SD) respectively and age data was showing neither skewness nor kurtosis to a substantial amount as shown in the histogram (Figure 1), age was considered normally distributed.

For more comprehensive analysis, age was grouped into five groups separated by five years gap i.e. 26 – 30 years, 31 – 35 years and so on as shown in Table 1. It shows that majority (75.4%) of the participants belonged to the age group 26 – 30 years which literally means that most of the study participants were young residents.

Gender Distribution: In the study population, 124 participants' self-reported gender was male (51.5%), 115 participants' self-reported gender was female (47.7%) whereas 2 participants (0.8%) opted not to disclose their gender as shown in Figure 2.

Descriptive Statistics of EI, GHQ and Stress: In current study, mean overall general health questionnaire (GHQ) score was found to be 14.15±6.30 (95% CI = 13.34 – 14.95) as shown in Figure 3. Minimum and maximum GHQ scores were 1 and 32 scores respectively so there was wide range of 32 scores between the two extremes. Regarding non-parametric measures, median GHQ score was 13.50 and IQR was 9.

Mean GHQ scores of male and female participants were 14.32±6.18 and 14.02±6.38 respectively as shown in Table 2 and Figure 4. With the aid of Independent Samples t-Test, it was found that GHQ scores among male and female participants were statistically matched (p value = 0.708).

To measure the confounding effect of age on the GHQ scores, Analysis of Variance (ANOVA) was performed to compare GHQ score in all age groups as shown in Table 3 and Figure 5. Mean GHQ scores were highest for the age group 36-40 years and lowest for the age group < 25 years and there was statistically significant (p value = 0.011) difference of mean GHQ scores among the age groups.

As ANOVA showed significant difference of GHQ scores in age groups, to further analyse the mean GHQ scores among age groups, Tukey HSD test was applied as shown in Table 4. Asterisk (*) demark significant differences.

Mean overall Stress score was found to be 161.27±42.47 (95 % CI = 155.87 – 166.67) as shown in Figure 6. Minimum and maximum stress scores were 72 and 255 respectively so there was a range of 183 scores between the two extremes. Median and IQR for stress scoring were 163.50 and 50 respectively.

Stress scores were compared between male and female participants which were 158.32±41.05 and 164.67±44.07 respectively as shown in Table 5 and Figure 7. Independent Samples t-test was applied and it was found that stress scores were statistically matched (p value = 0.251) among two genders.

To measure the confounding effect of age on the stress scores, Analysis of Variance (ANOVA) was performed to compare stress score in all age groups as shown in Table 6 and Figure 8. Mean stress scores were highest for the age group < 25 years and lowest for the age group 31 – 35 years and there was statistically insignificant (p value = 0.495) difference of mean stress scores among the age groups.

Mean overall score for Emotional Intelligence was found to be 105.40±20.35 (95% CI = 102.82 – 107.99) as shown in Figure 9. Minimum and maximum EI scoring was 33 and 154 so there was a range of 121 EI scores between the highest and lower EI achiever. Median and IQR for EI scores were 106 and 27 respectively.

EI scores were compared between male and female participants which were 104.15±21.50 and 106.69±19.12 respectively as shown in Table 7 and Figure 10. Independent Samples t-test was applied and it was found that stress scores were statistically matched (p value = 0.339) among two genders.

To measure the confounding effect of age on the Emotional Intelligence scores, the statistical procedure for Analysis of Variance (ANOVA) was performed to compare EI score in all age groups as shown in Table 8 and Figure 11. Mean EI scores were highest for the age group 26-30 years and lowest for the age group < 25 years and there was statistically significant (p value = 0.012) difference of mean EI scores among the age groups.

As it was found with the application of ANOVA that there was significant difference of Emotional Intelligence scores in the age groups, to further analyse the mean EI scores among age groups, Post Hoc Tukey HSD test was applied as shown in Table 9. Asterisk (*) demarks significant differences.

Correlation between EI, Stress, GHQ: As it was the most important question of current study to determine the correlation between GHQ, stress and emotional intelligence in the population, Pearson' correlation method was applied and it showed that emotional intelligence was negatively correlated with stress (r = -0.682, p value = 0.001) whereas it has no correlation with GHQ scores as shown in Table 10. Other significant and insignificant correlations are also shown. Emotional intelligence was not correlated (r = -0.123, p value = 0.058) with GHQ scores as shown in Figure 12.

Emotional intelligence was strongly correlated (R^2 linear = 0.465) with stress scores in the study population as shown in Figure 13. There was negative correlation between these parameters as mentioned above.

Emotional intelligence scores were not correlated (R2 linear = 0.003) with age of participants as shown in Figure 14, thus it is safe to deduce that inferences made in current study are not

significantly affected by confounding demographic factors such as age and gender.

At the end of results section, correlation of all quantitative variables i.e. emotional intelligence, GHQ, stress and age are collectively represented in the same scatterplot (Figure 15) to reinforce the major outcome of the study.

Table 1: Age groups for study population

Age groups	Frequency	Percent
< 25 years	12	5.0
26 - 30 years	181	75.4
31 - 35 years	41	17.1
36 - 40 years	6	2.5
Total	241	100

Table 2: Comparison of GHQ scores in male and female participants

Gender	N	GHQ Scores		P value
		Mean	Std. Deviation	
Male	124	14.32	6.176	0.708
Female	115	14.02	6.384	

Table 3: Comparison of GHQ score in age groups

Age groups	Mean	SD	95% CI of Mean		P value
			Lower Bound	Upper Bound	
< 25 years	11.17	4.76	8.14	14.19	0.011
26 - 30 years	13.76	6.12	12.86	14.66	
31 - 35 years	16.63	6.71	14.51	18.75	
36 - 40 years	16.83	5.42	11.15	22.52	
Total	14.20	6.264	13.40	15.00	

Table 4: Intergroup variations of GHQ scores against age groups

(I) Age Groups	(J) Age Groups	Mean Difference (I-J)	Sig.
< 25 years	26 - 30 years	-2.596	.492
	31 - 35 years	-5.467*	.037
	36 - 40 years	-5.667	.257
26 - 30 years	< 25 years	2.596	.492
	31 - 35 years	-2.872*	.037
	36 - 40 years	-3.071	.626
31 - 35 years	< 25 years	5.467*	.037
	26 - 30 years	2.872*	.037
	36 - 40 years	-.199	1.000
36 - 40 years	< 25 years	5.667	.257
	26 - 30 years	3.071	.626
	31 - 35 years	.199	1.000

Table 5: Comparison of stress scores in male and female participants

Gender	N	Stress Scores		P value
		Mean	SD	
Male	123	158.32	41.05	0.251
Female	115	164.67	44.07	

Table 6: Comparison of stress score in age groups

Age groups	Mean	SD	95% CI for Mean		P value
			Lower Bound	Upper Bound	
< 25 years	179.9167	56.10454	144.2695	215.5638	0.495
26 - 30 years	160.6167	42.03899	154.4335	166.7998	
31 - 35 years	159.6829	42.37832	146.3067	173.0592	
36 - 40 years	161.0000	21.72556	138.2004	183.7996	
Total	161.4351	42.48137	156.0219	166.8484	

Table 7: Comparison of Emotional Intelligence in male and female participants

Gender	N	Mean	Std. Deviation	P value
Male	123	104.15	21.505	0.339
Female	115	106.69	19.125	

Table 8: Comparison of EI scores in age groups

Age Groups	Mean	SD	95% CI for Mean		P value
			Lower Bound	Upper Bound	
< 25 years	89.83	32.49	69.20	110.47	0.012
26 - 30 years	107.48	19.10	104.67	110.29	
31 - 35 years	100.90	20.19	94.53	107.27	
36 - 40 years	102.17	13.09	88.43	115.90	
Total	105.33	20.36	102.74	107.92	

Table 9: Intergroup variations of EI scores against age groups

(I) Age Groups	(J) Age Groups	Mean Difference (I-J)	Sig.
< 25 years	26 - 30 years	-17.644*	.018
	31 - 35 years	-11.069	.333
	36 - 40 years	-12.333	.607
26 - 30 years	< 25 years	17.644*	.018
	31 - 35 years	6.575	.231
	36 - 40 years	5.311	.919
31 - 35 years	< 25 years	11.069	.333
	26 - 30 years	-6.575	.231
	36 - 40 years	-1.264	.999
36 - 40 years	< 25 years	12.333	.607
	26 - 30 years	-5.311	.919
	31 - 35 years	1.264	.999

Table 10: Correlation between GHQ, Stress and EI scores

Pearson Correlations		Stress	EI	Age
GHQ	r	-0.079	-0.123	.191**
	P value	0.221	0.058	0.003
	N	240	240	240
Stress	r		-.682**	-0.021
	P value		0.001	0.752
	N		240	239
EI	r			-0.053
	P value			0.417
	N			239

**. Correlation is significant at the 0.01 level (2-tailed).

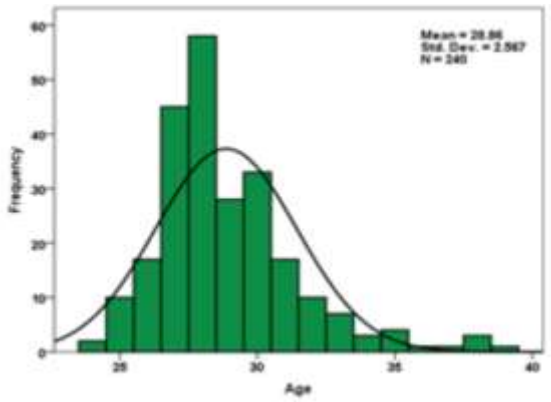

Figure 1: Age distribution curve for the study population

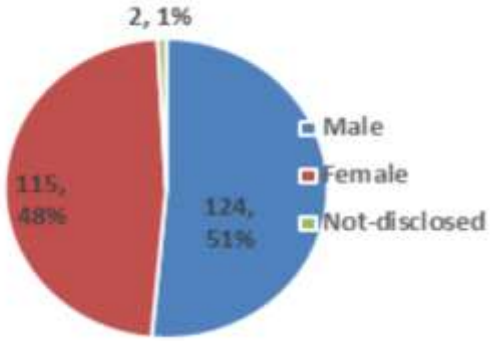

Figure 2: Gender distribution for study population

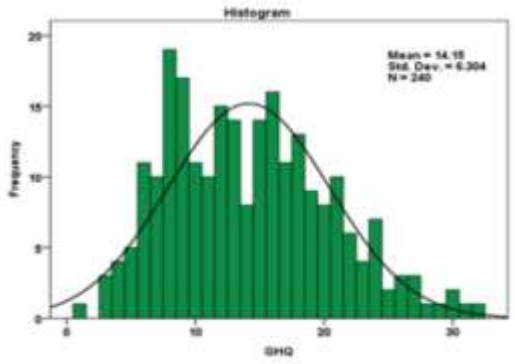

Figure 3: GHQ score distribution curve

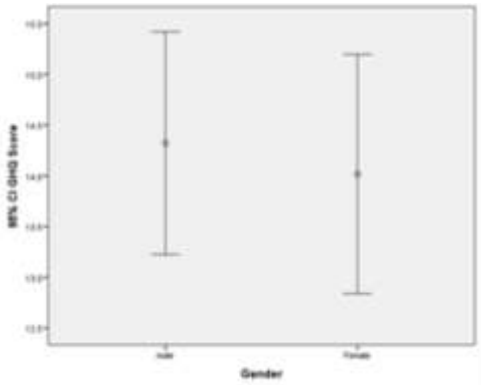

Figure 4: Comparison of GHQ scores in male and female participants

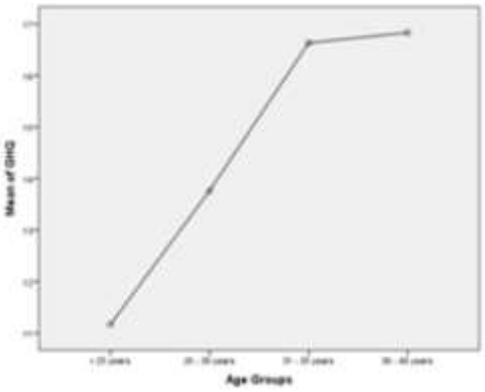

Figure 5: Graphic representation of GHQ

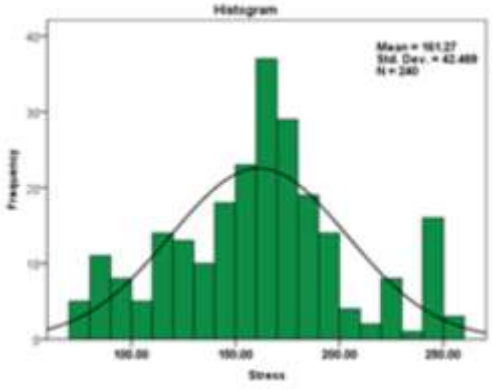

Figure 6: Stress scores distribution curve score in age groups

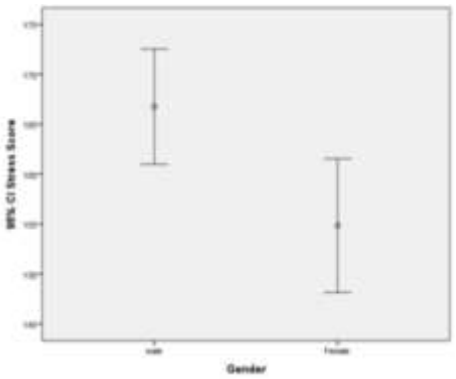

Figure 7: Comparison of stress scores in male

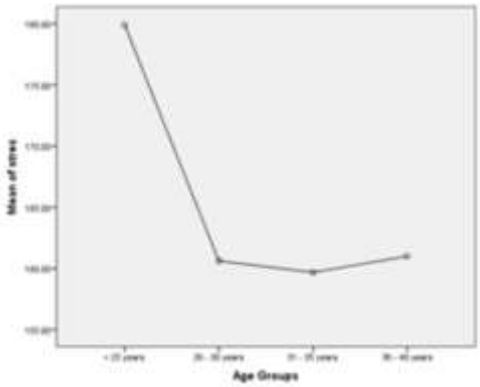

Figure 8: Graphic representation of and female participants stress score in age groups

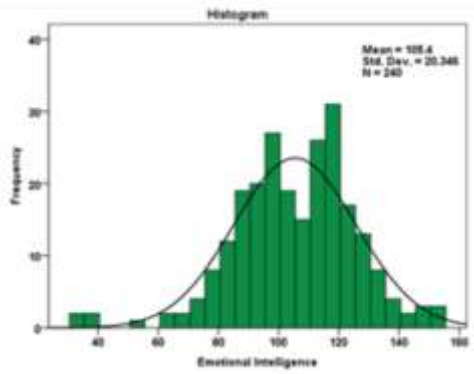

Figure 9: Emotional intelligence distribution curve

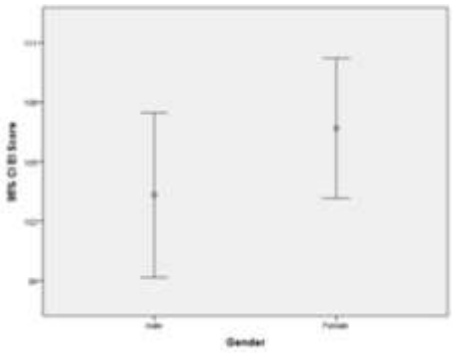

Figure 10: Comparison of Emotional Intelligence in male and female participants

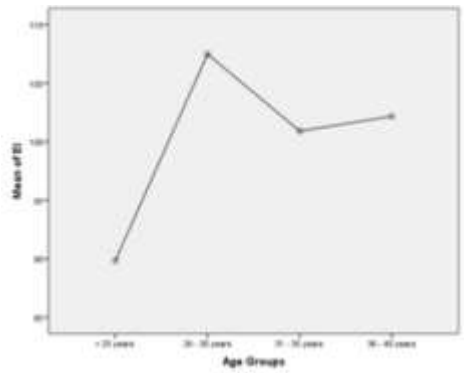

Figure 11: Graphic representation of EI scores

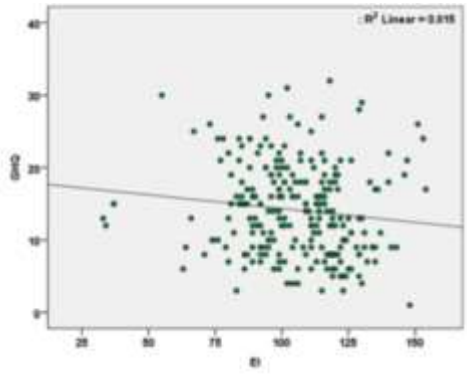

Figure 12: Scatterplot between EI and GHQ in age groups

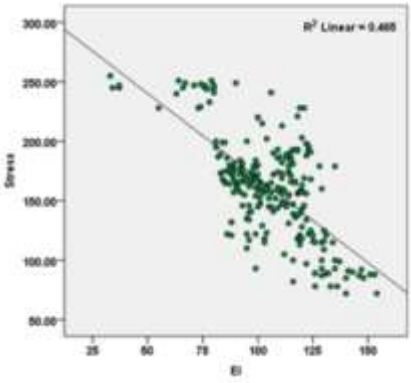

Figure 13: Scatterplot between EI and Stress

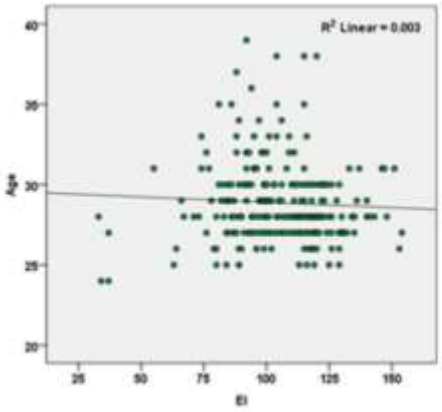

Figure 14: Scatterplot between EI and age

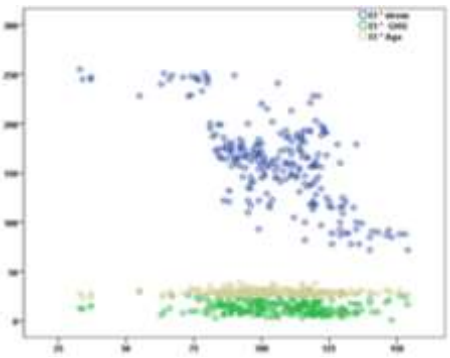

Figure 15: Scatterplot between EI, Stress, GHQ and Age

DISCUSSION

The majority of study participants (75.4%) of trainees were in the age bracket of 26 – 30 years. These participants were selected through a purposive, convenience sampling technique which was a limitation of study and chosen to reduce the effort and time requirements as the study was supposed to be completed in a stipulated timeframe determined by the University of Health Sciences for its M.Phil candidates' research projects. Secondly, this sampling technique was already approved by Advanced Studies and Research Board of the University.

Mean stress scores were 161.27±42.47 with a minimum and maximum stress scores of 72 and 255 respectively. Stress scores were comparable in male and female participants which were 158.32±41.05 and 164.67±44.07 respectively (p value = 0.251). Similarly, there was statistically insignificant (p value = 0.495) difference of mean stress scores among the age groups. So, it was conferred that stress was not affected by gender and age in current study population.

Lastly, the emotional intelligence and workplace stress and general health conditions are all adaptable and changeable variables. They vary over the period of time and don't remain constant. A cross sectional study may not provide all the required details for such non-static phenomena. These may be better investigated through longitudinal studies rather than cross-sectional ones as highlighted in a recent reliable study (15) conducted to explore the relationship between emotional intelligence and work place stress.

In the end, it is summarized that emotional intelligence scores have been shown to have significant linear correlation with workplace stress experienced by the participants of current study i.e. clinical postgraduate trainees working in tertiary care hospitals of Lahore city. There was no correlation between stress, general health and age. Moreover, there was no significant difference of emotional intelligence and other studied parameters between male and female residents. These findings are consistent with available literature reporting the relationship between emotional intelligence and workplace stress among various occupations including nursing and medical profession.

CONCLUSION

Current study has shown a strong and statistically negative correlation between emotional intelligence and workplace stress among clinical post graduate trainees in Lahore. Thus the study concludes that emotional intelligence may help to prevent stress at workplace among PGRs and this relationship between emotional intelligence and stress is not affected by any of the studied factors such as age, gender and GHQ.

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