

## ORIGINAL ARTICLE

# FACTORS ASSOCIATED WITH ORGANIZATIONAL STRESS AMONG INTENSIVE CARE UNIT HEALTHCARE WORKERS, IN SOMALIA HOSPITAL

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## ABSTRACT

*A cross-sectional study was conducted in two hospitals in Hargeisa city to determine the job and organizational stress among nurses and doctors in ICU and its influencing factors. A universal sampling method was carried out and one hundred and twenty questionnaires were distributed among nurses and doctors working in intensive care units of two hospitals on different shift duties; morning, afternoon, night and rotation shifts. The response rate was 83.3%. Regression analysis showed that approximately 88% (adjusted R square = 0.889) of the variation in stress mean score was explained by the background variables. Experience, role overload, physical environment and marital status were significant predictors.*

**Key words:** Job stress, intensive care unit organizational stress, Somalia Hospital.

## INTRODUCTION

Stress is defined as the reactions of individuals to new or threatening factors in their work environment<sup>1</sup>. Organizational stress is the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources or needs of the worker<sup>2</sup>. Occupational stress is a recognized problem in health care workers specially, in intensive care unit in which the routine work demands a highly technical environment as well as well skilled and highly specialized doctors and nurses<sup>3</sup>.

Organizational and job stressors present when health staff encounter nervousness or frustration from aspects of their work that they cannot control. Occupational stress is a major health difficulty for both individual workers and organizations, and can produce burnout, illness, labor turnover, absenteeism, poor morale and reduced competence and performance<sup>4</sup>.

There are many stressors in ICU such as; complex patient care, conflict with physicians, working nights or holidays, poor cooperation from other departments<sup>5</sup>. Some of the stressors in intensive care unit are related to patient and patient-care like dealing with routines, technology and emotional needs, others are linked to health care personnel, such as working with physicians, inexperienced staff, dealing with interpersonal

tensions, families of patients and some stressors are related to the environment and organization<sup>6</sup>.

Several studies had pointed out that different factors and stressors in some ICU hospitals may not be present in other ICU hospitals. This may be an indication of the importance of exploring the work settings in order to understand what kind of stressors health workers experience.

The aim of the study was to identify job and organizational stressors do the doctors and nurses in HGH and Manhal Specialty Hospitals experience and what are the predictors for the job and organizational stress.

## MATERIALS AND METHODS

A cross-sectional research design was used in this study to explore stress and its influencing factors among nurses and doctors in ICUs in HGH and Manhal Hospitals in Hargeisa City the Capital of Northern part of Somalia - the self-declared republic of Somaliland. These two hospitals were chosen because of convenience. The study targeted on doctors and nurses working in the Intensive Care Units of the HGH and Manhal Specialty Hospital. Inclusion criteria for respondents were: working in ICU, qualified nurses and doctors, worked in shift and not less than 2 months working in ICU. Ethical approval was obtained from the relevant

organizations includes UKMMC, Manhal and Hargeisa Hospitals. The respondents granted the consent.

The data collection was based on self-administered questionnaires distributed to eligible nurses and doctors working in ICU at the beginning of each shift and re-collected at the end of the shift. Senior doctors and nurse at the end of the shift gathered distributed questionnaires from participants. Only complete questionnaires were included in the analysis and incomplete questionnaires or those not received were counted as non-respondents and were omitted from analysis. The questionnaires were anonymous, and the measures were adapted from validated Health Professions Stress Inventory by Wolfgang (1988)<sup>7</sup>; Occupational Role Questionnaire by Osipow and Spokane (1987)<sup>8</sup>; Coworker support Scale by Shin et al (1989)<sup>9</sup> and Supervisor Support scale by Ray EB and Miller (1994)<sup>10</sup>.

The dependent variable was job-organizational stress and independent variables were; age, gender, ethnicity, marital status, educational level, years of experience, shift duty, amount of salary, patient care uncertainty and family difficulties, coworkers support, supervisory support, lack of professional recognition, interpersonal conflict, job conditions, role overload, role conflict, role ambiguity, role boundary, physical environment and responsibility.

Data was analyzed by using Statistical Package Social Science software (SPSS version 16). Significant level; P value < 0.05 was applied. Descriptive analysis was presented as a frequency, percentage, mean and standard deviation and sub-scales were normally distributed. Bivariate analysis was employed to identify the factors of stress among doctors and nurses in ICU. T-test and ANOVA was used to determine differences in mean stress scores between independent variables. *Post hoc tests* were then conducted to examine differences between sub-groups. A correlation analysis used to identify association between overall stress and job-organizational factors. Finally, a regression analysis was conducted to find out the important factors in predicting stress.

## RESULTS

A total of 100 questionnaires were returned with a response rate of 83.3%. The mean age of respondents was  $30.3 \pm 6.4$  years old ranged from 20 to 46 year and majority were doctors (49%) and most of them were female (59%). In relation to ethnicity almost all health workers were Somali (98%). In terms of working shift, the majority of staffs were morning workers (65%). Majority were married (57%), while the average mean of assigned number of patients per worker was  $10.9 \pm 6.6$ , with mean years of working experience was  $4.4 \pm 4.2$ . Most of the staff has higher education (55%) (Table 1).

**Table 1. Socio-demographic data of staff (N=100)**

Characteristic	Frequency	%	Mean	SD	Min-Max
Age group			30.3 ± 6.40	0.635	20 - 46
20-29	55	55.0			
30-39	32	32.0			
39-49	13	13.0			
Gender					
Male	57	57.0			
Female	43	43.0			
Marital Status					
Married	57	57.0			
Single	33	33.0			
Divorced	10	10.0			
Educational level					
Diploma in nursing	45	45.0			
Degree in nursing	6	6.0			
MBBS	30	30.0			
Working Experience			4.4 ± 4.2	0.42	0.2 - 20.5
< 3 years	54	54.0			
> 3 years	46	46.0			
Salary status			360 ± 253	25.2	80 - 1000 \$
Low	77	77.0			
Average	11	11.0			
High	12	12.0			
Staff					
Specialist	19	19.0			
Doctor	49	49.0			
Nurse	51	51.0			
Manhal and HGH Staff					
HGH	59	59.0			
Manhal	41	41.0			
Shift	19	19.0			
Afternoon	65	65.0			
Morning	6	6.0			
Night	10	10.0			
Rotation					

Table 2 shows the mean and standard deviation of job and organizational stressors. The highest mean score of job and organizational stressors sub-scales was coworker support and supervisory support followed by patient care uncertainty and patient

and family difficulties, lack of professional recognition, role overload, role boundary, physical environment, responsibility, role conflict, role ambiguity, job conditions, and interpersonal conflicts respectively.

**Table 2. Descriptive statistics of job and organizational stressors**

Variables	Min	Max	Mean ± SD	Std. Error
Patient Care UFD	28.0	42.0	35.0 ± 4.50	0.448
Coworker support	20.0	59.0	39.5 ± 9.15	0.914
Supervisory support	23.0	57.0	39.4 ± 8.60	0.858
Lack of Professional Recognition	26.0	42.0	35.0 ± 4.60	0.457
Interpersonal Conflict	3.0	9.0	6.87 ± 1.62	0.162
Job Conditions	12.0	45.0	27.7 ± 10.10	1.014
Role Overload	14.0	46.0	30.3 ± 10.15	1.015
Role conflict	12.0	48.0	29.8 ± 10.40	1.041
Role Ambiguity	13.0	46.0	29.8 ± 10.20	1.022
Role Boundary	14.0	47.0	30.3 ± 10.30	1.025
Physical Environment	13.0	46.0	30.0 ± 10.20	1.013
Responsibility	15.0	47.0	30.0 ± 10.10	1.012
Overall Stress	16.0	48.0	32.0 ± 11.80	1.183

Analysis of variance of age group revealed significant difference among age groups. Significant difference is seen in gender with males showed higher level of stress compared to female, also in years of experience with junior staff reported higher level of stress (P < 0.05). Analysis of

variance with *post hoc Turkey's test* demonstrated significant differences in mean stress levels among single and married (P < 0.05) with singles had higher stress levels compared to married (Table 3 and Table 4).

**Table 3. T-test for difference in mean stress vs socio-demographic factors**

Variables		Mean stress	Std. Deviation	T-test	P value
Ethnicity groups	Somalia	31.7	11.81	1.193	0.89
	Others	30.5	17.68		
Gender	Male	28.3	10.80	-3.439	0.001
	Female	36.1	11.80		
Experience	Junior	41.6	5.83	22.75	<0.001
	Experienced	20.0	3.10		

**Table 4. Analysis of variance of marital status and reported mean of stress**

**ANOVA**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3085.488	2	1542.744	13.902	.0005
Within Groups	10764.622	97	110.975		
Total	13850.110	99			

**Post hoc Tukeys test**

(I) Marital Status (II)	(J) Marital Status	Mean Difference (I-J)	Std. Error	Sig.
Single	married	11.7*	2.304	<0.001
	divorced	12.6*	3.803	0.004
Married	single	-11.7*	2.304	<0.001
	divorced	0.9	3.611	0.965
Divorced	single	-12.6*	3.803	0.004
	married	-0.9	3.611	0.965

\*The mean difference is significant at the 0.05 level.

There was strong positive correlation between coworker support (r = 0.790), job conditions (r = 0.856), supervisory support (r = 0.79), role ambiguity (0.896), role boundary (0.894), physical

environment (r = 0.904), responsibility (r = 0.893) and stress score for the whole sample (N= 100) (Table 5).

**Table 5. Correlation between job and organizational factors and stress**

Independent Variables	Pearson correlation	P value
Patient Care UFD	-0.038	0.77
Coworker support	0.790**	<0.001
Supervisory support	0.790**	<0.001
Lack of Professional Recognition	-0.052	0.60
Interpersonal Conflict	-0.086	0.39
Job Conditions	0.858**	<0.001
Role Overload	0.876**	<0.001
Role conflict	0.893**	<0.001
Role Ambiguity	0.896**	<0.001
Role Boundary	0.894**	<0.001
Physical Environment	0.904**	<0.001
Responsibility	0.893**	<0.001

Multiple linear regression backward step method was used to determine important predictors for job and organizational stress. The stress was regressed against socio-demographic and job-organizational variables; marital status ( $p = 0.012$ ), experience ( $p < 0.001$ ), role overload ( $p = 0.002$ ), physical

environment ( $p < 0.001$ ) were significant predictors for stress development in ICU. This model explains about 88% (adjusted R square= 0.883) of the variability of stress and rest is due to unstated variables (Table 6).

**Table 6. Multiple Linear Regressions between independent variables and job-organizational stress**

Predictors of job-organizational stress	B		Beta		
	Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	P
(Constant)	36.461	7.152		5.098	<0.001
Coworker support	0.152	0.078	0.118	1.940	0.055
Role Overload	0.641	0.199	0.551	3.217	0.002
Physical Environment	0.989	0.197	0.847	5.031	<0.001
Experience	-12.139	2.186	-0.514	-5.554	<0.001
Marital Status	-1.858	0.725	-0.097	-2.561	0.012

Dependent variable: stress

## DISCUSSION

The primary aim of this study was to investigate common stressors perceived by the nurses and doctors in ICU in two hospitals in Somalia city. Though, there are many researchers conducted in assessing stress among nurses in ICU alone, but only several studies were conducted in detecting stressors affecting doctors and nurses in ICU.

Findings of the study suggest that registered nurses and junior doctors in their first years of work had higher levels of stress scores. In this study, T-test showed significant difference in the mean stress score among the junior and experienced doctors and nurses with junior staff presented higher mean stress score compared to experienced workers (P = 0.0005). The junior and experienced staffs presented mean stress score of (mean 41 ± 5.8 SD and mean 20 ± 3.1 SD) respectively.

This result is consistent with the findings of other studies. Study conducted by Bilodeau found that inexperienced staff reported higher levels of stress<sup>6</sup>. Murphy reported that new graduates rated feeling of inadequately trained for what they have to do and exposed to health and safety hazards as highly stressful events that are frequently occurring in working environment<sup>11</sup>.

Results of age groups showed significant difference in mean stress score (p = 0.0005) with the age between 20-29 years old showed higher mean of stress level. This result is in agreement with findings of Gamal et al (2003) which showed significant negative relationship, indicating younger staff presented high levels of stress<sup>12</sup>. This means that with an increase of staff's age, the job stress level decreases. The possible explanation may be attributed to the fact that the older health workers are more experienced and hence they are much more resistant to stress compared to younger aged doctors and nurses.

Significant difference was found between stress score and marital status (p = < 0.05) with singles reported a significant higher mean of stress compares to married and divorced workers. The result is consistent with Callaghan et al (2000), finding who reported that singles had marginally higher stress scores than married, although it was not statistically significant<sup>13</sup>. The possible explanation of this difference may be that, the singles were more exposed to work compared to married and divorced. They may be given more burdens, compared to married. Or maybe, being single is more stressful then married in their community. But this result is inconsistent with the findings of other studies those not found that marital status to be relevant as a stress source.

Significant difference in the mean stress score was found in shift duty. Nurses and doctors who worked in the afternoon shifts showed higher level of stress scores ( $p < 0.05$ ) in contrast to rotating groups who showed lowest levels of stress. This result is inconsistent with the finding of Lewis and Robinson (1992) who found shift rotation as the most stressful shift and Franco who counted working nights as stressful<sup>14,15</sup>. The possible explanation may be that the afternoon staffs are less experienced and hence more liable to stress and the possibility of more activities taking place during afternoon.

Significant difference in the mean stress score was found among salary groups. The lowest salary groups showed higher level of stress scores ( $p < 0.05$ ) followed by average and high salary groups. The low salary groups have difficulties in running their daily lives because; they don't earn enough money to cover their basic needs of life.

There were significant differences in the mean stress score of gender groups. Independent t-test showed significant differences in stress levels ( $p < 0.05$ ) between males and females. In this study males showed higher level of mean stress compared to females, which is inconsistent with the results of other studies<sup>12</sup>. The possible explanation may be that most Somali males were expected to shoulder more responsibility during work, compared to women.

Results showed significant difference in mean stress between educational groups ( $p < 0.05$ ) Turkey's test was used to detect where this difference lies. Significant difference between stress level of diploma and MBBS was found. Stress level was higher in MBBS followed by diploma, specialist and bachelor in nursing. The possible explanation might be that the MBBS shoulder more responsibility and expectation and also expose to role overload. Different studies found different results. Piko (1999) presented those with primary education had the highest levels, while those with baccalaureate-level education had the lowest<sup>16</sup>.

Significant correlations between job-organizational stressors sub-scales and overall stress were found. Person-product moment correlation was used to determine relationship between job-related variable and overall stress level. Significant variables were coworker support, supervisory support, job conditions, role overload, role

conflict, role ambiguity, role boundary, physical environment, and responsibility.

This is consistent with Huckabay and Jagla (1979) findings that found the environmental problems as a significant stressor in ICU<sup>17</sup>. The possible explanation may be that the environment in intensive care is always busy and staffs often deal with death and comatose patients as well as highly sophisticated technology.

The result is consistent with the findings of some studies. Gilmer (1982) found a positive correlation between interpersonal conflicts and stress in intensive care unit<sup>18</sup>. Co-workers and supervisors support were significant stressors which is consistent with the findings of Spoth and Konewko (1987), and Lewis and Robinson (1992)<sup>14,19</sup>.

In this study, the role overload was significant stressor which is consistent with the findings of Leatt and Schneck who observed higher levels of role overload. Variables role ambiguity and role conflict were significant stressors and were consistent with the results of other findings<sup>20</sup>. Lazarus and Launier found role ambiguity, role boundary and role conflict as significant stressors<sup>21</sup>. Interpersonal conflict was not significant which is inconsistent with the findings of Gilmer who reported significant positive relationship between interpersonal conflict and stress in intensive care units<sup>18</sup>.

Findings of multiple regression analysis revealed that overall model explains 88% (adjusted  $R = 0.883$ ) of the variability in stress level and rest is explained by other unstated variables. The most important predictors were years of experience, role overload, physical environment and marital status.

## CONCLUSION

In conclusion, experience, role overload, physical environment and marital status were significant predictors by taking backward step method. Physical environment alone contributed about 85% of the variation followed by role overload. Staff experience had a negative effect on increase of stress level. With every increase of one year experience the mean of stress score will decrease approximately by 12.1.



### Limitations and recommendations

In spite of this interesting result, the study has some limitations. A non-probability sample was employed in the study using cross-sectional design. The application of a longitudinal cohort study with a randomized sample would strengthen and improve the ability to make causal statements in future studies. There may be other individual, occupational, organizational, family and non-work factors that can produce stress. Future researchers interested in this area should try to explore other factors in future.

From the findings of this study, it is proposed that hospital managers and administrators to held stress-management workshops to increase staff knowledge about how to manage stress, as well as introducing other programs like relaxation, redesigning environment techniques and evaluating feedback. Other social, financial and moral supports are also recommended.

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