

Assessment of Work Stress and Organizational Commitment among Female Nurses at Zagazig University Hospitals, Sharkia Governorate, Egypt**¹Nanees Salah Eldeen Ghareeb (Ghareeb NS), ²Mona Mostafa Aboserea (Aboserea MM), ²Eman Elshahat Oraby (Oraby EE),***¹Occupational Medicine and Environmental Health, ²Public Health and Preventive Medicine, Faculty of Medicine, Zagazig University, Egypt.***ABSTRACT**

Background: Nursing is generally perceived as a stressful and demanding profession. It is both physically and psychologically challenging. Staff commitment is an important ingredient to organizational success. The objectives of the present study were to determine the frequency of work stress and its possible stressful factors among nurses at Zagazig University Hospitals and to identify some of its physical and psycho-behavioral health effects, in addition to explore the relationship between work stresses and organizational commitment among nurses in Zagazig university hospitals. Subjects and methods: A cross-sectional study was conducted on 190 female nurses working at Zagazig university hospitals over the period of 4 months (from August 1st to November 30th 2013). Stratified random sample was used for selection of nurses. The study tools included; 1- A pre-constructed standardized questionnaire composed of 3 main parts; a) Part one: includes some socio-demographic data, b) Part two: which is the Expanded Nursing Stress Scale, c) Part three: organizational commitment scale questionnaire. 2- Some Physical examinations as blood pressure, height and weight measurement and 3- Some Laboratory investigations as measuring random blood glucose level. Results: The findings of the present study revealed that moderate stress was the frequent degree of work stress (64.7%) and organizational commitment represented 55.3% among the studied nurses. There was an inverse (negative) correlation between work stress & organizational commitment with highly statistical significance ($P < 0.001$). Working in the emergency department, night shifts, & single nurses were the most significant predictors of work stress among the studied nurses with OR (9.36, 3.9 & 3.36 respectively). Recommendations: Based on the findings of the present study, it recommends to establish an occupational stress committee, which must include a representative group of nurses, to plan and implement a proper stress reduction program with appropriate coping strategies and clear and specific job description, flexible and fair work schedules, and regular meeting between supervisors and their staff nurses to discuss and solve their problem and so improve their organizational commitment.

Key words: Work stress, Organizational commitment, nurses.**Introduction**

Job stress is the harmful emotional and physical reactions resulting from the interactions between the worker and her/his work environment where the demands of the job exceed the worker's capabilities and resources (Zaghloul, 2008). Work-stress is increasingly recognized as one of the most serious occupational health hazards reducing workers satisfaction and productivity and increasing absenteeism and turnover (Rose *et al.*, 2011).

Sayed and Ibrahim (2012) mentioned that, hospital-staff in particular are subject to work stress simply because they are severely challenged by their rapidly changing environment.

Nursing is generally perceived as a demanding profession. It is both physically and psychologically challenging. Over the past several years, signs of occupational stress appear to be increasing among nurses which has been referred to many factors ranging from downsizing, restructuring, and merging to role boundary and responsibility (Nedd, 2006).

The major sources of stress for nurses entail dealing with death and dying, conflict with colleagues, inadequate preparation to deal with the emotional needs of patients and their families, lack of staff support, workload, and uncertainty concerning treatment plans (Zaghloul, 2008).

The end result of continuous work-stress over time is worker-burnout, which may lead to serious physical and emotional problems (Scott *et al.*, 2006).

Some factors of the occupational stress include; working conditions, relationships at work, role conflict and ambiguity organization structure and climate, work-home interface, career development and nature of the job (Wu *et al.*, 2007).

Organizational commitment can be defined as a state in which an employee identifies with an organization and its goals, is willing to exert effort on behalf of the organization, wishes to maintain membership of the organization, as well as the extent to which employees are loyal and dedicated to the organization (Cartwright & Cooper, 2002).

Staff commitment is an important ingredient to organizational success. Some researchers reported that individuals who have a high degree of commitment to their organizations experience greater amounts of stress than those who are less committed (Mowday *et al.*, 2002).

Alternatively, some researches founded that organizational commitment protects the individual from negative outcomes as stress (Kobasa and Antosrovsky, 1998).

Therefore, exploring the relation between occupational stress and organizational commitment is important in improving the quality of health care.

Hence, the objectives of the present study were to determine the frequency of work stress and its possible stressful factors among nurses at Zagazig University Hospitals in addition to explore the relationship between work stress and organizational commitment and some of its physical and mental health effects among nurses in Zagazig university hospitals.

Subjects and methods:

Study design, setting & time:

A cross-sectional study was conducted on female nurses working at Zagazig university hospitals over the period of 4 months (from August 1st to November 30th 2013).

The Sample size was calculated using Epi info version 6.04 (Dean *et al.*, 1994); According to the statistical book of Zagazig University Hospitals, the total number of registered nurses at the year 2013 was 2500 nurse but the net workings ones were 2280, with expected frequency of work related stress among nurses was 30% (Al-Hawajreh, 2011) at confidence interval 95%, with study power was 80%. Accordingly, the total calculated sample size was 204 nurses.

Sampling technique:

Stratified random sampling technique was used for selection of nurses as follows; Different units and departments at Zagazig University Hospitals were classified into 4 main strata where each stratum had nearly the same working conditions; 1) Internal Medicine and Pediatrics Departments, 2) Surgical and Anesthesia Departments, 3) Outpatient Clinics and Blood Bank, and 4) Casualty, Intensive Care, and Emergency Departments.

Inclusion criteria for nurses group:

Female nurses who were working at the same department or unit for at least 2 successive years, with no past or family history of any psychiatric illness and no history of hypertension or diabetes mellitus on joining the job.

Study tools:

1) Questionnaire:

A pre-constructed standardized questionnaire was used (French *et al.*, 2000); with some additional questions about possible family and social stress risk factors and other questions about strain manifestations (Ahmed Refat *et al.*, 2004). Also, Organizational commitment scale was used to determine the extent or the level of organizational commitment among nurses. Elements of the questionnaire were determined and based on a scale of Townsend (2011).

The questionnaire was composed of 3 main parts;

Part one: includes some demographic data such as; age, residence, marital status, etc.

Part two: which is the Expanded Nursing Stress Scale to which only nurses were subjected and which includes:

a) Work characteristics data such as; type of department, duration of employment, job rank, and work hours per week, number and type of work shifts.

b) Possible stressful conditions in the work place which were broadly grouped into 10 categories (subscales) represented by 59 items as follows; dealing with death and dying (6 items), inadequate preparation for dealing with the emotional needs of patients and their families (11 items), work load (18 item), conflicts with physicians

(3 items), problems with supervisors (6 items), problems with peers (4 items), ambiguity concerning treatment plans (5 items), discrimination problems (3 items), lack of motivation and incentives (2 items), adverse environmental conditions and ergonomic design deficiencies (1 item).

Each item in each category was given: 0 (never exposed), 1 (not stressful), 2 (occasionally stressful), 3 (frequently stressful), 4 (extremely stressful).

In order to compute the total stress score, scores on all the 59 items were added together and interpreted as follows: no stress ≤ 59 , mild stress (60-118), moderate stress (119-176), and severe stress ≥ 177 .

Also, part two of the questionnaire includes questions about possible stress effects as follows:

A- Short-term physical manifestations such as repeated headache or migraine, dizziness, tremors, sleep disturbance,.....etc.

B- Long-term physical manifestations such as hypertension and \ or coronary heart diseases, peptic ulcer,....etc.

C- Short-term mental manifestations such as forgetfulness, hesitation, anger, frustration, anxiety,etc.

D- Long-term mental manifestations such as serious depression, recurrent accidents, domestic violence, suicidal behavior, and substance abuse.

Part three:

Organizational commitment scale questionnaire which include five items dealing with happiness with the organization, if its problems are my own, sense of belonging to it, it has personal meaning for me and I feel like part of the family at my organization. The possible response for each item was choices of; strongly disagree, disagree, neither agrees or disagrees, agree and strongly agree with scores of 1,2,3,4 and 5 respectively. Organizational commitment was classified as absent if total score \leq mean (≤ 17.7) and present if total score range 17.8-25 (Townsend, 2011).

2) Physical examination:

a- the height in meters and the weight in kilograms of each studied nurse were measured, and then body mass index (BMI) was calculated. BMI was classified as normal (BMI=18.5-24.9 kg/m²), overweight (BMI=25-29.9 kg/m²), and obese (BMI \geq 30 kg/m²) (Gibson, 1998).

b- a standardized method was used for measuring blood pressure of each participant during work time; where hypertension was considered when systolic blood pressure ≥ 140 mmHg and / or diastolic blood pressure ≥ 90 mmHg in subjects not on antihypertensive medication (Jackson, 2000).

3) Some Laboratory investigations:

A standardized method for measuring random blood glucose level for each participant in the study during work time was used (Frances's, 2000); where normal random blood sugar was <140 mg / dl, however; pre diabetes and diabetes mellitus were considered when random blood glucose levels were 140- <200 and ≥ 200 mg / dl respectively (American Diabetes Association, 2007).

Pilot study:

A pilot study was carried out before starting the actual data collection.

Ethical issues:

Proposal acceptance was obtained from the Institutional Review Board (IRB) of the Faculty of Medicine; Zagazig University. Moreover, informed consent was obtained from all participants after explaining the objectives of the study and the confidentiality of the information was assured.

Data management:

The collected data were presented, summarized, tabulated & analyzed by using computerized software statistical packages (EPI-info Version 6.04 & SPSS version 15) (Joreskog, 1999). $P < 0.05$ was considered to be statistically significant. Chi square, fisher exact & Z test were used to compare proportions. Pearson's Correlation coefficient (r) was used for testing the association between two continuous variables. Logistic regression analysis for the most predictor variables of work stress among the studied nurses was done.

Results:

The total nurses who accepted to participate in the study were 190.

Pie chart demonstrated that moderate stress was the frequent degree of work stress among the studied nurses (64.7%), however mild stress & severe stress represented 23.2%, & 12.1% respectively as revealed in figure (1).

As regarding the relationship between some socio-demographic characteristics and work stress among the studied nurses as demonstrated in table (1). It was found that the highest percentages of moderate to severe stress were among nurses with ages less than 30 years (89.9%), far resident from the work place (93.9%), having ≥ 3 children (88.4%), had nursing institute & nursing school qualification (100% & 77.5% respectively) with highly statistical significant association ($p < 0.001$). The table showed also that single nurses had 100% moderate to severe stress. On the other hand; Moderate to severe stresses were the commonest also among those nurses who were working at the surgical department (100%), her job position as a nurse (93.5%), with less than 10 years of experience (100%), working in evening & night shifts (100% & 89.3% respectively), and among those with variable shifting state (94.0%) with presence of highly statistical significant associations ($p < 0.001$).

There was statistical significant negative correlation between work stress & years of experience ($p < 0.001$) as shown in Table (2). On the other hand, a statistical significant positive correlation was found between work stress and both number of shifts per month & number of hours per shift.

Figure (2) illustrated that; work load, inadequate preparation for dealing with the emotional needs of patients and their families, problems with supervisors, and dealing with death and dying were the commonest possible stressful conditions in the work place among the studied nurses (with means; 44.2, 22.3, 16, & 15.8 respectively).

Table (3) represented that moderate to severe stress was the commonest among overweight & obese nurses (83.4%) however mild stress was the frequent among nurses with normal weight (100%) with statistical significant association ($p < 0.001$). All hypertensive nurses had moderate to severe stress (100%). It was found also that 48% of pre-diabetic & diabetic nurses had moderate to severe stress.

Single bar chart showed that organizational commitment represents 55.3% among the studied nurses as in figure (3).

Table (4) showed that there was an negative correlation between work stress & organizational commitment with highly statistical significance ($P < 0.001$), while there were positive (direct) correlations between work stress and both physical and mental effects (strain manifestations) with statistical significance.

Table (5) showed that working in the emergency department, night shifts, & single nurses were the most significant predictors of work stress among the studied nurses with OR(9.36, 3.9 & 3.36 respectively).

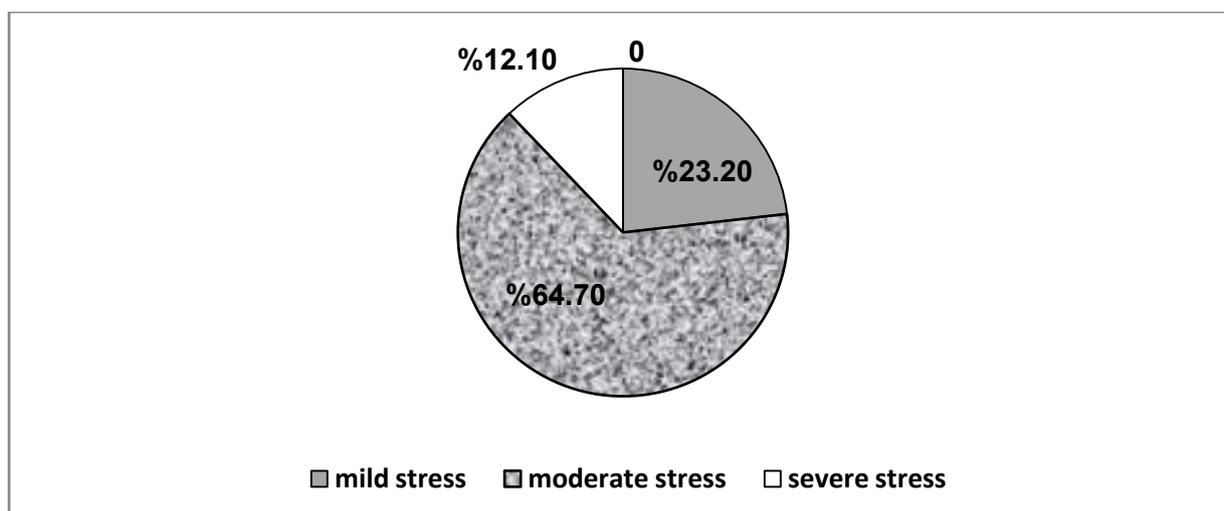


Fig. 1: Percentage distribution of work stress among the studied nurses according to Expanded Nursing Stress Scale (no=190).

Table 1: Association between some Socio-demographic characteristics and workstress among the studied nurses (no=190).

Variable	Mild stress (No=44) No (%)	Moderate to severe stress (no=146) No (%)	P value
Age groups (years): • <30 (no=69) • ≥30 (no=121)	7(10.1) 37(30.6)	62(89.9) 84(69.4)	<0.05
Residence: • Near the work (no=75) • Far from the work (no=115)	37(49.3) 7(6.1)	38(50.7) 108(93.9)	<0.001
Marital status: • Single(no=16) • Married (no=174)	0(0.0) 44(25.3)	16(100) 130(74.7)	<0.05
No of children: • ≤2(no=69) • ≥3(no=121)	30(43.5) 14(11.6)	39(56.5) 107(88.4)	<0.001
Nursing qualification: • Nursing school (no=129) • Nursing institute (no=24) • Faculty of nursing (no=37)	29(22.5) 0(0.0) 15(40.5)	100(77.5) 24(100) 22(59.5)	<0.001 <0.001 >0.05
Working department: • Outpatient clinics(no=22) • Emergency room(no=99) • Internal medicine(no=45) • Surgery (24)	15(68.2) 22(22.2) 7(15.6) 0(0.0)	7(31.8) 77(77.8) 38(84.4) 24(100)	<0.010 <0.001 <0.001 <0.001
Job position: • Nurse (no=107) • Staff nurse (47) • Head nurse (no=37)	7(6.5) 22(46.8) 15(40.5)	100(93.5) 25(53.2) 22(59.5)	<0.001 <0.001 <0.05
Years of experience: • <5years(no=16) • 5-9 years(no=23) • ≥10years(no=151)	0(0.0) 0(0.0) 44(29.1)	16(100) 23(100) 107(70.9)	<0.001 <0.001 <0.001
Working shifts: • Day(no=52) • Evening (no=8) • Night(no=130)	30(57.7) 0(0.0) 14(10.7)	22(42.3) 8(100) 116(89.3)	>0.05 <0.001 <0.001
Shifting state: • Fixed (no=74) • Variable (no=116)	37(50.0) 7(6.0)	37(50.0) 109(94.0)	<0.001

Table 2: Correlation between experience years, work hours per week, shifts per month, & hours per shift, and work stress among the studied nurses (no=190).

Variable	Pearson correlation (r)	P value
• Years of experience	-0.40	<0.001
• Hours of work per week	0.35	<0.05
• Number of shifts per month	0.18	< 0.05
• Number of hours per shift	0.44	<0.001

Table 3: Association between BMI, Blood pressure, and random blood sugar and work stress among the studied nurses (no=190).

Variable	Mild stress (no=44) No %	Moderate to severe stress (no=146) No %	P value
Body mass index (BMI by kg/m ²): • Normal weight(15) • Overweight& Obese (175)	15(100) 29(16.6)	0(0.0) 146(83.4)	<0.001
Blood pressure (mmHg): • Normal(151) • Hypertensive(39)	44(29.1) 0(0.0)	107(70.9) 39(100)	<0.05
Random blood sugar (mg/dl): • Normal(140) • Pre-diabetes&Diabetes (50)	18(12.9) 26(52.0)	122(87.1) 24(48.0)	<0.001

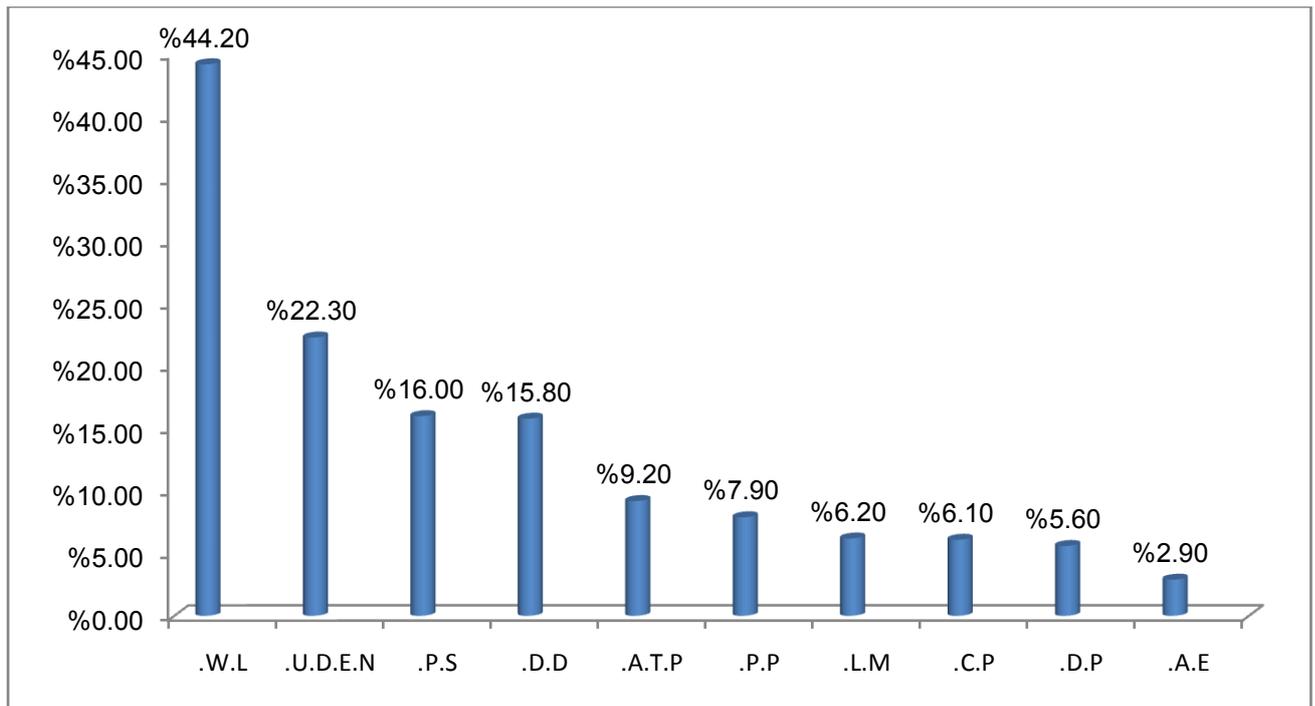


Fig. 2: Mean Distribution of possible stressful conditions in the work place among the studied nurses (No=190). **W.L.**=work load, **U.D.E.N.** = unable to deal with emotional needs of patients and their families, **P.S.** = problems with supervisors, **D.D.** = dealing with death, **A.T.P.** = ambiguity in tt plans, **P.P.** = problems with peers, **L.M.**=lack of motivations, **C.P.**=conflicts with physicians, **D.P.** = discrimination problems and **A.E.** = adverse environment.

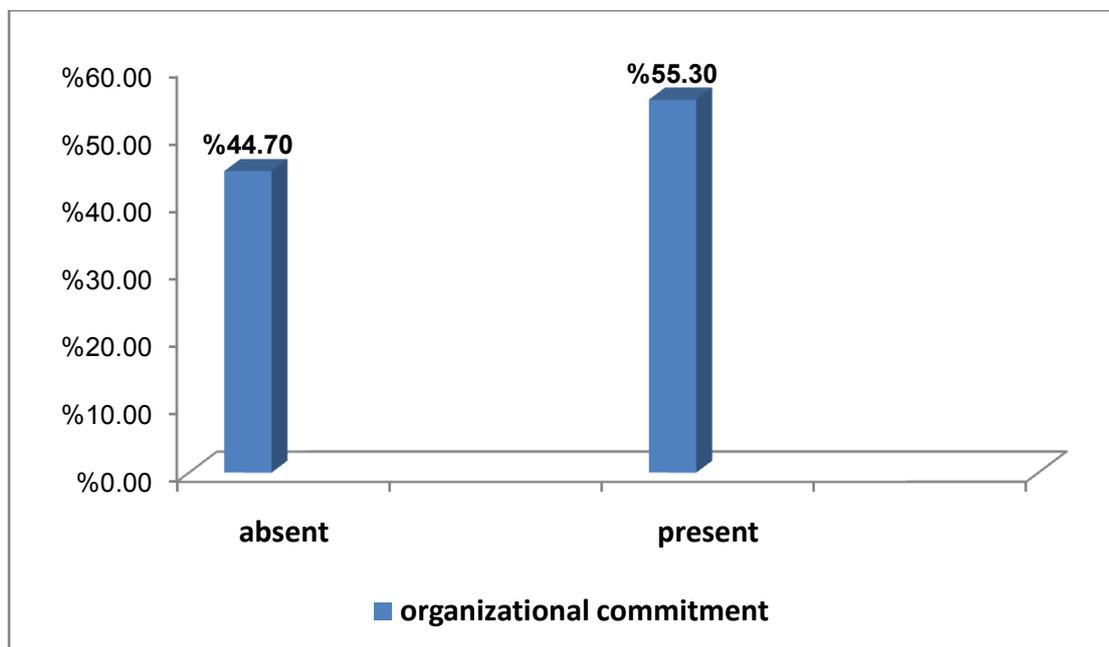


Fig. 3: Percentage distribution of organizational commitment among the studied nurses (no=190).

Table 4: Correlation between work stress and both organizational commitment and stress effects among the studied nurses (no=190).

Variable	Pearson correlation (r)	P value
Organizational commitment	-0.46	<0.001
Stress effects on nurses:		
▪ Short and long term Physical effects	0.69	<0.001
▪ Short and long term Mental effects	0.15	<0.05

Table 5: Multivariate logistic regression analysis for the most predictor variables of work stress among the studied nurses (no=190).

Predictor variable	B	Wald	Sig.	Exp(B)	95% C.I. for EXP(B)	
					Lower	Upper
Working in emergency department	4.27	8.7	0.000	9.36	1.738	50.434
Night shifts	2.4	8.9	0.001	3.90	1.8	12.9
Single nurses	2.27	6.776	0.006	3.36	1.738	50.434
Far residence	0.76	4.852	0.036	2.46	1.91	2.370
Working in surgical department	3.6	7.2	0.002	2.46	1.91	2.370
Evening shift	1.6	5.5	0.005	2.30	1.7	17.3
No of shifts per month	3.1	5.6	0.004	2.10	2.1	21.2
Have ≥ 3 children	2.26	9.310	0.002	1.70	1.03	16.02
Work experience <5 years	0.83	4.8	0.012	1.51	1.47	1.97

Discussion and conclusions:

The present revealed that all the studied group of female nurses were exposed to stress with different degree where, moderate stress was found to be the most frequent degree followed by mild stress & severe stress which was consistent with Ahmed Refat *et al.* (2004), who reported that the highest percent of the studied nurses had moderate stress (65.7%), while 18.5% of nurses complained from mild stress and 13.9% of them suffered from severe stress. But our findings weren't complying with Al-Hawajreh (2011) who reported that occupational stress among nurses in selected Jordanian hospitals was 30%. This could be explained by low salaries of nurses which might be reflected on their future social and family life; nurses are often blamed for errors and are generally treated as scapegoats by other members of the medical profession and the poor reputation of the nursing profession in Egypt.

It was found that the highest percentages of moderate to severe stress among nurses with ages less than 30 years and those not married which was different from Sharifah Zainiyah *et al.* (2011) who noticed that age and marital status had no effect on the prevalence of stress. Possible explanation may be the high responsibilities and the overload of young nurses but older nurses usually have more confidence, and experience. Also, the single nurses feel lonely and unhappy which increase the level of stress among them.

Nurses, who are far resident from their work place had more level of stress than that among near resident group which was in accordance with Ahmed Refat *et al.* (2004) who reported that 72.1% of far resident nurses had high score of stress than among near resident nurses due to difficulty in reaching the work on time.

Concerning nurses who had ≥ 3 children experienced moderate to severe stress, that wasn't in consistent with Ahmed Refat *et al.* (2004) who mentioned that high total stress score was found to be significantly associated with fewer number of children of the studied nurses. Raising the burden of life in all aspects with increased the number of children leads to increase stress at work.

It was found also; that severe and moderate stresses were significantly associated with nursing institute & nursing school qualification, and this was in agreement with Elkahlout and Algaed (2003) who reported that there was an effect of the educational level of nurses on job stress because low qualification usually associated with high work load and low salaries which increase work stress. Moreover, the position of junior nurse was more associated with moderate to severe stress than that among staff nurses and head nurses which was confirmed by Abdel-Hamid (2003). He stated that high total stress score was found to be significantly associated with lower job rank where junior nurses were associated with insufficient job experience and more criticism from other health care workers.

Also, the current study revealed that nurses working at surgical department and their work experience less than 10 years had high frequencies of moderate to severe stress, this wasn't in accordance with Elkahlout and Algaed (2003), they found no significant relationship between different departments and work experience among nurses and job stress levels. However our findings could be related to high work load, bloody field during surgical operations with high associated risks which was accompanied with high stress levels especially among nurses with low experience to deal with these work conditions.

Working in evening and night shifts with variable shifting state were found to be associated with high level of stress. This was in accordance with Admi *et al.* (2008) who assumed that rotating shift work affects the amount of sleep, professional mistakes on a three-shift schedule which increase the stress among nurses.

It was found that there was statistical significant negative correlation between work stress & years of experience that was incongruent with Al Hosis *et al.*(2013)who mentioned that there was no significant relationship between years of past experience and work stress among Saudi Nurses Working in Ministry of Health Hospitals in Qassim Region. This could be due to malpractice, unpreparedness and deficient skills of less experienced nurses in dealing with stressful conditions which increased the work stress.

On the other hand, statistical significant positive correlations were noticed between work stress and number of shifts per month & number of hours per shift. This was consistent with KANDOLIN (2007), hefound female nurses work in three-shift schedule with more hours worked per shift reported more stress symptoms and ceased to enjoy their work, rising stress level among them than nurses in two-shift schedule. Also, there was a statistical significant positive correlation between work stress and hours of work per week this was consistent with Ahmed Refat *et al.*, (2004) who reported that the positive significant correlation between the working hours per week and total stress score of the studied nurses which was attributed to reduced leisure time.

Work load, inadequate preparation for dealing with the emotional needs of patients and their families, problems with supervisors, and dealing with death and dying were found to be the commonest possible stressful conditions in the work place among the studied nurses. This was consistent with Roberts *et al.*(2012) and Moustaka and Constantinidis(2010) who reported that Stress in nursing is attributed largely to the work overload, suffering and emotional demands of patients and families, lack of support and criticism of supervisors as well as death and dying of cases.

The results of the present study revealed that moderate to severe stresses were the commonest among overweight & obese nurses. Similar findings were obtained by Han *et al.*, (2011) who mentioned that stress among nurses were significantly associated with being overweight and obese (OW/OB) assumed that less physical exertion, limited movement and long work hours and stress may affect eating behavior and fast food choices.

All hypertensive nurses had moderate to severe stress and 87.1 % of non-diabetic nurses was associated with moderate to severe stress. This was partially consistent with Cheung and li (2012) who reported that work stress is frequently associated with physiological and psychological disturbances and may indirectly lead to diabetes and hypertension.

It was noticed that organizational commitment represented 55.3% among the studied nurses which consisted with Hayes *et al.*(2006) who stated that 52% of the sample could commit to remain in the specialty for a further 12 months. There was an inverse significant correlation between work stress & organizational commitment; this was consistent with Ho *et al.*(2009)who mentioned that the role of stress among nurses could have a negative effect on their organizational commitment. Contrastly, there was positive significant correlation between work stress and both physical or mental effects either short or long. Similar findings were obtained by Pino and Rossini (2012)who reported that mental and physical ill health was from the occupational stress outcomes among hospital nurses.

Multivariate logistic regression analysis predicted several factors of work stress which were working in the emergency department, night shifts, & single nurses were the most significant predictors of work stress among the studied nurses. This was inconsistent with Alhajjar (2013) who reported that Depression, workload, lack of support, uncertainty about treatment and conflicts with physicians were the most predictors for stress among Palestinian nurses at Gaza city. This could be attributed to the high rate of urgent cases at emergency unit which need quick deal by highly trained team work and the high potential which were deficient at emergency department at Zagazig University. Moreover, night shift work had bad effect on the sleep quality and circadian rhythm which affect the work performance and led to stress. Finally, single nurses had work stress more than the married ones due to loneliness and society perception as well as more work load because they didn't have husband and children.

Recommendations:

Based on the findings of the present study, it recommends to establish an occupational stress committee, which must include a representative group of nurses, to plan and implement a proper stress reduction program with appropriate coping strategies and clear and specific job description, flexible and fair work schedules, and regular meeting between supervisors and their staff nurses to discuss and solve their problem and so improve their organizational commitment. Further studies to apply stress reduction program for the studied nurses.

Limitations of the study:

14 nurses (about 6.9% of the calculated sample) refused to participate in the study. Long time was taken to fill the questionnaire about 45 min or more.

Competing interests:

The authors declare that there are no competing interests. This research paper was financed totally by the authors of the study .

Contributors:

Nanees S Eldeen designed the study and determined the objectives and wrote the discussion and submitted the article. Eman Elshahat designed the questionnaire conducted the practical phase of the study. Mona M Abosrea wrote the subjects & methods and analyzed the data statistically in addition to revising and editing the whole manuscript. All authors revised the manuscript and have seen and approved the final version.

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