Original Article

Occupational Stress Experienced by Nurses Working in a Greek Regional Hospital: A Cross-sectional Study

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Abstract

Background: Occupational stress is both psychologically and physically challenging and may lead to high rates of absenteeism, burnout, and turnover. Nursing is considered as one of the most stressful and demanding professions. This study aims to measure perceived stress levels among nurses in a Greek public general hospital. **Materials and Methods:** A cross-sectional study was conducted. A total of 157 nurses and nursing assistants took part. A self-administered questionnaire including sociodemographics and Expanded Nursing Stress Scale (ENSS) for stress assessment was used. Analysis was performed using Statistical Package for the Social Sciences version 20.0. **Results:** Total stress mean(SD) score ranged in medium levels [136.27 (47.80)]. The most stressful situations were dealing with death and dying [18.29 (5.59)]; patients' and their families' demands [20.90 (7.12)], and uncertainty concerning treatment [22.19 (9.07)]. Discrimination [4.40 (4.25)] and conflicts with peers [12.07 (5.10)] provoked less stress. There was a statistically significant relationship between age and total stress ($F = 4.23$, $p < 0.001$) and all distinct stressors. Nurses between 30 and 34 years expressed higher stress in all cases except patients' and their families' demands stressor. Those nurses who were divorced expressed higher stress in death and dying subscale ($F = 2.93$, $p = 0.035$). Nursing assistants expressing higher stress as far as workload ($t = -2.40$, $p = 0.017$), conflicts with physicians ($t = -2.19$, $p = 0.033$), and problems with peers ($t = -2.63$, $p = 0.009$) were concerned, compared to nurses. **Conclusions:** The findings of the study are in line with other researchers' findings concerning stressors among nursing personnel in Greece. Appropriate measures for the prevention and management of specific stressors must therefore be taken.

Keywords: *Greece, hospitals, nursing, occupational health*

Introduction

Occupational stress refers to those harmful physical and emotional responses that occur when job demands do not match the resources, capabilities, and needs of an employee.[1] It is a reaction to several adverse conditions related to work content, work organization, and working environment.[2] During the past decades, it has been highlighted as a problem of great concern.[3] According to the American Institute of Stress, it is the main factor in up to 80% of all work-related injuries and 40% of turnovers in the workplace, while the European Foundation for the Improvement of Living and Working Conditions reported that 30% of the European working population is affected by work-related stress.[3]

Nursing has been identified as one of the most stressful professions. Work-related stress among nurses affects both individual and organizational functioning as well as the healthcare provided. Literature suggests that it is associated with musculoskeletal disorders[4,5] and locomotor diseases,[6] high rates of anxiety[7,8] and depression,[9,10] high burnout levels,[11] reduced job satisfaction,[12] absenteeism,[13] and high turnover intention,[14] whereas it is negatively associated with nurses' patient care behaviors.[15]

There are numerous sources of work-related stress among nursing personnel. Some of these stressors are related to personality, whereas some of them are related to workplace and organizational structure or service user communication. Personality traits, such as neuroticism, may influence the perceptions of working conditions[16] or individual differences due to sociodemographics, such as gender.[17] Workplace and organizational

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stressors include workload, lack of reward and work shift choices, professional conflict, lack of social support, safety issues, lack of supervision, reduced advancement opportunities, and time management.[18,19] Service user communication stressors are referred to nurse–patient interaction and related to confronting of difficult or challenging behaviors and the emotional pressure that results from those behaviors.[20]

Data from different countries with different cultures and healthcare systems, such as Japan,[21] China,[22] Iran,[23] United States,[24] and many European countries,[25-27] suggest that occupational stress affects nursing personnel worldwide. In addition, work-related stress affects nurses working in different healthcare sectors such as oncology units,[28] mental health centers,[21] emergency departments of hospitals,[22] and intensive care units.[4]

Concerning Greek reality, literature suggests that occupational stress does affect nursing personnel. Numerous studies reveal that situations in everyday clinical practice that are related to dealing with death and dying are among the most important stressors for nursing staff.[15,29] According to the findings of a study conducted among army and civilian registered nurses, occupational stress is mainly related to workload, taking decisions that affect the lives of others, and the fact that their occupation tends to interfere with their family life.[30] Another comparative study in capital and regional hospitals shows that work overload and conflict between professional and family roles contribute to the development of occupational stress.[31]

Concerning the nursing profession in Greece, it must be highlighted that the country has the third lowest density of nurses among Organization for Economic Co-Operation and Development countries (3.3 per 1000 population).[32] Only Turkey and Mexico trail Greece in this regard. Due to this situation, many working positions in healthcare services are covered by nursing assistants, rather than registered nurses. Besides the shortage and abysmal composition of nursing staff, literature suggests that Greek nurses perceive lack of autonomy, lack of a standard framework concerning specialized nursing responsibilities, and difficult working conditions related to low salaries and working shifts as their major stressors.[33,34] Although the above-mentioned stressors are often reported by nursing staff worldwide, the results of a cross-sectional survey among nurses in 12 European countries and the United States revealed that Greek nurses report higher rates of burnout, turnover intention, and lower rates of job satisfaction compared with nurses from other countries.[35]

At the same time, due to its financial crisis, Greece has lost, over the past 7 years, more that 25% of the gross domestic product (GDP).[36] This fact, combined with the excessive austerity measures, has had a great impact on healthcare system and both workers' and clients' lives. Indeed, recent data suggest that the crisis has strongly affected vulnerable populations,[37] while at the same time long-term pathogeneses such as population aging (the population over 65 years increased in the past 10 years from 18% to 20.5%), high prevalence of chronic diseases, and polypharmacy increase barriers and difficulties for the Greek national healthcare system.[38]

The aim of this study was to measure perceived occupational stress levels among nurses and nursing assistants working in a regional public general hospital in Greece. By considering all the above, concerning Greek reality, we could say that the study of work-related stress in nursing personnel is crucial, since human resources is the most important component in the field of healthcare.

Materials and Methods

A cross-sectional study was conducted between the months of February and March of 2016. A total of 190 questionnaires were distributed to nurses working in a regional public general hospital in northern Greece. The specific hospital, which is one of the 28 hospitals in northern Greece, was selected on the basis of convenience, since two of the researchers worked there. The final sample consisted of 157 nurses (response rate: 82.63%). The sample size was calculated according to confidence interval equal to 0.95 and effect size equal to 0.80.

The research instrument included two parts. The first part contained five questions recording sociodemographic characteristics of the sample: gender, age, family status, specialty, and professional experience.

The Expanded Nursing Stress Scale (ENSS) was used to evaluate nurses' work-related stress. The ENSS is an expanded and updated revision[39] of the Nursing Stress Scale (NSS) which was initially developed by Pamela Gray-Toft and James Anderson.[40] ENSS is a 59-item scale, with nine subscales. Each item is ranked on a 5-point Likert scale from 1 "never stressful" to 4 "extremely stressful" and 0 "does not apply." The subscales include the following: (1) dealing with death and dying (seven items with score range 0–28); (2) conflicts with physicians (five items with score range 0–20); (3) inadequate preparation to deal with emotional needs of the patient (three items with score range 0–12); (4) problems with peers (six items with score range 0–24); (5) problems with supervisors (seven items with score range 0–28); (6) workload (nine items with score range 0–36); (7) uncertainty concerning treatment (nine items with score range 0–36); (8) stressful situations related to interactions with patients and their families (like unreasonable demands) (eight items with score range 0–32); and (9) discrimination by nurses and other professionals (three items with score range 0–12). A total (range 0–236) score is derived from the instrument using subscale scores. There are no specific cut-off scores for scale and subscales. Higher scores indicate higher levels of perceived stress. The translation and validation

of ENSS in the Greek language were made by Moustaka *et al*.[29] who granted permission to use it. In our study, Cronbach's alpha for the total scale was 0.97, whereas split-half reliability, which was assessed through Guttman coefficient, was 0.92.

Statistical analysis was performed using Statistical Package for the Social Sciences version 20.0 software (Statistical Package for the Social Sciences, version 20; IBM, Armonk, NY, USA). The means and standard deviations were used to describe the stress levels perceived by nurses. Independent *t*-test was adopted to check the association between occupational stress and sex and specialty, and one-way analysis of variance (ANOVA) was used to describe the associations between other sociodemographic features and stress. In addition, multivariate analysis of variance (MANOVA) was used for controlling the effects of independent variables separately.

The inclusion criteria were informed consent, signed by the subjects, to participate in the study and a stable working relationship in the hospital. After liaising with head nurses of the departments, the questionnaires were distributed among all nurses and nursing assistants working in the hospital and filled out by them. Of the 190 nurses working in the hospital, 5 were on maternity leave, 3 on leave due to educational reasons, while 25 did not want to participate.

Ethical considerations

The Ethics Committee of the 4th Sanitary Region of Greece, in which the hospital is located, granted permission for conducting the research (with approval no. 1960.2.2.2016). All the participants received a brochure explaining the purpose of the research. They were also informed about the anonymity of the study and the fact that they were free to participate or not, and to withdraw at any time. Informed consents were obtained from all the participants

Results

The final sample consisted of 157 nurses. The sociodemographic characteristics of the sample are presented in Table 1. Most of the participants were women (80.89%), between the ages of 40–49 years (52.23%) and married (75.79%). Regarding professional experience, 52 participants (33.12%) had worked for more than 26 years.

The mean values and standard deviations of total stress and ENSS subscales are provided in Table 2. Since there are no cut-off scores that determine whether a stressor is in a low, medium, or high level, we cannot put a dividing line, indicating the level. However, by considering the potential range of scores, we could say that more stressful factors were those that were related to "death and dying," "patients' and their families' demands" during nursing tasks, and "uncertainty concerning treatment," which corresponded to 65.32%, 65.31%, and 61.63% of the maximum possible rating, respectively. The least stressful factors were related to "discrimination" and "conflicts with peers," which correspond to just 36.67% and 50.29% of the maximum possible rating, respectively.

Table 1: Sociodemographic features of the subjects

	n (%)
Gender	
Men	28 (17.83%)
Women	127 (80.89%)
Age (years)	
<24	10 (6.37%)
24-29	1 (0.63%)
30-34	5 (3.18%)
35-39	25 (15.92%)
40-49	82 (52.23%)
>50	31 (19.74%)
Family status	
Married	119 (75.79%)
Unmarried	15 (9.55%)
Divorced	17 (10.83%)
Widowed	4 (2.55%)
Specialty	
Nurse	144 (91.72%)
Nursing assistant	13 (8.28%)
Professional experience	
0-5	16 (10.19%)
6-10	11 (7.00%)
11-15	29 (18.47%)
16-20	25 (15.92%)
20-25	24 (15.28%)
>26	52 (33.12%)

Table 2: Means, standard deviations, and range of nurses' stressors

Stressors (ENSS)	Mean (SD)	Range
Death and Dying	18.29 (5.59)	0-28
Inadequate Emotional Preparation	6.89 (2.91)	0-12
Discrimination	4.40 (4.25)	0-12
Workload	19.72 (7.34)	0-36
Uncertainty Concerning Treatment	22.19 (9.07)	0-36
Conflict with Physicians	10.60 (5.01)	0-20
Problems with Peers	12.07 (5.10)	0-24
Problems with Supervisors	16.88 (7.13)	0-28
Patients and Family	20.90 (7.12)	0-32
Total stress	136.27 (47.80)	0-236

ENSS: Expanded Nursing Stress Scale; SD: Standard deviation

The associations between total stress and its subscales and sociodemographics are presented in Table 3. One-way ANOVA revealed statistically significant associations between age and both total stress and all separate stressors. Nurses between 30 and 34 years of age expressed higher total stress ($F_{(5,131)} = 4.23$, $p < 0.001$) and higher scores in all stressors except patients' and their families' demands,

Table 3: Associations between stress and sociodemographic characteristics

	ENSS																														
	Death and Dying			Inadequate Emotional Preparation			Discrimination			Workload			Uncertainty Concerning Treatment			Conflict with Physicians			Problems with Peers			Problems with Supervisors			Patients and Family			Total stress		
	Mean	*p*	*F*	Mean	*p*	*F*	Mean	*p*	*F*	Mean	*p*	*F*	Mean	*p*	*F*	Mean	*p*	*F*	Mean	*p*	*F*	Mean	*p*	*F*	Mean	*p*	*F*	Mean	*p*	*F*
Age (years)		**<0.001****	6.04		**0.001****	4.37		**0.031***	2.54		**0.001****	4.41		**0.014***	2.98		**0.018***	2.84		**0.039***	2.41		**0.008****	3.24		**0.017***	2.87		**0.001****	4.23
<24	13.02			4.80			2.90			14.80			15.50			6.62			11.30			11.50			15.70			99.93		
24-29	15.00			5.00			8.00			13.00			21.00			11.00			11.00			13.00			15.00			116.00		
30-34	22.60			8.60			8.60			25.00			27.00			12.80			15.20			21.40			22.60			168.76		
35-39	17.69			7.08			4.00			18.80			22.92			10.64			12.18			16.00			21.48			134.54		
40-49	17.54			6.33			3.83			18.73			20.90			10.14			11.01			16.24			20.04			129.02		
>50	21.78			8.45			5.87			23.91			25.90			12.71			14.26			20.06			24.00			162.27		
Family status		**0.035***	2.93		0.620	0.59		0.768	0.38		0.863	0.25		0.850	0.27		0.572	0.67		0.798	0.34		0.598	0.63		0.474	0.84		0.646	0.55
Married	18.17			6.79			4.27			19.84			22.03			10.58			11.85			16.67			20.82			135.44		
Unmarried	15.68			6.47			4.47			18.40			21.67			9.21			12.87			16.13			18.93			127.89		
Divorced	21.35			7.59			5.38			19.88			24.00			11.24			12.65			17.06			22.41			148.44		
Widowed	19.00			7.75			5.25			21.50			21.26			12.50			13.24			16.00			23.67			143.15		
Specialty	**Mean**	***p***	***t***	**Mean**	***p***	***t***	**Mean**	***p***	***t***	**Mean**	***p***	***t***	**Mean**	***p***	***t***	**Mean**	***p***	***t***	**Mean**	***p***	***t***	**Mean**	***p***	***t***	**Mean**	***p***	***t***	**Mean**	***p***	***t***
		0.178	-0.95		0.357	-0.92		0.057	-1.95		**0.018***	-2.40		0.263	-1.15		**0.036***	-2.15		**0.008****	-2.63		0.117	-1.58		0.289	-1.06		0.062	-1.67
Nurse	18.16			6.84			4.27			19.37			21.99			10.37			11.76			16.61			20.77			134.51		
Nursing assistant	20.34			7.62			6.62			24.38			24.92			13.38			15.62			19.85			22.96			160.28		

ENSS: Expanded Nursing Stress Scale. *t*-Test analysis was conducted for specialty and one-way ANOVA for age and family status. *p<0.050; **p<0.010

in which nurses more than 50 years of age expressed a higher score ($F_{(5,142)} = 2.87$, $p = 0.017$). In addition, in all cases, except the patients and their families, nurses more than 50 years of age had the second highest score. As far as family status is concerned, those nurses who were divorced expressed higher stress for Death and Dying stressor ($F_{(3,146)} = 2.93$, $p = 0.035$). Finally, concerning specialty, nursing assistants expressed higher stress in the cases of Workload ($t_{(153)} = -2.40$, $p = 0.017$), Conflicts with Physicians ($t_{(152)} = -2.15$, $p = 0.033$), and Problems with Peers ($t_{(151)} = -2.63$, $p = 0.009$), compared to nurses. Statistical analysis did not reveal any significant difference in cases of gender and professional experience.

To test the main effects of sociodemographic characteristics (such as gender, age, family status, and specialty) separately by controlling the effect of covariates, we proceeded to MANOVA test. In this case, statistical analysis shows that ANOVA results were confirmed only for the case of age, and more specifically for the associations between age and total stress ($F_{(5,134)} = 3.95$, $p = 0.002$) and the subscales of Death and dying ($F_{(5, 134)} = 402$, $p = 0.002$), Inadequate emotional preparation ($F_{(5,134)} = 4.94$, $p < 0.001$), Workload ($F_{(5,134)} = 3.95$, $p = 0.002$), Uncertainty concerning treatment ($F_{(5, 134)} = 3.37$, $p = 0.007$), Conflicts with physicians ($F_{(5,134)} = 2.56$, $p = 0.031$), and Problems with supervisors ($F_{(5,134)} = 3.67$, $p = 0.004$).

Discussion

The study results provided empirical support for the existence of moderate levels of occupational stress among nurses and are in line with the findings of other researchers in Greece.[15,29,41]

"Dealing with Death and Dying" was the most significant stressor among the participants. This is in line with the findings of other researches that have used ENSS for the measurement of occupational stress in Greece,[15,29] and a number of other countries.[2,42-44] Working with the terminally ill brings to the surface existential and ethical issues, while at the same time it is related to high demands concerning the appropriate healthcare that is being provided. According to a study in Holland about the attitudes of Dutch doctors and nurses to palliative and terminal care, nurses reflected more on existential matters (80%) and were more likely to agree that dealing with a dying patient made them aware of their own feelings regarding death (97%).[45] Meanwhile, comparison with physicians showed that nurses were more likely to definitely agree that palliative care was a rewarding part of their work, and that they were less likely to prefer to leave care of these patients to others.[45]

The second most important factor that caused higher stress was related to "Patients and their families." The specific stressors included situations like patients' unreasonable demands, patients and families' abusive behaviors, being blamed for everything that may go wrong, and sexual harassment. Interactions with patients and their families may be a greater source of stress in countries holding higher collectivist cultural values such as Greece, compared with those that hold higher individualist values in their cultural context.[46] In a study conducted in five countries about sources of occupational stress among nurses, it was found that cultures where collective values are higher, such as Italy and Israel, stressors related to patients and their families were higher when compared with the United States, which is regarded as the most representative example of country with a culture of individualism.[46] Another important issue related to patients and their families' stressor is violence and abusive behavior. Concerning Greece, 5%–25% of hospital employees and particularly nurses are exposed to some kind of violence, which is mainly verbal.[47] For this reason, it is essential for nurses to refuse to accept that violence and aggression are "just part of the job." Further research is important in raising awareness and providing direction, to form a framework for education programs, policies, and best-practice guidelines for the safety of nurses and, ultimately, patient care.[48]

As far as associations between sociodemographics and occupational stress are concerned, age was associated with total stress and its separate factors. In all cases, except Patients and their Families factor, where older than 50 years nurses had the highest score, nurses between 30 and 34 years of age expressed higher stress, whereas younger nurses had less stress in all cases except Workload stressor. The above is not in line with the findings of many studies which show that younger nurses are more vulnerable to work-related stress.[49-51] However, in our study, we do not have a clear boundary between young and old, while 30 and 34 years of age is in the middle concerning young and old age categories.

Family status was positively associated with Death and Dying stressor with those nurses who were divorced and widowed expressing higher stress, whereas singles expressed lower stress levels. Higher stress levels among divorced and widowed nurses compared with the unmarried ones have been found in numerous studies.[52,53] We can assume that coping with death, which is anyway inevitable and one of the most important risk factors for stress among healthcare professionals,[54] is more difficult to manage for divorced or widowed nurses perhaps because they have grieved over someone in their own lives or may have extra responsibilities at home related to their children's needs.

Finally, the study results revealed a significant positive association between specialty and specific stressors. In particular, nursing assistants expressed higher stress in cases of Workload, Conflicts with Physicians, and Problems with Peers, compared with registered nurses. Nursing education in Greece has two levels. The first includes an educational preparation of a 4-year university program or a 4-year program offered by technological institutions that leads to

a Bachelor's of science or associate diploma in nursing, respectively. The second refers to a 2-year vocational training which is provided by post-secondary educational institutions. Differences in the educational levels lead to different types of diploma awards and registrations.[55] We can assume that nursing assistants may be more vulnerable to stress-related factors like those mentioned above, since their training includes fewer professional qualification and skills.

Our study had some limitations. First, the sample size was not very large. Second, it was a cross-sectional study, so we cannot indicate causal mechanisms through interpretation of data that were collected at one-point time. Therefore, implications for future research may include a longitudinal research design that could strengthen the possibilities for measuring a true prediction, combining with qualitative research that may enlighten us about the mechanisms related to nurses' experiences and their perceptions of occupational stress. Furthermore, future research must focus on the existing differences concerning the sources and the strain of work-related stressors between nurses and nursing assistants. Finally, future studies in the specific field may be oriented to investigation for practical solutions for the reduction in work-related stress in nursing staff.

Conclusion

Our study revealed that the most stressful factors for Greek nurses and nursing assistants are those related to coping with death and dying, patients and their families' demands, and uncertainty concerning treatment. This is in line with the findings of other researchers who have used ENSS for nurses' stress assessment in Greece. Additionally, we indicated a number of positive associations between age, marital status, specialty, and different stressors. What is needed is a better evaluation of occupational stress risk factors. In addition, specific preventive measures, both at individual and managerial levels, must be taken to manage them. Interventions at the managerial level may include enhancing of supervisor support, provision for more breaks, workload coping strategies, and promoting of staff rewards.[56] Additionally, individual and team level literature suggests that different types of interventions such as cognitive-behavioral stress management programs (familiarization with cognitive errors and negative thoughts and recognition of efficient and inefficient coping strategies),[57] neuro-linguistic programs that focus on individual reactions toward stressful events,[58] massage therapy,[59] and short-term educational programs promoting physical methods of coping with stress, problem-solving, goal setting, and efficient communication skills[60] may prove helpful for supporting nursing staff.

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Conflicts of interest

Nothing to declare.

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