



Original Article

Exploring Stress Levels, Job Satisfaction, and Quality of Life in a Sample of Police Officers in Greece

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ABSTRACT

Background: The ongoing economic crisis in Greece has affected both stress and quality of life (QoL) at all socioeconomic levels, including professionals in the police force. The aim of this study was to examine perceived stress, job satisfaction, QoL, and their relationships in a sample of police officers in Greece.

Methods: A cross-sectional study was conducted during the first trimester of 2011 in 23 police stations in the greater Athens area. A total of 201 police officers agreed to participate (response rate 44.6%). The General Health Questionnaire-28 (GHQ-28) was used to assess general health, and the World Health Organization Quality of Life-BREF Questionnaire and Perceived Stress Scale-14 (PSS-14) questionnaires were used to assess QoL and perceived stress, respectively.

Results: The PSS and GHQ subscales and total scores exhibited strong, positive, and significant correlations coefficients (r): 0.52 for somatic disturbances, 0.56 for stress and insomnia, 0.40 for social dysfunction, and 0.37 for depression, yielding an r equal to 0.57 for the total GHQ score. A higher level of perceived stress was related to a lower likelihood of being satisfied with their job; in this regard, male participants and higher ranked officers reported lower job satisfaction. The PSS and GHQ scores were inversely, consistently, and significantly related to almost all of the QoL aspects, explaining up to 34% of their variability. Parenthood had a positive effect on QoL related to physical health, and women reported lower QoL related to psychological health.

Conclusion: Higher levels of stress are related to an increased risk of reporting suboptimal job satisfaction and QoL. The magnitude of these associations varied depending on age, gender, and rank, highlighting the need for stress-management training.

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1. Introduction

For several decades, the scientific community has studied workplace stress and its effects, in terms of both physical and psychological health and individual behavior. In 2005, the European Agency for Safety and Health at Work reported that 22% of workers in the European Union experience high levels of stress. In a recent European survey, the highest stress levels were reported by Greek workers (55%) [1]. Police officers also experience elevated levels of stress, anxiety, and irritability [1]. Their work has been described as one of the most stressful occupations in the world, because the physical threats in their operational field are

enormous. Police officers are charged with the apprehension of criminals, the prevention and investigation of crimes, and the maintenance of public order [2]. At the same time, they are nameless, faceless individuals, and most consider them a separate group from the rest of the society. However, organizational stressors, such as the administrative structure and working environment, are considered to be more significant compared with the operational issues that police officers handle [3–6].

Numerous reports state that the suicide rate of police officers is higher compared with other working groups, and police officers have also been reported to experience stress-related morbidity, reduced productivity, absenteeism due to illness, and premature

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retirement [3,7–10]. Increased alcohol consumption, smoking, and drug abuse are additional negative consequences that occur as a result of stress in their workplace [11–14].

During the last three years, the economic crisis in Greece has affected almost all professional groups [15]. There have been riots in various regions of Greece and public opinion has turned against police-force officers, creating preconceived notions about this particular profession and rendering it even more stressful [5]. Because this particular occupation is extremely important for social order and coherence and because stress interferes with police officers' performance, it would be very interesting to assess police officers' lives during these times and focus on possible actions that should be taken to prevent or relieve the impact of stress on their quality of life (QoL).

The aim of this study was thus to assess police officers' perceived stress levels, job satisfaction, QoL, and their relationships during these difficult times.

2. Materials and methods

2.1. Study sample

A cross-sectional study was conducted during the first trimester of 2011 in 23 police stations at various district (regional) level departments of the greater Athens area. The greater Athens area was divided into four (prefectural) sampling zones, and sample sizes of at least 20% of the departments were considered to be adequate and feasible. The sampling zones were central Athens (21 departments), northeast Attica (34 departments), southeast Attica (15 departments), and west Attica (15 departments). Convenience and judgment sampling methods (quota sampling) were utilized to fulfill the predefined sampling criteria. Although quota sampling is a form of nonprobability (nonrandom) sampling, it does not introduce any bias in study results because it is unrelated to the specific research aims. After obtaining permission from the respective captain in each police station, all of the policemen were asked to participate in the study. Of the 450 police officers contacted, 201 agreed to participate in the study (response rate, 44.6%). The remaining 249 police officers either refused to participate or their captain did not give clearance and/or consent to participate. The study was approved by the Technological Educational Institute of Athens thesis committee.

2.2. Study instruments

The following instruments were used in this study:

- A questionnaire, which was used to collect demographic information.
- The General Health Questionnaire-28 (GHQ-28), which is one of the most commonly used tools to assess mental well-being. This is a screening tool, which was developed to detect individuals who are likely to have or be at risk of developing psychiatric disorders. The tool measures the common mental health problems/domains of depression, anxiety, somatic symptoms, and social withdrawal. Although it is available in a variety of versions comprising 12, 28, 30, or 60 items, the 28-item version is the most widely used one because of time considerations and has been the most widely questionnaire in other working populations, allowing for more valid comparisons [16]. At present, there are four scoring methods for the GHQ-28, but the most common ones are the Likert and the GHQ scoring methods. In general, patients suffering from psychiatric problems can be distinguished from individuals with good mental health if they have a score of 5 or more on

the Likert scale, or 24 or more on the GHQ scale. Higher scores indicate a higher probability of mental disorder. The GHQ-28 questionnaire has been translated and validated in Greek previously [17]. In addition, a question regarding perceived health status (How would you rate your health status overall?) was included and scored on a 3-point scale—"Good or Worse," "Very good," and "Excellent."

- The World Health Organization Quality of Life-BREF Questionnaire (WHOQOL-BREF), which was developed by the WHO, assesses an individual's QoL. The instrument is a self-report inventory of generic QoL questions with 26 original items, and is divided into the following four subscales: physical health, mental health, social relationships, and social environment. Higher scores indicate a better QoL [18]. Having been translated and validated in Greek previously, the WHOQOL-BREF contains four additional questions [19] and seems to be a well-developed instrument for assessing QoL.
- The Perceived Stress Scale-14 (PSS-14) is a 14-item self-report instrument with a 5-point scale (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, 4 = very often). Stress is commonly measured using (1) the environmental approach, that is, the occurrence of demanding events (stressors); (2) the psychological approach, that is, the perceived individual stressfulness of each stressor; or (3) the biological approach that focuses on the biological elements of the stress response. The PSS-14 assesses the perception of stressful experiences (i.e., the psychological approach) by asking the respondents to rate the frequency of their feelings and thoughts related to events and situations that occurred over the previous month. Half of the items in the PSS-14 represent perceived helplessness (perceived distress), whereas the remaining half represents self-efficacy (perceived coping) [20]. Longer lasting and higher levels of self-perceived stress, indicated by a high score, are considered a risk factor for a clinical psychiatric disorder [21]. The instrument has also been translated and validated in Greek previously [20].
- *Job satisfaction questionnaire*: We developed this as a five-item self-reporting tool with the scoring scale ranging from 2 to 3 points depending on the question. This questionnaire qualitatively measures job satisfaction, which is considered to be one of the most important determinants of QoL. The following questions were included: (1) "How satisfied are you with your job?" This question had a 4-point scale—"Very satisfied," "Somewhat dissatisfied," "Very dissatisfied," and "Somewhat dissatisfied." The last two categories were combined in the regression analysis, which lead to a three-level dependent variable. (2) "Would you recommend your job to a friend?" This question had a 3-point scale—"No, I'd discourage it," "I doubt it," and "I would highly recommend it." (3) "Would you choose the same job all over again?" This question had a 3-point scale—"Without a doubt," "It is likely," and "Definitely not." (4) "How likely will you find a new job within the next year?" This question had a 3-point scale—"Likely," "Very likely," and "Unlikely." (5) "Are you satisfied with your salary?" This question was dichotomized into "yes" and "no" answers.

2.3. Statistical analysis

The Pearson's Chi-square test and the Kruskal–Wallis test were used to investigate possible associations between police rank and other variables. The statistical analyses were based on regression modeling techniques because we wanted to estimate the effect of stress on the various outcomes after adjusting for potential confounders. The self-reported job satisfaction as an ordinal variable was assessed using the ordered logit model. When the proportional

odds assumption was violated, different effects for the different levels of job satisfaction were estimated. The nonparametric median regression analysis with bootstrap standard error estimates, based on 100 replications, was used to model the WHOQOL-BREF scale scores, because the corresponding variables were quantitative and not normally distributed. All statistical analyses were performed using STATA software, version Intercooled 9.2 (StataCorp. LP, College Station, TX, USA) for Windows.

3. Results

Basic demographic data and job-related characteristics of the 201 police officers who agreed to participate in the survey are presented in Table 1. Most participants were men ($n = 156$; 77.6%) and younger than 30 years of age [28.1 (standard deviation or $sd = 8$) and 28 ($sd = 6.7$) for male and female participants, respectively]. The majority of the participants were single (68% of men and 53% of women) and worked in the night shift (Table 1). More than half of the participants (53%) were classified in the higher education level (>14 years), and a significant proportion of the participants were highly ranked (Table 1). Significantly fewer women belonged to the high-rank classification and worked in the night shift (49% vs. 71%); however, the weekly employment time did not differ between genders (mean = 44 hours/week). The average employment duration in the police force was 6.3 years ($sd = 6.4$) for men and 5.1 years ($sd = 4.8$) for women.

Seventy-five percent of the male police officers and 84% of the female police officers stated that they were more or less satisfied with their job, but only 24% of the participants would highly recommend their job to a friend. Four of five participants considered it highly unlikely that they would change their occupation by finding another job within the next year, but only 35.5% of the participants were satisfied with their salary.

As expected for a sample whose majority is young police officers, 85% of the men and 78% of the women reported very good to

excellent health status (self-reported health status). However, 6.4% of the men ($n = 10$) and 4.4% of the women ($n = 2$) reported poor to fair health status.

Based on the GHQ-28 scores [Likert scale (23/24)], the participants' general health level results were more than satisfactory; the female participants' scores were lower (better) but did not differ significantly from that of the male participants' scores [20.1 ($sd = 10.4$) vs. 18.5 ($sd = 13.4$), respectively; $p = 0.59$]. In the subscale analysis, the female participants reported more somatic disturbances, higher stress levels, and more frequent insomnia, whereas men exhibited slightly higher scores for social dysfunction and depression; however, none of these differences reached statistical significance.

On the WHOQOL-BREF questionnaire, both male and female police officers reported similar results (not significantly different), although on most scales (physical health, psychological health, and environment), the male participants scored higher (better) than the female participants [(27.17 (4.26) vs. 26.55 (3.85); 22.79 (3.11) vs. 21.60 (3.22); 25.11 (5.03) vs. 24.95 (4.33), respectively; $p > 0.05$]. By contrast, women had a slightly higher score in social relations than men [11.39 (2.36) vs. 11.16 (2.18); $p > 0.05$].

The PSS and GHQ subscales and total scores exhibited strong, positive, and significant correlations (Table 2). The correlation coefficient (r) was 0.52 for somatic disturbances (and PSS), 0.56 for stress and insomnia, 0.40 for social dysfunction, and 0.37 for depression, yielding an r equal to 0.57 for the total GHQ score. As expected, the PSS and GHQ scores were negatively and significantly correlated with the QoL scores (Table 2).

Table 3 shows the results of the univariate analysis of self-reported job satisfaction. There was evidence that the proportional odds assumption was violated for the variables of age and parenthood; thus, different effects were estimated for the different levels of job satisfaction. Table 3 also presents the results of the multivariate analysis. The variable of age did not seem to have a consistent effect on job satisfaction. Age seemed to increase the

Table 1
Individual and job-related characteristics of police-force officers

	Police rank					<i>p</i>
	Police first and second captains	Police lieutenant/second lieutenant	Police constable	Police-training officer	Special guard	
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
Male participants	26 (81.3)	25 (69.4)	64 (73.6)	23 (92.0)	11 (91.7)	0.148
Having kids (parenthood)	13 (40.6)	16 (44.4)	8 (9.2)	0 (0.0)	1 (8.3)	<0.001
<i>Marital status</i>						<0.001
Single/divorced/widowed	12 (37.5)	13 (36.1)	72 (82.8)	23 (95.8)	6 (50.0)	
Married/domestic partnership	20 (62.5)	23 (63.9)	15 (17.2)	1 (4.2)	6 (50.0)	
<i>Higher education (at least 2 years)</i>						0.617
No	14 (43.8)	21 (58.3)	42 (49.4)	10 (40.0)	5 (41.7)	
Yes	18 (56.3)	15 (41.7)	43 (50.6)	15 (60.0)	7 (58.3)	
<i>Working shift</i>						<0.001
Any other	20 (62.5)	20 (55.6)	23 (26.4)	1 (4.0)	3 (25.0)	
Rotational including night shift	12 (37.5)	16 (44.4)	64 (73.6)	24 (96.0)	9 (75.0)	
<i>Job satisfaction</i>						0.105
Somewhat/very dissatisfied	12 (37.5)	9 (25.0)	19 (21.8)	2 (8.0)	1 (8.3)	
Somewhat satisfied	14 (43.8)	14 (38.9)	49 (56.3)	14 (56.0)	6 (50.0)	
Very satisfied	6 (18.8)	13 (36.1)	19 (21.8)	9 (36.0)	5 (41.7)	
	Median (IQR)	Median (IQR)	Median (IQR)	Median (IQR)	Median (IQR)	<i>p</i>
Age (y)	33.0 (31.0, 41.0)	33.0 (27.5, 41.5)	24.0 (22.0, 26.0)	21.0 (20.0, 21.0)	26.5 (25.0, 28.0)	<0.001
PSS total	23.0 (18.5, 26.0)	21.0 (16.0, 31.0)	23.0 (16.0, 27.0)	17.0 (14.0, 27.0)	19.0 (15.5, 25.0)	0.791
GHQ total	18.0 (13.5, 21.5)	18.0 (12.0, 22.0)	15.0 (11.0, 26.0)	15.0 (11.5, 23.0)	13.0 (9.0, 18.5)	0.656
<i>WHOQOL-BREF</i>						
Physical health	28.0 (26.0, 29.0)	27.0 (24.5, 29.5)	28.0 (24.0, 30.0)	29.0 (26.0, 31.0)	29.0 (24.5, 30.5)	0.431
Psychological health	23.0 (20.0, 24.0)	23.0 (20.0, 24.0)	23.0 (20.0, 25.0)	23.0 (22.0, 26.0)	24.0 (22.5, 24.0)	0.514
Social relations	12.0 (11.0, 13.0)	11.0 (10.5, 13.0)	11.0 (10.0, 13.0)	10.0 (9.0, 12.0)	12.0 (11.5, 12.5)	0.159
Environment	25.0 (22.0, 27.0)	24.0 (22.0, 28.0)	25.0 (22.0, 28.0)	25.0 (20.0, 28.0)	24.0 (20.5, 28.0)	0.854

GHQ, General Health Questionnaire; IQR, interquartile range; PSS, Perceived Stress Scale; WHOQOL-BREF, World Health Organization Quality of Life-BREF.

Table 2
Correlations among PSS, GHQ, and QoL subscales

	GHQ1	GHQ2	GHQ3	GHQ4	GHQ total	QOL1	QOL2	QOL3	QOL4
PSS total	0.523	0.562	0.397	0.365	0.567	-0.574	-0.695	-0.337	-0.522
GHQ1		0.687	0.613	0.574	0.869	-0.639	-0.474	-0.322	-0.383
GHQ2			0.559	0.533	0.860	-0.554	-0.469	-0.386	-0.400
GHQ3				0.634	0.814	-0.579	-0.387	-0.416	-0.398
GHQ4					0.802	-0.519	-0.405	-0.416	-0.304
GHQ total						-0.689	-0.538	-0.460	-0.443
QOL1							0.631	0.512	0.514
QOL2								0.532	0.430
QOL3									0.308

GHQ1, physical complaints; GHQ2, stress and insomnia; GHQ3, social dysfunction; GHQ4, severe depression; PSS, Perceived Stress Scale; QOL, Quality of Life subscale; QOL1, physical health, QOL2, mental (psychological) health; QOL3, social relationships; QOL4, social environment. All correlations were significant at the 0.01 level.

likelihood of being less satisfied with the job but not the likelihood of being dissatisfied (somewhat/very). A higher level of perceived stress was related to a lower likelihood of being more satisfied. Male participants and higher ranked officers reported lower satisfaction with their job (Table 3). Specifically, police-training officers ($p = 0.030$) and special guards ($p = 0.084$, marginally nonsignificant difference) had a higher odds of being more satisfied with their job compared with police captains. The interactions of police rank with gender and PSS were not statistically significant with regard to job satisfaction ($p = 0.563$).

As shown in Table 4, the WHOQOL-BREF scores were modeled and adjusted for age and gender. The PSS and GHQ scores were inversely, consistently, and significantly related to almost all of the scales, and these factors explained up to 34% of the variability of the subscales. The variable of parenthood also had a significant positive effect on the QoL related to physical health scale, female

participants reported lower QoL scores in relation to psychological health. Possible interactions were assessed for both models. Specifically, the gender-PSS interaction was not statistically significant neither for job satisfaction ($p = 0.752$) nor for the four subscales of the WHOQOL-BREF [$p(1) = 0.759$; $p(2) = 0.876$; $p(3) = 0.351$; and $p(4) = 0.4$, respectively]. The parenthood-gender interaction was not statistically significant neither for job satisfaction ($p = 0.347$) nor for the four subscales of the WHOQOL-BREF [$p(1) = 0.322$; $p(2) = 0.058$; $p(3) = 0.6$, $p(4) = 0.574$]. The overall effects of police rank on the four subscales of the WHOQOL-BREF were not statistically significant [$p(1) = 0.503$; $p(2) = 0.644$; $p(3) = 0.605$; and $p(4) = 0.594$, respectively]. In addition, there was no evidence for interaction of police rank with gender and PSS ($p = 0.395$).

4. Discussion

This cross-sectional study of a sample of the Greek police force confirmed that there are significant relationships between perceived stress, job satisfaction, and QoL. Our findings are consistent with findings reported by previous studies [22–25]. Perceived stress levels are negatively associated with general health and QoL [24]. Although these measures include the dimension of mental health, implying an inherent correlation is distinct in nature. The GHQ-28 assesses the psychological aspect of QoL (psychological well-being) but is mainly designed for detection and assessment of individuals with an increased likelihood of current psychiatric disorder by comparing their recent psychological state with the usual one [26,27]. The strong correlations between the subscales (somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression) and the total score indicate the inter-relatedness of the subscales and the unidimensionality of the instrument. Its score has been found to be influenced by gender but not by age, marital status, and living situation [26,27]. The WHOQOL-BREF assesses individuals' perceptions in the context of their culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. This constitutes a broad concept affected in a complex way by the individuals' physical health, psychological state, level of independence, social relationships, personal beliefs, and their relationship to the salient features of their environment. Under this concept, the definition of health as "A state of complete physical, mental, and social well-being not merely the absence of disease ..." is fundamental and differentiates the disease-centered approach of the GHQ-28. Therefore, the questionnaires (concepts) are complementary rather than competitive in the QoL research arena, implying the significance of adjustment in the multivariate analysis. The PSS does not

Table 3
Univariate and multivariate analysis of job satisfaction (ordered logit models)

	Univariate		Multivariate		
	OR	95% CI	OR	95% CI	
Age (y)					
Somewhat/very dissatisfied	0.92	0.88	0.97	0.93	0.88
Somewhat satisfied	1.02	0.98	1.07	1.05	0.99
Gender					
Male	1		1		
Female	1.66	0.88	3.11	2.65	1.22
Having kids					NS
Somewhat/very dissatisfied	0.43	0.20	0.91		
Somewhat satisfied	1.34	0.62	2.90		
Marital status					NS
Single/divorced/widowed	1				
Married/domestic partnership	0.72	0.41	1.27		
Education years					NS
<14	1				
≥14	0.91	0.54	1.54		
Working shift					NS
Any other	1				
Rotational including night shift	1.39	0.79	2.44		
Police rank					
Police 1st and 2nd captain	1		1		
Police lieutenant/second lieutenant	2.39	0.93	6.14	1.87	0.70
Police constable	1.72	0.78	3.75	1.40	0.53
Police-training officer	3.58	1.31	9.76	4.52	1.16
Special guard	4.22	1.18	15.05	3.77	0.84
PSS total (per 5 units)	0.62	0.51	0.75	0.91	0.88
GHQ total (per 5 units)	0.78	0.68	0.89	NS	

Proportional odds assumption is violated for age ($p < 0.001$) and kids ($p = 0.005$); odds ratio for age and kids corresponds to the odds ratio of being more satisfied than the corresponding satisfaction category; odds ratio for the other covariables to the odds ratio of being more satisfied in general is independent of the satisfaction category. CI, confidence interval; GHQ, General Health Questionnaire; NS, nonsignificant; OR, odds ratio; PSS, Perceived Stress Scale.

Table 4
Multivariate analysis of the WHOQOL-BREF scales *(median regression with bootstrap SEs)

	Physical health	Psychological health	Social relations	Environment
Age (y) per unit	-0.05 (-0.17, 0.08)	-0.02 (-0.08, 0.03)	0.015 (-0.043, 0.073)	-0.01 (-0.14, 0.13)
Gender				
Male	0	0	0	0
Female	-0.42 (-1.25, 0.41)	-1.06 (-2.03, -0.09)	0.244 (-0.902, 1.390)	1.45 (-0.85, 3.74)
Having Kids				
No	0	NS	NS	NS
Yes	1.82 (0.11, 3.53)			
PSS total (per unit)	-0.12 (-0.22, -0.02)	-0.19 (-0.28, -0.11)	NS	-0.25 (-0.35, -0.16)
GHQ total (per unit)	-0.21 (-0.30, -0.12)	-0.07 (-0.13, -0.002)	-0.085 (-0.144, -0.025)	-0.12 (-0.19, -0.06)
Pseudo R2	0.32	0.34	0.09	0.20

Values in bold indicate significant relations.

GHQ, General Health Questionnaire; NS, nonsignificant; PSS, Perceived Stress Scale; SE, standard error; WHOQOL-BREF, World Health Organization Quality of Life-BREF Questionnaire.

* Age and gender were included in all four models irrespectively of the significance level.

reach significance only in the “social relations” scale, although all scales under study were strongly related and the collinearity between them may excuse such an effect. The reason seems to be the less strong association between PSS and social relations compared with the other subscales. The loss in the multivariate modeling of social relations is reflected in the lower pseudo-R2. It is possible that perceived stress (i.e., perceived helplessness and self-efficacy) at the time of social distress, and specifically in certain occupational groups such as the police force, is less influenced by social relations and support. In our study, female officers seemed to be more prone to stress and less capable of acquiring a sufficient means of coping, but they also seemed to be more satisfied. This discrepancy may be explained by a lighter work burden (lower ranks and lesser night shifts) combined with a low rate of parenthood. Higher levels of somatization and depression, compared with their male counterparts, have been reported in female officers [28]. Gender and perceived stress score interactions did have significant additional influence (relation) on either job satisfaction or QoL, although there were only a few women in our sample. Having kids (parenthood) and possible gender interactions did not show any significant relation with job satisfaction or QoL. Female police officers with kids reported slightly better quality of life related to mental health but this may be attributed to organizational or other social factors. Age was negatively correlated with job satisfaction levels but only to a certain extent. More importantly, the lower ranked officers had a significantly higher probability of being satisfied with their job. Perceived stress levels also had a profound effect on both job satisfaction and QoL, as results of other studies have shown [3,29]. The current economic crisis most likely contributes to this finding. Our study provides strong evidence on the vulnerability of specific groups among the police force (i.e., male participants and higher ranked officers) in an era of social distress and the potential benefit of stress management on QoL. It is obvious from the current results that among the complex interplay of the various aspects of QoL and job satisfaction, especially in cases where other approaches to work-environment modification are not very easy to be implemented, stress management might be a promising tool. Stress-management and health promotion programs are completely lacking in the Hellenic Police Force and may prove to be a useful strategy in this regard [30].

In general, our sample consisted of relatively young and healthy police officers and was relatively small. However, studies of this type are rarely performed, and this is the first known study of its kind in Greece. Other limitations may be related to the time constraints of the cross-sectional design.

Police-force officers provide a valuable service to our society; however, they are not immune to stress, and stress should be prioritized as an important issue that should be tackled with effective stress prevention and management programs. The results of the study can be summarized as follows:

- Perceived stress levels have a profound negative effect on both job satisfaction and QoL.
- The higher ranking officers had a significantly higher probability of being dissatisfied with their job.
- The relationships between perceived stress and general health and their combined effect on QoL further highlight the need for stress-management training, especially in the stressful socio-economic environment that has arisen from the economic crisis in this country.

Conflicts of interest

The authors declare that there are no conflicts of interests regarding the publication of this article.

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References

- [1] European Agency for Safety and Health at Work. European Risk Observatory Report. Bilbao (Spain): European Agency for Safety and Health at Work; 2009.
- [2] Deschamps F, Paganon-Badinier I, Marchand AC, Merle C. Sources and assessment of occupational stress in the police. *J Occup Health* 2003;45:358–64.
- [3] Collins PA, Gibbs AC. Stress in police officers: a study of the origins, prevalence and severity of stress-related symptoms within a county police force. *Occup Med (Lond)* 2003;53:256–64.
- [4] Violanti JM, Aron F. Ranking police stressors. *Psychol Rep* 1994;75:824–6.
- [5] Kirkcaldy B, Cooper CL, Ruffalo P. Work stress and health in a sample of U.S. police. *Psychol Rep* 1995;76:700–2.
- [6] Brough P. Comparing the influence of traumatic and organisational stressors upon the psychological health of police, fire and ambulance officers. *Int J Stress Manag* 2004;11:227–44.
- [7] Schmidtke A, Fricke S, Lester D. Suicide among German federal and state police officers. *Psychol Rep* 1999;84:157–66.
- [8] McCafferty FL, McCafferty E, McCafferty MA. Stress and suicide in police officers: paradigm of occupational stress. *South Med J* 1992;85:223–43.
- [9] Confederation of British Industry (CBI). Focus on absence. *Absence and Labour Turnover Survey*. London (UK): CBI; 1999. p. 5–9.
- [10] Her Majesty's Inspectorate of Constabulary (HMIC). Lost time. The management of sickness absence and medical retirement in the police service. *The-matic inspection report*. London (UK): HMIC; 1997. p. 59–75.

- [11] Smith DR, Devine S, Leggat PA, Ishitake T. Alcohol and tobacco consumption among police officers. *Kurume Med J* 2005;52:63–5.
- [12] Richmond RL, Wodak AK, Heather L. Research report: how healthy are the police? A survey of lifestyle factors. *Addiction* 1998;93:1729–37.
- [13] Dunham RG, Lewis L, Alpert GP. Testing the police for drugs. *Crim Law Bull* 1998;24:155–66.
- [14] Pinfold V, Huxley P, Thornicroft G, Farmer P, Toulmin H, Graham T. Reducing psychiatric stigma and discrimination—evaluating an educational intervention with the police force in England. *Soc Psychiatry Psychiatr Epidemiol* 2003;38:337–44.
- [15] Biggam FH, Power KG, MacDonald RR, Carcary WB, Moodie E. Self-perceived occupational stress and distress in a Scottish police force. *Work Stress* 1997;11:118–33.
- [16] Jackson C. The General Health Questionnaire. *Occup Med (Lond)* 2007;57:79.
- [17] Garyfallos G, Karastergiou A, Adamopoulou A, Moutzoukis C, Alagiozidou E, Mala D, Garyfallos A. Greek version of the General Health Questionnaire: accuracy of translation and validity. *Acta Psychiatr Scand* 1991;84:371–8.
- [18] Skevington SM, Lotfy M, O'Connell KA., WHOQOL group. The World Health Organization's WHOQOL-BREF quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL Group. *Qual Life Res* 2004;13:299–310.
- [19] Ginieri-Coccosis M, Triantafillou E, Tomaras V, Soldatos C, Mavreas V, Christodoulou G. Psychometric properties of WHOQOL-BREF in clinical and health Greek populations: incorporating new culture-relevant items. *Psychiatriki* 2012;23:130–42.
- [20] Andreou E, Alexopoulos EC, Lionis C, Varvogli L, Gnardellis C, Chrousos GP, Darviri C. Perceived Stress Scale: reliability and validity study in Greece. *Int J Environ Res Public Health* 2011;8:3287–98.
- [21] Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav* 1983;24:385–96.
- [22] Berg AM, Hem E, Lau B, Ekeberg Ø. An exploration of job stress and health in the Norwegian police service: a cross sectional study. *J Occup Med Toxicol* 2006;1:26.
- [23] Slottje P, Twisk JW, Smidt N, Huizink AC, Witteveen AB, van Mechelen W, Smid T. Health-related quality of life of firefighters and police officers 8.5 years after the air disaster in Amsterdam. *Qual Life Res* 2007;16:239–52.
- [24] Lipp ME. Stress and quality of life of senior Brazilian police officers. *Span J Psychol* 2009;12:593–603.
- [25] Brown J, Cooper C, Kirkcaldy B. Occupational stress among senior police officers. *Br J Psychol* 1996;87:31–41.
- [26] Golderberg D, Williams P. A user's guide to the General Health questionnaire. Berkshire (UK): NFER-Nelson; 1988.
- [27] Willmott SA, Boardman JA, Henshaw CA, Jones PW. Understanding General Health Questionnaire (GHQ-28) score and its threshold. *Soc Psychiatry Psychiatr Epidemiol* 2004;39:613–7.
- [28] He N, Zhao J, Archbold CA. Gender and police stress. *Int J Police Strateg Manag* 2002;4:687–708.
- [29] Scanff CL, Taugis J. Stress management for police special forces. *J Appl Sport Psychol* 2002;14:330–43.
- [30] Cooper CL. Stress prevention in the police. *Occup Med (Lond)* 2003;53:244–5.