

## Research Article

# Role conflict, role ambiguity, and burnout in nurses and physicians at a university hospital in Turkey

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### Abstract

In many countries currently, health-care professionals experience burnout in their professional life. This study explored the relationship between burnout, and role conflict and role ambiguity in nurses and physicians at a university hospital in Turkey. The data were collected by questionnaires that included sociodemographic variables, Maslach's Burnout Inventory (MBI), and Rizzo's Role Conflict and Role Ambiguity Scales. Two hundred and fifty one health-care professionals (170 physicians and 81 nurses) responded to the survey. There was a strong positive correlation between the MBI and Rizzo's Role Conflict and Role Ambiguity Scales. The nurses showed significantly higher levels of role conflict, role ambiguity, and burnout compared to the physicians. A multiple regression analysis showed that role conflict and role ambiguity might help to explain the higher level of burnout experienced by the nurses compared to the physicians. Future research is needed to develop preventive measures for the burnout of health-care professionals.

### Key words

burnout, health-care professionals, nurses, physicians, role ambiguity, role conflict.

## INTRODUCTION

Burnout was first described by Freudenberger (1974: 159) as "the extinction of motivation or incentive, especially where one's devotion to a cause or relationship fails to produce the desired results". Maslach (1976) noted that burned-out professionals lose their concern for the persons they work with and come to treat them in detached or even dehumanized ways. These observations led to the well-accepted definition of burnout of Maslach and Jackson (1981) as a syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment. Emotional exhaustion refers to the depletion of one's emotional resources and the feeling that one has reached the end of the road and has nothing left to give to others at a psychological level (Jackson & Schuler, 1983). Depersonalization is an attempt to put distance between oneself and service recipients by actively ignoring the qualities that make them unique and engaging people. A depersonalized person might have an insulting and cynical approach to others (Leiter & Harvie, 1996; Maslach *et al.*, 2001). Another aspect of burnout is the perception that one's accomplishments on the job fall short of personal expectations, a perception that involves a negative self-evaluation in the absence of feedback from co-workers and other precipitating factors of burnout (Jackson & Schuler, 1983). Maslach's Burnout Inventory (MBI) is commonly used as a

research tool in the current literature to measure the level of burnout (Lee *et al.*, 1990; Kanste *et al.*, 2006; Wu *et al.*, 2007).

Hospitals are institutions where health-care professionals have direct contact with patients and are exposed to their emotional and physical needs. Patient care can offer both intrinsic satisfaction and stress for nurses and physicians. Nurses might experience considerable stress in their job because they have long working hours, a wide range of tasks, and complex relationships with patients, their family, physicians, and other co-workers (Maslach *et al.*, 2001). Wu *et al.* (2007) emphasized occupational stress factors in nurse burnout. Vahey *et al.* (2004) indicated that 40% of 820 nurses suffered from burnout and 25% of the hospital nurses considered leaving their work due to the burnout syndrome. The specific risk factors for the burnout of physicians have not been established clearly. Previous studies indicated that the highest burnout scores were noted for general practitioners, residents, and young physicians if there was a lack of role clarity (Olkinuora *et al.*, 1990; Chopra *et al.*, 2004). When idealistic nurses and physicians enter the workforce and face difficulties and stress in their working environment, they might begin to lose ambition, devotion, and affection for their work and experience exhaustion (Cherniss, 1995; Payne, 2000).

The characteristics of the job and work environment, a lack of well-defined job responsibilities and expectations, rewards, support groups, consultation, and employee empowerment, workload, excessive and outdated policies and procedures, and excessive control, are organizational factors that contribute to the development of burnout (Maslach & Jackson,

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1981; Lambert & Lambert, 2007). Previous studies indicated that organizational variables have a stronger effect than personal factors in the development of burnout (Maslach *et al.*, 1997; Payne, 2000).

In addition to these general organizational and personal characteristics, specific properties of the job can have an impact in the development of burnout. For example, health-care professionals usually spend most of their working period in contact with patients and with their colleagues. Helping people who have significant health problems is a challenge. This can be rewarding when patients show their respect and gratitude after their treatment; however, patients and their relatives can become highly demanding (Slaby, 1994). In addition, concerns about malpractice issues, being responsible for patients, and being idealistic can make health-care professionals more obsessive at work and make them devote less time for rest (De Valk & Oostrom, 2007).

Role conflict and role ambiguity have been identified as important causes of work-related stress (Katz & Kahn, 1977; Lambert & Lambert, 2001). Role conflict exists when an individual has two or more role requirements that work against each other. In matrix-style organizations, the principles of chain of command, unity of command, and direction of command have certain implications for role conflict (Rizzo *et al.*, 1970). Role ambiguity involves uncertainty about what should be accomplished in the job (Matteson & Ivancevich, 1982; Chang & Hancock, 2003). A lack of agreement or coordination among role senders produces a pattern of sent expectations that contains logical incompatibilities or that takes inadequate account of the needs and abilities of the focal person (Kahn *et al.*, 1964). Role conflict and role ambiguity can evoke increased occupational stress, decreased professional performance, and impaired organizational efficiency (Rizzo *et al.*, 1970; Lambert & Lambert, 2001).

Spence Laschinger and Finegan (2008) proposed that nursing shortages can increase the risk of burnout among nurses. In the Turkish health-care system, there is a shortage of nurses. The mean ratio of nurses to physicians is 1.1 in Turkey, which is much lower than the mean ratio (2.9) of other Organisation for Economic Cooperation and Development (OECD) countries (OECD, 2007). Health-care professionals are employed by the government at university hospitals in Turkey and the nurse-to-physician ratio might be low at these hospitals due to budget constraints. In addition, the Turkish health-care system has a highly complex structure. Turkish university hospitals have various organizational committees but they also have a vertical management tradition that results in a certain amount of hierarchy. The relationships within and between the institutions are not well structured or well regulated (Demir *et al.*, 2003). In recent years, the health-care system in Turkey has undergone major transformational changes. The government has aimed to increase the number of physicians and nurses throughout the country. In the past, university hospitals were located only in major cities, such as Ankara, Istanbul, and Izmir. More than twenty new university hospitals have been built throughout the nation since 1996 to improve medical care. However, there are no data related to the psychosocial work climate

and job-related experiences of the health-care professionals working at these university hospitals. We planned a study to explore the relationship of burnout with role conflict and role ambiguity in nurses and physicians at a university hospital in Turkey.

## MATERIALS AND METHODS

The study was conducted at a university hospital that has been serving as a major referral center since 1996, with a bed capacity of 220 patients, in the western Black Sea region of Turkey. We believe that the organizational profile and work climate of this hospital might represent the characteristics of other newly established university hospitals throughout the nation. The sample of this research contained all the nurses and physicians (residents and faculty members) who were actively involved in patient care. The ethical requirements were met by obtaining informed consent from the participants and appropriate permission from the chief director of the hospital.

The questionnaire that was used in this study was composed of three sections. The first section explored the socio-demographic characteristics of the participants by eleven questions, including their age, sex, marital status, and number of working hours. The second section of the questionnaire was the MBI, which constituted 22 questions on three subscales, including emotional exhaustion (nine questions), depersonalization (five questions), and reduced personal accomplishment (eight questions), on a five-grade Likert scale ("never" = 1, "rarely" = 2, "sometimes" = 3, "often" = 4, and "always" = 5). In the MBI, high scores in emotional exhaustion and depersonalization and low scores in personal accomplishment indicate a higher level of burnout; however, we reversed the scores for low personal accomplishment before running our analysis, so that high scores indicated a higher level of burnout. The third section of the questionnaire was developed by Rizzo *et al.* (1970) and included 14 questions about role conflict (eight questions) and role ambiguity (six questions). The questions for role conflict ("never true" = 1, "rarely true" = 2, "sometimes but infrequently true" = 3, "neutral" = 4, "sometimes true" = 5, "usually true" = 6, and "always true" = 7) and role ambiguity ("always true" = 1, "usually true" = 2, "sometimes true" = 3, "neutral" = 4, "sometimes but infrequently true" = 5, "rarely true" = 6, and "never true" = 7) were evaluated on a seven-grade Likert scale. High scores indicate a higher level of role conflict and role ambiguity in our analysis.

The total workforce of the university hospital was 255 nurses and physicians. All patient care services were included in our study. The questionnaires were distributed to all the participants and the completed surveys were collected on the following day; 251 out of 255 participants (170 physicians and 81 nurses) responded to the survey, with a response rate of 98%. All of these returned surveys were included in our analysis.

The hypotheses of this study were:

Hypothesis 1: Certain sociodemographic variables (age, sex, number of working hours, length of service, and

self-perception of work performance) are associated with all three subscales (emotional exhaustion, depersonalization, and low personal accomplishment) of burnout.

Hypothesis 2: Nurses have higher levels of burnout in all subscales compared to the physicians.

Hypothesis 3: The burnout levels in the three subscales are associated with the level of role conflict and role ambiguity.

The data were evaluated by using the SPSS statistical software package (v. 15.0; SPSS, Chicago, IL, USA). A reliability analysis was carried out and Cronbach's alpha ( $\alpha$ ) levels were obtained for internal consistency of the measurement scales. The sociodemographic variables are described in Table 1. We used the independent *t*-test and one-way analysis of variance to test the association of the demographic variables with the three subscales of burnout. Pearson's correlation analysis was used to evaluate the correlation within the subscales of burnout, role conflict, and role ambiguity. Standard multiple linear regression analysis (not stepwise or hierarchical) was used to develop a model estimating the contribution of role conflict and role ambiguity on the three subscales of burnout.

In this model, role conflict and role ambiguity were independent variables and the subscales of burnout (emotional exhaustion, depersonalization, and low personal accomplishment) were the dependent variables. All the physicians and nurses were evaluated together and regression coefficients ( $R^2$  and adjusted  $R^2$ ) were calculated. The main outcome measure of our study was to predict the effects of role conflict and role ambiguity on burnout levels.

## RESULTS

A reliability analysis was carried out for the study items. The Cronbach's  $\alpha$  was found to be 0.89 for emotional exhaustion, 0.68 for depersonalization, and 0.77 for low personal accomplishment in the MBI subscales; the Cronbach's  $\alpha$  was 0.82 for role conflict and 0.79 for role ambiguity in Rizzo's instrument.

The frequency distribution of the participants according to sociodemographic variables and the level of burnout (emotional exhaustion, depersonalization, and low personal accomplishment) are summarized in Table 1.

Our results showed that the women perceived higher emotional exhaustion ( $t = -3.19$ ,  $P = 0.002$ ) and lower personal

**Table 1.** Frequency distribution and percentages of the sociodemographic variables of the physicians and nurses and their burnout scores in three subscales

Variable	N	%	Emotional exhaustion <sup>†</sup> Mean (SD)	Depersonalization <sup>†</sup> Mean (SD)	Low personal accomplishment <sup>†</sup> Mean (SD)
Sex			$t = -3.19$ ; $P = 0.002$	$t = -1.80$ ; $P = 0.073$	$t = -5.36$ ; $P < 0.001$
Male	104	41.4	1.59 (0.85)	0.93 (0.73)	0.89 (0.60)
Female	147	58.6	1.96 (0.96)	1.11 (0.79)	1.34 (0.74)
Marital status			$t = -2.41$ ; $P = 0.017$	$t = -2.05$ ; $P = 0.042$	$t = 0.62$ ; $P = 0.538$
Married	171	68.1	1.70 (0.85)	0.96 (0.65)	1.17 (0.71)
Single	80	31.9	2.03 (1.06)	1.20 (0.96)	1.11 (0.74)
Age (years)			$t = 5.38$ ; $P < 0.001$	$t = 4.08$ ; $P < 0.001$	$t = 4.21$ ; $P < 0.001$
$\leq 34$	178	70.9	1.98 (0.97)	1.14 (0.82)	1.27 (0.72)
$\geq 35$	73	29.1	1.40 (0.68)	0.78 (0.57)	0.86 (0.64)
Number of hours of work per day			$F = 10.83$ ; $P < 0.001$	$F = 2.65$ ; $P = 0.072$	$F = 4.79$ ; $P = 0.009$
$\leq 8$	89	35.5	1.49 (0.74)	0.90 (0.75)	1.34 (0.78)
9–16	125	49.8	1.91 (0.94)	1.08 (0.72)	1.06 (0.63)
$\geq 17$	37	14.7	2.24 (1.06)	1.22 (0.93)	1.03 (0.78)
Length of service (years)			$F = 5.61$ ; $P = 0.001$	$F = 2.55$ ; $P = 0.056$	$F = 2.02$ ; $P = 0.112$
$\leq 4$	63	25.1	2.03 (0.96)	1.12 (0.87)	1.25 (0.73)
5–9	99	39.4	1.95 (0.99)	1.14 (0.75)	1.18 (0.70)
10–14	58	23.1	1.54 (0.77)	0.91 (0.75)	1.16 (0.72)
$\geq 15$	31	12.4	1.42 (0.74)	0.78 (0.59)	0.87 (0.75)
Role			$t = -5.26$ ; $P < 0.001$	$t = -3.48$ ; $P = 0.001$	$t = -4.34$ ; $P < 0.001$
Physician	170	67.7	1.61 (0.86)	0.92 (0.71)	1.02 (0.66)
Nurse	81	32.3	2.23 (0.93)	1.29 (0.83)	1.44 (0.75)
Self-perception of work performance			$F = 22.33$ ; $P < 0.001$	$F = 14.59$ ; $P < 0.001$	$F = 6.81$ ; $P = 0.001$
Poor	12	4.8	3.43 (0.35)	2.15 (0.70)	1.77 (0.56)
Average	60	23.9	1.75 (0.73)	1.01 (0.69)	1.28 (0.72)
Satisfactory	179	71.4	1.72 (0.92)	0.97 (0.75)	1.07 (0.71)

<sup>†</sup>Higher scores indicate a higher level of burnout (emotional exhaustion, depersonalization, and low personal accomplishment).

accomplishment ( $t = -5.36$ ,  $P < 0.001$ ) compared to the men, the single participants demonstrated higher emotional exhaustion ( $t = -2.41$ ,  $P = 0.017$ ) and depersonalization ( $t = -2.054$ ,  $P = 0.042$ ) compared to the married health-care professionals, and the younger personnel ( $\leq 34$  years old) showed higher levels of burnout in all three subscales compared to those individuals  $> 35$  years old (Table 1). The health-care professionals who worked  $\leq 8$  h per day had less emotional exhaustion ( $F = 10.83$ ,  $P = 0.000$ ) but higher levels of burnout in the subscale of low personal accomplishment ( $F = 4.79$ ,  $P = 0.009$ ) compared to the participants who worked 9–16 h per day. The more-experienced professionals had lower emotional exhaustion compared to the less-experienced ( $\leq 4$  years) individuals ( $F = 5.61$ ,  $P = 0.001$ ). The health-care professionals who found their work performance was unsatisfactory felt higher levels of burnout in all the subscales ( $F = 6.81$ ,  $P = 0.001$ ). Three demographic characteristics (health professionals  $\leq 34$  years old, nurses, and perceived poor work performance) correlated with all three subscales (emotional exhaustion, depersonalization, and low personal accomplishment) of burnout; however, some variables were not correlated with all these subscales.

Nurses showed higher levels of burnout in all the subscales compared to the physicians (Table 1). In Turkey, nursing is a female profession and all of the nurses in our study were female. In order to eliminate the “gender” factor, we further analyzed the burnout level of the female physicians ( $n = 66$ ) in comparison with the nurses. The nurses ( $n = 81$ ) showed significantly higher levels of burnout in the subscales of emotional exhaustion ( $P < 0.001$ ) and depersonalization ( $P = 0.002$ ) compared to the female physicians, while there

was no significant difference in relation to low personal accomplishment ( $P = 0.07$ ).

We carried out parametric tests as the distribution of the variables fit normal distribution in the comparing groups. The Pearson’s correlation analysis showed that there was a positive and statistically significant correlation between the three subscales of the MBI (emotional exhaustion, depersonalization, and low personal accomplishment) internally. There was also a positive and low internal correlation between Rizzo’s role conflict and role ambiguity scores ( $P < 0.01$ ) (Table 2). The levels of burnout in the three subscales were significantly correlated with the level of role conflict and role ambiguity (Table 2).

The role conflict and role ambiguity levels were significantly higher for the nurses compared to the physicians ( $P < 0.01$ ). As all of the nurses were female, we further compared them with the female physicians. The levels of role conflict ( $P < 0.001$ ) and role ambiguity ( $P = 0.005$ ) were significantly higher for the nurses compared to the female physicians (Table 3).

Among the physicians, the emotional exhaustion, role conflict, and role ambiguity scores were significantly higher in the resident physicians ( $P < 0.01$ ) compared to the faculty members (Table 4).

The linear regression analysis showed that role conflict might be associated with the burnout variables (0.31–0.45;  $P < 0.01$ ) and that role ambiguity might be associated with the burnout variables (0.20–0.23;  $P < 0.01$ ) (Table 5). We constructed our regression equations by multiple linear regression analysis for role conflict and role ambiguity as independent variables. Our results indicated that it is possible

**Table 2.** Correlation between subscales of Maslach’s Burnout Inventory and Rizzo’s Role Conflict and Role Ambiguity Scales ( $n = 251$ )

Subscale	Mean	SD	Emotional exhaustion†	Depersonalization†	Low personal accomplishment†	Role conflict†	Role ambiguity†
Emotional exhaustion	1.81	0.93	(0.890)	–	–	–	–
Depersonalization	1.04	0.77	0.651*	(0.680)	–	–	–
Low personal accomplishment	1.15	0.72	0.209*	0.277*	(0.770)	–	–
Role conflict	4.70	0.88	0.483*	0.403*	0.177*	(0.820)	–
Role ambiguity	3.36	1.01	0.334*	0.326*	0.340*	0.197*	(0.79)

\* $P < 0.01$ . †Higher scores indicate a higher level of burnout (emotional exhaustion, depersonalization, and low personal accomplishment), role conflict, and role ambiguity. The scale reliability coefficients are noted on the diagonal (parentheses). There was a significant correlation between the MBI, Role Ambiguity Scales, and Role Conflict Scales.

**Table 3.** Role conflict and role ambiguity among female physicians and nurses

Variable	N	%	Role conflict† Mean (SD)	Role ambiguity† Mean (SD)
Role			$t = -3.787$ ; $P < 0.001$	$t = -2.833$ ; $P = 0.005$
Female physician	66	45	4.62 (0.74)	3.23 (0.83)
Nurse	81	55	5.06 (0.67)	3.64 (0.94)

†Higher scores indicate a higher level of role conflict and role ambiguity.

**Table 4.** Burnout, role conflict, and role ambiguity among physicians

Physicians	N	%	Emotional exhaustion† Mean (SD)	Depersonalization† Mean (SD)	Low personal accomplishment† Mean (SD)	Role conflict† Mean (SD)	Role ambiguity† Mean (SD)
Role			$t = -5.186; P < 0.001$	$t = -1.435; P = 0.153$	$t = -1.767; P = 0.079$	$t = -9.691; P < 0.001$	$t = -2.991; P = 0.003$
Faculty member	62	36.5	1.18 (0.78)	0.81 (0.73)	0.90 (0.59)	3.80 (0.85)	2.92 (1.11)
Resident	108	63.5	1.85 (0.81)	0.97 (0.70)	1.08 (0.68)	4.95 (0.67)	3.39 (0.91)

†Higher scores indicate higher level of burnout (emotional exhaustion, depersonalization, low personal accomplishment), role conflict and role ambiguity.

**Table 5.** Multiple linear regression analysis of the burnout subscales in relation to role conflict and role ambiguity

Subscale	Emotional exhaustion ( $R^2 = 0.292$ ; adjusted $R^2 = 0.286$ )			Depersonalization ( $R^2 = 0.226$ ; adjusted $R^2 = 0.219$ )			Low personal accomplishment ( $R^2 = 0.128$ ; adjusted $R^2 = 0.121$ )		
	Coefficient estimate (SE)	<i>t</i> -value	<i>P</i> -value	Coefficient estimate (SE)	<i>t</i> -value	<i>P</i> -value	Coefficient estimate (SE)	<i>t</i> -value	<i>P</i> -value
Role conflict	0.45 (0.05)	7.96	< 0.001†	0.31 (0.04)	6.18	< 0.001†	0.09 (0.04)	1.89	0.61
Role ambiguity	0.23 (0.05)	4.55	< 0.001†	0.20 (0.04)	4.50	< 0.001†	0.23 (0.04)	5.25	< 0.001†

†Statistically significant.

to construct the following linear regression equations for the subscales of burnout:

$$EE = -1.093 + 0.45 RC + 0.23 RA,$$

$$D = -1.058 + 0.31 RC + 0.20 RA, \text{ and}$$

$$LPA = -0.40 + 0.09 RC + 0.23 RA,$$

where EE = emotional exhaustion, D = depersonalization, LPA = low personal accomplishment, RC = role conflict, and RA = role ambiguity.

As explanatory variables, role conflict and role ambiguity accounted for 29.2% of the variance (adjusted  $R^2 = 28.6\%$ ,  $F = 51.14$ , and  $P < 0.001$ ) in emotional exhaustion, 22.6% of the variance (adjusted  $R^2 = 21.9\%$ ,  $F = 36.13$ , and  $P < 0.001$ ) in depersonalization, and 12.8% of the variance (adjusted  $R^2 = 12.1\%$ ,  $F = 18.22$ , and  $P < 0.001$ ) in low personal accomplishment (Table 5).

## DISCUSSION

The sample ( $n = 251$ ) in our study included almost all the physicians and nurses working at the same university hospital in Turkey and the high response rate (98.4%) of the participants suggests that the results are representative of the study sample. In our study design, the probability of a type I error ( $\alpha$ ) was set as 0.05 and the sample size (98% of the target population) was adequate for the study power (1- $\beta$ ) in 90% certainty.

In the evaluation of the demographic variables (hypothesis 1), we tested the association of the sociodemographic variables with the subscales of burnout. Only three demographic characteristics ( $\leq 34$  years of age, nurse, and perceived poor work performance) were significantly

associated with all three subscales (emotional exhaustion, depersonalization, and low personal accomplishment) of burnout.

In our study, the women experienced higher levels of burnout in the subscales of emotional exhaustion and low personal accomplishment in comparison to the men. Maslach and Jackson (1981) emphasized the vulnerability of women as they act with more empathy than men. The single health-care professionals experienced higher levels of emotional exhaustion and depersonalization compared to the married ones, which could be explained by the positive effects of sharing and the supportive role of the spouse in order to cope with organizational stress factors.

The participants that were  $\leq 34$  years old had higher levels of burnout in all the subscales compared to the older health-care professionals; therefore, a younger age seems to be a risk factor for burnout syndrome. Older age is usually associated with more experience to handle organizational stress factors and adaptive strategies might be more developed in comparison to a less-experienced health-care professional. In parallel to our results, a number of investigators identified the age factor in the development of burnout (Maslach & Jackson, 1981; Garrosa *et al.*, 2008).

Nurses and physicians who devoted  $\leq 8$  h per day to their work experienced less emotional exhaustion but higher levels of burnout in low personal accomplishment compared to the individuals working 9–16 h per day. Unlike the faculty members, the residents and service nurses stay on duty at the hospital periodically. Devoting a longer period of life to work constitutes more frequent calls on duty, late shifts, and less time spent with family members, and might induce emotional exhaustion (Gelsema *et al.*, 2006). Our findings suggest that more time dedicated to work can have a positive influence on

the self-perception of personal accomplishment; in contrast, Demir *et al.* (2003) reported high levels of burnout in personal accomplishment for nurses who spent longer periods at work.

In our study, the nurses and physicians who were at the beginning of their professional life experienced the highest level of emotional exhaustion in comparison to the more experienced ones. Previous studies proposed that physicians early in their professional life were more prone to develop burnout (Olkinuora *et al.*, 1990). In parallel to these findings, most of the physicians who demonstrated high levels of burnout in our analysis were in a residency program and in their early professional life.

In hospitals, there are many committees, like infection, emergency, surgery, laboratory, radiology, pharmacy, inpatient, outpatient, doctor and nurse training, risk management, and quality control. On a horizontal chart of hospital management, these committees would create a matrix-style organization. Although this matrix-style organization of committees occurs in Turkish university hospitals, the effects of the vertical hospital management tradition create a certain amount of hierarchy among health-care professionals. Therefore, Turkish university hospitals are not pure matrix organizations and have a complex structure that results in coordination problems (Oguzhan *et al.*, 2004). This organizational context can create organizational stress. Nurses are more likely to be exposed to these organizational stress factors compared to the physicians (Ito & Lambert, 2002). In Turkish university hospitals, only the faculty members have organizational autonomy and the residents are under the supervision of the faculty members. The nurses have the lowest level of organizational autonomy, as they are under the supervision of double authorities: head nurses and physicians.

Confirming the second hypothesis of our study, the nurses experienced higher levels of burnout, role conflict, and role ambiguity compared to the physicians. As nursing is a female profession in Turkey and all of the nurses ( $n = 81$ ) in our study were female, we further compared the nurses with the female physicians ( $n = 66$ ) and our results showed higher levels of emotional exhaustion, depersonalization, role conflict, and role ambiguity among the nurses compared to the female physicians. Work overload, direct and more frequent exposure to patients who have a chronic illness, a lack of a retention bonus, and limited professional expectations also might contribute to the increased frequency of burnout among nurses (Felton, 1998; Lambert & Lambert, 2007). Wu *et al.* (2007) proposed that occupational stress among nurses might induce burnout. In Turkey, the work environment of nurses contains several factors that might induce burnout. The nurse-to-physician ratio is accepted by the OECD as a criterion reflecting the development of the health-care system of countries. In our study, the hospital nurse-to-physician ratio was 1:2, which was much lower than the OECD standard (OECD, 2007). In Turkey, the job definitions of nurses are not stated accurately and clearly. Furthermore, low wages, the inadequacy of equipment and materials, working hours that are too long, and an excessive number of patients might have negative effects on the psychosocial life of nurses.

The residents who were in a residency program perceived higher levels of burnout, role conflict, and role ambiguity than the faculty members. This also might support the possible role of organizational hierarchy, which was prominent between the residents and faculty members at the university hospital setting.

We tested the association between role conflict, role ambiguity, and the subscales of burnout (hypothesis 3). We found that the levels of role conflict and role ambiguity were significantly associated with the level of burnout. The multiple regression analysis showed that role conflict can increase emotional exhaustion and depersonalization and that role ambiguity can increase significantly emotional exhaustion, depersonalization, and low personal accomplishment. In previous reports, Lee *et al.* (1990) indicated a correlation between role conflict and the emotional exhaustion and depersonalization subscales of burnout in professional managers. Piko (2006) reported a correlation between role conflict and burnout in nurses; however, role ambiguity was not evaluated in Piko's study. Our study identified that the strongest correlation was between role ambiguity and low personal accomplishment in health-care professionals. Both role ambiguity and role conflict were strongly associated with emotional exhaustion and depersonalization in our study.

## CONCLUSIONS

Previous studies revealed that burnout could have several deteriorating effects, both for the organization and for the health-care professionals (Xianyu & Lambert, 2006). Although not included in our study, official records of the evaluated hospital show a high employee turnover rate, low working capital, and low incentive bonus, which might reflect poor organizational performance. The experience of burnout might diminish one's work performance significantly and poor work performance might put the patients' health at risk, which is not acceptable for health-care organizations. Our study demonstrated that role conflict and role ambiguity might contribute to the development of burnout. Like all studies, this study has some limitations. First, as we used a survey design, the assumption was made that the participants' responses were unlikely to be affected significantly by recall bias and that they understood the questions being posed. Second, this study was limited to a single university hospital. We believe that further studies are necessary, in collaboration with health-care professionals and managerial organizational scientists, so that useful information can be provided in order to redesign the organizational work environment in health-care institutions to prevent burnout in nurses and physicians.

## REFERENCES

- Chang E, Hancock K. Role stress and role ambiguity in new nursing graduates in Australia. *Nurs. Health Sci.* 2003; **5**: 155–163.
- Cherniss C. *Beyond Burnout: Helping Teachers, Nurses, Therapists, and Lawyers Recover from Stress and Disillusionment*. London: Routledge, 1995.
- Chopra SS, Sotile WM, Sotile MO. Physician burnout. *JAMA* 2004; **291**: 633.

- Demir A, Ulusoy M, Ulusoy MF. Investigation of factors influencing burnout levels in the professional and private lives of nurses. *Int. J. Nurs. Stud.* 2003; **40**: 807–827.
- De Valk M, Oostrom C. Burnout in the medical profession – causes, consequences and solutions. *Occup. Health Work* 2007; **4**: 24–29.
- Felton JS. Burnout as a clinical entity – its importance in health care workers. *Occup. Med.* 1998; **48**: 237–250.
- Freudenberger HJ. Staff burnout. *J. Soc. Issues* 1974; **30**: 159–165.
- Garrosa E, Moreno-Jimenez B, Liang Y, Gonzalez JL. The relationship between sociodemographic variables, job stressors, burnout and hardy personality in nurses: an exploratory study. *Int. J. Nurs. Stud.* 2008; **45**: 418–427.
- Gelsema TI, Van der Doef M, Maes S, Janssen M, Verhoeven C. Longitudinal study of job stress in the nursing profession: Causes and consequences. *J. Nurs. Manag.* 2006; **14**: 289–299.
- Ito M, Lambert VA. Communication effectiveness of nurses working in a variety of settings within one large university teaching hospital in western Japan. *Nurs. Health Sci.* 2002; **4**: 149–153.
- Jackson SE, Schuler RS. Preventing employee burnout. *Personnel* 1983; **60**: 58–68.
- Kahn RL, Wolfe DM, Quinn RP, Snoek JD, Rosenthal RA. *Organizational Stress: Studies in Role Conflict and Role Ambiguity*. New York: Wiley&Sons, 1964.
- Kanste O, Miettunen J, Kyngas H. Factor structure of the Maslach Burnout Inventory among Finnish nursing staff. *Nurs. Health Sci.* 2006; **8**: 201–207.
- Katz D, Kahn RL. *The Social Psychology of Organizations* (2nd edn). New York: Wiley, 1977.
- Lambert VA, Lambert CE. Literature review of role stress/strain on nurses: an international perspective. *Nurs. Health Sci.* 2001; **3**: 161–172.
- Lambert VA, Lambert CE. Workplace and personal factors associated with physical and mental health in hospital nurses in China. *Nurs. Health Sci.* 2007; **9**: 120–126.
- Lee RT, Ashforth BE, Blake E. On the meaning of Maslachs's three dimensions of burnout. *J. Appl. Soc. Psychol.* 1990; **75**: 743–747.
- Leiter M, Harvie PL. Burnout among mental workers: a review and a research agenda. *Int. J. Psychiatry* 1996; **42**: 90–101.
- Maslach C. Burned-out. *Hum. Behav.* 1976; **5**: 16–22.
- Maslach C, Jackson SE. The measurement of experienced burnout. *J. Occup. Behav.* 1981; **2**: 99–113.
- Maslach C, Jackson SE, Leiter MP. *The Truth about Burnout: How Organizations Cause Personal Stress and What to Do about It*. San Francisco: Josey-Bass, 1997.
- Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu. Rev. Psychol.* 2001; **52**: 397–422.
- Matteson M, Ivancevich J. Type A and B behavior patterns and health symptoms: examining individual and organizational fit. *J. Occup. Med.* 1982; **24**: 585–589.
- Oguzhan T, Bebitoglu G, Ustu Y. Hospital administration operations in Turkey. *J. Acad. Hosp. Adm.* 2004; **16**: 2.
- Olkinuora M, Asp S, Juntunen J *et al.* Stress symptoms, burnout and suicidal thoughts in Finnish physicians. *Soc. Psychiatr. Epidemiol.* 1990; **25**: 81–86.
- Organisation for Economic Cooperation and Development (OECD). *Health at a Glance 2007: OECD Indicators*. Paris: Organisation for Economic Cooperation and Development, 2007.
- Payne N. Occupational stressors and coping as determinants of burnout in female hospice nurses. *J. Adv. Nurs.* 2000; **33**: 396–405.
- Piko BF. Burnout, role conflict, job satisfaction and psychological health among Hungarian health care staff: a questionnaire survey. *Int. J. Nurs. Stud.* 2006; **43**: 311–318.
- Rizzo JR, House RJ, Lirtzman SI. Role conflict and ambiguity in complex organizations. *Adm. Sci. Q.* 1970; **15**: 150–163.
- Slaby AE (ed.). *Handbook of Psychiatric Emergencies* (4th edn). Norwalk, CT: Appleton & Lange, 1994.
- Spence Laschinger HK, Finegan J. Situational and dispositional predictors of nurse manager burnout: a time-lagged analysis. *J. Nurs. Manag.* 2008; **16**: 601–607.
- Vahey DC, Aiken LH, Sloane DM, Clarke SP, Vargas D. Nurse burnout and patient satisfaction. *Med. Care* 2004; **42**: 57–66.
- Wu S, Zhu W, Wang Z, Wang M, Lan Y. Relationship between burnout and occupational stress among nurses in China. *J. Adv. Nurs.* 2007; **59**: 233–239.
- Xianyu Y, Lambert VA. Investigation of the relationships among workplace stressors, ways of coping and mental health of Chinese head nurses. *Nurs. Health Sci.* 2006; **8**: 147–155.