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# The Relationship Between Defense Mechanisms and Nurses' Occupational Burnout: A Cross-sectional Study

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## Abstract

**Background:** Occupational burnout is a psychological syndrome that occurs in response to chronic stress in the workplace. Nowadays, it is known as one of the most important consequences of occupational stress. Defense mechanisms may also affect occupational burnout.

**Objectives:** Since burnout is an important factor influencing the productivity of nurses, this study was conducted to investigate the relationship between the defense mechanisms and occupational burnout among nurses in the educational hospitals of an urban area in Iran.

**Methods:** This descriptive cross-sectional study was conducted on 318 nurses who had at least one-year of work experience in four educational hospitals in Sari city, Iran, in 2018. Sampling was performed using the proportional stratified sampling method. The data were collected by the Maslach Burnout Inventory (MBI) scale, psychological Defense Styles questionnaire (DSQ-40), and a demographic questionnaire. Data were analyzed using descriptive and inferential statistics via the SPSS software V.20.

**Results:** A total of 318 nurses were studied, 13 (4.1%) of the nurses had a burnout. The mean score of the dimension of emotional exhaustion (EE) was 17.49, in the dimension of depersonalization (DP) it was 5.42, and in the dimension of personal achievement (PA) it was 31.58. They indicated a low level of occupational burnout, and the mean scores of FE, DP, and PA subscales indicated a low level of occupational burnout. The use of more mature defense mechanisms had a significant negative correlation with the increase of the EE score (rho = -0.210, $P < 0.001$), but no significant relationship was reported with other aspects of burnout. Increased use of immature defense mechanisms had a direct correlation with the increase in the score of DP (rho = 0.255 and $P < 0.001$), but had a significant inverse relationship with the PA score (rho = -0.238 and $P < 0.001$) and no significant relationship with EE ($P = 0.627$). No significant relationship was found between the use of neurotic defense mechanisms and burnout dimensions ($P_{EE} = 0.119$, $P_{DP} = 0.174$, and $P_{PA} = 0.127$).

**Conclusions:** Since there is a significant relationship between defense mechanisms and occupational burnout, using the components of defense mechanisms in job interviews can lead to choosing appropriate nurses to perform different tasks in different settings, in accordance with individual and psychological characteristics. Also, teaching problem-solving skills, stress management, and useful information can improve defense mechanisms, nurses' job performance, and patient satisfaction.

*Keywords:* Defense Mechanisms, Defense Styles, Depersonalization, Emotional Exhaustion, Nurses, Occupational Burnout, Personal Achievement

## 1. Background

Occupational burnout is a response to chronic stress in the workplace and is recognized as one of the most important consequences of occupational stress (1, 2). This psychosocial syndrome is an internal response to external stressors and includes three dimensions of emotional

exhaustion (EE), depersonalization (DP) (negative reaction and neglecting the client), and decrease in personal achievement (PA) (losing abilities and success in the job) (3, 4). The symptoms of burnout are usually a combination of psychiatric, psychosomatic, physical, and social disorders. The main psychological symptoms of this condition included chronic fatigue and persistent burnout and at the top of symptoms are mental dysfunction. Concentration and memory impairments (reduction of precision), personality changes (loss of interest, disorientation, aggression), anxiety, and depression that can lead to suicide as well as addiction are the consequences of exhaustion. Common symptoms included headache, digestive disorders (irritable stomach, diarrhea), cardiovascular disorders such as tachycardia, arrhythmias, and hypertonia. In addition, according to the severity of burnout, negative social consequences such as abandonment of work and personal life (sexual problems and social isolation) can be observed (5).

This descriptive cross-sectional study (2013) was conducted on 230 nurses in the educational, therapeutic hospital in Sari, Iran, using the Maslach Burnout Inventory (MBI) scale. This study revealed moderate levels of EE (26%), low levels of DP (15%), and a sense of PA (60%) (1).

The consequences of burnout on employees, clients, and other facilities can be very serious. Occupational burnout can reduce the quality of the provided services by staff. Also, it can be an important factor in leaving the job and low mood that can be accompanied by individual complaints such as somatic fatigue, insomnia, increased alcohol and drug consumption, and familial problems (6). The lack of job satisfaction and occupational burnout not only causes human errors but also imposes high costs on the organizations (7). Therefore, the identification of factors affecting burnout will be beneficial to improve the quality of healthcare services. According to the previous studies, various factors such as age, gender, marital status, work experience, work shift, income, emotional and physical components, and mental health influence occupational burnout. Attention to other factors, such as personality characteristics, is recommended to assess occupational burnout (8-12).

Defense mechanisms are psychological strategies that are unconsciously used to protect us from anxiety arising from unacceptable thoughts or feelings and inadequacy feelings and maintain self-esteem (10). Defense is a psychological mechanism that interferes with individuals' wishes, needs, emotions, and impulses. On the other hand, it interferes with internal intrusions and external facts (13). Whether the individual is normal or neurotic, different degrees of defense mechanisms are helpful. Defense mechanisms have the ability to eliminate impulses, limit social relationships, change reality, reduce learning, consciously know ourselves, change our awareness of our conflicts and influence conflicting feelings with our beliefs (14).

In a longitudinal study on men who were followed for 50 years, Vaillant (14) showed a positive correlation between the continuity of job and a successful emotional life with mature defense mechanisms. Also, it had a negative correlation with immature defense mechanisms (15). Defense mechanisms may also affect occupational burnout. However, so far there have been few studies on the relationship between these two variables on the personnel in Iran. The results of a study in Iran, regarding the use of defense mechanisms in assessing burnout in the airline personnel, showed that immature defense mechanisms had positive and significant effects on EE, and mature and neurotic defense mechanisms had significant effects on DP. Also, mature and neurotic defense mechanisms had significant effects on PA (16).

Several studies showed that nurses were more likely to experience burnout than other occupations. The US Bureau of Information has reported that healthcare jobs are associated with the highest levels of occupational injuries, including occupational burnout (9). Some other studies reported the rate of nursing occupational burnout in the United States was four times higher than in other service industries (17). It was indicated that if nurses, as the members or co-ordinators of the healthcare team did not play an active role, the provision of care would face some problems. Owing to heavy workload, the lack of adequate support and job security, low salaries, and high work hours, nurses are often not motivated to engage in activities and take responsibilities (18, 19).

## 2. Objectives

Given that occupational burnout seems to be an important factor in reducing the productivity of nurses and there is not research about the relationship between defense mechanisms and occupational burnout among nurses in Mazandaran Province, this study aimed to investigate the relationship between defense mechanisms and occupational burnout among nurses in educational hospitals in an urban area of Iran. The findings of this study can be used in occupational examinations to measure occupational burnout in nurses and take necessary interventions to reduce it.

## 3. Methods

### 3.1. Participants

Sampling was performed using the proportional stratified sampling method that was proportional to the num-

ber of nurses working in internal medicine (all general and specialized internal wards), surgery (all surgical wards), critical care wards (ICU, NICU, and BICU), pediatrics, emergency, psychiatry, psychosomatic, burn and obstetrics, and gynecology wards. The nurses who had at least one year of work experience and were satisfied with participation in this study were included. In contrast, nurses with a history of psychiatric disorders and chronic diseases such as severe low back pain and migraine headache were excluded.

### 3.2. Sample Size

The following sampling formula was used to estimate the sample size:

$$\omega = \frac{1}{2} Ln \frac{1+r}{1-r} n = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2}{(\omega)^2} + 3 \quad (1)$$

Given the correlation coefficient between the scores of each of the three dimensions of defense mechanisms and the score of each dimension of burnout based on the findings of the study by Sepidehdam and Karimi (16), $\alpha = 0.05$ and $\beta = 0.20$, and considering the largest possible sample size, the sample size was estimated at 274 individuals. Subsequently, assuming 10% attrition, the final sample size was determined by 318 individuals.

### 3.3. Procedure

This was a descriptive cross-sectional study with a correlation design, which was conducted on nurses employed in four educational hospitals in the northern part of Iran in 2018.

### 3.4. Instruments

The Maslach Burnout Inventory (MBI), Defense Mechanisms questionnaire (DSQ-40), and demographic data questionnaire were used for data collection.

#### 3.4.1. Maslach Burnout Inventory (MBI)

The MBI is the most common standard golden measurement tool for measuring occupational burnout (20). It consists of 22 items consisting of three dimensions of (EE), (DP), and (PA). Nine items are about EE, 5 items are related to DP, and 8 items are about PA. In the dimension of EE, a score of 30 or more indicates a high level and scores 18-29 and less than 17 indicate average and low levels of burnout, respectively. In the DP dimension, the score of 12 or higher indicates a high level, a score of 7 - 11 an average level and a score of less than 6 shows a low level. In the dimension of PA, a score of 40 or higher indicates a high level, the average level is for the score of 34 - 39, and a low level is for the score of 33. The high scores of EE and DP, and a low score of PA indicate a high level of burnout. The validity and reliability of this questionnaire were confirmed in Iranian studies so that in a study Cronbach's alpha coefficients of this questionnaire with a sample of hospital staff in Isfahan were as follows: EE = 0.88, PA = 0.86, DP = 0.79 and for the whole questionnaire was 0.83 (21).

#### 3.4.2. Psychological Defense Styles Questionnaire (DSQ-40)

This 40-item questionnaire with a 9-point Likert scale was developed by Andrews, Singh, and Bond in 1993. This instrument measures 20 defense mechanisms as follow: immature mechanisms (rationalization, projection, denial, omnipotence, devaluation, transition, somatization, autistic fantasy, splitting, passive aggression, displacement, and isolation), mature mechanisms (suppression, sublimation, humor, anticipation), and neurotic defenses (puedo-altruism, reaction formation, intellectualization, and undoing) (22, 23). The DSQ-40 had been used in many studies and translated into other languages such as Japanese, Chines, French, and Portugues. It has been shown to be valid in most studies (23). For each defense mechanism, there are two questions. The person in each of the defense mechanisms obtains a score between 2 and 18. In each of the defense mechanisms in which the individual score is increased from 10, it means that the individual uses that mechanism. In general, the mean of the individual scores in each mechanism was determined and compared with the mean score of the person in other mechanisms. The highest mean score in a mechanism shows which mechanism is used by the person (22, 24). A study was conducted by Heidarinasab et al. (23) with the aim of factor analysis of the defense mechanisms' questionnaire. It showed that although nested defense mechanisms in all three styles were different from the findings of Andrews et al. (22), it supported the results of this study. Besharat et al. (25) calculated Cronbach's alpha coefficients for each of the mature, immature, and neurotic defence mechanisms and reported them as 0.75, 0.73, and 0.74, respectively. They reported the test/retest reliability score with a four-week interval, indicating the appropriate reliability of this questionnaire (25).

#### 3.4.3. Demographic Characteristics Questionnaire

In this study, a researcher-made questionnaire was used for demographic data, including questions about age, gender, level of education, marital status, number of children, employment status, workplace hospital, work experience, work area, job satisfaction, work shift, maximum work shift, satisfaction with shift work, mean of weekly work time, family income, overtime, second job, place of residence, type of residence, history of psychiatric prob-

lems, history of referral to the psychiatrist, and drug and alcohol use.

### 3.5. Ethical Considerations

The research proposal was approved by the Ethics Committee affiliated with Mazandaran University of Medical Sciences (ethical code: IR.MAZUMS.REC.1396.10367). The questionnaires were distributed among the nurses in different wards, and necessary explanations were provided to them. Those nurses that were willing to fill out the questionnaires signed written informed consent forms. Filling out the questionnaires indicated the individuals' satisfaction with participation in the study. Anonymity and confidentiality of the data collection process were described to the nurses. The researchers presented detail about the aim and method of the study. Also, they could access findings if they requested.

### 3.6. Statistical Analysis

Descriptive and inferential statistics were used for data analysis via SPSS software V.20. To describe quantitative variables such as age, the score of each defensive mechanisms, each dimension of occupational burnout and work experiences, mean and standard deviations (mean $\pm$ SD), or median and median range (depending on the normal distribution of data) were used. Percentage and frequency were used for qualitative data such as gender, marital status, employment status, type of hospital ward, type of job shifts, etc. The normal distribution of quantitative variables was investigated by drawing a histogram and plotting the normal distribution curve as well as the Kolmogorov-Smirnov test.

For single-variable analysis, the independent *t*-test, Pearson correlation coefficient, ANOVA, Mann-Whitney U-test, Spearman Rank correlation coefficient, and Kruskal-Wallis tests were used. Also, a multiple linear regression test was used to predict the general score of job burnout (dependent variable) based on independent variables such as age, gender, marital status, employment status, and defense mechanism scores. $P < 0.05$ was considered statistically significant.

## 4. Results

### 4.1. Demographic Characteristics

The demographic characteristics of the nurses are presented in Table 1.

### 4.2. Occupational Burnout and Its Dimensions

Of 318 nurses, 13 (1.4%) had occupational burnout. The mean score of the dimension of EE was 17.49, in the dimension of DP, it was 5.42 and in the dimension of PA, it was 31.58. They indicated a low level of occupational burnout. The frequency of individuals at high, medium, and low levels in each dimension of occupational burnout showed that most nurses were low in all three dimensions (Table 2).

### 4.3. Describing Defense Mechanisms

Of 318 nurses, 38 (11.9%) nurses had immature defense mechanism, 186 (58.5%) had mature and 94 (29.6%) neurotic defense mechanisms. The mean score of each defense mechanism showed that the highest mean score was related to the advanced predictive mechanism and the lowest mean score was related to immature defence mechanisms of denial.

The frequency of individuals according to the existence or absence of any of the 20 mechanisms showed that the most frequent occurrence was the presence of an advanced predictive mechanism (92.5%) and the least frequent one was for the immature mechanism of denial. The immature mechanism of projection was used by 90 individuals (28.3%).

The scores of the various defense mechanisms are presented in Table 3. The existence and absence of a variety of defense mechanisms are shown in Table 4.

### 4.4. Dimensions of Burnout According to Demographic Characteristics

#### 4.4.1. Age

Most individuals were at a low level of EE and DP. For PA, most individuals in the age group of 20 - 49 years were at a low level, but in the age group of 50 - 60 years, they mostly had a high level of PA. However, the Kruskal Wallis test showed a significant difference between the mean score of occupational burnout in different age groups ($P_{EE} = 0.183$, $P_{DP} = 0.474$, and $P_{PA} = 0.088$).

#### 4.4.2. Gender

The Mann-Whitney U-test showed that the mean rank of EE was different between the two groups. ($P = 0.008$, $Z = -2.647$) and women experienced more EE than men. The mean rank of DP was similar between men and women ($P = 0.761$, $Z = -0.304$). The mean score of PA varied between men and women ($P = 0.037$, $Z = -2.090$) and in women it was more than men.

**Table 1.** Nurses' Demographic Information[a]

| Variables | Values | Variables | Values |
|---|---|---|---|
| **Age range** | | **Overtime work** | |
| 20 - 29 | 127 (39.9) | Yes | 31 (9.74) |
| 30 - 39 | 126 (39.6) | No | 287 (90.25) |
| 40 - 49 | 55 (17.3) | **Income of family, Rials** | |
| 50 - 59 | 10 (3.1) | < 5000000 | 8 (2.5) |
| **Years of service** | | 5000000 - 10000000 | 34 (10.7) |
| 1 - 5 | 121 (38.1) | > 10000000 | 276 (86.8) |
| 6 - 10 | 109 (34.3) | **Home type** | |
| 11 - 15 | 49 (15.4) | Personal | 266 (83.6) |
| 16 - 20 | 21 (6.6) | Rental | 44 (13.8) |
| 21 - 25 | 13 (4.1) | Donate | 8 (2.5) |
| 26 - 30 | 5 (1.6) | **Psychiatric history** | |
| **Unit** | | Yes | 11 (3.5) |
| Internal | 21 (6.6) | No | 307 (96.5) |
| Obstetrics and gynecology | 16 (5.0) | **Refer to psychiatrist** | |
| Surgery | 46 (14.5) | Yes | 13 (4.1) |
| Emergency | 41 (12.9) | No | 305 (95.9) |
| Psychiatry | 47 (14.8) | **Psychotropic history** | |
| Pediatrics | 14 (4.4) | Yes | 10 (3.1) |
| Intensive care unit | 52 (16.4) | No | 307 (96.5) |
| Cardiovascular care unit | 50 (15.7) | Unclear | 1 (0.3) |
| Oncology | 16 (5.0) | **Smoking** | |
| Burning | 15 (4.7) | Yes | 13 (4.1) |
| **Shift work** | | No | 305 (95.9) |
| In circulation | 268 (84.27) | **Substance abuse** | |
| Fix | 50 (15.72) | Yes | 4 (1.3) |
| **Most shift work** | | No | 314 (98.7) |
| Morning | 106 (33.3) | **Child number** | |
| Evening | 23 (7.2) | 0 | 151 (47.5) |
| Morning and evening | 62 (19.5) | 1 | 75 (23.6) |
| Night | 33 (10.4) | 2 | 82 (25.8) |
| Evening and night | 94 (29.6) | 3 | 7 (2.2) |
| **Unit satisfaction** | | 4 | 2 (0.6) |
| Yes | 243 (76.4) | 5 | 1 (0.3) |
| No | 75 (23.6) | | |

[a]Values are expressed as No. (%).

#### 4.4.3. Income Level

There was a significant relationship between the income level of nurses and the mean rank of DP. So the lowest income group had the lowest level of PD (P = 0.12). The income level had no statistically significant relationship with the dimensions of EE and PA ($P_{EE} = 0.055$, $P_{PA} = 0.305$).

**Table 2.** Maslach Burnout Inventory (MBI) Dimension Scores[a]

| Burnout Dimensions | Values |
|---|---|
| **Emotional exhaustion** | |
| Low | 181 (56.9) |
| Moderate | 89 (28.0) |
| High | 48 (15.1) |
| **Depersonalization** | |
| Low | 214 (67.3) |
| Moderate | 61 (19.2) |
| High | 43 (13.5) |
| **Personal accomplishment** | |
| Low | 145 (45.6) |
| Moderate | 86 (27.0) |
| High | 87 (24.4) |

[a]Values are expressed as No. (%).

*4.4.4. Second Job*

The Mann Whitney U-test showed that those nurses who had a second job experience had less EE than those who did not have a second job (P = 0.046). However, the existence or absence of a second job was not associated with and PA ($P_{DP}$ = 0.905 and $P_{PA}$ = 0.952).

*4.4.5. Type of Work Shift and Satisfaction with It*

The Mann Whitney U-test showed that the mean ranks of EE and DP in groups with fixed and variable work shifts were not different ($P_{EE}$ = 0.929, ZEE = -0.90, $P_{DP}$ = 0.188, and ZDP = -1.316). However, the rank of PA was associated with the type of work shift (P = 0.010, Z = -2.576), and the nurses with constant work shifts had more PA. Also, those who were dissatisfied with their work shifts had significantly decreased EE (P < 0.001), DP (P = 0.001), and lower personal integrity (P = 0. 035).

*4.4.6. Workplace and the Degree of Satisfaction with It*

The results of the ANOVA test showed that EE and PA had no relationships with the workplace ($P_{EE}$ = 0.053, FEE = 1.883, $P_{PA}$ = 0.059, FPA = 1.852). The Kruskal Wallis test showed that DP was not related to the workplace (P = 0.056).

Also, satisfaction with the workplace had no associations with all three dimensions of burnout (pEE = 0.000, ZEE = -3.524), (pDP = 0.000, ZDP = -3.775), and (pPA = 0.004, Z = -2.876) such that in those nurses who were dissatisfied with their workplace, the mean scores of EE and DP were higher, but the mean score of PA was lower.

**Table 3.** Mean and Standard Deviations of Defenses Mechanisms[a]

| Defense Styles and Mechanisms | Values |
|---|---|
| **Immature** | |
| Rationalization | 12.98 ± 2.904 |
| Projection | 7.61 ± 3.860 |
| Denial | 8.06 ± 3.784 |
| Omnipotence | 9.80 ± 3.413 |
| Devaluation | 9.29 ± 3.834 |
| Acting out | 9.58 ± 3.584 |
| Somatization | 11.85 ± 3.518 |
| Autistic fantasy | 8.76 ± 4.476 |
| Splitting | 8.90 ± 3.898 |
| Passive aggression | 8.73 ± 3.962 |
| Displacement | 9.51 ± 3.610 |
| Isolation | 8.81 ± 4.035 |
| **Mature** | |
| Suppression | 11.49 ± 3.341 |
| Sublimation | 10.33 ± 3.617 |
| Humor | 11.19 ± 3.480 |
| Anticipation | 13.44 ± 2.810 |
| **Neurotic** | |
| Pseudo altruism | 10.33 ± 3.617 |
| Reaction formation | 8.97 ± 3.815 |
| Idealization | 9.12 ± 3.112 |
| Undoing | 10.21 ± 3.621 |

[a]Values are expressed as mean ± SD.

*4.4.7. Work Experience*

The ANOVA test showed that EE and work experience had no correlations together (P= 0.583, F = 0.756). Based on the Kruskal Wallis test, DP did not correlate with work experience (P = 466), but a significant relationship was found between PA and work experience (P = 0.008). The highest level of PA was observed in the nurses with 21 - 25 years of work experience and the lowest level was in individuals with 16 - 20 years of work experience.

*4.4.8. Other Characteristics (Level of Education, Marital Status, and Overtime)*

No difference was found between the mean score of occupational burnout in individuals at different educational levels ($P_{EE}$ = 0.362, $P_{DP}$ = 0.526, and $P_{PA}$ = 0.428). The mean ranks of occupational burnout in the different marital status groups were similar ($P_{EE}$ = 0.059, $P_{DP}$ = 0.167, and $P_{PA}$ = 0.196). The mean ranks of occupational burnout in different groups of the employment status had no differences

**Table 4.** Frequency of Defense Mechanisms[a]

| Defense Styles and Mechanisms | Values | Defense Styles and Mechanisms | Values |
|---|---|---|---|
| **Immature** | | **Mature** | |
| Rationalization | | Suppression | |
| Yes | 278 (87.4) | Yes | 239 (75.2) |
| No | 40 (12.6) | No | 79 (24.8) |
| Projection | | Sublimation | |
| Yes | 90 (28.3) | Yes | 189 (59.4) |
| No | 228 (71.7) | No | 129 (40.6) |
| Denial | | Humor | |
| Yes | 108 (34.0) | Yes | 236 (74.2) |
| No | 210 (66.0) | No | 82 (25.8) |
| Omnipotence | | Anticipation | |
| Yes | 174 (54.7) | Yes | 294 (92.5) |
| No | 144 (45.3) | No | 24 (7.5) |
| Devaluation | | **Neurotic** | |
| Yes | 151 (47.5) | Pseudo-altruism | |
| No | 167 (52.5) | Yes | 293 (92.1) |
| Acting out | | No | 25 (7.9) |
| Yes | 170 (53.5) | Reaction formation | |
| No | 148 (46.5) | Yes | 141 (44.3) |
| Somatization | | No | 177 (55.7) |
| Yes | 243 (76.4) | Idealization | |
| No | 75 (23.6) | Yes | 206 (64.8) |
| Autistic fantasy | | No | 112 (35.2) |
| Yes | 146 (45.9) | Undoing | |
| No | 172 (54.1) | Yes | 235 (73.9) |
| Splitting | | No | 83 (26.1) |
| Yes | 150 (47.2) | | |
| No | 168 (52.8) | | |
| Passive aggression | | | |
| Yes | 129 (40.6) | | |
| No | 189 (59.4) | | |
| Displacement | | | |
| Yes | 165 (51.9) | | |
| No | 153 (48.1) | | |
| Isolation | | | |
| Yes | 145 (45.6) | | |
| No | 173 (54.4) | | |

[a]Values are expressed as No. (%).

(pEE = 0.934, pDP = 0.146, and pPA = 0.683). The Mann Whitney's U test showed that the burnout dimensions had no correlations with overtime ($P_{EE}$ = 0.481, $P_{DP}$ = 0.526, and $P_{PA}$ = 0.082).

### 4.5. Analysis of Defense Styles Based on Demographic Characteristics

The chi-square test showed that the type of defense mechanism was dominated by individuals independent of their age (P = 0.977). The dominant defense mechanism significantly correlated with gender (P < 0.001), as the prevalence of immature defense mechanisms in men and the prevalence of mature and neurotic defense mechanisms were higher in women. There was no significant relationship between the prevail defense mechanism and the education level (P = 0.139). The dominant defense mechanism of the nurses had a significant relationship with their marital status (P = 0.042). The highest frequency of undeveloped mechanisms was in widows and the lowest frequency was in divorced women. The prevalence of developed defense mechanisms was in divorced women, and the least frequent one was in widows. Also, the neurotic mechanism was the most common in single nurses and was the least frequent in widows and divorced nurses.

In those nurses who were dissatisfied with their work shifts, mature and immature defense mechanisms were more frequent than those who were satisfied, but the neurotic defense mechanism was more prevalent among those who were satisfied with their work shift. The prevalent type of defense mechanism did not significantly correlate with work experience, employment status, workplace, second job, income, overtime, place of residence and housing status (P > 0.05) (Table 5).

### 4.6. Analyzing the Dimensions of Burnout Based on Defense Mechanisms

The *t*-test showed that the mean scores of all three defense mechanisms were not significantly different between the two groups with burnout and without burnout (P > 0.05). The Kolmogorov-Simonov test showed that the distribution of data was not normal in EE, DP, and PA. Data distribution was not normal in mature mechanism, but it was normal in immature and neurotic mechanisms.

Correlation analysis showed that the more use of mature defense mechanisms had a significant reverse correlation with the increase in the score of EE (P < 0.001, rho = -0.210), but had no significant relationship with other aspects of burnout ($P_{Dp}$ = 0.078, $P_{PA}$ = 0.789)

An increased in the use of immature defense mechanisms had a direct correlation with the increase in the score of PD (P < 0.001, rho = 0.255), but had a significant negative correlation with the code of PA (P = 0.000, rho = -0.238). It did not correlate with EE (P = 0.627). There was no significant relationship between the use of neurotic defense mechanisms and burnout dimensions ($P_{EE}$ = 0.119, $P_{DP}$ = 0.174, and $P_{PA}$ = 0.127).

## 5. Discussion

This study aimed to investigate the relationship between defense mechanisms and occupational burnout among nurses in educational hospitals in Sari, Iran. This study showed that all three dimensions of job burnout were at low levels. Also, 4.1% of the nurses had job burnout.

A systematic review and meta-analysis about the prevalence of burnout among nurses in Iran on 4,180 participants showed the overall prevalence of burnout among Iranian nurses was estimated to be 36% [95% confidence interval (CI), 20% - 53%] (26). In Ahmadi's study (1), the majority of nurses were at a moderate level of EE and low levels of PD and PA. In the study of Rasoulian et al. (20) , burnout scores in nurses in the dimensions of EE, DP, and PA were reported at moderate, low, and moderate levels, respectively. Azari et al. (11) studied nurses working in hospitals of Mazandaran University of Medical Sciences in Sari and reported the frequency of burnout as 28.1%. They reported a moderate level of EE, a low level of DP, and a moderate level of PA in nurses (11). In Regan et al.' study (27), a moderate level of EE was reported, but 23% had high EE, 34% had moderate EE, and 43% had low EE.

In this study, EE and DP were somewhat similar to other studies. However, a reduction in PA was higher in this study than in other studies. The reduction of PA was one of the components of burnout, and it referred to the negative evaluation and dissatisfaction of one's own self with regard to doing the job and how to work with clients.

In the present study, there were no relationships between marital status, educational level, workplace, and overtime and nurses' burnout. The results of this study showed that there were significant relationships between all socio-demographic factors such as age, gender, marital status, work experience, income and education, and nurses' burnout. Low educated and single nurses experienced more burnout due to a lack of adequate social support (8). In Hosseini Nejad's study, the hospital, age, gender, and work experience did not significantly affect the severity of burnout of emergency nurses (12). In Azeri and Ahmadi's studies, no significant relationship was found between marital status, work experience and average hours of work per week and with nursing occupational burnout (11, 26). Individual and social factors can affect the behavior and feelings of a person in different working con-

**Table 5.** Defense Styles According to Socio-Demographic Information[a]

| Sociodemographic | Defenses Styles | | | P Value |
|---|---|---|---|---|
| | Immature | Mature | Neurotic | |
| **Age range** | | | | 0.977 |
| 20 -29, n = 127 | 16 (12.6) | 73 (57.5) | 38 (29.9) | |
| 30 - 39, n = 126 | 14 (11.1) | 76 (60.3) | 36 (28.6) | |
| 40 - 49, n = 55 | 7 (12.7) | 30 (54.5) | 18 (32.7) | |
| 50 - 59, n = 10 | 1 (10.0) | 7 (70.0) | 2 (20.0) | |
| **Gender** | | | | 0.000 |
| Female, n = 238 | 18 (7.6) | 148 (42.2) | 72 (30.3) | |
| Male, n = 80 | 20 (25.0) | 38 (47.5) | 22 (27.5) | |
| **Educational level** | | | | 0.139 |
| High diploma, n = 7 | 3 (42.9) | 3 (42.9) | 1 (14.3) | |
| Bachelor, n = 294 | 33 (11.2) | 172 (58.5) | 89 (30.3) | |
| Master, n = 17 | 2 (11.8) | 11 (64.7) | 4 (23.5) | |
| **Marital status** | | | | 0.042 |
| Single n = 88 | 14 (15.9) | 43 (48.9) | 31 (35.2) | |
| Married, n = 228 | 23 (10.1) | 142 (62.3) | 63 (27.6) | |
| Widow, n = 1 | 1 (100.0) | 0 (0.0) | 0 (0.0) | |
| Divorce, n = 1 | 0 (0.0) | 1 (100.0) | 0 (0.0) | |

[a] Values are expressed as No. (%).

ditions. In some circumstances, they can reduce motivation and highlight the negative aspects of work.

In the present study, there was a significant relationship between occupational burnout and age. Also, the highest level of PA was related to the age group of 59 - 50 years, which could be due to the increased work experience, thereby increasing occupational and social skills. In Ahmadi's study, there was a significant relationship between age and occupational burnout in terms of PA; thus, as the age increased, PA increased (26). The Abdie et al. survey showed that younger individuals had higher burnout rates (27). The Rasoulian et al. (20) reported a higher burnout rate in people older than 40 years of age. Many scholars are of the opinion that the lower the age of the person, the higher the burnout. In explaining this, it should be stated that older people have more experience and more time to learn the right coping strategies, which reduces their burnout (28). In addition, anxiety and depression may occur in the early years of work-life and in younger individuals due to the lack of adaptation with the new conditions.

In this study, EE and PA were seen more in women, but DP was not associated with gender. In the study of Tubaia and Sahraeian (9), DP in male nurses was significantly higher than female nurses. Maslach et al. (6) also believed that gender was not an important predictor of job burnout in women.

In this study, there was no significant relationship between marital status and burnout. In the study of Mazlomi et al. (29), different aspects of burnout in married individuals were more than single women. Dogan et al. (30) showed that there was no significant relationship between marital status and burnout. While some believe that the existence of a spouse as an informal supportive source can reduce the level of exhaustion by creating a sense of empathy and emotional support (1). In this study, work experience only affected the level of PA and did not correlate with EE and DP. Increasing the experience and skills in dealing with various work problems can be a reason for lower job burnout at older ages.

There was no significant relationship between workplace and burnout in this study. In this study, burnout was observed in surgery, oncology, emergency, psychiatry, gynecology, and internal wards. In the surgery department, in which patients require serious procedures and have life-threatening conditions, they are likely to experience increased stress and burnout. Burnout is common in wards, such as the oncology ward due to exposure to patients' suffering and their families. Also, in the emergency department, due to the fact that patients need urgent and imme-

diate care, it is more likely that nurses simply suffer from tension and subsequent burnout. Fatigue, lack of time, provision of care in stressful situations, and the possibility of mortality in most patients impose more stress on nurses who work in emergency departments (31).

In this study, there was a significant correlation between occupational burnout and satisfaction with the workplace. It indicated that job satisfaction more than the type of ward affected burnout.

Also, the income level had a significant relationship with DP and the group with the lowest income experienced it less. Ahmadi et al. showed that individuals with higher income and overtime were more likely to have burnout in the DP dimension (26). In Abdie et al. study, there was no relationship between overwork and economic status and job burnout (32).

In this study, 58.5% of the nurses used mature defense mechanisms, 29.6% had neurotic defense mechanisms, and 11.9% used an immature defense mechanism. In the study of Besharat (25), the use of mature, neurotic, and immature mechanisms in students was 56.1%, 38.8%, and 5.8%, respectively. In the study of Tahery et al. (33) on nurses, they were 65%, 27%, and 8%, respectively, those were consistent with the findings of the present study and indicated that the prevailing defense mechanism in most people was mature mechanisms. However, in the study of Afzali et al. (34), the neurotic defense mechanism was used more than other ones. Abolghasemi et al. (35) also argued that the mean score of immature defense mechanisms in women was greater than the mean score of mature defense mechanisms. Therefore, most people in this study used appropriate defensive mechanisms in dealing with anxiety and work tensions.

In the present study, there are more mature and neurotic mechanisms in women and non-mature mechanisms in men. In the study of Besharat et al. (25), no relationship was reported between gender and defensive mechanisms. Shehata et al. (36) found that men used immature mechanisms more than women, and women used neurotic defense mechanisms more than men. The only immature defense mechanism used in this study by women was physicalizing. In this study, immature defense mechanisms were more in married nurses, and immature and neurotic defense mechanisms were more in singles. In this regard, it can be said that mature defenses can make individuals enter marital relationships, and married women can better stand up to stressful situations and benefit from better methods of defense because of the support they receive from their spouse. In this study, there was no relationship between age, work experience, and employment status, and the dominant defense mechanism, but Tahery et al. (33) stated that increasing age, work experience and job stability could increase the use of mature defense mechanisms.

This study showed that EE was not related to immature and neurotic defense mechanisms, but had a significant negative correlation with mature defense mechanisms. In 2009, Regan et al. (27) aimed at investigating the relationship between EE and defense mechanisms in intensive care unit nurses. The use of mature defense mechanisms was not accompanied by EE, and neurotic and immature mechanisms were significantly associated with EE (27). The results of the study on airline personnel of the Islamic Republic of Iran also showed that the immature defense mechanism had a positive and significant effect on EE (16). Indeed, EE is one of the components of burnout that occurs during stress and stress conditions. In such a situation, the role of defense mechanisms as a factor in protecting an individual from anxiety becomes more important. Individuals who use mature defense mechanisms are more successful in coping with stressful conditions.

In this study, an immature defense mechanism had a reverse effect on PA and had a significant direct effect on DP. However, in the study of Sepidehdam and Karimi (16), it was not associated with DP and PA. Growth styles and neuroticism had a significant effect on DP and PA that was different from the results of this study (16). Immature defense mechanisms are not efficient in dealing with difficult and stressful work situations. If these mechanisms are predominant, work stress is unsuccessfully controlled and the person is prone to burnout. However, the current study's findings should be considered in light of its limitations. First, the probability of the temporality bias must be considered causal directions of relations among variables examined cannot be empirically evaluated because this study is cross-sectional and because of the correlational nature of the data, no definitive statement can be made about causal relationships among the variables. Second, another limitation of this study is sampling from nurses working in the city of Sari, which may have implicated the generalization of the results to other cities and other medical personnel and the research did not take into consideration public versus private health institutions, which may differ considerably.

Third, only self-reported paper-and-pencil questionnaires were used for data gathering that may prone the result to the social desirability bias. It is clear that the next step could be research programmed to examine the mediating role of other personality traits on occupational burnout in nurses with mature defense mechanisms. Future researches should investigate this field with larger nurses and in different institutions and should address the issue defense mechanisms and other dimensions of personality more directly.

The significant prevalence of burnout in the dimension of PA requires special interventions. Organizational interventions such as encouraging teamwork, participating in decision making, job support, reducing workplace ambiguity and conflict, psychological interventions to reduce occupational stress, adaptation to the workplace, and in-service training workshops for nurses are suggested.

To improve the performance and reduce the occupational burnout of nurses, the use of psychometric mechanisms in job tests and job interviews is suggested to improve the selection of appropriate nurses to perform different tasks in different parts of the hospital. It helps to adapt to individual characteristics and psychological characteristics. Similar studies are proposed in a larger geographic area with a larger sample size.

### *5.1. Conclusions*

Professional nursing is stressful and occupational stress is one of the causes of occupational burnout. In such a situation, defense mechanisms are in place to protect the individual against unpleasant emotions. These mechanisms, in terms of efficiency, can partly modify and control these emotions and prevent burnout. Awareness of the dimensions of occupational burnout in nurses can provide important information for managers through creating appropriate strategies, increase nursing job productivity, and patient satisfaction. Solutions such as increasing material support, education of problem-solving skills, and stress management, and provision of useful information will be helpful to improve the staff's defense mechanisms.

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## Footnotes

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