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Predicting Factors of Depression and Anxiety in Mental Health Nurses: A Quantitative Cross-Sectional Study

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ABSTRACT

Introduction: The nursing profession is characterized as one of the most stressful and emotional demoting professions. It is widely agreed that many nurses are experiencing anxiety and depression as a results of their profession. **Purpose:** The purpose of this study was to assess the prevalence and associated factors of depression and anxiety among mental health nurses working in public psychiatric hospitals, in order to identify independent predictors of mental health disorders risk. **Material and Methods:** A descriptive, cross-sectional study was conducted in which 110 mental health nurses who were working in public psychiatric hospitals of Greece participated. The Patient Health Questionnaire-2 (PHQ-2) and the Generalized Anxiety Disorder-2 (GAD-2) questionnaire along with a sheet with basics demographic, social, and work characteristics, including gender, age, marital status, educational level, working experience in nursing, working position and shift, were used as instrument for data collection. **Results:** The mean age of the nurses was 42.64 years (SD = 5.87 years) and working experience in nursing 15.73 years (SD = 5.64 years). Most participants were women 64.5%, married 59.1% and nursing assistant 53.6%, while 48.2% of them held a higher education degree. A very large percentage found to be classified as depressed (52.7%) and anxious (48.2%) and factors that found to be associated were age, marital status and educational level (for depression and anxiety) and working experience (only for depression). **Conclusions:** Mental health nurses are in high risk for developing psychiatric disorders such as depression and anxiety. Being single, divorced or widowed, older, with many years of experience and a higher education degree can be predicting factors associated with depression and anxiety in mental health nurses.

Keywords: Depression, Anxiety, Mental health, Nursing personnel, Psychiatric hospital.

1. INTRODUCTION

Depression and anxiety are considered the most frequent mental disorders in human life (1, 2). According to WHO, depression and anxiety disorders show an increasing tendency in different countries of the world. In today's human development conditions, they are associated with severe consequences and, therefore, affect not only the quality of life and the social functioning of human, but even contribute to the growth of social problems and economic losses (3, 4).

Among the wide range of this problem's issues, the question of determining Predicting Factors of Depression and Anxiety needs particular research (5). The multidimensional nature of the manifestations of depressive and anxiety disorders in modern conditions of society's development leads to the fact that there

is still no consensus regarding the definition of Predicting Factors.

Most scholars associate the personal factors of mental health with harmony, mental balance, creativeness, the personality integration and semantic regulation of life, spirituality, moral and social principles, the ability to self-actualization, which is oriented towards the meaning of life (6-12). Psycho-educational cognitive behavior therapy, using internet for preventive interventions, stepped-care interventions are the most used preventive intervention for depression and it has been implemented in many countries (13, 14).

At the same time, our analysis of scientific literature has revealed that the system of development, preservation and maintenance of mental health of staff of psychiatric institutions during the professional activity is not sufficiently developed (15,

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16). The relationship of the specifics of professional, socio-axio-genesis, as a condition for the full development of the personality of nurses require particular attention. The notion of “mental health” is defined as an integrative characteristic of the social, psychophysiological, personal and spiritual levels of human development that opens up a way to fully realize his/her internal and social potentials in the direction of social and moral choice (16). The study of peculiarities of the development of mental health of nurses in mental health facilities also requires the study of their age, gender, socio-psychological and individual-personality characteristics under conditions of a certain meso and microsocial environment. Detection of associated Factors that could Predict Depression and Anxiety of nurses in mental health facilities will contribute to a better understanding of the mechanisms of their mental health. At the same time, it will be useful for defining an individual approach to assessing, analyzing, forecasting and creating favorable mental health conditions not only for nurses but even and for their patients (17, 18). Therefore, we want to stress the topicality of outlined problem in today’s conditions (Therefore, the topicality of outlined problem in today’s conditions becomes the most urgent). The purpose of this study was to assess the prevalence and associated factors of depression and anxiety among mental health nurses working in public psychiatric hospitals, in order to identify independent predictors of mental health disorders risk.

2. METHODS

2.1. STUDY DESIGN AND SAMPLE

This study utilized a descriptive, cross-sectional research design. The source population was all mental health nurses who were working in public psychiatric hospitals of Greece. The sample consisted of 110 mental health nurses who were randomly selected from two public psychiatric hospitals in Athens, which is the capital of Greece. Stratified random sampling procedure per hospital was used in recruiting samples. The sample size is approximately 10% of the source population’s nurses. The response rate was 73.3% (110 out of 150 questionnaires). Nurses were chosen using the following criteria: (1) being a nurse or nurse assistant with immediate association with patients, (2) having working experience in nursing at least 1 year, (3) having adequate knowledge of the Greek language and satisfactory level of communication, and (4) being consented to participate in the study. The data collection of the survey was done from 1st April to 31st May 2017. Local ethical committees approved the study protocol.

2.2. ASSESSMENT INSTRUMENTS

The Patient Health Questionnaire-2 (PHQ-2) and the Generalized Anxiety Disorder-2 (GAD-2) questionnaire were produced as ultra-brief screening instruments for depression and anxiety, suitable for use in epidemiological studies. The PHQ-2 includes two questions and it was found to have good sensitivity and specificity for detecting depressive disorders (19). Likewise, the GAD-2 questionnaire which comprises two questions appears to have acceptable accuracy for detecting generalized

anxiety, panic, social anxiety and post-traumatic stress disorder (20). In both questionnaires, each question requires respondents to rate on a four-point scale ranging from «0 = not at all» to «3 = nearly every day». PHQ-2 and GAD-2 total scores are calculated by adding the two questions score, resulting in a range from 0 to 6 for each questionnaire, with higher score indicative of higher mental health disorder. According to receiver-operating characteristic curve analysis, the optimal cutpoint is ≥ 3 on both the PHQ-2 and GAD-2 scales (11, 21). In primary and secondary care settings, the ultra-brief tools can be used as an initial screening method.

The basics demographic, social, and work characteristics, including gender, age, marital status, educational level, working experience in nursing, working position and shift were collected.

2.3. STATISTICAL ANALYSES

Means and standard deviations for continuous data and frequencies and percentages for categorical data are presented to demonstrate nurses characteristics (independent variables). The occurrences of depression and anxiety were used as the outcomes (dependent variables) of the under research correlations. Odds ratio with 95% confidence interval was used as measure of association. Associations between potential prognostic determinants and outcomes were examined using univariate logistic regression analysis. Predictors univariately associated with outcome (p -value < 0.10) were included in a multivariate logistic regression model. The fit of the multivariate model was assessed by the Hosmer-Lemeshow goodness-of-fit test. All reported p -values were two-tailed, and a p -value under 0.05 was considered statistically significant. Statistics of the research’s empirical data were processed with IBM SPSS for Windows (version 21.0, SPSS Inc., Chicago, IL, USA).

3. RESULTS

3.1. SAMPLE CHARACTERISTICS

The mean age of the nurses was 42.64 years ($SD = 5.87$ years) and working experience in nursing 15.73 years ($SD = 5.64$ years). Most participants were women 64.5%, married 59.1% and nursing assistant 53.6%, while 48.2% of them held a higher education degree. Table 1 shows the demographic, social, and work data of the respondents.

3.2. DEPRESSION AND ANXIETY IN THE MENTAL HEALTH NURSES

Total scores of study scales are provided in Table 2. The mean total score of PHQ-2 and GAD-2 was 2.57 ($SD = 1.82$) and 2.66 ($SD = 1.90$) respectively. According to the cut off points of depression (PHQ-2 score ≥ 3) and anxiety (GAD-2 score ≥ 3), a high percentage of the mental health nurses were at risk for psychiatric disorder. The screening method showed prevalence 52.7% (58/110) for depression and 48.2% (53/110) for anxiety.

3.3. FACTORS ASSOCIATED WITH DEPRESSION

Univariate analyses showed that factors associated with elevated depression symptoms in mental health nurses were age, marital status, educational level, working experience in nursing and working position. The crude odds ratios are presented in Table 3.

Characteristics	n	(%)
Gender		
Male	39	(35.5%)
Female	71	(64.5%)
Age (years), mean ± st. dev.	42.64 ± 5.87	
Marital status		
Married	65	(59.1%)
Single	30	(27.3%)
Divorced/Widowed	15	(13.6%)
Educational level		
High school	57	(51.8%)
University/Technical university	35	(31.8%)
Postgraduate degree	18	(16.4%)
Working experience in nursing (years), mean ± st. dev.	15.73 ± 5.64	
Working position		
Nurse assistant	59	(53.6%)
Nurse	41	(37.3%)
Head of department	10	(9.1%)
Shift		
Rotated	95	(86.4%)
Morning	15	(13.6%)

Table 1. Mental health nurses characteristics (n=110).

A stepwise logistic regression (backward method based on maximum likelihood) was conducted to predict the possibility of depression using the significant factors from univariate analyses. After two steps, the final model included the following four significant predictors of depression risk: age, marital status, working experience in nursing and working position. The adjusted odds

Scales	n	(%)
PHQ-2 (total score), mean ± st. dev.	2.57 ± 1.82	
≥3 (presence of depression)	58	(52.7%)
<3 (absence of depression)	52	(47.3%)
GAD-2 (total score), mean ± st. dev.	2.66 ± 1.90	
≥3 (presence of anxiety)	53	(48.2%)
<3 (absence of anxiety)	57	(51.8%)

PHQ = Patient Health Questionnaire GAD = Generalized Anxiety Disorder

Table 2. PHQ-2 and GAD-2 scales in mental health nurses (n=110).

ratios are presented in Table 3. Particularly, the risk of depression development was increased by 13% for every single year of age growing and 16% for every single year of extended working experience in nursing. Also, single and divorced/widowed mental health nurses were 10.30 times and 10.21 times, respectively, more likely to develop a risk for depressive disorder compared with married nurses. In addition, nurses were 2.93 times more likely than nurses assistant to be at risk for depression but it was not found significant difference with the heads of departments. The multivariable model as a whole explained 46.5% of the variance in depression risk and correctly classified 78.2% of cases. According to the Hosmer-Lemeshow test, the data fit the model perfectly (p=0.829).

3.4. FACTORS ASSOCIATED WITH ANXIETY

Simple and multiple logistic regression analysis were performed to explore the relationship between anxiety and mental health nurses characteristics. Table 4 presents both the crude and the adjusted odds ratios. Results of univariate analysis showed that age, marital status, educational level, working experience in nursing and work-

Characteristics	Depression (PHQ-2 ≥ 3)		COR (95% CI)	AOR (95% CI)
	Yes (n=58)	No (n=52)		
Gender				
Male (reference group)	21 (53.8%)	18 (46.2%)	1	
Female	37 (52.1%)	34 (47.9%)	0.93 (0.43, 2.04)	
Age (years)	44.69 ± 6.04	40.35 ± 4.77	1.15 (1.07, 1.24)**	1.13 (1.00, 1.26)**
Marital status				
Married (reference group)	25 (38.5%)	40 (61.5%)	1	1
Single	20 (66.7%)	10 (33.3%)	3.20 (1.29, 7.94)**	10.30 (2.83, 37.46)**
Divorced/Widowed	13 (66.7%)	2 (13.3%)	10.40 (2.16, 50.01)**	10.21 (1.74, 59.80)**
Educational level				
High school (reference group)	23 (40.4%)	34 (59.6%)	1	
University/Technical university	23 (65.7%)	12 (34.3%)	2.83 (1.18, 6.80)**	
Postgraduate degree	12 (66.7%)	6 (33.3%)	2.96 (0.97, 9.01)*	
Working experience in nursing (years)	17.71 ± 5.15	13.52 ± 5.39	1.17 (1.07, 1.26)**	1.16 (1.02, 1.32)**
Working position				
Nurse assistant (reference group)	24 (40.7%)	35 (59.3%)	1	1
Nurse	28 (68.3%)	13 (31.7%)	3.14 (1.36, 7.26)**	2.93 (1.03, 8.34)**
Head of department	6 (60.0%)	4 (40.0%)	2.19 (0.56, 8.59)	0.68 (0.11, 4.29)
Shift				
Rotated (reference group)	50 (52.6%)	45 (47.4%)	1	
Morning	8 (53.3%)	7 (46.7%)	1.03 (0.35, 3.06)	

*p<0.10 **p<0.05 COR = Crude Odds Ratio AOR = Adjusted Odds Ratio

Data shown as n (%) for categorical variables or mean ± st. dev. for continuous variables.

Hosmer-Lemeshow test: p=0.829 Adjusted Nagelkerke R² = 46.5% Overall Predictive Ability = 78.2%

Table 3. Association between characteristics and depression in mental health nurses (n=110).

Characteristics	Anxiety (GAD-2 ≥ 3)		COR (95% CI)	AOR (95% CI)
	Yes (n=53)	No (n=57)		
Gender				
Male (reference group)	17 (43.6%)	22 (56.4%)	1	
Female	36 (50.7%)	35 (49.3%)	1.33 (0.61, 2.92)	
Age (years)	44.15 ± 6.22	41.23 ± 5.18	1.09 (1.02, 1.17)**	1.11 (1.03, 1.21)**
Marital status				
Married (reference group)	25 (38.5%)	40 (61.5%)	1	1
Single	19 (63.3%)	11 (36.7%)	2.76 (1.13, 6.76)**	4.63 (1.57, 13.65)**
Divorced/Widowed	9 (60.0%)	6 (40.0%)	2.40 (0.76, 7.56)	1.81 (0.53, 6.23)
Educational level				
High school (reference group)	19 (33.3%)	38 (66.7%)	1	1
University/Technical university	21 (60.0%)	14 (40.0%)	3.00 (1.25, 7.18)**	3.44 (1.31, 9.04)**
Postgraduate degree	13 (72.2%)	5 (27.8%)	5.20 (1.62, 16.74)**	4.24 (1.20, 15.03)**
Working experience in nursing (years)	17.08 ± 4.96	14.47 ± 5.99	1.09 (1.02, 1.17)**	
Working position				
Nurse assistant (reference group)	20 (33.9%)	39 (66.1%)	1	
Nurse	26 (63.4%)	15 (36.6%)	3.38 (1.47, 7.78)**	
Head of department	7 (70.0%)	3 (30.0%)	4.55 (1.06, 19.51)**	
Shift				
Rotated (reference group)	44 (46.3%)	51 (53.7%)	1	
Morning	9 (60.0%)	6 (40.0%)	1.74 (0.57, 5.27)	

*p<0.10 **p<0.05 COR = Crude Odds Ratio OR = Adjusted Odds Ratio

Data shown as n (%) for categorical variables or mean ± st. dev. for continuous variables.

Hosmer-Lemeshow test: p=0.854 Adjusted Nagelkerke R² = 26.9% Overall Predictive Ability = 70.0%

Table 4. Association between characteristics and anxiety in mental health nurses (n=110).

ing position were significantly correlated with the risk of anxiety. After three steps in multivariate analysis (step-wise with backward method) age, marital status and educational level, but not working experience in nursing and working position, emerged as significant predictors of elevated anxiety symptoms. Age of nurses was a positive predictor of anxiety disorder. Specifically, the risk of anxiety development was increased by 11% for every single year of age growing. As well, single mental health nurses were 4.63 times more likely to develop a risk for anxiety disorder compared with married nurses but it was not found significant difference with divorced or widowed nurses. In addition, an interesting finding is that tertiary education nurses and nurses with a postgraduate degree were more likely (3.44 times and 4.24 times respectively) to have elevated anxiety symptoms compared with secondary education nurses. This model seems to explain 26.9% in the variation of anxiety disorder and it can properly classify 70.0% of study cases. Finally, the fit of the multivariate model was perfectly (p=0.854).

4. DISCUSSION

The purpose of this study was to investigate the prevalence of depression and anxiety among mental health nurses and the importance of associated factors such as age, educational status, working experience, to the development of such disorders. Overall, a very large percentage found to be classified as depressed (52.7%) and anxious (48.2%) and factors that found to be associated were age, marital status and educational level (for depression and anxiety) and working experience (only for

depression). Health care sector is characterized as one of the most stressful and emotional demanding filed of work (22) and specially nurses, which are constantly exposed to various stressful situations as pain, death, grief and conflicts. That can lead to the experience of anxiety, negative emotions and depressive symptoms (23, 24). In addition, the rates and the prevalence of anxiety and depression in Greece is increasing over the years and especially after 2009 in which enter the financial crises. Moreover, the cuts on begets and the lack of nursing staff that came as consequence of this crisis may had have increased stressors in healthcare setting. That can partial explain the high rates of depression and anxiety among our participants (25, 26). Psychiatric wards consider to be a very stressful department and the working condition can be very dementing, leading nursing personnel that works there to experiencing high levels of work stress, depressive and anxiety symptoms as well as high levels of burnout (17, 27-29). While other studies found that the extended stress in such departments can often lead nurse to suicide attempts (30). According to our results almost 50% of the participants are experiencing anxiety and depressive symptoms. In a previous study was found that there is a strong relations between depression and anxiety and nurses who were reporting elevated levels of anxiety also reported in depression to, fact that supports the coexistence of those two disorders (31).

In a recent study conducted in Taiwan in which 156 psychiatric nurses participated the depression level, consider to be moderate for the total sample and 15.6% of the psychiatric nurses had distinctly depressed mood

(32). The 15.6% can be lower compared to our finding, yes is notable. Similar finding were reported in Greece in a study conducted by Papathanasiou (24), in which 240 health care employees were participated and the majority of them were nurses (n=183). More specific the percentage that considers being depressed and anxious was 14.20% and 17.60% respectively (24). The variety on depressive levels' classification can be explained from different psychometric instruments that are used on the assessment of depression. Previous studies in nursing personnel indicating that nurses are exhibiting higher rates of anxiety, somatization and social dysfunction among other psychiatric problems and anxiety and depression are the most common among them (33). The high prevalence of depression and anxiety is reinforcing finding from previous studies that have been conducted in different departments and in different cultures revealing the universality of the stressor, difficulties and the emotional demands that nurses are facing (34). According to Firth-Cozens et al. (35), at least 1/3 of the nursing personnel is experiencing high levels of occupational stress from the begging of their work career and are vulnerable to psychiatric disorders. In addition psychiatrist and nurses have the highest rates on suicides among various professions. This findings can be reinforced from our results as well as from a recent study conducted in Hong Kong nurses of which 35.8% and 37.3% were experiencing depression and anxiety respectively (36).

Regarding factors associated with anxiety and depression in mental health nurses we found that as age, educational status, working experience, to the development of such disorders. This finding are in agreement in previous national and international studies conducted among nurses (23, 37-38). Thus, reinforcing there assumptions that various demographic factors, educational status and perceived support in nurses may associated with mental health status (22). In addition, we observed that depression and anxiety are increasing along as the age increasing. In a previous study in Greece in which the levels of anxiety of nurses working in NHS was examined it was found that indeed anxiety and age had an positive correlation (38). This findings are in construct to the existing literature. Results from several international studies arguing that age is a protective factor and younger nurses seem to be more voluanarbe to depression and anxiety (36, 39-40), may attribute to the fact that older nurses are more experienced so they experiencing less work related stress, they may have increasing social support from a spouse or children that can be a protective factor to psychosocial problems (22, 37).

Furthermore regarding to educational status our finding indicating that university graduates and those who hold an post graduate degree are more likely to have depression and anxiety at 3.44 and 4.24, respectively. In a study conducted in China in 2012 and 1437 nurses participated found that indeed higher education may be a factor associated with depression and anxiety among nurses (37). In general such findings are in construct with existing international literature (41) and it may be explained by the responsibility which can be a stressor

and it is increasing along with educational status. Moreover, higher education nurses usually having high expectation for their profession and can feel disappointment when experiencing lack of progress or improvement in the clinical practice (42). Thus, can lead to the experience of depression and anxiety symptoms.

On the other hand, gender, rotated shifts weren't associated with depression and anxiety. Previous studies supporting that gender can be an important factor in the development of depression and anxiety. In a study conducted in 2011 by Uwaoma et al (43), in nurses working in various departments found that women were experiencing more anxiety than men. In the same conclusions were driven and Kourakos et al. (38) and Karanikola et al. (44), in studies which conducted Greece among NHS's nurses. Regarding the rotated shifts our finding is reinforcing findings from a very large study in which 1437 nurses were participated and they didn't found any association between night shift with depression and anxiety (37). According to the existing literature, nurses working on rotating or night shifts, need special attention and frequent health checks because there are consider to be at high risk for health effects (45). Among others night shifts in nursing have been associated with poor psychological well-being and quality of life, less satisfied by work and increased levels of burnout, elevated levels of depression, anxiety and stress, decreased resilience and negative coping (46-49).

Limitations of the study: The study has some limitations. Firstly, the sample is low. However, this study conducted in a specific population of nurses those who are working in psychiatric hospitals of Greece. Finally, a cross-sectional study does not give statistical information about the variance that those disorder can have in time. In addition, self-administrated psychometric instruments can't replace clinical interview conducted by a specialized psychiatrist.

Strengths of the study: As already indicated, there is not much literature that assesses the prevalence of depression and anxiety among mental health nurses as well as the associated factors. In this way, nursing managers as well as nursing personnel could know and recognize factors related with depression and anxiety and how they are related.

5. CONCLUSIONS

To sum up, a significant number of mental health nurses in the study were found to have elevated levels depressed and anxiety. Depression and anxiety have been well researched and well documented over the years in both national and international level in general population as well as in nurses. The current study conducted in a specific population among nurses those who working in two from the three remaining psychiatric hospitals of Greek NSH. Socio-demographic and occupational variables, apart from age, educational level and working experience, do not seem to influence the prevalence of depression and anxiety. Almost 50% of the respondents have an active symptomatology of depression and anxiety and in many cases from both, a statistic which should

be improved to avoid additional health problems that may lead to absence from work and of Corser poor quality of provided patient's care.

- **Authors contributions:** KT, IP, MK and EF designed the study, and wrote the initial draft of the manuscript. VV, AP, MAK, and MK contributed to analysis and interpretation of data, and assisted in the preparation of the manuscript. KT, IP, MK, VV, AP, MAK and EF reviewed and approved the final version of the manuscript.
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