An-Najah National University

Faculty of Graduate Studies

Prevalence of Depressive Symptoms and Associated Factors Among Radiographers in the West Bank Hospitals of Palestine:

A Cross-Sectional Study

By

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This Thesis is Submitted in Partial Fulfillment of the Requirements for The Degree of Master in Public Health, Faculty of Graduate Studies, An-Najah National University, Nablus-Palestine.

2019

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الإهداء

الى من يسكنون قلبي وللابد ......

الى رجل الكفاح، الى من رسم طريق النجاح، الى من علمني ان العلم اقوى سلاح، الى المربي رمز العطاء ... والدي الحبيب.

الى القلب النابض، الى رمز الحب والحنان، الى من تدعو ليل نهار بدعوات صادقة فهي سر النجاح... امي الحبيبة.

الى رمز الصدق والوفاء، الى رفيقة عمري، الى زهرة حياتي، الى عنوان نجاحي ... زوجتي الغالية.

الى اطفالي فلذات اكبادي، يمان و ريان حفظهم الله.

اهدي اليهم هذا العمل، سائلا الله ان يرفعنا و ينفع به، انه سميع مجيب.

Acknowledgment

Primarily i would thank god for being able to complete this project with success.

Then i would like to thank my committee chair, Dr.Adnan Sarhan, who continually and convincingly conveyed a spirit of adventure in regard to research, without his guidance and persistent help this dissertation would not have been possible.

Then i would like to thank both the internal examiner Dr. Ali Abu Arrah and the external examiner Dr. Husni Awad who enriched the thesis with their constructive comments.

Then i would like to thank my parents and friends who have helped me with their valuable suggestions and guidance has been helpful in various phases of the completion of the project.

Last but not the least i would like to thank my wife who has helped me a lot.

Ahmed obaid

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الإقرار

أنا الموقعة أدناه مقدمة الرسالة التي تحمل العنوان:

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Prevalence of Depressive Symptoms and Associated Factors Among Radiographers in the West Bank Hospitals of Palestine:

A Cross-Sectional Study

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أقر بأن ما اشتملت عليه هذه الرسالة أنما هي نتاج جهدي الخاص، باستثناء ما تمت الإشارة اليه حيثما ورد، وأن هذه الرسالة ككل، أو أي جزء منها لم يقدم من قبل لنيل أية درجة علمية أو بحث علمي أو بحثي لدى أية مؤسسة تعليمية أو بحثية أخرى.

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Declaration

The work provided in this thesis, unless otherwise referenced, is the researchers own work, and has not been submitted elsewhere for any other degree or qualification.

Students name:	اسم الطالبة:
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Date:	التاريخ:

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List of Abbreviations

PMIA	Palestinian Medical Imaging Association.
NIMH	National Institution of Mental Health.
CT	Computed Tomography.
MRI	Magnetic Resonance Imaging.
IRB	Institutional Review Board.
CI	Confidence Interval.
OR	Odds Ratio.
WHO	World Health Organization.
SPSS	Statistical Package of the Social Science.
PSQI	Pittsburgh Sleep Quality Index.
HADS	Hospital Anxiety and Depressive Disorders.

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Abstract

Study title: Prevalence of Depressive Symptoms and Associated Factors Among Radiographers in the West Bank Hospitals of Palestine: A Cross-Sectional Study.

Student name: The study carried out by Ahmed Obaid and under supervision of Dr. Adnan Sarhan.

Background: Radiographers are one of the most important and needful components of the workforce in the health care system. They fall under the category of supporting medical professions, thus, they are frontline medical service providers. They are face with occupational stressors in different ways which may contribute to diverse adverse mental effects including depression.

Aim: This study aims to investigate the prevalence of depressive symptoms and explore its associated risk factors among radiographers working in West Bank hospitals.

Method: A Cross-Sectional design is used for the study. Beck's depression inventory-II Arabic version is administered to respondents and Statistical Package of the Social Science (SPSS) version 21 is used for data analysis.

Results: The prevalence of depressive symptoms among radiographers was 75.69%. Multivariate logistic analysis showed that number of children is one, two to five and more than five ($P<0.05$, OR 22.59, 95%CI 1.98-256.60), ($P<0.05$, OR 12.87, 95%CI 1.51-109.43), ($P<0.05$, OR 5.31, 95%CI 1.01-27.79) respectively, male ($P<0.05$, OR 13.587, 95%CI 3.99-46.21) and bachelor's degree ($P<0.05$, OR 11.10, 95 %CI 1.04-118.41) were positively associated with mild to moderate depressive symptoms. Whereas private sector ($P<0.05$, OR 0.116, 95%CI0.041-0.333) and experience period of more than 21 years ($P<0.05$, OR 0.133, 95%CI0.019-0.924) were negatively associated with mild to moderate depressive symptoms. Regarding severe depression working in private sector ($P<0.05$, OR 8.61, 95%CI 3.006-24.68) and working experience period of more than 21 years ($P<0.05$, OR 7.52, 95% CI 1.08-52.24) were positively associated with severe depressive symptoms. Whereas number of children is one , two to five and more than five (($P<0.05$, OR 0.044, 95%CI 0.004-0.503), ($P<0.05$, OR 0.078, 95%CI 10.009=0.660), ($P<0.05$, OR 0.188, 95%CI 0.036-0.985) respectively, male ($P<0.05$, OR 0.074, 95%CI 0.022-0.250) and bachelor's degree ($P<0.05$, OR 0.090, 95 %CI 0.008-0.960) were negatively associated with severe depressive symptoms.

Conclusion: Depressive symptoms among radiographers found to be prevalent. Gender, number of children, experience period, educational level and working sector were associated with the generation of depressive symptoms. Efficient investigations and interventions such as mental health education courses, improving radiographer`s patient communication,

keeping up with modern imaging modalities and developing coping mechanisms for radiographers aim to improve the radiographer's mental health from the view of depressive symptoms. Studies to identify possible risk factors, causes of depressive symptoms, as well as to investigate its effects and consequences on the radiographer`s health workforce are needed.

Keywords: Depression, Radiographers, West Bank

Chapter one
Introduction

1.1 Background

According to the National Institution of Mental Health (NIMH), depression is the most common mental disorder, it is a psychological and physiological state, caused by integration of genetic, biological, physical, environmental and psychological factors often begin in adulthood. It negatively affects how you feel, the way you think, act and handle daily activities such as sleeping, eating, or working, fortunately it is treatable(U.S. Department of Health and Human Services, 2015).

Depression is one of the most spread problems worldwide; it has a great effect on life quality and productivity of workers (Wang, Sun, Chi, Wu, & Wang, 2010), and can result in direct economic cost (Kudielka et al., 2005)

Globally as reported by World Health Organization (WHO), more than 300 million people suffer from depressive symptoms, and it is the leading cause of disability. It is twice as common in women as in men. While its incidence increases with age in men, it decreases with age in women, at its worst, depression may lead to suicide. About 800.000 people die every year all around the world especially at the young ages of 15-29 years (World Health Organization, 2018).

In the United State of America, an estimated (6.7%) of all adults, about (16.2) million people were depressed in 2016, (8.5%) are adult females compared to (4.8%) adult males (National Institue of Mental Health, 2016).

In the West Bank of Palestine, based on the Palestinian Ministry of Health annual report in 2016, the incidence rate of mood (affective) disorders was 11.1 per 100,000 of the total population. In addition, the total number of community mental health centres visitors of mood disorders in the West Bank was 10553 visitors with a prevalence rate of 359.5 per 100,000 of the total population.

In the West Bank of Palestine, there are thirteen governmental hospitals and eleven private hospitals. And the total number of medical imaging investigation in 2016 in governmental hospitals only was 1251796 test (X-ray 1098688, Computed Tomography (CT) 127439, Magnetic Resonance Imaging (MRI) 25669 (Ministry of Health, 2016).

Based on the Palestinian Medical Imaging Association (PMIA) statistics, the total number of radiographers in the West Bank is 985 of whom 207 radiographers working in governmental hospitals and133 in private hospitals in 2018, but the other radiographers were not working. (Palestinian Association of Medical Radiation Technologists, 2018).

Stress may affect different people in different ways and in different workplaces. It has been linked to different adverse mental effects including depression. Radiographers as frontline medical service provider are at risk of developing occupational stress and depressive symptoms (Ashong et al., 2015).

Radiographers can be occupationally exposed to significant physical ionizing radiation hazards which affect the atoms in the living cells and damage the genetic material Deoxyribonucleic Acid (DNA). These absorbed, scattered and ionized radiation photons will produce a short term side effects like skin burns and vision impairments and may produce long term side effects like cancers and infertility (Griffin, 2006).

Working as medical imaging technicians may be prone to in physical, emotional and psychosocial stressful situations, and fear from these side effects specially late effect, may affect life pleasure, concentration, thinking and decision making, energy and productivity, and consequently may lead them to a state of depressive symptoms (Craciun, Mankad, & Lynch, 2015).

Studies showed that occupational stress may be caused by individual, social or workplace factors which are recognized as a health hazard in working environments. These stressors include a range of adverse mental effects like depression (Lightfoot, 1993).

Radiographers as healthcare workers and hospital staff members are the most stressed occupational professionals. Diagnosing patients, highly exposure to diseases, suffering and emergency (Thomas & Valli, 2006), risk of infections, high job demands and responsibilities, understaffing, resources shortage, lack of control, overtaxing workload, time pressure and lack of support from managers or senior colleagues (Tyssen & Vaglum, 2002) may lead to increase the risk of depression among radiographers which result in poor services delivery, less productivity and increase the risk of medical errors (Firth-Cozens & Roy, 2000).

However in Palestine, radiographers like other health care providers, work optimally to provide the best diagnostic services to patients. Nonetheless it is not true to state that radiographers are mentally healthy all times without estimating the prevalence of depressive symptoms in terms of psychiatric morbidity in the radiography profession.

1.2 Significance of the study

Working in a dangerous profession, such as medical imaging, is worth looking into, especially researching its psychological effects since its potential effects in the future may lead to disability and death in the future.

Since the prevalence of depression among radiographers in the West Bank has not been investigated previously, this study will contribute to the knowledge of the society that the profession of medical imaging may affect the mental health of the radiographers to the degree of depression. It is also

worth mentioning that technicians are aware of the possible causes and risk factors, which help as a researchable material in order to develop the tools and mechanisms necessary to cope with and reduce the rates of depression among radiographers in particular and all medical professions in general.

1.3 Problem Statement

Radiographers working in government and private hospitals are exerting great physical and psychological effort to provide the best diagnostic services.

The radiographers working in a work environment fraught with health risks and future unknown damage with every radiograph they performs, and with every patient they deals with him, and with an increase in working years, and with a steady accumulation of the radiation in their bodies, that puts them under great psychological pressure and which threatens their normal lives, thus, they are at a higher risk of developing depressive disorders than the general population (Tsai & Liu, 2012).

1.4 Aim of the study

To investigate the prevalence of depressive symptoms among radiographer`s working in the West Bank governmental and private hospitals and find the associated factors.

1.5 Objectives

• To estimate the prevalence rate of depressive symptoms among radiographers working in the West Bank governmental and private hospitals.

• To explore the socio-demographic factors associated with developing depressive symptoms among radiographers working in the West Bank governmental and private hospitals.

1.6 Research questions

• Is there a significant prevalence of depressive symptoms among radiographers?

• Are there significant factors associated with the depressive symptoms among radiographers?

1.7 Hypothesis

• There is a significant prevalence of depressive symptoms among radiographers working in West Bank hospitals.

• There is a significant association between demographic factors and depressive symptoms among radiographers working in West Bank hospitals.

Chapter Two
Literature Review

Different studies were conducted to investigate the prevalence of depressive symptoms especially among health care providers and explore its associated factors. Regarding radiographers as healthcare providers, very few studies were conducted globally and even fewer developed in the Arab world.

In the Arab world, a cross-sectional study aimed to estimate the prevalence of anxiety and depressive symptoms and explore the associated risk factors among Tunisian medical residents using hospital anxiety and depression questionnaire by Marzouk M et al. 2018. It included 1700 medical residents (mean age: 28.5±2 years, female: 60.8%) **,** the results showed that 74.1% of the participants had either definite (43.6%) or probable (30.5%) anxiety, while 62% had definite (30.5%) or probable (31.5%) depressive symptoms, with 20% having both definite anxiety and definite depression (Marzouk et al., 2018).

A descriptive survey entitled "Work-related ill-health in radiographers" in the United Kingdom, aimed to analyse work-related illness like depression among radiographers (n=218) between 1989and 2015. The results revealed that the skin diagnosis was the most frequently reported illness (n=77), followed by musculoskeletal illness (n=77), while the radiographers compared to other occupations had the highest incidence rates of work-related illness (Hulls, Money, Agius, & de Vocht, 2018).

A cross-sectional study aimed to find the prevalence of depression anxiety and stress among 520 resident doctors of a teaching hospital in India. The results showed that the average prevalence of depression, anxiety and stress was 27.71%, 36.58% and 24.24% respectively. Furthermore, variables such as long duty hours, no job satisfaction, not having any hobbies, and staying at the hostel were significantly associated with higher scores in relation to depression, anxiety, and stress (Dave S, Parikh M, Vankar G, & Valipay SK, 2018).

A cross-sectional study was carried out among primary and tertiary healthcare providers including 961 doctors and 685 nurses in Shibin El-Kom city in the Menoufia governorate in Egypt. The study aimed to estimate the prevalence rate of depressive symptoms among health care providers. The results showed that the prevalence of depressive symptoms among all participants of the primary centres(71.4%) was higher than tertiary healthcare hospital(59%); also the prevalence of depressive symptoms among the physicians of the primary centres(73.8%) was higher than tertiary hospitals (58.8%), also revealed that the prevalence among nurses of the primary centres (68.6%) was higher than the tertiary hospitals (45.4; Nashat, 2018).

A cross-sectional study in Lahore, Pakistan, aimed to assess the prevalence of anxiety and depression among 203 doctors. The results showed that mild to moderate anxiety and depression were revealed in 34% and 24.8% respectively, while severe anxiety and depression were at 7.2%

and 1% respectively. There was strong positive relation between experience period in years and depression (p<0.011), and gender on anxiety (*p*-0.002).The study concluded that doctors as health care providers showed high levels of anxiety and depression (Atif, Khan, Ullah, Shah, & Latif, 2016).

A cross-sectional survey conducted among 50 radiographers, aimed to investigate psychosocial stress, its predictors and coping mechanisms among radiographers in Ghana. The results showed that 72% radiographers had lost interest in the work, 78% of the radiographers revealed they had to work with inadequate equipment and accessories, 70% of the radiographers were not exposed to courses relevant to their profession and most radiographers also experienced a higher workload. These work conditions considered as sources of psychosocial stress may affect radiographers at the site of the study (Kyei, Amoabeng, Sule, Antwi, & Anim, 2016).

A cross-sectional study in Hong Kong examined the prevalence of depression, anxiety and stress among 850 nurses (87.6%, n=745 female). The results showed that 37.3% of respondents had depression symptoms, where divorced females and widowed /separated were more prevalent to report depression than their male counterpart (OR 1.685 , 95% CI 0.71-4.02). Results also showed an inverse relationship between age and depression (ex. Age 25-34y, OR 0.95, 95% CI 0.57-1.60). Nurses without job satisfaction and working shift rotation were more likely to have

depressive symptoms (OR 3.155, 1.254) respectively (Cheung & Yip, 2015).

A cross-sectional descriptive study of depression among 309 health workers at the hospital in Enugu, Southeast Nigeria was conducted to determine the prevalence rate and distribution of depression. The results showed that 14.9% of healthcare workers were found to be depressed, females were more depressed than males (18.0%, 8.7% respectively), a feeling of sadness over family, living and working conditions was linked to the depressed participant (Obi, Aniebue, Okonkwo, Okeke, & Ugwunna, 2015).

A systematic review study had extracted data from 31 cross-sectional studies and 23 longitudinal studies aimed to estimate the depressive symptom prevalence among resident doctors. The results showed that the overall prevalence of depression or depressive symptoms was 28.8%, and there was an increased prevalence associated with the increase of the calendar year (slope = 0.5% increase per year; Mata et al., 2015).

Regarding studies related to depression in radiology department, a descriptive study in Italy examined the association between work-related stress with depression and anxiety among 654 radiologist, the results revealed that 43.9% (n=287) radiologist were experiencing depressive symptom, and younger female radiologist reported higher levels of depressive symptoms (Magnavita & Fileni, 2014).

A descriptive study in northern Jordan examined the correlations between stressors, musculoskeletal disorders complaints, and stress symptoms like depression among radiographers (n=74) from three different radiology departments in public, private and educational hospitals. The results showed that stress symptoms such as depression and musculoskeletal complaints such as low back pain in the public hospitals were significantly higher than the other hospitals (Alhasan, Abdelrahman, Alewaidat, Almhdawi, & Nazzal, 2014).

A cross-sectional study carried out among 3474 nurses in southern China; the study aimed to investigate the association between working conditions and development of depressive symptoms. The results showed that 38% of nurses had depressive symptoms, and more than 10% of the nurses often experienced workplace violence. Depressive symptoms were significantly associated with persistent workplace violence, long working hours (more than 45 hours per week), frequent working night shifts work (two or more per week), and specific working departments (Yanhong Gong et al., 2014).

A cross-sectional study was carried among 1592 Chinese nurses in 2011 to explore depressive symptoms prevalence and associated factors. The results found that the prevalence was 61.7%, and 74.9% had mild depressive symptoms. Lower job rank, higher over commitment and higher education were positively associated with depressive symptoms, whereas

regular meals, doing physical exercise and higher job satisfaction were negatively associated with depressive symptoms (Gao et al., 2012).

A prospective cross-sectional survey was conducted in seven identified governmental and private hospitals in Malaysia included 223 healthcare providers, 15% (n=35) radiographers. The study aimed to compare job stress levels of healthcare providers in both governmental and public sectors. The results showed that the radiographers were the most stressed (p>.05) and no significant difference was found between both sectors (p<.05). (Lua. & Imilia., 2011).

A quantitative research with questionnaires associated with the Hospital Anxiety and Depression Scale (HADS) was applied among 219 radiologists and medical imaging residents (53% female, 47% male) from 2007 to 2009, to explore anxiety and depression in the performance of residents in radiology and medical imaging. The results showed that 54.8% were depressed and 51.1% were anxious especially at the age of 20-30 years. Poor academic and professional performance, lack of motivation, determination and organization, social, economic and familial problems were linked to the existence of a stressor process with mental and physiological reactions that exceed individual's coping capacity and triggers emotional reactions that cause deep changes in resident's behaviour (Silva et al., 2011).

In a study that used the Beck Depression Inventory (BDI), prevalence of depression among 2251 resident doctors in Tehran, Iran who worked in three different medical university hospitals. The results showed that 31.2% of the resident doctors had symptoms of depression (26% for the males and 39% for the females), and the symptoms of depression were 2.3 times more frequent in females (Sadeghi, Navidi, & Sadeghi, 2007).

A study of cross-national epidemiology of major depression and bipolar disorder by Weisman et al. 1996, aimed to estimate the rates and patterns of major depression and bipolar disorder from 10 different countries (United States, Canada, Puerto Rico, France, West Germany, Italy, Lebanon, Taiwan, Korea, and New Zealand) included 38000 community subjects. The results showed that the lifetime prevalence rates for major depression widely varied across countries, ranging from 1.5 cases per 100 adults in Taiwan to 19.0 cases per 100 adults in Beirut but the annual rates ranged from 0.8 cases per 100 adults in Taiwan to 5.8 cases per 100 adults in New Zealand, and the mean age at onset range was between (24.8-34.8 years).

Finally in every country, the rates of major depression were higher among women than men (Weissman et al., 1996).

Chapter Three
Methods

This chapter describes the design, study population, sampling technique, data collection, instrument, and statistical analysis.

3.1 Study design

A descriptive cross-sectional design was used to achieve the aim of this study.

3.2 Study population

A total of 985 radiographers make up the study population, and 340 of them are working, and distributing as 207 radiographers working in governmental hospitals and 133 radiographers working in private hospitals in the West Bank of Palestine, whereas the rest are not working, and the majority of radiographers in both sectors are males.

3.3 Sample size.

Calculation of the sample is done by using the formula (n = N*X / (X + N − 1)), confidence level 95%, margin of error 5% and sample proportion 50%, the minimum sample size needed is 181 (Wayne W. Daniel & Cross, 1999).

3.4 Sampling technique.

A convenient sampling technique was used to collect the sample. I visited Thirteen radiology departments in governmental hospitals and eleven private hospitals in the West Bank to collect the sample.

3.5 Instrument

After approval of participation, the participants are asked to complete a self–reported questionnaire which contains two parts: the first part is about socio-demographic factors, and the second one is about translating Beck's depression inventory (four-item) scale, incorporating 21 questions with a maximum score of 63 and a minimum score of zero. The total score identified the level of depression (see annex2).

3.6 Inclusion and Exclusion criteria

- Available and accessible radiographers working on morning shifts were included.

- New radiographers(less than one year of experience), radiographers with known physical disabilities were excluded.

- Radiographers working in Jerusalem hospitals were excluded since there was no data available in medical imaging association records that was needed in the study.

- Those who refused to accept or complete the questionnaire form were excluded.

3.7 Data collection process

All identified radiology departments in the West Bank were visited on morning shifts between Sunday and Thursday to ensure the participation of the largest sample in the study. Morning shifts include different radiographers from both genders who work during other daily shifts in other days and on different imaging modalities. Radiographers were verbally invited to participate in the study. After I received their approval to participate, they were asked to fill out the questionnaire. The interview was conducted face to face with the participant at the radiology department to trigger and motivate him, and to obtain correct answers, and the interview lasted 20-30 minutes.

3.8 Study variables

Dependent variable: Depressive symptoms. Associated factors.

Independent variables: Radiographers. Socio-demographic variables.

3.9 Validity and reliability of Beck's depression inventory

Beck's Depression Inventory is considered to be valid and reliable for evaluating depressive symptoms.

Regarding the Arabic translated inventory that was used, it was tested in a study aimed to investigate the validity and reliability of Beck's Scale for depression among secondary school students, in particular, the third year, in M'sila- Algeria. The results showed that the Scale has

achieved appropriate and high indicators of reliability and internal consistency using alpha coefficient (Cronbach's Alpha) value of 0.849 (Alhameed & Abd allah, 2016).

One study for Korean adolescents concluded the overall statistical value for Cronbach's alpha was 0.89 (90% CI; Lee, E., Lee, S., Hwang, Hong, & Kim, 2017).

3.10 Data handling and statistical analysis: The data were handled and analyzed using of Statistical Package of the Social Sciences (SPSS) version 21.

Chi-square test & Logistic Regression was used for analysis of the current study finding.

3.11 Ethical Consideration

The Institutional Review Board's (IRB) approval has been taken from an-Najah National University before the research was conducted.

The research is conducted and the data are collected according to the research ethics principles to achieve the study purposes. A letter and a consent form were attached to the questionnaire including information about the nature and the purpose of the study (see Annex1).

Chapter 4
Results

4.1. Introduction

This chapter presents the study results. Part one shows the results of socio-demographic data. Part two reports the prevalence of depression. Part three provides the results of the relationship between mild to moderate depression levels and socio-demographic characteristics. Part four identifies the results of the relationship between severe depression and socio-demographic characteristics.

Table 4.1: Distribution of participants according to their socio-demographic characteristics.

Variables		No%
Age	24-34	109 (60.2)
	35-45	40(22.1)
	≥ 46	32(17.7)
Gender	Male	131 (72.4)
	Female	50 (27.6)
Marital status	Single	44 (24.3)
	Married or widowed	137(75.7)
Number of children (if married)	No children	59(32.6)
	One child	29(16)
	2-5	77(42.5)
	More than 5	16(8.8)
Education level	Diploma	19(10.5)
	Bachelors	151(83.4)
	Master and more	11(6.1)
Hospital	Private	66(36.5)
	Governmental	115(63.5)
Experience period(years)	<1	0
	1-10	114(63)
	11-20	43(23.7)
	≥ 21	24(13.3)
Monthly salary (USD)	1000-1199	96(53)
	$\geq$1200	85(47)

Existence of physical disability	No	181(100)
	Yes	0(0)
Existence of chronic diseases	No	172(95)
	Yes	9(5)
Cigarette smoking	No	119(65.7)
	Yes	62(34.3)
Night shift working	No	79(43.6)
	Yes	103(56.4)
Imaging modality working on	X-Ray	134(74)
	Computed Tomography	36(19.9)
	Magnetic Resonance imaging	11(6.1)
Living place	City	73(40.3)
	Village	88(48.6)
	Refugee Camp	20 (11.1)

Table 4.1 shows the results of univariate analysis between depressive symptoms and all variables. The male participants outnumbered the female participants 131(72.4%) versus 50(27.6) respectively.

Most of the participants are between 24-34 years old and form (60.2%) of the study sample, and most of them from the village (48.6%) and were married (75.7%) and have 2-5 children (42.5%). Also, most of the participants who have a bachelor degree level of education make up (83.4%) of the sample, while those work in governmental hospitals form (63.5%), the results also showed those with experience period between 1-10 years form (63%) and who receive a monthly salary of 1000-1199 USD reached (53%). Regarding the existence of chronic diseases, smoking and working on a night shift, the results show that (95%) of the sample do not have diseases, (65.7%) not smokers and (56.4%) are working night shifts. The results show that (74%) of radiographers are working on conventional X-ray modality.

Table 4.2: Distribution of the sample according to the level of depression symptoms.

Level (beck`s score)	Frequency (%)
Normal (1-10)	44 (24.31)
Mild (11-16)	42 (23.21)
Borderline (17-20)	20 (11.01)
Moderate (21-30)	38 (21.01)
Severe (31-40)	35 (19.34)
Extreme (over 40)	2 (1.11)
Total	181(100)

Table 4.2 shows that (24.3%) of radiographers do not complain from depression, (23.2%) of participants experience mild depression, (21%) have moderate depression, (19.3%) have severe depression and (1.1%) experience extreme depression level, and the prevalence rate of depression symptoms among radiographers is 75.69 %.

Table 4.3: Factors associated with mild to moderate depression.

Variables	B	S.E.	Wald	Df	P	OR	95% C.I Lower	Upper
Age (24-34)Y			3.353		0.187			
35-45Y	3.219	1.798	3.204	1	0.073	25.003	0.737	848.518
46Y and more	1.265	0.971	1.697	1	0.193	3.542	0.528	23.751
Male	2.609	0.625	17.452	1	0.000	13.587	3.995	46.210
Single	-.558-	0.982	0.323	1	0.570	0.572	0.084	3.919
Number of children Have no children			7.374	3	0.061			
One child	3.118	1.240	6.324	1	0.012	22.593	1.989	256.607
2-5 children	2.556	1.092	5.480	1	0.019	12.879	1.516	109.432
More than five children	1.670	0.844	3.911	1	0.048	5.312	1.015	27.799
Education level Diploma			4.464	2	0.107			
Bachelors	2.407	1.208	3.974	1	0.046	11.105	1.041	118.419
Master and more	0.754	0.912	0.683	1	0.409	2.126	0.355	12.712
Working sector Private	-2.153-	0.537	16.075	1	0.000	0.116	0.041	0.333
Experience period 1-10Y			5.142	2	0.076			
11-20 Y	-3.287-	1.745	3.548	1	0.060	0.037	0.001	1.142
21Y and more	-2.018-	0.989	4.162	1	0.041	0.133	0.019	0.924
Salary Less than 1000$	0.719	0.519	1.917	1	0.166	2.052	0.742	5.676
Disability	1.508	1.148	1.725	1	0.189	4.516	0.0476	42.851
Diseased	-1.115-	1.069	1.088	1	0.297	0.328	0.040	2.665
smoker	0.571	0.479	1.419	1	0.234	1.770	0.692	4.525
Working night shifts	0.059	0.514	0.013	1	0.909	1.061	0.387	2.908

Imaging modality Conventional X-ray			1.059	2	0.589			
Computed tomography	0.126	0.902	0.019	1	0.889	1.134	0.193	6.649
Magnetic resonance imaging	-0.450-	0.910	0.245	1	0.621	0.638	0.107	3.793
Living place City			3.360	2	0.186			
Village	1.125	0.718	2.452	1	0.117	3.080	0.753	12.591
Camp	1.310	0.720	3.317	1	0.069	3.708	0.905	15.191
Constant	-5.564-	2.028	7.529	1	0.006	0.004		

Table 4.3 shows the results of the multivariate logistic regression analysis of factors associated with mild to moderate depressive symptoms among radiographers.

The results show a significant association between gender and depression; males were 13.5 times more likely to report mild to moderate depression than females (P< 0.001, OR 13.587, CI 3.99-46.2).

In addition, the number of children is significantly associated to depressive symptoms. Radiographers with fewer children are more likely to report mild to moderate depression. When the number of children is one, two to five, and more than five, the p-values, OR and CI are ((0.012, 22.59, 1.98-256.60), (0.019, 12.87, 1.51-109.43), (0.048, 5.31, 1.01-27.79) respectively. Radiographers whose educational level is bachelors are significantly associated with depression and are 11.10 times more likely to report depression than those with other educational level (p <0.046, OR 11.10, CI 1.04- 118.41). Other variables show no significant association with mild to moderate depression among radiographers.

Table 4.4: Factors associated with severe depression

Variables	B	S.E.	Wald	D f	P	OR	95% C.I	
							Lower	Upper
Age (24-34)Y			3.353	2	0.187			
35-45Y	-3.219-	1.798	3.204	1	0.073	0.040	0.001	1.357
46Y and more	-1.265-	0.971	1.697	1	0.193	0.282	0.042	1.893
Male	-2.609-	0.625	17.452	1	0.000	0.074	0.022	0.250
Single	0.558	0.982	0.323	1	0.570	1.748	0.255	11.971
Number of children Have no children			7.374	3	0.061			
One child	-3.118-	1.240	6.324	1	0.012	0.044	0.004	0.503
2-5 children	-2.556-	1.092	5.480	1	0.019	0.078	0.009	0.660
More than five children	-1.670-	0.844	3.911	1	0.048	0.188	0.036	0.985
Education level Diploma			4.464	2	0.107			
Bachelors	-2.407-	1.208	3.974	1	0.046	0.090	0.008	0.960
Master and more	-.754-	0.912	0.683	1	0.409	0.470	0.079	2.813
Working sector Private	2.153	0.537	16.075	1	0.000	8.614	3.006	24.682
Experience period 1-10Y			5.142	2	0.076			
11-20 Y	3.287	1.745	3.548	1	0.060	26.768	0.875	818.598
21Y and more	2.018	0.989	4.162	1	0.041	7.521	1.083	52.248
Salary Less than 1000$	-0.719-	0.519	1.917	1	0.166	0.487	0.176	1.348
Disability	-1.508-	1.148	1.725	1	0.189	0.221	0.023	2.101
Diseased	1.115	1.069	1.088	1	0.297	3.050	0.375	24.790
Smoker	-0.571-	0.479	1.419	1	0.234	0.565	0.221	1.445
Working night shifts	-0.059-	0.514	0.013	1	0.909	0.943	0.344	2.584
Imaging modality								

Conventional X ray			1.059	2	0.589			
Computed tomography	-0.126-	0.902	0.019	1	0.889	0.882	0.150	5.170
Magnetic resonance imaging	0.450	0.910	0.245	1	0.621	1.568	0.264	9.325
Living place City			3.360	2	0.186			
Village	-1.125-	0.718	2.452	1	0.117	0.325	0.079	1.327
Camp	-1.310-	0.720	3.317	1	0.069	0.270	0.066	1.105
Constant	5.564	2.028	7.529	1	0.006	260.99		

Table 4.4 illustrates the results of the multivariate logistic regression analysis of factors associated with severe depressive symptoms among radiographers.

We can see a significant association between the working sectors and severe depressive symptoms. Radiographers working in private hospitals are 8.61 times more likely to report severe depressive symptoms than radiographers working in the governmental sector ($p < 0.05$, OR 8.614, CI 3.006-24.68).

In addition, a significant association is found between experience period and severe depression. Radiographers with longer experience periods and who complained of severe depressive symptoms are 7.52 times more likely to experience it than those having shorter experience periods ($p < 0.04$, OR 7.521, CI 1.08-52.24). Other variables show no significant association with severe depression among radiographers.

Chapter five
Discussion

5.1 Discussion

Radiographers as healthcare providers comment at some time in their lives on depression as mental disorders, and they fearing consequently the development of depressive symptoms. They would mostly be reluctant to undergo a medical screening to assess their psychiatric condition or undergo psychotherapy when needed. In general, mental health disorders around the world are neglected for fear of stigmatization.

Depressed medical care providers of whom radiographers are prone to have poor mental and physical health which may develop personality mental disorders. Psychologically unwell healthcare provider cannot provide adequate medical services as their mentally healthy peers. Medical care providers with depression tend to depict poor work efficacy (Khuwaja, Qureshi, & Azam, 2004).

Radiographers as healthcare providers must be very aware of the importance of screening for depressive symptoms, and risk factors, as well as finding the methods used for coping mechanisms and treatment, so as not to negatively affect the quality and the quantity of their required practical work.

This study investigated the level of depressive symptoms and explored the associated risk factors among radiographers working in the West Bank hospitals.

In this study, subjects were sampled from the radiographers working in both governmental and private hospitals sectors, and the response rate was (100%) which is greater than the normal proportion of returns in the questionnaire survey (70%; Aiken, 1981). This seemed to be able to provide a good representation of our study population and increase the generalizability of our study conclusion.

5.2 Prevalence of depressive symptoms among radiographers.

Our study demonstrated that depressive symptoms were common among radiographers. The current study found that the prevalence rate of depressive symptoms among radiographers working in both sectors in the West Bank of Palestine was (75.69%). The prevalence was higher than that found in the general population in Palestine as reported in the Palestinian Ministry of Health's annual report in 2016 (Ministry of Health, 2016). This prevalence was comparable to the cross-sectional study among health care workers in the National Guard hospital in Riyadh, Saudi Arabia. The prevalence rate of depression was found to be (11.4%; AlFahhad, 2018). Another study examined the prevalence of depressive symptoms among Chinese doctors and was found to be (65.3%; Wang et al., 2010).

Also, a lower prevalence of depressive symptoms was reported among Korean nurses against our study, where the prevalence rate was (38% ; Yoon & Kim, 2013).

The prevalence of depressive symptoms among nurses in Canada, France, and the USA ranged between (10% to 40% ; Letvak, Ruhm, & McCoy, 2012) which is lower than what our study found among radiographers as healthcare providers.

Another study was done by the US Department of Health and Human Services. The study was looking at the rate of workplace depression from the year 2004-2006 in workers ages of 18-64years. The study found that healthcare practitioners and technicians came in third place with a depression rate of (9.6%), while in our study (75.69%) of radiographers as healthcare workers had depression (Jane, 2006).

Another study showed that the prevalence of depressive symptoms among healthcare workers was 48.12% (95% CI: 45.08% to 51.16%). The prevalence of depressive symptoms among nurses was 52.40% (95% CI: 47.87% to 56.93%) which is higher than the doctors' 44.70% (95% CI: 10.64% to 48.77%; Claudia, Miriam, Thomas, Daniel, & Wendy, 2003).

The relatively high prevalence of depressive symptoms among radiographers in the West Bank of Palestine may be attributable to various factors. The first factor consists of the shortage of radiographers with the heavy workload. Although the number of radiographers has increased in

the West Bank hospitals in both sectors over the past few years, we still face a critical radiographer's shortage in hospitals. As per the Palestinian Ministry of Health annual report in 2016, the total number of radiography examinations was 594305 tests in governmental hospitals only, and the total number of radiographers working in the governmental sectors was 207 (Ministry of Health, 2016). The large number of patients causes radiographers to have heavy workload, where each patient requires movements and special positioning for each examination. Another factor is the unjustified requests for radiology examinations required by the doctors, or sometimes by the request of the patients themselves without medical necessity. In addition to the large shortage of rooms allocated for radiology examinations, as well as the relatively old radiographing machines of different modalities. These old machines require great physical effort from the radiographer to move and change their positions to perform the tests which may cause severe pain in the neck, shoulders and lower back and over time they become chronic and cause great psychological pressure, which leads to depression.

A study in which the title "A need assessment for prevention of work-related stress experienced by radiographers in Ghana" showed that pain and weakness resulted from frequent transferring, handling, positioning the patients, frequent manual pushing and pulling of equipment, wearing of lead aprons as well as repeated forceful manual exertion while imaging were symptoms of distress among radiographers which need prevention (Kofi Kyei, 2015).

The second factor is the dissatisfaction healthcare in the between health care providers and patients which may lead to medical disputes which often occur within the healthcare facilities. Patients feel that they do not receive full and correct medical services as these services are free and the workers are indifferent to the results of treatment. The relationship is strained by some mistrust and thus produces some form of enormous psychological pressure on the medical personnel which accumulate over time and strongly affects radiographer's psychological health. This phenomenon was noticeable in our health institutions in both sectors especially the governmental sector.

Many studies linked the dissatisfaction in the relationship between healthcare providers and patients with the generation of mental illness such as depression among medical care providers. A study in China explored doctor-patient relationships and found that it was dissatisfying and struggle often occurred in the high rates within the healthcare facilities (Zhao, 2011).

The third factor is the inadequacy of salaries and vacation times. Radiographers' income in the West Bank is lower than that of radiographers in Israel, especially, and in many Arab countries. The radiographers are exposed to danger and damage from radiation every time they examine a patient for radiology examinations. So there is a mismatch between high workload and relatively low or inadequate salaries as well as rewards among radiographers in Palestine. A previous study revealed that

the most frequently encountered stressors in the radiology departments were pressure to complete tasks, inadequate salaries and inadequate vacation time (Chingarande & Bekezela, 2013).

What is even more important is the fact that such state of psychic disorders or poor mental health may lead to a decrease in cognitive performance (Maharaj, Lees, & Lal, 2019) such as: the ability to focus, process information and perform radiography examinations. This decrease in cognitive performance in lea to an increase the errors made especially in such a sensitive area as the health field (Haslam, Atkinson, Brown, & Haslam, 2005) and as costly in terms of productivity (Karlsson, Bjorklund, & Jensen, 2010).

These results confirm our hypothesis of the considerable high prevalence of depressive symptoms which suggests that radiographers suffer seriously from depression symptoms. So the prevalence of depressive symptoms among radiographers is not to be neglected and could exceed values reported in other health care providers (Alonso et al., 2004).

5.3 Associated factors with depressive symptoms among radiographers.

It is important that the identification of risk factors predisposing the radiographers to the development of depressive symptoms would be helpful for further intervention. Regarding socio-demographic factors, many studies had linked and found the associations between socio-demographic

factors like; age, gender, and the existence of chronic diseases with depression (Patten et al., 2008). In this study; age, gender, marital status, number of children, education level, working sector, experience period and monthly salary, the existence of the disability and chronic diseases, smoking, night shift working, imaging modality and living place were analysed for their association with the depressive symptoms.

5.3.1 Relationship between depression and age variables

Concerning age, the study showed no significant association between age and depression among radiographers. Our finding matched with a study conducted in the United Kingdom. It showed that no association was found between age and depression (Spearman's correlation coefficient 0.004; Chambers & Campbell, 1996). In contrast, another study found significant association between age and depression. It showed that increasing in age was a protective factor against depression. Another study showed that as age increased, the risk of depression decreased (Bjorvatn et al., 2012). A study that explored depression among registered nurse also found a positive association between age and depressive symptoms (Skinner & Scott, 1993). Another study conducted among nurses in Alexandria, Egypt, showed unlike the general population, as nurses aged, they are less likely to suffer from depression and depressive symptomatology (Arafa, Nazel, Ibrahim, & Attia, 2003).

5.3.2 Depression in association with gender variables

We also found that the prevalence of depression was significantly associated with gender (P< 0.001, OR 13.587, CI 3.99-46.2). Males were 13.5 times more likely to report mild to moderate depression than females. This difference could possibly be due to various factors: the majority of radiographers working in the West Bank hospitals are males, the social view regarding radiography career as a male profession for its effect on fertility where the job requires great efforts and may cause spinsterhood for females. Another attributing factor could be the differences in health seeking behaviour, job roles and psychological coping skills between male and female healthcare workers. There is an increasing evidence that highlight a trend of delayed help-seeking in men when they become ill (Galdas, Cheater, & Marshall, 2005). An imbalance in the perception of job strain and reward could also be a contributing factor. The different genders perceive and respond to job strain differently. Psychological distress in relation to psychosocial work exposures was worse for men than for women (Vermeulen & Mustard, 2000). On the other hand, job reward perception is greater for women who predicted positively on their mental health as compared to men, they delay in seeking help for mental health problems compared to women (Li, Yang, & Cho, 2006). A study supporting our results was conducted in Malaysia among healthcare providers explored the prevalence rate of depression and its associated factors showed that males (55%) were found to be more prone to depression than females (35%; Parvez, Ayman, Vengadesh, Puspamary, &

Cheong, 2018). But other studies showed significant association where females were more likely to report depressive symptoms. A study among nurses in Taiwan showed that female nurses experience more depressive symptoms (Chang, Wang, Li, & Liu, 2011). Another study showed that being a female twice increased the risk of having depression (Murray & Lopez, 1997).

5.3.3 Relationship between depression and marital status variables

Regarding marital status, our results identified no significant association between depression and marital status although marital problems, separation, or divorce can certainly contribute to depressive symptoms. A study agreed with our results and showing that those living alone or with partners had no significant association with levels of depression (McCue, 2005). On the contrary, a study of the relationship between work stress, resourcefulness and depression level in psychiatry nurse showed that depression was cited as more frequent in single and divorced nurses versus married ones (Wang et al., 2015).

5.3.4 Depression in association with the number of children variables

Interestingly, for our study population, having only one child had the strongest positive association with mild to moderate depressive symptoms among all assessed risk factors. This might be due to the fear from having deformed embryos and infertility in the future. The study also noted that most of the participants were married and young age 24-34 years.

Radiographers, especially married couples, are worried about the risk of radiation they are exposed to at work and are afraid of its effects on the reproductive system, and on the formation of embryos and reproduction since the effect of radiation does not appear directly but in the future based on the amount of radiation accumulated in their bodies. Even if they have one child, they have worries about the child in the future and are reluctant to think about having children again. This makes them suffer from depression which is consistent with the results of our study. In Palestine, there exists no law that allows pregnant radiographers to leave work as vacation time to protect themselves and their foetus from the risk of radiation. This type of exposure can cause birth defects or incurable diseases such as cancer and blindness. In comparison, a study from the United Kingdom identified that there were no associations of depression levels with whether or not respondents had children, the number or ages of any children (Myers, 1994). Another study conducted among primary health care providers in Baghdad showed significant association between depressive symptoms and number of children among medical care providers. It showed that medical provider who had 3-5 children were more likely to be depressed than other medical providers (Alkhazrajy & Lujain, 2014).

5.3.5 Relationship between depression and educational level

We also found those radiographers whose educational level is a bachelor were significantly associated to depression and were 11.10 times more likely to report depression than those with educational level of diploma and master or more. This difference could be due to many reasons. Nowadays, the majority of work force is holders of a bachelor degree. They are unequally placed with their peers holding higher degrees in terms of financial, administrative aspects and decision-making within the organization. In addition, they do not have the opportunity to work in other locations, such as the academic field in order to escape from work with radiation and mitigate its risks. A study explored that lower job levels, higher over commitment, bad nurse-patient relationship and higher educational level were positively associated with depressive symptoms among Chinese nurses; whereas supervisor support, eating regular meals and higher job satisfaction were negatively associated (Gao et al., 2012). Another study done by researchers that surveyed 218 healthcare workers at primary health-care centres in three cities in the province of Ontario found that 30% of these workers had depression and had significant association with low educational level (Franche et al., 2006).

5.3.6 Depression in association with working sector

We found that working in private hospitals have strong association with severe depression. Working in private hospitals in Palestine is a great challenge and puts the radiographers under tremendous psychological

pressure. Working conditions, such as very high work load, working on old imaging machines, the lack of job safety, low income, firm administrative control over radiographer, patient relationship, and the lack of job incentives, all these cause great psychological pressure. Over time, the stressed radiographers become depressed and reach severe state of depression which may cause them to lose their work. Our finding is in agreement with a study that explored the association between working sector and stress related illness including depression. The study showed that radiographers working in the private sector were almost four times more likely to miss work due to a stress-related illness than those working in a public sector (OR=3.75, 95% CI: 1.51–9.20; Eslick & Raj, 2002).

5.3.7 Relationship between depression and experience period

We also found a significant association between experience period (21 years and more) and depression. Radiographers who have longer period of experience complained from severe depression by 7.52 times more than those with shorter period of experience (p< 0.04, OR 7.521, CI 1.08-52.24). This could be possibly due to the physical and psychological fatigue that accumulated over time, which adversely affects the mental health of the radiographer. In addition the fear of developing chronic diseases such as cancers due to the accumulation of quantities of radiation absorbed by the body and its inevitable late affect that may end life at any time. Will certainly generates a feeling of severe depression. Other studies did not

mention years of work concerning depression but the type of daily work if it is full time or half-day work.

A study in the USA indicated that an annual average of 7% of full-time health care workers aged 18 to 64 experienced a major depressive episode in the past year (Charles & Frisch, 2005). Another study recruited 60 participants from paramedics, the majority of whom were males (77%), worked shifts, and between 5-10 years' experience (35% depression). Depression was found to be mild among (27%) and moderate among (10%) of the respondents (Balch et al., 2011).

5.3.8 Depression in association with monthly salary

Regarding monthly income, the results showed that there was no association between it and depression. A European study that included 258 health-care workers explored the association between monthly income and anxiety, depression, interpersonal sensitivity and hostility. The results showed that 207 (80.2%) of the workers monthly income was below the monthly income of neighbouring countries, and it also showed that there is a significant negative correlation between the monthly salary and the experience of psychological symptoms (p=0.002; Esmina & paper, 2011). Another survey in 2003 on employees estimated a decrease in annual income among workers with selected disorders and showed that a 31% decrease in annual income had a major depressive disorder (Selimba, 2011).

5.3.9 Relationship between depression and chronic disease

In regard to chronic diseases (like diabetes mellitus, hypertension, heart disease...etc.), the results identified no significant association between depression and the presence of chronic diseases among radiographers. A study on depression in nurses found that depression is often accompanied by at least one chronic disease (Ohler, Kerr, & Forbes, 2010).

5.3.10 Relationship between depression and smoking

Regarding smoking, the results showed that there was no association between smoking and depression. Many studies assessed the association between lifestyle parameters as smoking, as an important risk factor for developing depressive symptoms (Averina et al., 2005). Another cross-sectional study design was conducted among 108 healthcare workers who were selected through random sampling from the purposive group. The results showed that depressed health workers were more likely to smoke a cigarette (Ghimire, Sharma, & Ghimire, 2014).

5.3.11 Depression in association with night shift working

We found that night shift working has no significant association with depression. In contrast, a cross-sectional study conducted among Chines doctors to determine the prevalence of anxiety and depressive symptoms as well as related risk factors showed a significant positive association between long working hours or frequent shifts work and anxiety or depressive symptoms. Therefore, the physicians who work at least 60

hours per week or who work night shifts twice or more per week were at greater risk of experiencing anxiety and depressive symptoms (Y. Gong et al., 2014). Another study examined the association between shift working and severity of depressive symptoms among Korean female nurses and showed that nurses who worked shifts had 1.519-times greater odds of experiencing a higher severity of depressive symptoms (OR = 1.519, CI = 1.380-1.674, P < 0.001; Lee. H., Kim. M., Kim. O., Lee. I., & Kim. H. 2016). Also, a study carried out among 865 Chines nurses assessed the effect of shifts work including night shift on sleeping quality and depressive symptoms. Sleep quality and depressive symptoms among nurses were evaluated by the Pittsburgh Sleep Quality Index (PSQI) and Hospital Anxiety and Depression Disorders Rating Scale (HADS). The results showed PSQI and HADS scores were both significantly higher in the nurses working night shifts (*P*<0.05) than in those working day shifts only, and the binary logistic regression showed that night shift and poor sleep quality were independent risk factors of depressive symptoms among nurses (Dai et al., 2019).

5.3.12 Relationship between depression and radiographing modality variables

Regarding the association of working on different medical imaging modalities and the prevalence of depressive symptoms, the results showed that there was no significant association with depression. No other studies were found to compare the results.

5.3.13 Depression in association with living place variables

Regarding the association of living place and the prevalence of depressive symptoms, the results showed that there was no significant association with depression. No other studies were found to compare the results.

Chapter Six

Conclusion

6.1 Conclusion

This study was undertaken to measure the prevalence rate of depression among radiographers working in governmental and private hospitals in the West Bank of Palestine and explore associated risk factors, based on cross-sectional survey. Our findings revealed that most radiographers prevalent to depressive symptoms, socio-demographic factors, gender, number of children and educational level were related to the development of mild to moderate depressive symptoms; whereas working sector and experience period were related to the development of severe depressive symptoms. Overall, only one child had the strongest positive association with mild and moderate depressive symptoms, whereas working in private hospitals had the strongest positive association with severe depressive symptoms among radiographers. In this sense, it could be important for radiology managers, hospital administrators and the Ministry of Health to warrants immediate attention, further investigation and interventions to improve the conditions of the mental wellbeing of radiographers working in both private and governmental sectors in the West Bank, Palestine.

6.2 Limitations of the study

1. Private hospitals in Jerusalem were excluded due to coordination, communication, transportation issues and the data needed for the study were not available in medical imaging association records.

2. Males make up the majority of the sample which affects the significant differences in some variables and generalizability of the finding for female radiographers.

3. The majority of radiographers working in the private sector, especially those are working as part time, are also working in governmental hospitals. I joined them in the sample but as full time working in governmental hospitals only to prevent sample duplication.

4. Measurement errors were due to recall bias should be taken into consideration as the study is a cross-sectional one.

6.3 Recommendation

1. This study measured the prevalence of depressive symptoms and explored associated factors, but we need additional studies to increase awareness, determine the causes of depression and develop coping mechanisms to reduce its effect on the life of the radiographers in Palestine.

2. Develop strategies to improve the mental health of radiographers and healthcare providers in general.

3. Improve working conditions especially in radiology departments such as reducing work pressure, increasing staffing, improving medical imaging machines, strengthening safety procedures, strictly preventing radiation leaks and adapting suitable environments at medical care hospitals in general.

4. Screening for depressive symptoms should be considered among healthcare providers including radiographers.

References

Aiken, L. R. (1981). **Proportion of Returns in Survey Research. Educational and Psychological Measurement**, 41(4), 1033-1038. doi: 10.1177/001316448104100412

AlFahhad, N. M. (2018). *Prevalence and factors associated with depression among health care workers in National Guard Hospital in Riyadh, KSA.* **International Journal of Medicine in Developing Countries.** doi: 10.24911/IJMDC.51-1526306040

Alhameed, M. A., & Abd allah, L. (2016). **Investigation of psychometric properties (validity and reliability) according to Beck Scale for depression among secondary school students,** in particular the third year, in M'sila. 106-109.

Alhasan, M., Abdelrahman, M., Alewaidat, H., Almhdawi, K., & Nazzal, M. (2014). *Work-related Stress, Musculoskeletal Disorder Complaints, and Stress Symptoms among Radiographers in the Northern Part of Jordan.* **Journal of Medical Imaging and Radiation Sciences,** 45(3), 291-298. doi: 10.1016/j.jmir.2014.04.002

Alkhazrajy, & Lujain. (2014). **Prevalence of depressive symptoms among primary health care providers in Baghdad.** 2, 1-20.

Alonso, J., Angermeyer, M. C., Bernert, S., Bruffaerts, R., Brugha, T. S., Bryson, H., . . . Vollebergh, W. A. (2004). **Prevalence of mental disorders in Europe: results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project.** Acta Psychiatr Scand Suppl(420), 21-27. doi: 10.1111/j.1600-0047.2004.00327.x

Arafa, M. A., Nazel, M. W. A., Ibrahim, N. K., & Attia, A. (2003). *Predictors of psychological well-being of nurses in Alexandria, Egypt*. **International Journal of Nursing Practice**, 9(5), 313-320. doi: 10.1046/j.1440-172X.2003.00437.x

Ashong, G., Rogers, H., Botwe, Benard, Anim-Sampong, & Samuel. (2015). **Effects of occupational stress and coping mechanisms adopted by radiographers in Ghana**. 22, 112-117. doi: 10.1016/j.radi.2015.09.002

Atif, K., Khan, H. U., Ullah, M. Z., Shah, F. S., & Latif, A. (2016). *Prevalence of anxiety and depression among doctors; the unscreened and undiagnosed clientele in Lahore, Pakistan*. **Pakistan journal of medical sciences**, 32(2), 294-298. doi: 10.12669/pjms.322.8731.

Averina, M., Nilssen, O., Brenn, T., Brox, J., Arkhipovsky, V. L., & Kalinin, A. G. (2005). **Social and lifestyle determinants of depression, anxiety, sleeping disorders and self-evaluated quality of life in Russia--a population-based study in Arkhangelsk**. Soc Psychiatry Psychiatr Epidemiol, 40(7), 511-518. doi: 10.1007/s00127-005-0918-x

Balch, C. M., Oreskovich, M. R., Dyrbye, L. N., Colaiano, J. M., Satele, D. V., Sloan, J. A., & Shanafelt, T. D. (2011). *Personal consequences of malpractice lawsuits on American surgeons*. **J Am Coll Surg**, 213(5), 657-667. doi: 10.1016/j.jamcollsurg.2011.08.005

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). **An inventory for measuring depression.** Arch Gen Psychiatry, 4, 561-571.

Bjorvatn, B., Dale, S., Hogstad-Erikstein, R., Fiske, E., Pallesen, S., & Waage, S. (2012). **Self-reported sleep and health among Norwegian hospital nurses in intensive care units**. Nursing in Critical Care, 17(4), 180-188. doi: 10.1111/j.1478-5153.2012.00504.x

Chambers, R., & Campbell, I. (1996). **Anxiety and depression in general practitioners: associations with type of practice, fundholding, gender and other personal characteristics**. Family Practice, 13(2), 170-173. doi: 10.1093/fampra/13.2.170

Chang, Y., Wang, P., Li, H., & Liu, Y. (2011). *Relations among depression, self-efficacy and optimism in a sample of nurses in Taiwan*. **Journal of Nursing Management**, 19(6), 769-776. doi: 10.1111/j.1365-2834.2010.01180.x

Charles, S., & Frisch, P. (2005). **Adverse Events, Stress, and Litigation: A Physician's Guide**. Oxford University Press, New York.

Cheung, T., & Yip, P. (2015). *Depression, Anxiety and Symptoms of Stress among Hong Kong Nurses: A Cross-sectional Study*. **International Journal of Environmental Research and Public Health,** 12(9), 11072.

Chingarande, G., & Bekezela, N. (2013). T*he prevalence and antecedents of occupational stress among radiographers in Zimbabwe: Interplay of economics and culture.* **International Journal of Medical Research & Health Sciences**, 2(2), 233-238.

Claudia, C., Miriam, D., Thomas, D., Daniel, F., & Wendy, H. (2003). **Confronting depression and suicide in physicians: a consensus statement** . Jama, 289.

Craciun, H., Mankad, K., & Lynch, J. (2015). *Risk management in radiology departments*. **World journal of radiology**, 7(6), 134-138. doi: 10.4329/wjr.v7.i6.134

Dai, C., Qiu, H., Huang, Q., Hu, P., Hong, X., Tu, J., . . . Chen, F. (2019). **The effect of night shift on sleep quality and depressive symptoms among Chinese nurses**. Neuropsychiatr Dis Treat, 15, 435-440. doi: 10.2147/ndt.s190689

Dave S, Parikh M, Vankar G, & Valipay SK. (2018). *Depression, anxiety, and stress among resident doctors of a teaching hospital.* **Indian J Soc Psychiatry**, 34, 163-171.

Eslick, G. D., & Raj, V. V. (2002). **Occupational stress amongst radiographers: does working in private or public practice make a difference?** Radiography, 8(1), 47-53. doi: 10.1053/radi.2001.0356

Esmina, A. T. U. C. C., Clinic of Psychiatry, Tuzla, Bosnia, & paper, a. H. O. s. (2011). **Psychological symptoms and monthly income of employees in companies undergoing privatization in postwar bosnia and herzegovina**. 4.

Firth-Cozens, J., & Roy, P. (2000). **Stress in health professionals: Psychological and organizational causes and interventions**. Wiley.

Franche, R., Williams, A., Ibrahim, S., Grace, S., Mustard, C., Minore, B., & Stewart, D. (2006). **Path analysis of work conditions and work-family spillover as modifiable workplace factors associated with depressive symptomatology**. Stress and Health, 22(2).

Galdas, P. M., Cheater, F., & Marshall, P. (2005). *Men and health help-seeking behaviour: literature review*. **J Adv Nurs**, 49(6), 616-623. doi: 10.1111/j.1365-2648.2004.03331.x

Gao, Y. Q., Pan, B. C., Sun, W., Wu, H., Wang, J. N., & Wang, L. (2012). *Depressive symptoms among Chinese nurses: prevalence and the associated factors*. **J Adv Nurs,** 68(5), 1166-1175. doi: 10.1111/j.1365-2648.2011.05832.x

Ghimire, M., Sharma, A., & Ghimire, M. (2014). *Smoking and Depression among Healthcare Workers*. **Journal of Lumbini Medical College,** 2, 21. doi: 10.22502/jlmc.v2i1.50

Gong, Y., Han, T., Chen, W., Dib, H. H., Yang, G., Zhuang, R., . . . Lu, Z. (2014). **Prevalence of anxiety and depressive symptoms and related risk factors among physicians in China: a cross-sectional study**. PLoS One, 9(7), e103242. doi: 10.1371/journal.pone.0103242

Gong, Y., Han, T., Yin, X., Yang, G., Zhuang, R., Chen, Y., & Lu, Z. (2014). **Prevalence of depressive symptoms and work-related risk factors among nurses in public hospitals in southern China: A cross-sectional study.** Scientific Reports, 4, 7109. doi: 10.1038/srep07109

Griffin, R. J. (2006). **Radiobiology for the Radiologists** (6th ed. Vol. 66): Elsevier.

Haslam, C., Atkinson, S., Brown, S., & Haslam, R. A. (2005). **Perceptions of the impact of depression and anxiety and the medication for these conditions on safety in the workplace.** Occupational and Environmental Medicine, 62(8), 538-545. doi: 10.1136/oem.2004.016196

Hulls, P. M., Money, A., Agius, R. M., & de Vocht, F. (2018). **Work-related ill-health in radiographers**. Occupational Medicine, 68(6), 354-359. doi: 10.1093/occmed/kqy076

Jane, C. (2006). **Work place depression in healthcare workers.** Jane's Mental Health, 67, 14-407.

Karlsson, M. L., Bjorklund, C., & Jensen, I. (2010). T*he effects of psychosocial work factors on production loss, and the mediating effect of employee health*. **J Occup Environ Med**, 52(3), 310-317. doi: 10.1097/JOM.0b013e3181d1cda2

Khuwaja, A. K., Qureshi, R., & Azam, S. I. (2004). *Prevalence and factors associated with anxiety and depression among family practitioners in Karachi, Pakistan*. **J Pak Med Assoc**, 54(2), 45-49.

Kudielka, B. M., Hanebuth, D., von Kanel, R., Gander, M. L., Grande, G., & Fischer, J. E. (2005). *Health-related quality of life measured by the SF12 in working populations: associations with psychosocial work characteristics*. **J Occup Health Psychol**, 10(4), 429-440. doi: 10.1037/1076-8998.10.4.429

Kyei, K. (2015). **A Need Assessment for Prevention of Work-Related Stress Experienced by Radiographers in Ghana**. Advanced Techniques in Biology & Medicine, 03. doi: 10.4172/2379-1764.1000124

Kyei, K., Amoabeng, K., Sule, D., Antwi, W., & Anim, S. (2016). **Psychosocial Stress and Its Predictors among Radiographers in Ghana**. OMICS Journal of Radiology, 5(245).

Lee, E. H., Lee, S. J., Hwang, S. T., Hong, S. H., & Kim, J. H. (2017). **Reliability and Validity of the Beck Depression Inventory-II among Korean Adolescents.** Psychiatry Investig, 14(1), 30-36. doi: 10.4306/pi.2017.14.1.30

Lee, H. Y., Kim, M. S., Kim, O., Lee, I. H., & Kim, H. K. (2016). *Association between shift work and severity of depressive symptoms among female nurses: the Korea Nurses' Health Study*. **J Nurs Manag**, 24(2), 192-200. doi: 10.1111/jonm.12298

Letvak, S., Ruhm, C. J., & McCoy, T. (2012). **Depression in hospital-employed nurses**. Clin Nurse Spec, 26(3), 177-182. doi: 10.1097/NUR.0b013e3182503ef0

Li, J., Yang, W., & Cho, S. I. (2006). **Gender differences in job strain, effort-reward imbalance, and health functioning among Chinese physicians**. Soc Sci Med, 62(5), 1066-1077. doi: 10.1016/j.socscimed.2005.07.011

Lightfoot, J. (1993). **Stress: its incidence and effect on radiographers**. Radiogr Today, 59(670), 6-12.

Lua., P. L., & Imilia., I. (2011). **Work-Related Stress Among Healthcare Providers of Various Sectors in Peninsular Malaysia**. MJP Online Early.

Magnavita, N., & Fileni, A. (2014). **Association of work-related stress with depression and anxiety in radiologists**. Radiol Med, 119(5), 359-366. doi: 10.1007/s11547-013-0355-y

Maharaj, S., Lees, T., & Lal, S. (2019). *Negative Mental States and Their Association to the Cognitive Function of Nurses*. **Journal of Psychophysiology**, 33, 207-218.

Marzouk, M., Ouanes-Besbes, L., Ouanes, I., Hammouda, Z., Dachraoui, F., & Abroug, F. (2018). **Prevalence of anxiety and depressive symptoms among medical residents in Tunisia: a cross-sectional survey.** BMJ Open, 8(7), e020655. doi: 10.1136/bmjopen-2017-020655

Mata, D. A., Ramos, M. A., Bansal, N., Khan, R., Guille, C., Di Angelantonio, E., & Sen, S. (2015). **Prevalence of Depression and Depressive Symptoms Among Resident Physicians: A Systematic Review and Meta-analysis**. Jama, 314(22), 2373-2383. doi: 10.1001/jama.2015.15845

McCue, J. D. (2005). **Adverse Events, Stress and Litigation: A Physician's Guide.** Annals of Internal Medicine, 143(5), 396-396. doi: 10.7326/0003-4819-143-5-200509060-00023

Ministry of Health. (2016). **Annual report. In Palestinian Health Information Center (Ed.),** (pp. 55 , 223). Plestine.

Murray, C. J., & Lopez, A. D. (1997). **Alternative projections of mortality and disability by cause 1990-2020: Global Burden of Disease Study.** Lancet, 349(9064), 1498-1504. doi: 10.1016/s0140-6736(96)07492-2

Myers, M. (1994). **Doctors' Marriages: A Look at the Problems and Their Solutions**. (2nd ed.). New York: Springer.

Nashat, N. (2018). **Prevalence of depressive symptoms among healthcare providers in Shibin El-Kom city in Menoufia governorate.** 31, 708-715. doi: 10.4103/mmj.mmj_85_17

National Institue of Mental Health. (2016). **Depression**. from https://www.nimh.nih.gov/health/topics/depression/index.shtml

Obi, I. E., Aniebue, P. N., Okonkwo, K., Okeke, T. A., & Ugwunna, N. (2015). *Prevalence of depression among health workers in Enugu, South East Nigeria*. **Niger J Clin Pract**, 18(3), 342-347. doi: 10.4103/1119-3077.151726

Ohler, M. C., Kerr, M. S., & Forbes, D. A. (2010). *Depression in nurses.* **Canadian Journal of Nursing Research,** 42(3), 66-82.

Palestinian Association of Medical Radiation Technologists. (2018). Medical imaging association statistics.

Parvez, I., Ayman, A. B., Vengadesh, S., Puspamary, M., & Cheong, A. T. (2018). *Prevalence and Related Factors of Depression among Healthcare Personnel at Primary Healthcare Centers*. **Malaysian Journal of Medicine and Health Sciences**, 14.

Patten, S. B., Williams, J. V., Lavorato, D. H., Modgill, G., Jette, N., & Eliasziw, M. (2008). **Major depression as a risk factor for chronic disease incidence: longitudinal analyses in a general population cohort.** Gen Hosp Psychiatry, 30(5), 407-413. doi: 10.1016/j.genhosppsych.2008.05.001

Sadeghi, A., Navidi, M., & Sadeghi, M. (2007). *Depression among Resident Doctors in Tehran, Iran*. **Iranian Journal of Psychiatry**, 2(2), 50-52.

Selimba, Z. (2011). *Psychological symptoms and monthly income of employees in companies undergoing privatization in postwar Bosnia and Herzegovina.* **International Journal of Health and Psychology Research**, 2.

Silva, G., Sousa, E., Koch, H., & Santos, A. (2011). **Anxiety and depression in the performance of residents in radiology and medical imaging.** European Society of Radiology(ESR).

Skinner, K., & Scott, R. D. (1993). **Depression Among Female Registered Nurses.** Nursing Management, 24(8), 42-45.

Thomas, L. S., & Valli, A. (2006). **Levels of occupational stress in doctors working in a South African public-sector hospital**. S Afr Med J, 96(11), 1162-1168.

Tsai, Y. C., & Liu, C. H. (2012). **Factors and symptoms associated with work stress and health-promoting lifestyles among hospital staff: a pilot study in Taiwan**. BMC Health Serv Res, 12, 199. doi: 10.1186/1472-6963-12-199

Tyssen, R., & Vaglum, P. (2002). **Mental health problems among young doctors: an updated review of prospective studies**. Harv Rev Psychiatry, 10(3), 154-165.

U.S. **Department of Health and Human Services.** (2015). Depression.

Vermeulen, M., & Mustard, C. (2000). **Gender differences in job strain, social support at work, and psychological distress**. J Occup Health Psychol, 5(4), 428-440.

Wang, J., Sun, W., Chi, T., Wu, H., & Wang, L. (2010). **Prevalence and associated factors of depressive symptoms among Chinese doctors: a cross-sectional survey**. Int Arch Occup Environ Health, 83(8), 905-911. doi: 10.1007/s00420-010-0508-4

Wang, S. M., Lai, C. Y., Chang, Y.-Y., Huang, C.-Y., Zauszniewski, J. A., & Yu, C.-Y. (2015). **The Relationships Among Work Stress, Resourcefulness, and Depression Level in Psychiatric Nurses**. Archives of Psychiatric Nursing, 29(1), 64-70. doi: 10.1016/j.apnu.2014.10.002

Wayne W. Daniel, & Cross, C. L. (1999). **Biostatistics: A Foundation for Analysis in the Health Sciences (Wiley Series in Probability and Statistics (7th ed.).** New York: John Wiley & Sons.

Weissman, M. M., Bland, R. C., Canino, G. J., Faravelli, C., Greenwald, S., Hwu, H. G., . . . Yeh, E. K. (1996). **Cross-national epidemiology of major depression and bipolar disorder**. Jama, 276(4), 293-299.

WHO. (2018). Depression from http://www.who.int/en/news-room/fact-sheets/detail/depression

World Health Organization. (2018). Depression from http://www.who.int/en/news-room/fact-sheets/detail/depression

Yoon, S. L., & Kim, J. H. (2013). **Job-related stress, emotional labor, and depressive symptoms among Korean nurses**. J Nurs Scholarsh, 45(2), 169-176. doi: 10.1111/jnu.12018

Zhao, M. (2011). **Evaluation of the third-party mediation mechanism for medical disputes in China**. Med Law, 30(3), 401-415.

Annex 1

Consent form

نموذج موافقة الاشتراك في البحث العلمي

تحية طيبة

عزيزي/عزيزتي فني/ة التصوير الطبي، أقدر مشاركتك في بحثي لإكمال درجة الماجستير في الصحة العامة بعنوان "**مدى إنتشار أعراض الإكتئاب والعوامل المرتبطة به بين فنيي الأشعة العاملين في المستشفيات الفلسطينية في الضفة الغربية** ".

عزيزي/عزيزتي فني/ة التصوير الطبي إعلم/ي أن مشاركتك طوعية ويمكنك إنهاء مشاركتك في أي وقت دون شرح الأسباب، علما أن الاستبيان لا يحتوي على إسم الفني/ة ومكان العمل، وان المعلومات الواردة فيه لأغراض البحث العلمي فقط .

إذا كان لديك أي استفسار، أرجو ألا تتردد/ي في الاتصال بي وشكرا على وقتك و مشاركتك .

الباحث: أحمد عبيد، ماجستير الصحة العامة، جامعة النجاح الوطنية / قسم الصحة العامة.

المشرف: د. عدنان سرحان ، قسم الصحة العامة / جامعة النجاح الوطنية.

الباحث توقيع

توقيع المشارك

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Annex 2

Arabic version of questionnaire

ملاحظة : يقسم الاستبيان الى قسمين، القسم الاول لجمع المعلومات الشخصية عن المشارك والقسم الثاني لقياس مستوى الاكتئاب، يرجى وضع اشارة **X** امام ما يناسب حالتك.

القسم الاول: المعلومات الشخصية

- العمر □ 24-34 □35-45 □ ≥ 46
- الجنس □ ذكر □ انثى
- الحالة الاجتماعية □ اعزب □متزوج □ غير ذلك
- عدد الابناء ان كنت متزوج/ة □لايوجد ابناء □1 □ 2-5 □ اكثر من خمسة
- مستوى التعليم □ دبلوم □ بكالوريس □ ماجستير او اكثر
- المستشفى الذي تعمل به □ خاص □ حكومي
- سنوات الخبرة □ اقل من سنة □ 1- 10 سنوات □ 11-20 □ ≥ 21 سنوات
- الدخل الشهري □ > 1000 دولار □1000-1199 دولار □ ≥ 1200 دولار
- هل تعاني/ن من اي اعاقة جسدية □ نعم □ لا
- هل تعاني/ن من أي امراض مزمنة □نعم □ لا
- هل انت مدخن/ة □نعم □ لا
- هل تعمل/تعملين بالدوام الليلي □نعم □ لا
- ما هو نمط التصوير الطبي الذي تعمل به □الاشعة السينية □ الاشعة المقطعية □ الرنين المغناطيسي
- مكان السكن □ مدينة □قرية □ مخيم لاجئين

القسم الثاني : نموذج بيك لقياس مستوى الاكتئاب

العبارات	اسم المجموعة	الرقم
0- لا اشعر بالحزن 1- اشعر بالحزن في كثير من الاحيان 2- انا حزين طوال الوقت 3- اشعر بالحزن والتعاسة الى درجة لا تطاق	الحزن	1
0- لم تضعف همتي فيما يخص مستقبلي 1- اشعر بضعف همتي فيما يخص مستقبلي على غير عادتي 2- اتوقع الا تسير اموري بشكل جيد 3- اشعر ان مستقبلي لا امل فيه، وان الامور تزداد سوء	التشاؤم	2
0- لا اشعر باني فاشل 1- فشلت اكثر مما ينبغي 2- كلما افكر في حياتي السابقة اكتشف الكثير من الفشل 3- اشعر اني فاشل في حياتي تماما	الفشل او الاخفاق فيما سبق من العمر	3
0- استمتع دائما بالحياة كما كنت من قبل 1- لا استمتع بالحياة بنفس القدر الذي اعتدت عليه 2- احصل على قدر قليل جدا من الاستمتاع بالحياه مما تعودت عليه من قبل 3- لم احصل على اي استمتاع بالحياة كعادة استمتاعي سابقا	فقدان المتعة او الاستمتاع	4
0- لا اشعر شعورا خاصا بالذنب 1- اشعر بالذنب من عديد الاشياء التي فعلتها او من اشياء واجبة الاداء ولم اقم بها 2- اشعر بالذنب معظم الاوقات 3- اشعر بالذنب جل الاوقات	الشعور بالذنب او الاثم	5
0- لا اشعر بان هناك عقابا او اذى يحل بي 1- اشعر بان عقابا او اذى سيحدث او يحل بي 2- اتوقع عقابا يقع علي بالفعل 3- اشعر اني ساتعرض للعقاب او الاذى	الشعور بالعقاب او الاذى	6
0- شعوري نحو ذاتي لم يتغير 1- فقدت الثقة في نفسي 2- خاب املي في نفسي 3- لا احب نفسي	الاحساس السلبي نحو الذات	7
0- لا الوم او لا انتقد نفسي اكثر من المعتاد 1- انتقد نفسي اكثر من المعتاد 2- الوم نفسي لما ارتكب اخطاء 3- الوم نفسي على كل ما يحدث من سوء بسببي	موقف نقد الذات	8

0- لا تتتابني اي افكار للتخلص من نفسي 1- تراودني افكار للتخلص من حياتي ولكني لا انفذها 2- اريد ان انتحر 3- سانتحر في اي فرصة متاحة	الافكار او الرغبة في الانتحار	9
0- لا ابكي اكثر من المعتاد 1- ابكي اكثر من المعتاد 2- ابكي لاتفه الاسباب او لاقل اصغر الاشياء 3- كنت قادرا على البكاء ولكنني اعجز الان على البكاء حتى لو اردت ذلك	البكاء	10
0- لست منزعجا او متوترا هذه الايام عن اي وقت مضى 1- اشعر بالانزعاج او التوتر هذه الايام عن اي وقت مضى 2- اتهيج و اتوتر لدرجه يصعب علي البقاء هادئا 3- اتهيج و اتوتر لدرجه تدفعني الى الحركة او فعل شيء ما	الهيجان او الإستثارة	11
0- لم افقد اهتمامي بالاخرين او بالانشطة 1- انا قليل اهتمام بالاخرين او بالانشطة عن السابق 2- فقدت معظم اهتمامي بالاخرين وبالامور الاخرى 3- لدي صعوبة في ان اهتم باي شيء مهما كان	فقدان الاهتمام	12
0- اتخذ قرارات صائبة و حكيمة دائما كمثل ما كنت عليه سابقا 1- لم اجد صعوبة في اتخاذ القرارات 2- لدي صعوبة كبيرة اكثر من ذي قبل في اتخاذ القرارات 3- اعجز تماما عن اتخاذ اي قرار مهما كان بالمرة	التردد في اخذ القرار	13
0- اظن اني شخص مهم ولدي قيمة 1- اعتقد اني لست شخصا مهما وذا قيمة كما تعودت 2- اشعر اني اقل قيمة مقارنة بالاخرين 3- اشعر اني عديم القيمة تماما	انعدام القيمة	14
0- لدي دائما نفس القدر من الطاقة كما كنت من قبل 1- لدي قدر من الطاقة اقل مما كنت عليه من قبل 2- ليس لدي طاقة كافية للتمكن من فعل اشياء كثيرة 3- ليس لدي طاقة لفعل شيئ مهما كان.	فقدان الطاقة	15
0- عادات نومي لم تتغير 1 أ- انام اكثر بقليل على ما تعودت عليه 1 ب- انام اقل بقليل على ما تعودت عليه 2 أ- انام اكثر مما تعودت عليه بشكل كبير 2 ب- انام اقل مما تعودت عليه بشكل كبير 3 أ - انام تقريبا كل اليوم 3 ب- استيقظ من النوم مبكرا 2-3 ساعات، واعجز عن استئناف نومي	التغير في عادات النوم	16

0- لا اغضب اكثر من المعتاد 1- اغضب اكثر من المعتاد 2- اغضب اكثر بكثير من المعتاد 3- انا دائم الغضب	قابلية الغضب	17
0- شهيتي لم تتغير 1أ- شهيتي اقل بقليل من السابق 1ب - شهيتي اكبر بقليل من السابق 2أ- شهيتي اكثر بقليل من السابق 2ب- شهيتي اكبر بكثير من السابق 3أ- ليست لدي شهية على الاطلاق 3ب- لدي رغبة دائمة في الاكل	تغير الشهية	18
0- استطيع التركيز دائما كما تعودت 1- لا استطيع التركيز كما تعودت 2- لدي صعوبة في ان اركز لمدة طويلة في اي شيء كان 3- اجد نفسي عاجزا على التركيز في اي شيء مهما كان	صعوبة التركيز	19
0- لست اكثر ارهاقا من السابق 1- ارهق واتعب بسهولة اكثر مما تعودت عليه 2- كثرة الارهاق تعيقني عن القيام باشياء كثيرة اعتدت عليها 3- اصبحت مشغولا تماما باموري الصحية	الارهاق او الاجهاذ	20
0- لم الاحظ اي تغيرات حديثة في رغبتي الجنسية 1- اصبحت اقل اهتماما بالجنس من ذي قبل 2- قلت رغبتي الجنسية بشكل ملحوظ 3- فقدت تماما رغبتي الجنسية	فقدان الاهتمام بالجنس	21

Annex 3

English version of Study questionnaire

Section one: Socio-Demographic data

Age   □24-34   □35-45   □ ≥ 46

Gender   □Male   □Female

Marital status   □Single   □Married   □Other

Number of children (if you married)   □No children   □One child   □ 2-5   □More than 5

Educational level   □Diploma   □Bachelors   □Master and more

Type of hospital   □Private   □Governmental

Years of Experience   □ <1   □1-10   □11-20   □≥21

Monthly salary   □< 1000$ □1000- 1199 $ □≥ 1200$

Existence of physical disability   □Yes   □No

Existence of chronic diseases   □Yes   □No

Smoking   □Yes   □No

Night shift working   □Yes   □No

Imaging modality you are working on   □X-Ray   □Computed Tomography

□Magnetic Resonance imaging

Living place   □City   □Village   □Refugee Camp

Scale of Beck's Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

1. 0- I do not feel sad.

   1- I feel sad.

   2- I am sad all the time and I can't snap out of it.

   3- I am so sad and unhappy that I can't stand it.

2. 0- I am not particularly discouraged about the future.

   1- I feel discouraged about the future.

   2- I feel I have nothing to look forward to.

   3- I feel the future is hopeless and that things cannot improve.

3. 0- I do not feel like a failure.

   1- I feel I have failed more than the average person.

   2- As I look back on my life, all I can see is a lot of failures.

   3- I feel I am a complete failure as a person.

4.   0- I get as much satisfaction out of things as I used to.

    1- I don't enjoy things the way I used to.

    2- I don't get real satisfaction out of anything anymore.

    3- I am dissatisfied or bored with everything.

5. 0- I don't feel particularly guilty

   1- I feel guilty a good part of the time.

   2- I feel quite guilty most of the time.

   3- I feel guilty all of the time.

6.   0- I don't feel I am being punished.

   1- I feel I may be punished.

   2- I expect to be punished.

   3- I feel I am being punished.

7. 0- I don't feel disappointed in myself.

   1- I am disappointed in myself.

   2- I am disgusted with myself.

   3- I hate myself.

8. 0- I don't feel I am any worse than anybody else.

   1- I am critical of myself for my weaknesses or mistakes.

   2- I blame myself all the time for my faults.

   3- I blame myself for everything bad that happens.

9. 0- I don't have any thoughts of killing myself.

   1- I have thoughts of killing myself, but I would not carry them out.

   2- I would like to kill myself.

   3- I would kill myself if I had the chance.

10. 0- I don't cry any more than usual.

   1- I cry more now than I used to.

   2- I cry all the time now.

   3- I used to be able to cry, but now I can't cry even though I want to.

11. 0- I am no more irritated by things than I ever was.

   1- I am slightly more irritated now than usual.

   2- I am quite annoyed or irritated a good deal of the time.

   3- I feel irritated all the time.

12. 0- I have not lost interest in other people.

   1- I am less interested in other people than I used to be.

   2- I have lost most of my interest in other people.

   3- I have lost all of my interest in other people.

13. 0- I make decisions about as well as I ever could.

   1- I put off making decisions more than I used to.

   2- I have greater difficulty in making decisions more than I used to.

3- I can't make decisions at all anymore.

14. 0- I don't feel that I look any worse than I used to.

1- I am worried that I am looking old or unattractive.

2- I feel there are permanent changes in my appearance that make me look unattractive

3- I believe that I look ugly.

15. 0- I can work about as well as before.

1- It takes an extra effort to get started at doing something.

2- I have to push myself very hard to do anything.

3- I can't do any work at all.

16. 0- I can sleep as well as usual.

1- I don't sleep as well as I used to.

2- I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.

3- I wake up several hours earlier than I used to and cannot get back to sleep.

17. 0- I don't get more tired than usual.

1- I get tired more easily than I used to.

2- I get tired from doing almost anything.

3- I am too tired to do anything.

18. 0- My appetite is no worse than usual.

1- My appetite is not as good as it used to be.

2- My appetite is much worse now.

3- I have no appetite at all anymore.

19. 0- I haven't lost much weight, if any, lately.

1- I have lost more than five pounds.

2- I have lost more than ten pounds.

3- I have lost more than fifteen pounds.

20. 0- I am no more worried about my health than usual.

1- I am worried about physical problems like aches, pains, upset stomach, or constipation.

2- I am very worried about physical problems and it's hard to think of much else.

3- I am so worried about my physical problems that I cannot think of anything else.

21. 0- I have not noticed any recent change in my interest in sex.

1- I am less interested in sex than I used to be.

2- I have almost no interest in sex.

3- I have lost interest in sex completely.

Interpreting the Beck Depression Inventory:

Now that you have completed the questionnaire, add up the score for each of the twenty-one questions by counting the number to the right of each question you marked. The highest possible total for the whole test would be sixty-three. This would mean you circled number three on all twenty-one questions. Since the lowest possible score for each question is zero, the lowest possible score for the test would be zero. This would mean you circles zero on each question. You can evaluate your depression according to the Table below.

Total Score _____ Levels of Depression

1-10_____These ups and downs are considered normal

11-16_____Mild mood disturbance

17-20_____Borderline clinical depression

21-30_____Moderate depression

31-40_____Severe depression

Over 40_____Extreme depression

جامعة النجاح الوطنية

كلية الدراسات العليا

مدى إنتشار أعراض الإكتئاب والعوامل المرتبطة به بين فنيي الأشعة العاملين في مستشفيات الضفة الغربية، فلسطين: دراسة مقطعية

إعداد

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إشراف

د. عدنان سرحان

قدمت هذه الأطروحة استكمالاً لمتطلبات الحصول على درجة الماجستير في برنامج الصحة العامة، بكلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس– فلسطين.
2019

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الملخص

يعد فنيو الاشعة أحد أهم مقدمي الخدمات الطبية في القطاع الصحي، فهم جنود الخطوط الامامية في منظومة القطاع الصحي الفلسطيني ويندرجون تحت فئة المهن الطبية المساندة.

فهم يواجهون ضغوطات مهنية بطرق مختلفة قد تسهم في تأثيرات نفسية ضارة متنوعة بما في ذلك الاكتئاب.

عنوان الدراسة: مدى إنتشار أعراض الإكتئاب والعوامل المرتبطة به بين فنيي الأشعة العاملين في المستشفيات الفلسطينية في الضفة الغربية

اسم الطالب: البحث من عمل الطالب احمد فائد عبد المجيد عبيد وبإشراف الدكتور عدنان سرحان

هدف الدراسة: تهدف هذه الدراسة إلى دراسة مدى انتشار أعراض الاكتئاب تحديد العوامل المرتبطة به بين فنيي الأشعة العاملين في مستشفيات الضفة الغربية.

طريقة الدراسة: الدراسة مقطعية، واستخدمت النسخة العربية من مقياس بيك للاكتئاب وبرنامج التحليل الاحصائي النسخة 21 لتحقيق اهداف الراسة.

نتائج الدراسة: اظهرت النتائج ان معدل انتشار أعراض الاكتئاب بين فنيي الاشعة قد بلغ 75.69 %. وأظهر التحليل الاحصائي متعدد المتغيرات أن متغيرات عدد الابناء، وكون فني الاشعة ذكر وحاصل على درجة البكالوريس كانت مرتبطة إيجابيا مع أعراض الاكتئاب خفيفة إلى معتدلة.

في حين أن المتغيرين العمل في القطاع الخاص وفترة خبرة أكثر من 21 سنة، كانت مرتبطة بشكل سلبي مع أعراض الاكتئاب خفيفة الى معتدلة.

فيما يتعلق بالاكتئاب الحاد، اظهرت النتائج ان العمل في القطاع الخاص وفترة الخبرة العملية لأكثر من 21 عامًا كانت مرتبطة بشكل ايجابي مع أعراض الاكتئاب الحاد. في حين أن عدد الابناء، وكون فني الاشعة من الذكور وحاصل على درجة البكالوريوس كانت مرتبطة بشكل سلبي مع أعراض الاكتئاب الحاد.

الخلاصة: تبين ان اعراض الاكتئاب بين فنيي الأشعة شائعة. وارتبطت المتغيرات: الجنس، وعدد الابناء، وفترة الخبرة، والمستوى التعليمي، وقطاع العمل بظهور أعراض الاكتئاب.

تهدف هذه الابحاث والتدخلات الفعالة، مثل دورات التثقيف في مجال الصحة النفسية الى تحسين التواصل بين المريض وفني الأشعة، ومواكبة طرائق التصوير الطبي الحديثة، وتطوير آليات التعامل مع العاملين بالأشعة التشخيصية، وإلى تحسين الصحة النفسية للفني من وجهة نظر أعراض الاكتئاب.

هناك حاجة إلى دراسات اضافية لتحديد عوامل الخطر المحتملة، وأسباب أعراض الاكتئاب، وكذلك للتحقيق في آثارها وعواقبها على القوى العاملة في المنظومة الصحية خاصة المهن الخطرة منها كالأشعة.