

**PREVALENCE OF DEPRESSION, ANXIETY AND STRESS AMONG WOMEN
INMATES IN ETOT REFORM CENTER, DUHOK GOVERNORATE,
KURDISTAN REGION OF IRAQ**

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ABSTRACT

Background: Depression, anxiety and stress are most common mental health problems causing variety of somatic, behavioral, cognitive and general health effects which could range from mild to life-threatening. Being inmates can cause or worsen symptoms of mental illnesses. The present study determines the prevalence of depression, anxiety and stress among women inmates in Etot Reform Center in Duhok Governorate, Kurdistan Region of Iraq.

Methods: A cross sectional study was carried out on 53 women inmates in Etot Reform Center in Duhok Governorate, Iraq over the period from February 15th to May 15th 2023. Depression, anxiety, and stress were assessed by using the standardized Depression Anxiety Stress Scale-21 Items (DASS-21). Data were analyzed using SPSS version 27. Categorical data were described by their frequency and frequency percent. Fisher-Freeman-Halton Exact test was used to test the association between depression/anxiety/stress and sociodemographic variables.

Results: The prevalence of depression was 73.6%, anxiety was 84.8% and stress was found to be prevalent in 68% among women inmates. Depression and anxiety classified as moderate while stress classified as mild.

Conclusions: Based on the findings presented which concluded a higher prevalence of depression, stress and anxiety among inmates than the general population, there should be appropriate interventions such as introducing a framework of mental health and psychosocial support, activities to cope with new environment and more in-depth research in the future.

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Keywords: Anxiety, DASS-21, Depression, Inmate, Reform, Stress.

Understanding three different interrelated conditions of depression, anxiety and stress that can lead to severe mental problems is a complex approach. Firstly, depression which is one of the most common mental health disorders characterized by persistent sadness, emptiness, irritable mood and loss of

interest¹ along with somatic and cognitive changes². Secondly, anxiety which is a future-oriented anticipation³ that has cognitive and behavioral elements⁴. Thirdly, stress which is an interaction of force with resistance to counter that force⁵ with a major effect upon the senses of well-being, mood, behavior, and general health⁶. Depending on the type, timing and

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severity of the stressor applied, the impacts on the human body can range from simple alterations in homeostasis in healthy individuals⁷ to pathophysiological complications and life-threatening effects especially in unhealthy people⁶. Furthermore, literatures debate deeply on the psychological effects of stress over the depression denoting the rising attention to the long-term effects of stress⁸ while the existence of anxiety with depression will lead to poorer outcomes over time⁹.

Malik et al. (2019) concluded that the prevalence of depression, stress and anxiety was much higher among inmates compare to general population¹⁰. Based on the fact that inmate population receive inadequate health care, the occurrence of anxiety and depression are considered more prevalent among them compare to others^{11,12}. Taye (2018) determined that prevalence of depression, anxiety and stress were higher among women inmates than male counter¹³. Clinical studies refer that 15% of inmates have severe form of mental illness¹⁴. Systematic reviews and meta-analysis from many countries over four decades indicate high levels of psychiatric morbidity are consistently reported among inmates¹⁵.

No studies have been conducted in Iraq and Kurdistan Region to determine the prevalence of mental health illness among inmates.

The present study aimed to determine the prevalence of depression, anxiety and stress among women inmates in Etot Reform Center in Duhok Governorate, Kurdistan Region of Iraq.

METHODS:

A cross-sectional study conducted from February 15th to May 15th 2023 in Etot Reform Center in Duhok Governorate, Iraq. The aforementioned center, is a comprehensive detention services for female inmates and reentry program providing health and supportive services, education, and advocacy. The center has

been established in 2000 in Duhok city, as a part of organizational structure of the Ministry of Labour and Social Affairs. Adults aged more than 11 years arrested or convicted are subject to stay in this center. For ethical considerations, this study was approved by the Scientific and Ethical Committee from the concerned sectors in Duhok city, namely, Duhok Directorate General of Health and College of Medicine at University of Duhok.

The study included all the women admitted to the center at the time of conducting the study. The total number were 53 women inmates, every one of them was informed about the aim of the study and the confidentiality of their data were ensured by the researcher before starting to participate. Also, their rights to refuse or participate in the present study was confirmed and then oral consent had been obtained for the purpose of the interview. Official permission was taken from the Directorate of Care and Social Development and the Administration of Etot Reform Center. Inclusion criteria included all adult women age more than 18 years held in Etot Reform Center either on remained or carrying out a sentence for more than 6 months. While, exclusion criteria were mentally disordered inmates who admitted to hospital. Depression, anxiety, and stress were assessed by using the standardized Depression Anxiety Stress Scale-21 Items (DASS-21). The final score of each category group (Depression, Anxiety and Stress) is multiply by 2 because DASS-21 is a short version of the DASS-42 items. This questionnaire consists of three self-report scales formed to measure the emotional states of depression, anxiety, and stress. Each of these scales contains seven items; divided into subscales with similar content. The depression scale assesses devaluation of life, dysphoria, self-deprecation, hopelessness, lack of interest and involvement, inertia and anhedonia. The anxiety scale assesses autonomic

arousal, situational anxiety; subjective experience of anxious affect and skeletal muscle effects. The assigned scale of stress is considered sensitive to levels of chronic arousal. It assesses nervous arousal, being easily upset/agitated, & difficulty relaxing, impatient and irritable/over-reactive.

In this scale, the scores for depression, anxiety and stress are calculated through summation of the scores for the relevant items. Statistical analysis with using the DASS-21 questionnaire by interview technique included age-wise distribution and characteristics of the participants, and prevalence of depression, anxiety and stress among inmates Data were analyzed using SPSS version 27. Categorical data were described by their frequency and

frequency percent. Fisher-Freeman-Halton Exact test was used to test the association between depression / anxiety / stress and sociodemographic variables. A p value less than 0.05 was considered statistically significant.

RESULTS:

The age of the participants ranged from 19 to 65 years old (mean 34.5; years standard deviation 10.2 years). Seventy percent of the participants aged (19-39) years old. Eighty five percent of them were housewives, about 60% were married and about half of them were illiterate. Only six of them were alcoholic and 60% of them were current smokers (Table: 1).

Table 1: Characteristics of Women in Etot Reform Center

	Characteristic	No.	%
Age (years)	19 - 29	19	35.8
	30 - 39	18	34.0
	40 - 49	11	20.8
	50 - 65	5	9.4
Work	Employed	8	15.1
	Housewife	45	84.9
Education Level	Illiterate	25	47.2
	Primary-intermediate	13	24.5
	Preparatory	9	17.0
Marital Status	Higher education	6	11.3
	Single	5	9.4
	Married	31	58.5
Alcohol Consumption	Divorced	17	32.1
	Yes	6	11.3
Cigarette Smoking	No	47	88.7
	Yes	32	60.4
	No	21	39.6
Total		53	100.0

The prevalence of depression was 73.6%, anxiety was 84.8% and stress was found to be prevalent in 68% among women inmates.

Differences had been noted among various age group. Middle age groups tends to have moderate form of depression and anxiety and mild form of stress (Figure: 1).

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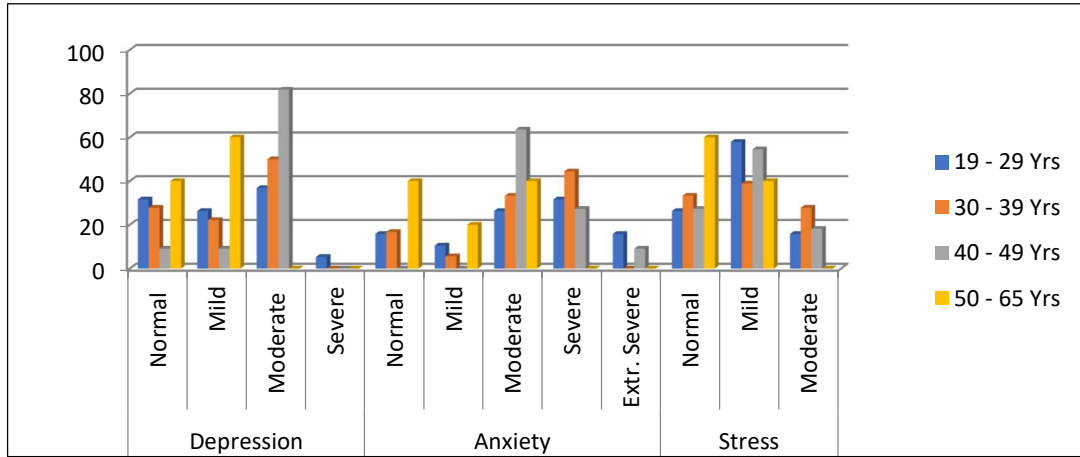


Figure 1: Percent distribution of age by severity of depression, anxiety and stress

The overall prevalence of depression and anxiety classified as moderate degree, the least was mild degree stress (Table: 2).

Table 2: Prevalence of depression, anxiety and stress, according to severity

Condition severity	Depression		Anxiety		Stress	
	No.	%	No.	%	No.	%
Normal	14	26.4	8	15.1	17	32.1
Mild	13	24.5	4	7.5	26	49.1
Moderate	25	47.2	20	37.7	10	18.9
Severe	1	1.9	17	32.1	0	0.0
Extremely severe	0	0.0	4	7.5	0	0.0
Total	53	100.0	53	100.0	53	100.0

Significant difference had been found in relation to marital status. Married and divorced inmates had higher level of

moderate degree of depression and mild degree of stress (Figure: 2).

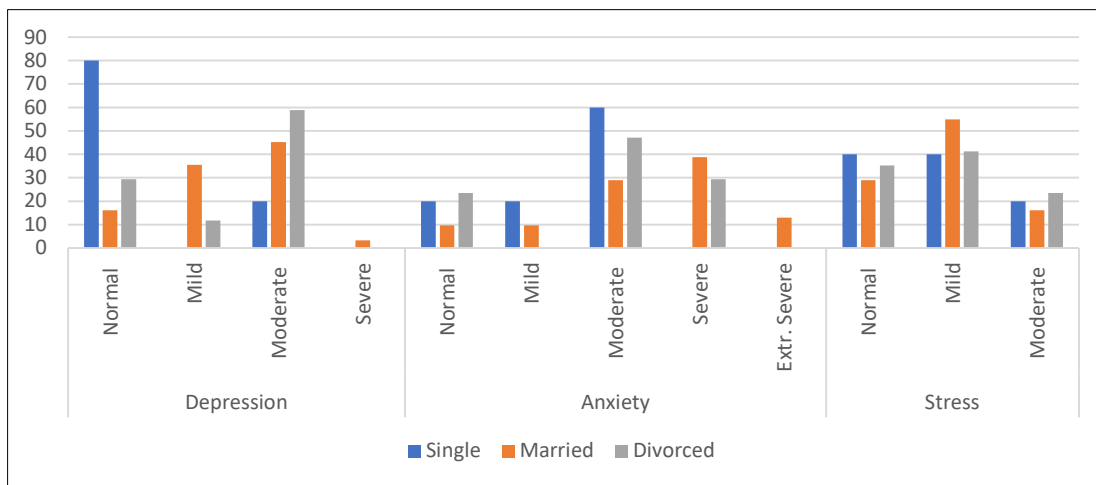


Figure 2: Percent distribution of marital status by severity of depression, anxiety and stress

In reference to depression, middle aged participants (40–49 years old) had the higher level of moderate degree of depression (81.8%) especially those who are employed. A significant relationship between marital status and severity of depression has been identified.

Singles having the least degree of depression whereas divorced having the highest prevalence of moderate degree of depression.

The other socio-demographic factors were not significantly related to degree of depression (Table: 3).

Table 3: Relationship between socio-demographic characteristics and degree of depression

Characteristic		Normal		Depression						Total No.	P value*
		No.	%	Mild		Moderate		Severe			
				No.	%	No.	%	No.	%		
Age (years)	19 - 29	6	31.6	5	26.3	7	36.8	1	5.3	19	0.099
	30 - 39	5	27.8	4	22.2	9	50.0	0	0.0	18	
	40 - 49	1	9.1	1	9.1	9	81.8	0	0.0	11	
	50 - 65	2	40.0	3	60.0	0	0.0	0	0.0	5	
Work	Employed	2	25.0	0	0.0	6	75.0	0	0.0	8	0.276
	Housewife	12	26.7	13	28.9	19	42.2	1	2.2	45	
	Illiterate	5	20.0	9	36.0	10	40.0	1	4.0	25	
Education Level	Primary-intermediate	4	30.8	3	23.1	6	46.2	0	0.0	13	0.600
	Preparatory	2	22.2	1	11.1	6	66.7	0	0.0	9	
	Higher education	3	50.0	0	0.0	3	50.0	0	0.0	6	
Marital Status	Single	4	80.0	0	0.0	1	20.0	0	0.0	5	0.048
	Married	5	16.1	11	35.5	14	45.2	1	3.2	31	
	Divorced	5	29.4	2	11.8	10	58.8	0	0.0	17	
Alcohol Consumption	Yes	1	16.7	2	33.3	2	33.3	1	16.7	6	0.151
	No	13	27.7	11	23.4	23	48.9	0	0.0	47	
Cigarette Smoking	Yes	7	21.9	10	31.3	14	43.8	1	3.1	32	0.399
	No	7	33.3	3	14.3	11	52.4	0	0.0	21	
Total		14	26.4	13	24.5	25	47.2	1	1.9	53	

* Based on Fisher-Freeman-Halton Exact test.

No significant relationship between socio-demographic characteristics and level of anxiety has been found despite that smoker showed higher prevalence of severe

anxiety on one hand and alcohol consumption participants had the higher prevalence of depression and anxiety on the other hand (Figure: 3 and Figure: 4).

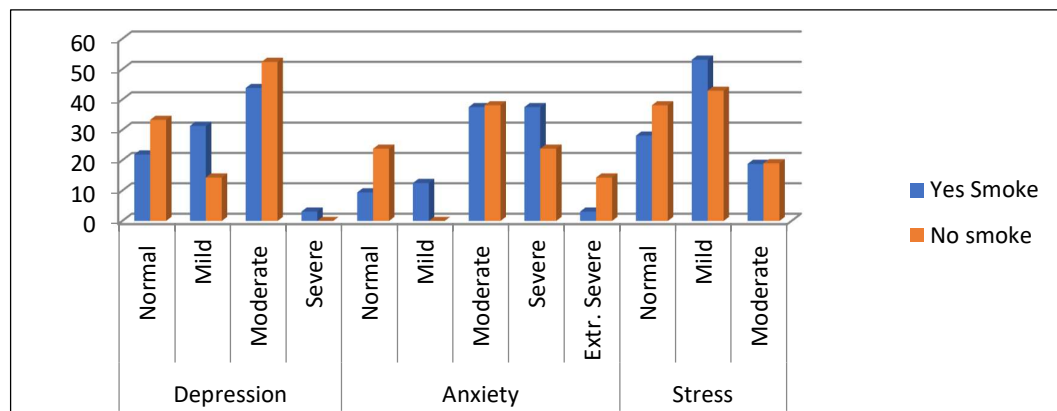


Figure 3: Percent distribution of smoking by severity of depression, anxiety and stress

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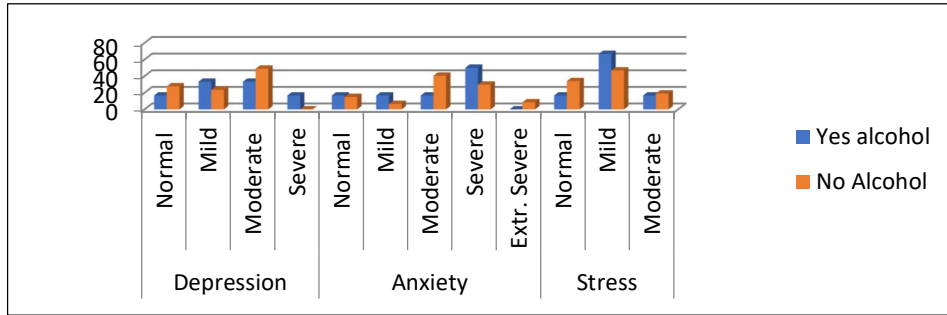


Figure 4: Percent distribution of alcohol drinking by severity of depression, anxiety and stress

No relationship between level of stress and sociodemographic characteristics. Although those with primary to

intermediate education displayed higher level of a moderate degree stress (Figure: 5).

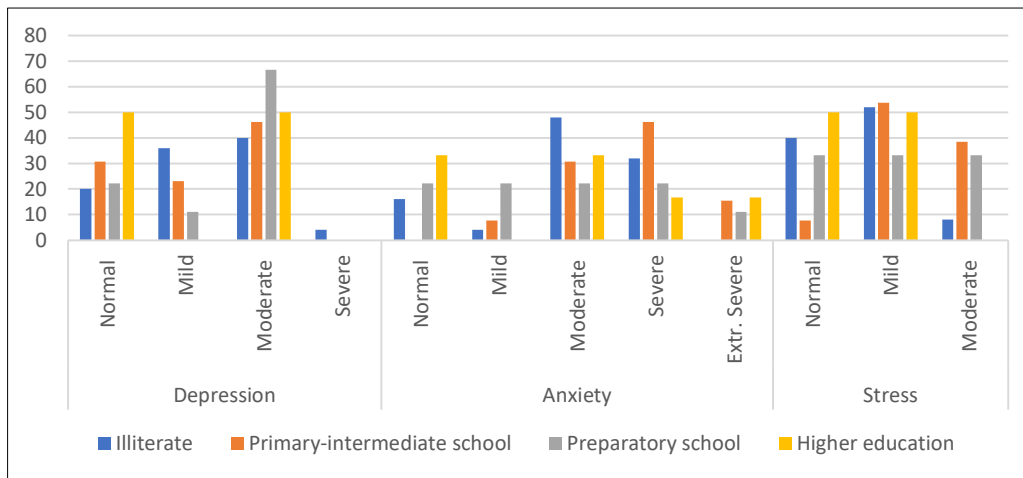


Figure 5: Percent distribution level of education by severity of depression, anxiety and stress

DISCUSSION:

The present study described the prevalence of depression, anxiety, and stress symptoms among women inmates in Etot Reform Center in Kurdistan Region of Iraq. The study, which is for the first-time in Kurdistan Region of Iraq yielded important results that are worthy to be elaborated. Studies shown that nearly 25% of women develop some form of mental illness at some point during their life¹⁶. Significantly, prevalence of depression, anxiety and stress are predominant among women inmates. This finding support Malik et al. (2019) conclusion that the prevalence of depression, stress and anxiety was found much higher among inmates. In reference to age, the age group 40-49 years have higher incidence of

developing depression, anxiety, and stress¹⁰.

Evidently, moderate depression rather than severe depression and moderate to severe anxiety on one hand and mild stress on the other hand were reported which is close to the findings by Birmingham (2003) that mild to moderate depression is a common finding among inmates¹⁷ and the finding is compatible with the studies conducted by Khan et al. (2012) and Math et al. (2011) regarding the age group^{16,18}. Married women have highest depression prevalence especially low educated group which is comparable to what has been concluded by Fazel et al. (2016) that being married predisposes more to mental health disorders. Since unmarried women tend to have least incidence of depression¹⁹. Thus, marital status and number of

children could be a demographic risk factor that greatly cause mental health problems.

This is not surprising because stagnation is often felt rather than generativity. Women inmates who were consuming alcohol and smoking cigarette tend to have a higher prevalence of depression and anxiety. This is another factor that need further research. In reference to educational level, there is a noticeable variation between different level of education and the incidence of mental health problems although it tends to be higher among primary to intermediate education women. While visiting Etot Reform Center for the purpose of data collection, the researchers had the opportunity to visit different parts of the center and observe the living conditions of the women inmates. Despite the center is dedicated for women yet living conditions were undoubtedly poor. Methods to accept the new environment and actively coping, lack of psychosocial support and privacy, and the fears from uncertain future and stigmatization and/or reintegration after release were noted as a common problem especially women with existing trauma history or any form of violence. These observational findings create potential likelihood and increase risk for developing mental health illnesses.

The present study had some limitations. Firstly, the limited sample size and gender of participants because the size was limited to 53 and participants were female. Secondly, the study is limited to one setting in one governorate. Thirdly, type of questionnaire used were subjective quantified. Upon these factors, findings could be different if the sample size is bigger or both genders involved and different settings were included. Nonetheless, even with the aforementioned limitations, the descriptive statistics revealed that most of the women inmates suffer from depression, anxiety and stress at different degrees. So far, the study is the first of its kind in Kurdistan Region of Iraq

and expectantly it informs and leads us to further research in this field and the findings can serve as a baseline for future studies. In conclusion, inmate health and psychosocial needs must to considered as a priority and there should be a periodical follow up for any mental disorders. The findings presented in our study which showed a high prevalence of depression, anxiety and stress among women inmates at Etot Reform Center in Duhok Governorate compared to general population The concluded facts direct us to present or recommend the need to introduce a general framework of mental health support at the Reform Centers in Kurdistan Region of Iraq including medical treatment and psychosocial support. Such framework should include timely screening, diagnosis and appropriate treatment and follow up to properly manage mental health problems. Furthermore, involving inmates in recreational and religious activities, capacity building and training them on how to cope with new environment. Finally, more in-depth research should be conducted in all Reform Centers in Kurdistan Region of Iraq to assess the mental health of inmates and to set effective treatment strategies.

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پوخته

به‌لافیونا خه‌موکی و دلهره‌وه‌کی و فشارا دهره‌وه‌کی دنافا نافرته‌تین گرتی ل ناهندا چاکسازیا نیتیتی ل پاریزگه‌ها دهوک/ههریما کوردستانی - عیراق

پیشه‌کی و نارمانج: خه‌موکی، دلهره‌وه‌کی و فشارا به‌ر به‌لافتترین ئاریشتین ساخلمیا دهره‌وه‌کی نه کو دینه نه‌گه‌ری کاربگه‌ریین جوراوجور بیت جهسته‌یی، رهفتاری، مه‌عریفی و گشتی بین ساخلمی کو ژ سفک دهست پی دکهن هه تا بگه‌هنه مه‌ترسیدار بو سه‌ر ژیا نا مروقی. زیندانیکن د بیهته نه‌گه‌ری خراپتربونا نیشانیین نه‌خوشیین دهره‌وه‌کی. نه‌ف فه‌کولینا نوکه ریژا به‌لافیونا خه‌موکی و دلهره‌وه‌کی و فشارا دهره‌وه‌کی دنافا نافرته‌تین گرتی ل ناهندا چاکسازیا نیتیتی ل پاریزگه‌ها دهوک/ههریما کوردستانی دیار دکه‌ت.

ریکن فه‌کولینی: نه‌ف فه‌کولینه ب دیزاینا کرووس_سیکشن هاتیه کرن دنافا ۵۳ گرتیی بین ره‌گه‌ز می ل ناهندا چاکسازیا نیتیتی ل پاریزگه‌ها دهوک/ههریما کوردستان - عیراق ل ۱۵ شوبات هه‌تا ۱۵ ئایاری ۲۰۲۳ هاتیه نه‌نجامدان. خه‌موکی، دلهره‌وه‌کی و فشارا ب بکارئینانا ستاندردی خه‌موکی، دلهره‌وه‌کی و خه‌موکی (بیه‌فرین ۲۱) (DASS-21) هاتینه هه‌لسه‌نگانن. زانیاری ب بکارئینانا (SPSS) فیرژن ۲۷ هاتینه شلوفه کرن و پولین کرن لیدیف فریکوینسی و فریکوینسیا ریژا سه‌دی هاتینه دهست نیشانکرن. تاقیرنا هویر یا فیشهر -فریمه‌ن -هالتون هاتیه بکارئینان بو تاقیرنا په‌یوه‌ندی دناقه‌را خه‌موکی/دلهره‌وه‌کی/فشارا دهره‌وه‌کی و گوهورینین کومه‌لایه‌تی و دیموگرافی.

نه‌نجام: ریژا به‌لافیونا خه‌موکی 73.6% بووه دلهره‌وه‌کی 84.8% بووه فشارا دهره‌وه‌کی 68% بووه دنافا نافرته‌تین گرتیی دا وه خه‌موکی و دلهره‌وه‌کی هاتینه پولینکرن مامناوه‌ند و فشارا دهره‌وه‌کی یا سفک بو.

ده‌ره‌نه‌نجام: ب پشتبه‌ستن ب وان نه‌نجامین هاتینه پیشکیشکرن، دیار دبیته کو به‌لافیونا خه‌موکی، دلهره‌وه‌کی و فشارا دنافا گرتیین نافرته زیده‌تره به‌راورد دگهل خه‌لکی دی، پیدفیه ده‌ستپه‌ردانه‌کا گونجای هه‌بیته وه‌ک چارچووه‌کی تهن‌دروستیا دهره‌وه‌کی و پشته‌فانیا دهره‌وه‌کی و کومه‌لایه‌تی بو فان گرتی یا و فه‌کولینین زیده‌تر و به‌رفره‌هتر ل پاشهرۆژی به‌ینه نه‌نجامدان.

الخلاصة

مدى انتشار الاكتئاب والقلق والتوتر بين النساء النزلاء في مركز إبتوت للإصلاح، محافظة دهوك، إقليم كردستان – العراق

الخلفية والأهداف: يعتبر الاكتئاب والقلق والتوتر من مشاكل الصحة العقلية الأكثر شيوعاً والتي تنتج عنها مجموعة من الآثار الصحية الجسدية والسلوكية والمعرفية والعامّة تتراوح من خفيفة إلى مهددة للحياة. كون الشخص سجيناً يمكن أن يسبب أو يزيد من أعراض الأمراض النفسية. تحدد هذه الدراسة مدى انتشار الاكتئاب والقلق والتوتر بين الموقوفات النساء في مركز إبتوت للإصلاح في محافظة دهوك، إقليم كردستان العراق.

طرق البحث: أجريت دراسة مقطعية على 53 موقوفة في مركز إصلاح إبتوت للإصلاح في محافظة دهوك في إقليم كردستان العراق خلال الفترة من 15 فبراير إلى 15 مايو 2023. تم تقييم الاكتئاب والقلق والتوتر باستخدام مقياس إجهاد الاكتئاب والقلق القياسي 21 عنصر (DASS-21). تم تحليل البيانات باستخدام SPSS الإصدار 27. تم وصف البيانات الفئوية من خلال تواترها ونسبة التردد. فيشر فريمان هالتون تم استخدام الاختبار الدقيق لاختبار العلاقة بين الاكتئاب/القلق/التوتر والمتغيرات الاجتماعية والديموغرافية.

النتائج: كان معدل انتشار الاكتئاب 73.6٪، وكان القلق 84.8٪ ووجد أن التوتر منتشر في 68٪ بين الموقوفات. تم تصنيف الاكتئاب والقلق على أنه معتدل بينما صنف التوتر على أنه خفيف.

الاستنتاجات: استناداً على النتائج المقدمة التي خلصت إلى وجود نسبة مرتفعة من معدل انتشار الاكتئاب والتوتر والقلق بين الموقوفات مقارنة بعامّة السكان، ينبغي أن تكون هناك تدخلات مناسبة مثل إدخال إطار للصحة العقلية والدعم النفسي الاجتماعي للموقوفات في مراكز الإصلاح في الإقليم، وأنشطة للتعامل مع البيئة الجديدة وإجراء المزيد من البحوث المتعمقة في المستقبل.