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RESEARCH ARTICLE

PREVALENCE AND ASSESSMENT OF DEPRESSION AMONG DIFFUSE IDIOPATHIC SKELETAL HYPEROSTOSIS (DISH) PATIENTS

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ABSTRACT

Background: Depression is most frequent among physical illness. Diffuse Idiopathic Skeletal Hyperostosis is a condition in which several ligaments and entheses become ossified. **Objectives:** Assessment of depression and the severity of depression among patients with diffuse idiopathic skeletal hyperostosis, and detection of risk factors. **Methods:** patients with diffusive idiopathic skeletal hyperostosis, both genders who have consulted during the study period and given their consent were assessed through sociodemographic and clinical data collection, and PHQ-9 questionnaire for depressive disorders evaluation. **Results:** The study investigates 43 patients with diffuse idiopathic skeletal hyperostosis. Prevalence of depression was 62%. Almost 88.88% of them were moderate to severe depression. Depression significantly associated with age, gender, occupation, life events, and duration of illness. **Conclusion:** depression is high in patients with diffuse idiopathic skeletal hyperostosis. Age, gender, occupation, life events, and duration of illness consider as the significant risk factors.

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INTRODUCTION

Diffuse idiopathic skeletal hyperostosis (DISH) is a common systemic condition, of prevalence nearly 10% in those aged >50 years (Mader *et al*., 2017). DISH also called as Forestier's disease, described firstlyin 1950 by Rotes-Queroland Forestier. DISH issystemic idiopathic disease affecting the axial skeleton characterized by anterolateral spinal ligaments ossification and formation of osteophyte along the whole spines (Goico-Alburquerque *et al*., 2017). Decreased mobility and mild backache may be the results of ossification of many ligaments (Pulcherio *et al*., 2014). Thoracic spine usually affected by the disorder. Other joints and spines may be affected. Treatment and diagnosis usually delayed because the majority of patientswere asymptomatic (Mader *et al*., 2009). The pathogenesisof DISH wasnotclear, but other factors like; anatomic, endocrine, metabolic, genetic, toxic, and environmental factors may take part (Kim *et al*., 2004). DISH is a disorder of old age, predominantly males male/female ratios 2:1 - 7:1 (Hiyama *et al*., 2018). Physical illness induced mental illnessesusually disturbing to volition, personality disorder, and dementia. Mood disorderswere accompanied physical illness, and most frequent is depression. Depression comorbid with physicaldisorders can be reactive or psychogenic inducted by social situation changes or depression directly results from the medical condition (Al Abbudi, 2018). Characteristic features of depressioninclude loss of interest, sadness, low self-esteem, feelings of guilt, sleep disturbance, changed appetite, poor concentration and tiredness. Depression may be long-lastingcores or recurrent episodes, with impairment of person's daily life function, work and school. Severe depression mayend with suicide (Al Abbudi *et al*., 2017). Depression diagnosis needs experience and accurate valuation. Clinical practice and research purposes required tools forscreening of depression. Many screening questionnaires are available, with different score thresholds to diagnose depression (Zhao *et al*., 2018). The Patient Health Questionnaire 9 (PHQ-9) is valid brief questionnaire (Adewuya *et al*., 2006) that used DSM-IV criteria for diagnosis of depression (Spitzer *et al*., 1999). PHQ-9 can be self-rated, or interviewer-rated, and is well validated dual-purpose questionnaire in the US that gives picture of depression severity (Kroenke *et al*., 2001), and DSM-IV diagnoses of depressive disorders: major depressive disorder, other depressive disorder and any depressive disorder.

Validity of PHQ-9 was done in many countries in view of construct validity, diagnostic accuracy (Kroenke *et al*., 2001), changes sensitivity, responsiveness to treatment (Lowe *et al*., 2006), internal consistency, test-retest reliability (Pinto-Meza *et al*., 2005) and realistic estimates of population base rates (Rief *et al*., 2004). Assessment of depression and the severity of depression among patients with diffuse idiopathic skeletal hyperostosis, and analysis of the significant sociodemographic and clinical risk factors associated with diffuse idiopathic skeletal hyperostosis patients were the aims of this study.

MATERIALS AND METHODS

Design and setting: The current is a cross-sectional study. It was conducted from February 1st, 2015 to 31st August 2018, in the Psychiatry department with cooperation with Rheumatology unit at Imamain Kadhimain Medical City, Baghdad, Iraq.

Study population: All patients with diffusive idiopathic skeletal hyperostosis (DISH), both genders who have consulted within the time of study and given their agreement to participate were included.

Data collection tools: Questionnaires were filled by consultant psychiatrist, which included; the collection of sociodem ographic and clinical data and PHQ-9 scale. The diagnosis of diffusive idiopathic skeletal hyperostosis (DISH) was based on the clinical findings, radiographic, and biological arguments. The study used the Arabic version of PHQ-9 to identify depression. Face validity process and internal consistency reliability was measured using Cronbach's alpha for the PHQ9, the results was 0.857 (AlHadi *et al*., 2017). Patient Health Questionnaire (PHQ) is a clinical diagnostic tool that is widely utilized worldwide because it provides a practical in clinic tool to screen for psychological disorders. A PHQ-9 score ≥ 10 has a sensitivity of 88% and a specificity of 88% for major depression (Kroenke *et al*., 2001). Major depressive disorder diagnosed if five or more of the nine criteria of depression have been elicited more than half of the days in the past two weeks and one of the symptoms is depressed mood or anhedonia[13]. PHQ-9 severity score from 0 to 27, since each item of the nine items can be scored from 0-3. (Not at all = 0, nearly every day =3) (Andreas *et al*., 2017).

Statistical analysis: Analysis and processing of data was done using the SPSS version 20 software IBM system. Frequency and percentages were used. Depression prevalence was calculated. P value of <0.05 was considered for statistical significant.

Definition of variables: The independent variables evaluated to explain depression were Sociodemographic and clinical data include; age, gender, marital status, occupation, education, family history of mental illness, traumatic life events, and medical comorbidity. PHQ-9 used for evaluation and assessment of depression.

Ethical issues: After clarifying the aims of this study, informed consent and agreement were getting from each patient. Interviews were carried out with full privacy. Names and other details were kept anonymous.

RESULTS

The current study includes total 52 diffuse idiopathic skeletal hyperostosis (DISH) patients. Nine of them not complete the questionnaire and withdrawn from the study. Data analysis was done for 43 patients. The age range was 45–80 years, mean 58±9.6 years. About 80% fall into the age group ≥50 years. Male was nearly three forth of the sample; 86% married, about 72%of higher education, 60% still active working, non-smokers 72%. Patients with DISH exposed to life events 53.5%, patients with family history positive of mental illness were 11.6%, and about 35% have medical comorbidity. (Table 1). Duration of illness was 3–20 years, mean 8.5±4 years. PHQ-9 range was 1 – 25, mean 12.8±8.28.

The prevalence of depression among patients with DISHwas 62.8%; about 88.88% of moderate depression to severe depression (Table 2). Depression was of significant correlation with age group (P=0.020), gender (P=0.042). Occupation (P=0.011), and life events (P=0.004) (Table 3). Depression severity was correlated significantly with age group (P=0.006) and life events (P=0.014) (Table 4). The correlation of depression was statistically significant with duration of illness (P=0.030). The correlation of severity of depression was statistically significant with duration of illness (P=0.023) (Table 5).

Table 1. frequency and percentages of the sociodemographic and clinical characteristics of the patients with diffuse idiopathic skeletal hyperostosis (DISH) involve in the study

characteristics		No.	%
Age Group	below 50 years	9	20.9
	50 - 60 years	17	39.5
	above 60 years	17	39.5
Gender	Male	33	76.7
	Female	10	23.3
Marital Status	Single	6	14
	Married	37	86
Education	Intermediate	12	27.9
	Secondary	23	53.5
	College	8	18.6
Occupation	Unemployed	12	27.9
	Free Work	23	53.5
	Employed	3	7.0
	Retired	5	11.6
	Housekeeper	6	14.0
Smoking	non smoker	31	72.1
	Smoker	12	27.9
Life Events	No	20	46.5
	Yes	23	53.5
Family History	No	38	88.4
	Yes	5	11.6
Comorbidity	No	28	65.1
	Yes	15	34.9

Table 2. frequency and percentages of depression and severity of depression among patients with diffuse idiopathic skeletal hyperostosis (DISH) involved in this study

		No.	%
Depression	No	16	37.2
	Yes	27	62.8
Severity of Depression	mild depression	3	11.11
	moderate depression	13	48.14
	severe depression	11	40.74

Table 3. Correlation of depression with sociodemographic and clinical characteristics of patients with diffuse idiopathic skeletal hyperostosis (DISH) involved in this study

Sociodemographic and clinical variables		Not depressed	Depressed	P
Age Group	below 50 years	5	4	0.020
	50 - 60 years	9	8	
	above 60 years	2	15	
Gender	Male	15	18	0.042
	Female	1	9	
Marital Status	Single	4	2	0.108
	Married	12	25	
Education	Intermediate	5	7	0.573
	Secondary	7	16	
	College	4	4	
Occupation	Unemployed	1	11	0.011
	Free Work	11	12	
	Employed	3	0	
	Retired	1	4	
Smoking	non smoker	12	19	0.744
	Smoker	4	8	
Life Events	No	12	8	0.004
	Yes	4	19	
Family History	No	15	23	0.397
	Yes	1	4	
Comorbidity	No	13	15	0.087
	Yes	3	12	

P<0.05 was considered statistically significant

Table 4. correlation of severity of depression with sociodemographic and clinical characteristics of patients with diffuse idiopathic skeletal hyperostosis (DISH) involved in this study

Sociodemographic and clinical variables		not depressed	mild depression	moderate depression	severe depression	P value
Age Group	below 50 years	5	2	2	0	0.006
	50-60 years	9	0	6	2	
	above 60 years	2	1	5	9	
Gender	Male	15	2	9	7	0.237
	Female	1	1	4	4	
Marital Status	Single	4	1	0	1	0.180
	Married	12	2	13	10	
Education	Intermediate	5	1	4	2	0.819
	Secondary	7	1	8	7	
	College	4	1	1	2	
Occupation	Unemployed	1	2	4	5	0.106
	Free Work	11	1	6	5	
	Employed	3	0	0	0	
	Retired	1	0	3	1	
Smoking	not smoker	12	1	8	10	0.175
	Smoker	4	2	5	1	
Life Events	No	12	2	4	2	0.014
	Yes	4	1	9	9	
Family History	No	15	3	11	9	0.686
	Yes	1	0	2	2	
Comorbidity	No	13	2	8	5	0.286
	Yes	3	1	5	6	

P<0.05 was considered statistically significant

Table 5. Correlation of duration of illness with depression and severity of depression of patients with diffuse idiopathic skeletal hyperostosis (DISH) involved in this study

Severity of depression		Duration of illness				P value
		1-5 years	6-10 years	11-15 years	16-20 years	
Depression	Not depressed	5	11	0	0	0.030
	Depressed	4	12	7	4	
Severity of Depression	mild depression	1	0	2	0	0.023
	moderate depression	2	7	2	2	
	severe depression	1	5	3	2	

DISCUSSION

This is the first study explores depression among diffuse idiopathic skeletal hyperostosis (DISH) patients. The prevalence of depression among patients with diffuse idiopathic skeletal hyperostosis (DISH) was 62.8%. Depression was of significant correlation with age group (*P=0.020*), gender (*P=0.042*), Occupation (*P=0.011*), and life events (*P=0.004*). High severity of depression was found; about 88.88% of moderate to severe depression. Depression was significantly correlated with duration of illness (*P=0.030*). Severity of depression was significantly correlated with duration of illness (*P=0.023*). Up to the knowledge of the author there are no exact figures to compare the results of this study with it. Chronic physical disorders consider as one of the traumatic stressful life events that may precipitate depression and other psychological disorders. The mechanisms behind physical disorders elevate the risk of initiation of depressive disorder were two mechanisms. The first has cognitive or psychological mechanism. Chronic difficulty or life eventsmay induce depressive disorder in susceptible patients. Second mechanism, more specific relation appears to present to link depression with certain physical illness (Goodwin, 2006). Different variables have been identified in rheumatological disorders patients that of association with depressive disorder. Variables may include; physical disability degree, physical pain, disease duration, gender, social stress level and availability of social support (Wolfe and Hawley, 1993; Azad *et al*., 2008).

Adaptation with severe or chronic physical disorders is difficult for the patients that may result in depression. Difficult adaptation may be due to changes social situation. Maladjustment in response to severe stress of medical disorder may results in depression (Al Abbudi, 2018). Mental disordersform 12.1% of depression global burden and by the year 2020 are increase to 15%. 25% of People may be affected during their lives by behavioural and mental disorders (Azad *et al*., 2008). People with chronic medical disorders are complaining of depressive disorder twice as compared with people without chronic illnesses (Azad *et al*., 2008; Pattern, 2001). There is association of depression with different disorders that presented with somatic or physical symptom, include, fibromyalgia, chronic fatigue and chronic pain states (Goodwin, 2006). In conclusion depression is high in diffuse idiopathic skeletal hyperostosis (DISH) patients. Age, gender, occupation, life events, and duration of illness consider as the significant risk factors. Patients may get benefit from close liaison between mental health professionals and rheumatologist.

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