

Work Impairment in Patients with Depression: A Descriptive Cross Section Study

Miada M. Elmetwaly^a, Abdel-Hady El-Gilany^a, Ibrahim H. Elkalla^b, Mohamed Elwasify^b

^a Department of Occupational Health and Industrial Medicine, Community Medicine Department, Faculty of Medicine, Mansoura University, Egypt.

^b Department of Psychiatry and Addiction, Department of Psychiatry, Faculty of Medicine, Mansoura University, Egypt.

Corresponding to: Miada M. Elmetwaly, Department of Occupational Health and Industrial Medicine, Community Medicine Department, Faculty of Medicine, Mansoura University, Egypt.

Email:
m_fahmi@mans.edu.eg

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Abstract:

Introduction: Depressive disorders significantly impair all aspects of the patient's life. Work comes on top of the list of the severely affected domains. This greatly affects worker's productivity. That might worsen patient's psychological condition even more. Decreased work productivity can be reflected on economy nationally and internationally. **Aim of Work:** This study aimed to determine work impairment among patients diagnosed with depression, and its associated sociodemographic, occupational, and clinical factors. **Methods:** This is an observational descriptive cross-sectional study conducted on 380 patients with depression who attended Mansoura University Hospitals, Egypt. Depression diagnosis was based on structured clinical interview using Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and Young Mania Rating Scale (YMRS). Data were collected using a questionnaire. Sociodemographic, occupational, and clinical factors were inquired about. Lam Employment Absence and Productivity Scale (LEAPS) was used to calculate work impairment in patients with depression. **Results:** More than half of the study participants (52.4%) had moderate, severe, or very severe work impairment. Independent predictors of moderate to very severe impairment are insufficient income, morning shift work, missed 5 or more work hours during the past 2 weeks, Hamilton Depression Rating Scale (HDRS) of 25 or more, 2 or more depressive episodes, 5 or more depressive symptoms, and death thoughts. **Conclusions:** Depression greatly impacts patients' ability to work. Periodic screening for work impairment especially among high-risk groups allows for early detection and timely intervention to reserve quality of life and work performance.

Key words: Depression; work; employment; performance; mental health.

Introduction

Depressive disorders belong to affective abnormalities; the hallmark of which is persistent severe sadness enough to disrupt social and occupational functioning [1]. DSM-5 broadly classifies depressive disorders into depressive and bipolar disorders [2]. Other types are being added by the DSM-5 such as disruptive mood dysregulation disorder and persistent depressive disorder which was known as dysthymia in previous DSM classifications [3]. Job performance is one of the agreed upon vital items related to work productivity. It has been defined as a means to reach the ultimate set of goals from a certain job [4]. Depressive disorders have great impact on work performance through many pathways; pathophysiology of depression itself is associated with low participation in every activity including work, it is **also** proved that patients with depressive disorders are less likely to seek medical care including employee assistance programs provided at workplace [5]. The devastating effects of depressive as well as other mental disorders are not limited only to workplace and productivity, it also extends to social and family lives of the workers [6]. It was estimated that the impairment caused by depressive disorders are more than many other diseases such as diabetes mellitus or chronic arthritis [7]. It was also proved that major depression has its impact on work performance independent of other co-existing risk factors such as obesity [8].

Younger workers are more affected than the older ones, females more than males, and workers with lower education are more affected than those with higher education [9]. Depression can exacerbate work-related musculoskeletal disorders which can affect work performance [10]. According to authors' knowledge, there is no research on level of work impairment among patients with depression in Egypt or any Arab country. The current research is intended to fill this gap of knowledge and relate work impairment to different sociodemographic, occupational, and clinical criteria of the patients.

Aim of Work

This study aims to assess levels of affection of work performance in depressed patients and associated occupational and clinical factors.

Study rationale

This study was conducted because depressive disorders' related affection of work performance is a widespread phenomenon that is not studied before in Mansoura University and its control will improve workers' wellbeing and productivity.

Research question

Does depression affect job performance?

Hypothesis

Authors believed that depression could affect job performance.

Materials and Methods

Study design: The current study is a descriptive cross section that was carried out in psychiatry outpatients' clinics of Mansoura University Hospitals, Egypt.

Place, date, and duration of the study: The study was conducted during the period from January to October 2021.

Study sample/ inclusion and exclusion criteria: Only patients in the working age group (18 to 60 years old) with clinical diagnosis of unipolar depression and bipolar I depression were recruited, whether they have full or part time job. Patients having other associated psychiatric disorders (such as schizophrenia or anxiety disorders) and chronic disabling health problems that may prevent average job performance (such as musculoskeletal disorders) were excluded.

Sample size was calculated using the OpenEpi program (<https://www.openepi.com/SampleSize/SSPrapor.htm>). An internal pilot study on 18 depressed patients revealed that 44.4% (8/18) of them had moderate to very severe work impairment. With confidence level 95%, 5 % precision and 80% study power, the sample size was found to be 380 depressed patients.

Study methods: Diagnostic criteria from DSM-5 were used to diagnose depression and exclude other axis I diagnoses. This was fulfilled through structured clinical interview for DSM-5-research version (SCID-5-RV) [11]. Young Mania Rating Scale (YMRS) was used with Hamilton

Depression Rating Scale (HDRS) in diagnosis of bipolar depression (HDRS more than 7 and YMRS less than 7) [12, 13]. Patients with depression were interviewed and were directly questioned by the physician to complete a questionnaire containing: 1) Sociodemographic data such as age, sex, current marital status, income sufficiency, and current educational degree. 2) Clinical data such as depression type, symptoms, family history, number of episodes, frequency of hospitalization, management plan, and associated chronic non disabling medical conditions were included as well as smoking, alcoholism, and drug use. Depression severity was measured by HDRS. It includes 17 questions about some aspects such as depressed mood, feeling of guilt, suicide thoughts, anxiety, and insight about future [14, 15]. We used the following severity classification: (0–7) no depression; (8–16) mild depression; (17–23) moderate depression; and (≥ 24) severe depression [16]. 3) Questions related to occupational history included job, duration of employments, work sector, average weekly work hours, being a full or part time job, previous work-related diseases, or injuries, known hazardous work exposures, and shift work. 4) The Lam Employment Absence and Productivity Scale (LEAPS) for assessment of work impairment. LEAPS is a ten-item scale that measures the degree of impairment in work performance by questioning the actual number of work hours versus what the worker was supposed to do. It also asks about some aspects such as quality of work performed, energy and motivation towards work to be performed. The total LEAPS score is from 0 to 28. It

classifies work impairment into non to minimal work impairment (0 to 5), mild work impairment (6 to 10), moderate work impairment (11 to 16), sever work impairment (17 to 22), and very sever work impairment (23 to 28). LEAPS has been validated as a tool that aids in assessment of work performance affection due to mood disorders on a sample of 234 working patients meeting (DSM-IV) criteria of mood disorders [17]. Psychometric properties of the LEAPS were tested (content validity, construct validity, reliability, and responsiveness) [18].

Consent: An informed written consent was obtained from each participant in the study after ensuring confidentiality, data anonymity, and patients' right to withdraw at any time.

Ethical approval: Approval by the Institutional Research Board (IRB), Faculty of Medicine, Mansoura University was obtained, and the proposal code is R.20.09.1015. Informed written consent was obtained from each participant in the study after ensuring confidentiality, data anonymity, and patients' right to withdraw at any time.

Data management: Data was entered and cleaned. Statistical analysis was performed using the Statistical Package for Social Sciences version 23 (Armonk, NY: IBM Corp.). Statistical tests were used for comparison. Qualitative variables were presented as numbers and percentages, and chi square test was used for comparison. Crude odds ratios (COR) and their 95% confidence intervals (CI) were calculated. Significant factors associated with work impairment were entered into multivariate

logistic regression models using stepwise forward Wald method to detect the independent predictor of impairment. Two models were performed: one included sociodemographic and occupational factors, the other included clinical factors. Adjusted odds ratios (AOR) and their 95% CI were calculated. Statistical significance level was considered $p \leq 0.05$.

Results

The overall moderate, severe, or very severe work impairment was 52.4%. Table 1 shows significant effect on work impairment exerted by: insufficient income and not completing education till secondary school.

In table 2, it is shown that some occupational factors significantly affected work impairment as being a manual worker (unskilled, semiskilled, or skilled) or a farmer, morning shift work, having private business, being scheduled to work less than 80 hours during the past 2 weeks, and missing 5 or more hours during the past 2 weeks.

Table 3 shows the first regression model performed in the study. It included significant sociodemographic and occupational factors that affected work impairment occurrence and severity. The independent predictors were insufficient income, morning shift work, and missing 5 work hours or more during the past 2 weeks, with AOR= 7.02, 3.33, and 12.92 respectively. This model can predict 82.1% of work impairment in patients with depression.

Table 4 shows significant effects of some clinical factors on work impairment as:

bipolar depression, HDRS of 25 or more, having severe depression, depression for more than 3 years, having 2 or more depressive episodes, previous hospitalization, having other medical health problems, being a smoker or drug user, positive family history, having 5 or more depressive symptoms, death thoughts, and requiring more than one line of treatment. The second regression model performed in the study is shown in Table 5. It included clinical factors. The independent predictors were having HDRS score of 25 or more, having 2 or more depressive episodes, having 5 or more depressive symptoms, and having death thoughts, with AOR= 7.68, 2.05, 10.45, and 2.99 respectively. This

model can predict 85.3% of work impairment in patients with depression.

Table 6 shows frequencies and percentages of different characters of the LEAPS among the study participants. Poor concentration and poor memory were the most common. More than half of the study participants exceeded the median total work impairment score. The table also showed frequencies and percentages of patients with different work impairment severity scores (based on the total work impairment score calculated from LEAPS). The most common degrees of work impairment were mild followed by non to minimal impairment, severe, very severe, and moderate work impairment.

Table (1): Work impairment in relation to patients’ sociodemographic data.

Parameter	Total	W.I. N (%)	<i>P</i>	COR (95% CI)
Overall	380	199 (52.4)		
Sex				
Males	151	83 (55.0)	0.410	1 (r)
Females	229	116 (50.7)		0.84 (0.56-1.27)
Age[§] (years)				
< 35	193	93 (48.2)	0.097	1 (r)
≥ 35	187	106 (56.7)		1.41 (0.94-2.11)
Income				
Sufficient	300	129 (43.0)	≤0.001	1 (r)
Not sufficient	80	70 (87.5)		9.28 (4.60-18.70)
Current marital status				
Married	195	94 (48.2)	0.095	1 (r)
Not married*	185	105 (56.8)		1.41 (0.94-2.11)
Educational degree				
Postgraduate	35	9 (25.7)	---	1 (r)
University	163	75 (46.0)	0.027	2.46 (1.09-5.58)
Secondary	104	59 (56.7)	≤0.001	3.79 (1.62-8.88)
Before Secondary	78	56 (71.8)	≤0.001	7.35 (2.98-18.16)

W.I.: Work impairment based on LEAPS (Lam Employment Absence and Productivity Scale). The displayed results are for moderate, severe, or very severe versus no, minimal, or mild work impairment.

COR :Crude Odds Ratio; [§] Age categories were based on the median age of the patients; * Not married include single, divorced, and widowed; CI: Confidence Interval; (r) is reference category; *p*>0.05: statistically non-significant.

Table (2): Work impairment in relation to patients' occupational profile

Parameter	Total	W.I.	<i>P</i>	COR
Overall	380	N (%)		(95% CI)
Type of Job				
Professional	197	82 (41.6)	---	1 (r)
Housewife	91	49 (53.8)	0.053	1.63 (0.99- 2.70)
Worker or farmer*	92	68 (73.9)	≤0.001	3.97 (2.31-6.85)
Duration of work				
< 10 years	170	83 (48.8)	0.213	1 (r)
≥ 10 years	210	116 (55.2)		1.29 (0.86-1.94)
Hazardous work environment[§]				
Yes	116	60 (51.7)	0.868	1 (r)
No	264	139 (52.7)		1.03 (0.67-1.61)
Occupational injuries or diseases				
No	346	176 (50.9)	0.062	1 (r)
Yes	34	23 (67.6)		2.02 (0.96-4.27)
Work shift				
Rotating	93	39 (41.9)	---	1 (r)
Night	13	7 (53.8)	0.417	1.62 (0.50-5.18)
Morning	274	153 (55.8)	0.02	1.75 (1.09-2.82)
Work sector				
Governmental	127	56 (44.1)	---	1 (r)
Private	76	41 (53.9)	0.174	1.48 (0.84-2.63)
Own business	177	102 (57.6)	0.02	1.72 (1.09-2.73)
Scheduled working hours during the past 2 weeks				
≥ 80 hours			0.012	1 (r)
< 80 hours	197	91 (46.2)		1.67 (1.12-2.52)
	183	108 (59.0)		
Missed working hours during the past 2 weeks				
< 5 hours			≤0.001	1 (r)
≥ 5 hours	189	45 (23.8)		13.32 (8.15-21.76)
	191	154 (80.6)		

W.I.: Work impairment based on LEAPS (Lam Employment Absence and Productivity Scale). The displayed results are for moderate, severe, or very severe versus no, minimal, or mild work impairment.

COR.: Crude Odds Ratio; CI.: Confidence Interval; (r) is reference category; * Workers included skilled, semiskilled, and unskilled; [§] Subjectively from the patient's perspective; *p*>0.05: statistically non-significant; *p*≤0.05= statistically significant).

Table (3): Multivariate logistic regression analysis of independent sociodemographic and occupational predictors of work impairment.

Predictor	β	p	AOR (95%CI)
Income			
Sufficient	---	≤ 0.001	1 (r)
Not sufficient	1.9		7.02 (3.18-15.47)
Work shift			
Rotating	---	---	1 (r)
Night	1.2	0.12	3.47 (0.73-16.51)
Morning	1.2	≤ 0.001	3.33 (1.74-6.38)
Missed working hours during the past 2 weeks			
< 5 hours			1 (r)
≥ 5 hours	2.6	≤ 0.001	12.92 (7.53-22.16)
Constant		-2.39	
Model χ^2		171.0 ($p \leq 0.001$)	
% Correctly predicted		82.1%	

AOR.: Adjusted Odds Ratio; CI.: Confidence Interval; (r) is reference category; χ^2 .: Chi square; $p > 0.05$: statistically non-significant; $p \leq 0.05$ = statistically significant; $p < 0.001$ = highly statistically significant difference.

Table (4): Work impairment in relation to patients' clinical criteria.

Parameter	Total	W.I.	P	COR
Overall	380	N (%)		(95% CI)
Type of depression				
Unipolar	268	113 (42.2)	≤0.001	1 (r)
Bipolar	112	86 (76.8)		4.54 (2.75-7.49)
HDRS-17 score				
< 25	189	37 (19.6)	≤0.001	1 (r)
≥ 25	191	162 (84.8)		22.95 (3.45-39.15)
Severity of depression *				
No, mild, or moderate	174	33 (19.0)	≤0.001	1 (r)
Severe depression	206	166 (80.6)		17.73 (10.62-29.61)
Duration of illness				
< 3 years	176	62 (35.2)	≤0.001	1 (r)
≥ 3 years	204	137 (67.2)		3.76 (2.46-5.75)
No. of depressive episodes				
< 2 episodes	147	54 (36.7)	≤0.001	1 (r)
≥ 2 episodes	233	145 (62.2)		2.84 (1.85-4.35)
Hospitalization				
No	287	118 (41.1)	≤0.001	1 (r)
Yes	93	81 (87.1)		9.67 (5.05-18.52)
Associated medical conditions				
No	299	146 (48.8)	≤0.001	1 (r)
Yes	81	53 (65.4)		1.98 (1.19-3.31)
Current smoking status^s				
Nonsmokers	268	124 (46.3)	≤0.001	1 (r)
Smokers	112	75 (67.0)		2.35 (1.48-3.73)
Alcohol use				
No	375	196 (52.3)	Fisher's exact	1 (r)
Yes	5	3 (60.0)	1.000	1.37 (0.23-8.29)
Drug use				
No	341	167 (49.0)	≤0.001	1 (r)
Yes	39	32 (82.1)		4.76 (2.05-11.09)
Family history				
No	241	114 (47.3)	0.009	1 (r)
Yes	139	85 (61.2)		4.76 (2.05-11.09)
Number of depressive symptoms				
< 5 symptoms	165	22 (13.3)	≤0.001	1 (r)
≥ 5 symptoms	215	177 (82.3)		30.28 (17.13-53.51)
Death thoughts				
No	243	84 (34.6)	≤0.001	1 (r)
Yes	137	115 (83.9)		9.89 (5.84-16.76)
Treatment regimen^e				
Medical	318	141 (44.3)	≤0.001	1 (r)
More than one line of treatment	62	58 (93.5)		18.2 (6.45-51.34)

W.I.: Work impairment based on LEAPS (Lam Employment Absence and Productivity Scale). The displayed results are for moderate, severe, or very severe versus no, minimal, or mild work impairment.

COR.: Crude Odds Ratio; CI.: Confidence Interval; (r) is reference category; HDRS-17.: Hamilton Depression Rating Scale 17-items; * Severity was classified based on HDRS-17; ^s Only cigarette smoking was inquired about;

^e Treatment options included medical treatment, Cognitive Behavioral Therapy (CBT), and Electroconvulsive Therapy (ECT); $p > 0.05$: statistically non-significant; $p \leq 0.05$: statistically significant; $p \leq 0.001$: highly statistically significant difference.

Table (5): Multivariate logistic regression analysis of independent clinical predictors of work impairment.

Predictor	β	<i>p</i>	AOR (95%CI)
HDRS-17 score			
< 25	---	≤ 0.001	1 (r)
≥ 25	2.04		7.68 (4.07-14.50)
No. of depressive episodes			
< 2 episodes	---	0.030	1 (r)
≥ 2 episodes	0.72		2.05 (1.07-3.93)
Number of depressive symptoms			
< 5 symptoms	---	≤ 0.001	1 (r)
≥ 5 symptoms	2.35		10.45 (5.39-20.24)
Death thoughts			
No	---	0.002	1 (r)
Yes	1.09		2.99 (1.50-5.96)
Constant			-3.06
Model χ^2			264.8 (P ≤ 0.001)
% Correctly predicted			85.3%

AOR.: Adjusted Odds Ratio; CI.: Confidence Interval; (r) is reference category; HDRS-17., Hamilton Depression Rating Scale 17-items; χ^2 ., Chi square; $p \leq 0.001$ = highly statistically significant difference.

Table (6): The Lam Employment Absence and Productivity Scale (LEAPS).

Character*	N (%)
Low energy or motivation	230 (60.5)
Poor concentration or memory	253 (66.6)
Anxiety or irritability	225 (59.2)
Getting less work done	205 (53.9)
Doing poor quality work	190 (50.0)
Making more mistakes	162 (42.6)
Having trouble getting along with people or avoiding them	180 (47.4)
Total work impairment score^s	
< 12	188 (49.5)
≥ 12	192 (50.5)
Work impairment severity	
Non to minimal	86 (22.6)
Mild	95 (25.0)
Moderate	52 (13.7)
Severe	74 (19.5)
Very severe	73 (19.2)

LEAPS.: Lam Employment Absence and Productivity Scale; * Frequencies and percentages of characters for $\geq 50\%$ of time; ^s Based on the median of work impairment score.

Discussion

This study revealed that 52.4% of the study participants were moderately, severely, or very severely work impaired. Previous studies reported that about 19% of workers with depression suffered from very severe work impairment and about 21% did not experience any effect on their work performance [19]. A longitudinal study that compared work performance in depressed patients versus those who had rheumatoid arthritis and those who are healthy documented that depressed individuals showed more work impairment than the other two groups. In some instances, rehabilitation services are needed in addition to medical treatment to regain job performance [20, 21]. The current study documents that depressed patients with insufficient income (from the patient's perspective) are more work impaired than those with sufficient income. A systematic review investigated the relatedness of many factors to depression among nurses reported that insufficient income was more associated with more severe levels of depression [22]. It is possible that lack of motivation to work caused by the low income may have a role in lower work performance.

In this study, depressed patients whose educational degree is less than secondary school were significantly more work impaired than those who had higher education. Completing education till secondary school. Authors believe that this might be due to the common association of lower educational degrees with unfavorable work stressors such as insufficient income.

A cohort study that screened about 14268 subjects reported that depression was related to work impairment and partly confirmed that job stressors add to this impact [23]. This study emphasizes that, being a farmer or a manual worker with depression is significantly associated with work impairment than being in depressed and in a professional job. It could be attributed to job characteristics such as long work hours, high job demands, and lower autonomy. This accords with some studies showed the interaction between job characteristics and work impairment in depressed workers [24].

The current study reports that depressed workers in morning shifts had significant work impairment than those who work night or rotating shifts. This might be attributed to diurnal variation of depressive symptoms among the study participants or sleep deprivation [25]. Some research report that work impairment due to mental health issues such as job stress are worst in the late night and early morning shift workers [26]. The current study documents that patients whose work is a private business were more work impaired than those who work in governmental or private sectors. Authors believe that an own business gives more chance to the depressed patient to have more days off and lose more work hours. Being scheduled to work less than 80 hours during the last 2 weeks was significantly associated with more work impairment. This suggests less pressure to do work and more chance for the occurrence of work impairment.

Depressed workers who missed 5 or more working hours during the past 2 weeks had significantly more work impairment than those who lost less. A survey that used Patient Health Questionnaire 9-item screen (PHQ-9) reported that for every 1 point increase in the PHQ score, there was a significant mean productivity loss of 1.65% [27]. This study documents that bipolar depression can significantly impact work performance. A systematic review that analyzed 14 work impairment articles documented that patient with bipolar disorders reported work performance improvement upon treatment [28]. In another study neuropsychological assessment of both unipolar and bipolar patients during a depressive episode emphasized that, bipolar group achieved significantly lower levels of cognitive performance. This would be linked to many aspects of job performance such as memory and concentration at work [29]. This was also proved by brain imaging in other studies [30].

According to this study, the higher HDRS, the more is the affection of work performance. HDRS of 25 or more significantly impairs work performance and is considered as severe depression. In the current study, depression severity based on HDRs was significantly associated with more work impairment. A study that examined the effect of depression (diagnosed by Beck's Depression Inventory) on academic performance of students reported that significant affection was more apparent in moderately and severely depressed students [31]. A systematic review that included 10 published studies

emphasized that functional impairment was more associated with moderate to severe depression whereas affective impairment was associated with mild depression [32].

The current study documents that depression for more than 3 years is more associated with lower work performance, and that this impact is significant. This is supported by another study that reported early intervention to treat depression (by first line antidepressants) as protective against work impairment and long term disability [33]. Previous hospitalization and having 2 or more depressive episodes are significantly related with lower job performance according to the current study. This accords with the previous results about the relatedness of depression severity with work impairment. In the current study, requiring more than one line of treatment (medical treatment and electroconvulsive therapy) is significantly associated with work impairment. Some research work referred that antidepressant treatment is associated with improved work performance and reduced absence [34].

In our study, having 5 or more depressive symptoms can significantly impair work performance. According to the (DSM), diagnosis of major depression can be based on the presence of 5 or more depressive symptoms [35]. According to the current findings, death thoughts (as a symptom of severe depression) are significantly associated with work impairment. Other research articles documented that hypersomnia and sad mood significantly impact performance not only in work, but also social, home, and private activities [36].

According to this study, having other chronic controlled non disabling medical conditions significantly impairs work performance. A systematic review supported the association between many personal, work related, and clinical factors in depressed patients and lower work participation including the presence of chronic physical illnesses [37]. The current study reports that being a depressed smoker or drug user is significantly related with more impairment of performance. It is agreed upon that there is a reciprocal relationship between smoking and depression [38]. Depressed patients are at twice risk to smoke than non-depressed ones [39]. Results from the British 1946 cohort emphasized that smoking per se greatly impacts physical performance [40]. In the current study, drug using depressed patients were occasional, and had more severe recurrent episodes. Their worse work performance is thought to be due to depression rather than occasional drug use.

The current study reports that depressed patients with positive family history for depression are significantly impaired. Other research studies documented that familial predisposition is associated with more severe forms such as major depressive disorders [41]. In the current study, poor concentration and poor memory were the most encountered features of work impairment among the study participants. Authors believe that these features are crucial for job performance and represent a fair explanation to having more than half of the study participants exceeding the mean work impairment score. In the current study, degrees of impairment encountered were

mild followed by non to minimal impairment, severe, very severe, and moderate work impairment. Data from the Canadian Community Health Survey 2002 documented that commonest work interference scores among the examined individuals were mild followed by non to minimal, very severe, moderate, and severe work impairments [19].

The current study investigated many factors; sociodemographic, occupational, and clinical, regarding their relatedness to work impairment in depressed patients. From organizational psychology perspective, some factors may have contributed to improved work performance among the patients, such as social support at work; it relates directly to higher job control, and better organizational productivity [42]. Other factors might have existed, this could be a point for further research.

Study limitations

The current study may be limited by the subjective nature of some items of the questionnaire such as income, and whether the work environment is hazardous or not. Not all depressed patients have help seeking behaviors, so authors expect the prevalence of work impairment among depressed workers to be more. Many depressed workers continue working with impaired productivity (presentism) and this has its impact on productivity.

Conclusion and recommendations

The current study states that depression has devastating effects on work performance. Authors recommend workplace screening that targets psychiatric illnesses such as

depressive and any other disorders that can impact worker's work performance. This is cost-effective steps that greatly enhance productivity and improve economy.

List of abbreviations

DSM-5: Diagnostic and Statistical Manual of Mental Disorders 5

YMRS: Young Mania Rating Scale

LEAPS: Lam Employment Absence and Productivity Scale

HDRS: Hamilton Depression Rating Scale

IRB: Institutional Research Board

SCID-5-RV: Structured Clinical Interview for DSM-5-Research Version

DSM-IV: Diagnostic and Statistical Manual of Mental Disorders IV

SPSS 23: Statistical Package for Social Sciences version 23

COR: Crude odds ratios

CI: confidence intervals

AOR: Adjusted odds ratios

PHQ-9: Patient Health Questionnaire 9-item screen

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