

What Are the Predictors of Work Impairment in Iranian Patients with Depressive Disorders?

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Abstract The purpose of this study is to estimate the predictors of working ability in depressed patients. Two hundred and twenty-six patients with depression consecutively admitted on outpatient basis from March 2003 to May 2006 were classified into working and non working groups. Severity of depression was measured by the Beck Depression Inventory and their occupational adjustment 2 months prior to the last episode was determined by Occupational Adjustment Scale, a subscale of Social Adjustment Scale. The groups were almost similar in terms of age, sex, education, and marital status. There were significant differences between them in terms of family history of depression, episodes of depression, history of suicide attempts, duration of illness and severity of depression ($P < 0.01$). The working depressed group differed significantly from the impaired depressed group in terms of work experience, job turnover, and overall occupational adjustment ($P < 0.01$). History of suicide attempt, family history of depression, time lost, severity of depression, pre-morbid occupational adjustment, age, and illness duration emerged as the most important predictors, explaining 64% of the patients' working ability. Our observations are on line with robust literature across the globe. Nature of illness condition as well as societal

attitude can explain the impairment condition in depressed patients. Presence of a comprehensive integrated approach to their treatment and rehabilitation is imperative.

Keywords Major depression · Impairment · Occupational adjustment · Time loss

Introduction

As a mental health problem, depression has affected as many as 21% of the Iranian population (Noorbala et al. 2004). European primary health care surveys have estimated its prevalence between 4.8 and 11.9% (Berardi et al. 2002; Vuroilehto et al. 2005), and between 5 and 25% of the Americans experience depression during their lifetime (Kessler et al. 2003). Moreover, presence of depressive symptoms are estimated 60% of the time during long term follow-up (Judd et al. 2000). Primary care studies have recorded its prevalence between 4.8 and 11.9% (Berardi et al. 2002; Vuroilehto et al. 2005). Reportedly between 5 to 25% of the Americans experience depression during their life-time (Kessler et al. 2003; Judd et al. 2000). Studies conducted in the late 1990s show that about 2% of the labour force in the US suffer from depression and 37 to 48% of them experience short term disability (Kouzis and Eaton 1997; Ormel et al. 1999; Kessler et al. 1999).

Depression is among the top five leading causes of disability adjusted life years (DALY) and premature death world wide, the second most common disease by the year 2020 and accounts for 15% of the disease burden in the world (Murray and Lopez 1996). In industrial nations, the economic burden of depression each year exceeds tens of dollars (Murray and Lopez 1996; Bijl and Ravelli 2000). Psychosocial disability associated with major depression

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often exceeds that noted in physical diseases such as hypertension, diabetes, chronic pulmonary illnesses, GI disturbances, and arthritis (Wells et al. 1989). Medical cost of depression each year in the US is about 26.1 billion while productivity loss is estimated 44 to 51.5 billion dollars (Greenberg et al. 2003; Stewart et al. 2003). Depression affects various aspects of job performance and its aftermaths persist even after symptom improvement (Adler et al. 2006). In general people with depressive disorder are characterized by unemployment, job turn over, presenteeism, and absenteeism (Lerner et al. 2003, 2004; Rost et al. 2004; Wang et al. 2004). The productivity losses related to depression exceeds the cost of effective treatment (Wang et al. 2004).

Cross sectional observational studies as well as randomized controlled trials of short term depression treatment studies have generated ample evidence about the psychosocial disability associated with major depression. Judd et al. (2005) are critical about the methodological drawbacks of these studies, specially their reliance on cross-sectional rather than longitudinal designs, sample size, methods and tools of data collection, and outcome measures. Nonetheless, there is a great consensus among scholars regarding vulnerability of the people with depression to suicide (Judd and Akiskal 2003), health care use and costs (Simon 2003), unemployment (Tse and Walsh 2001), dependency on public assistance (Judd and Akiskal 2003), low income (Goetzal et al. 2003), absenteeism (Adler et al. 2006; Tse and Walsh 2001; Goldberg et al. 1995), productivity loss (Stewart et al. 2003; Lerner et al. 2004), poor social function (Goldberg et al. 1995; Pradhan et al. 1999), and poor quality of life (Simon 2003; Votja et al. 2001).

Although previous research has linked depression to adverse occupational outcomes such as joblessness and productivity loss, no appreciable attempt has been made in Iranian context to predict working ability of sufferers of major depression. We are convinced that episodes of depression put affected individuals at a disadvantaged position which in turn affects their psychosocial performance including their ability to work. We hypothesized that depressive disorder with its episodic and recurrent nature when becomes severe, affects overall functioning of the individual and this in turn determines his/her work outcome or ability to work. We compared working ability of 147 working with 79 non working depressed patients who utilized psychiatric services of a university hospital. We hypothesized that episodes of depression put the individual at a disadvantaged occupational position and with severity of depression the likelihood of job loss increases. Past suicide attempt, positive family history of depression, time lost, severity of depression, pre-morbid occupational adjustment, age, and illness duration turned out as the

major predictors of working ability in the sample under investigation.

Materials and Methods

Participants

From March 2003 to May 2006, 1780 patients with major depression utilized psychiatric services of a university hospital in Isfahan-Iran. For the purpose of this cohort study we recruited those patients who used to work outside home prior to their last episode and hospitalization but were not necessarily on job at the time of study. The inclusion criteria were: (1) diagnosis of major depression with DSM-IV criteria, by two psychiatrists, (2) whose last episode was at least 2 months before this study was launched; (3) were employed prior to their last psychiatric admission, (4) were below 60 years of age, and (5) were literate. Therefore, housewives, soldiers for being under compulsory national service, students for having no monthly salary, those with physical and nonphysical co morbid and those who refused to give their written consent were excluded from this study. We communicated through phone and letters with all patients whose names were registered and sought their consent to be included in the study. Only 915 patients responded to our invitations. By means of inclusion and exclusion criteria, we found 587 eligible cases who fulfilled the research requirements. They were briefed about the goals of the study but in return more than half of them did not show enough interest and returned the questionnaires incomplete. Two trained social workers collected data about the participants' demographic and pre-morbid occupational background. Two senior psychiatrists made clinical assessment about the patients' present mental status. Only 226 patients showed full cooperation throughout the study. Keeping the goal of the study in mind, 226 cases were categorised into 'unimpaired' and 'impaired' groups: the former one comprised of 147 and the latter one with 79 cases.

Accuracy of allocating the respondents into 'unimpaired' and 'impaired' groups appeared to be significant and meaningful and not by chance. As per rules, the accuracy rate should be 25% higher than the by chance accuracy rate. The by chance accuracy criteria is computed by multiplying the by chance accurate rate of 0.500 (the cut value) or $1.25 \times 500 = 0.625$ (62.5%; Chan 2004). The classification accuracy rate computed by SPSS was 95.1%, which is greater than or equal to the proportion by chance accuracy criteria of 62.5%. The sensitivity is given by $74/79 = 93.7\%$ and the specificity is $141/147 = 95.9\%$. Accordingly, the criteria for classification of the patients into working and non working groups is satisfactory (Table 1).

Table 1 Allocation and classification of the study groups

Observed	Predicted		
	Job after		
	Continued	Job lost	Percentage correct
Job after continued	141	6	95.9
Overall percentage job lost	5	74	93.7
			95.1

Data Collection Tools and Procedure

At the outset of data collection, we differentiated the working (unimpaired) patients from the non working (impaired) patients. As the only dependent variable, impairment and unimpairment was determined by seeing the respondents' working ability after their last episode. Thus, a person was considered unimpaired if s/he was still on the job and was considered impaired if s/he had lost her/his previous job position and was sitting idle at home.

Data were collected by means of an interview schedule comprising of three sections. The first part contained information about the patients' demographic characteristics including age, sex, education, and occupation. The second part was about their psychiatric history and the psychiatrists' diagnosis along with the frequency of depression episode, history of suicide attempt, duration of illness, and severity of depression. Past or current depression was assessed at study enrolment with face-to-face structured clinical interview for Diagnostic Statistical Manual IV (DSM-IV) by two senior psychiatrists. Severity of depression was assessed by means of a Persian version of Beck Depression Inventory (BDI) which has shown high internal consistency (Cronbach's $\alpha = 0.87$) and acceptable test-retest reliability ($r = 0.74$; Ghassemizadeh et al. 2005). The BDI is a self-administered 21 item self-report scale measuring supposed manifestations of depression. As per instructions, we had to add up the score for each of the twenty-one questions and obtain the total. The highest score on each of the twenty-one questions was three, the highest possible total for the whole test was sixty-three. The lowest possible score for the whole test was zero. Severity of depression was based on the total score levels of depression: 05–09 'normal'; 10–18 'mild to moderate depression'; 19–29 'moderate to severe depression'; 30–63 'severe depression' (Beck et al. 1961, 1988).

The last part of the schedule dealt with the respondents' occupational characteristics including years of work experience, frequency of job change, and pre morbid occupational adjustment. We assessed their pre-morbid occupational adjustment by means of the Social Adjustment Scale (SAS), a self-administered questionnaire with 48

items covering five major areas of functioning, including work performance (Weissman et al. 1971). The SAS, which is originally in English, was translated into Persian by a group of three independent translators, bilingual in Persian and English who were ignorant about the background of the questionnaire, then translated the questionnaire back to English. After resolution of the discrepancies, the bilingual panel prepared a provisional Persian version of the questionnaire which was ready to be tested for feasibility, clarity, and response categories. As a subscale of the SAS, 'work performance' scale measures six dimensions of work, namely, time lost, imperfect performance, friction, distress, disinterest, and feelings of inadequacy in the last 2 months. 'Time lost' denotes the number of days the person missed his/her job in the last 2 months due to physical illness, mental illness, days laid off, days unemployed, etc. 'Impaired performance' refers to the patient's adherence to the norms of doing particular type of work. 'Feeling of inadequacy' refers to the person's subjective feelings about the way s/he has done her/his work in the past 2 months. 'Friction' refers to overt behaviour of the person including arguing, over annoyance, and withdrawal due to tension and not the person's inner feelings. 'Distress' excludes the person's distress due to disinterest but includes tiredness, malaise or tension while doing her/his work. 'Disinterest' refers to the person's feeling of dissatisfaction while doing her/his job. The responses for each area ranged from 1 to 5, while the overall score for six areas ranged from 6 to 30. All items were rated on the basis of Likert's 5-point scale. Higher the score lower the adjustment. The Persian version of the subscale (work performance) was reviewed and tested for reliability on a group of 69 patients with depression, yielding a Cronbach's Alpha equal to 0.81.

Statistical Analysis

We aimed to estimate the risk of occupational drifting in adults with the history of major depression. The participants' consensus was sought prior to home visits. Data collection was done by two trained social workers along with one psychologist and one psychiatrist who made clinical assessment of the patients' depression and work performance. To this end frequency distributions for all demographic variables, including age, sex, education, pre illness occupation, post depression occupational status, marital status, family history of depression, and frequency of suicide attempt were done. With respect to our interest summary mean analyses for all continuous variables such as severity of depression, time lost, impaired performance, friction, distress, disinterest, and feeling of inadequacy as well as overall occupational adjustment scores were calculated. Data were computer analysed, using SPSS11.5 and given normal distribution of data means, mode, and

percentage distributions were calculated. Two groups were compared for their nominal variables such as sex, education, occupation, marital status, and family history of depression. The groups were compared for other non nominal characteristics using t-student.

The 226 cases available for the analysis satisfied the recommended sample size of 20 independent variables (10 cases per variable which is based on number of cases per independent variable) for logistic regression. The Chi square yielded from the Hosmer and Lemeshow test was significant (Chi square = 30.35, $df = 8$, $P < 0.001$), ensuring the issue of over-fitting the data when using stepwise method (Chan 2004). Accordingly, logistic regression was run to calculate odds ratios and determine the association between the independent variables with the only dependent variable, namely, unimpaired and impaired. Covariates included in the final model were sex (category; male versus female), age (category; ≤ 30 ; 31–40; 41–50; ≥ 51), education (category; primary, secondary, and undergraduate), occupation (category; unskilled, skilled, technical, clerical, and academic), marital status (category; unmarried, married, others including divorced, separated, widowed or widower), family history of depression (category; yes versus no), history of suicide (category; yes and no), pre-morbid occupational adjustment (category; normal, mild to moderate, and moderate to severe), illness duration (category; ≤ 1 year, 2–3 years, and ≥ 4 years), number of episodes (category; \leq once, 2–3 times, and ≥ 4 times 0) and severity of depression (category; 05–09 normal; 10–18 mild to moderate; 19–29 moderate to severe; 30–63 severe).

Results

Participants' Background

At the outset intergroup comparison was made for their demographic features. The participants' age ranged between 22 and 55 years. Mean age for the unimpaired group was 39.95 ± 8.97 and for the impaired group was 38.95 ± 9.82 . However, this difference was not statistically significant ($P > 0.05$). Majority of the respondents were female but while the proportion of male and female were almost equal in both groups ($P > 0.05$). All participants in the study were literate ranging from primary till under graduation levels. Mean years of education for the working group was higher (10.60 ± 3.68) than the unemployed group (10.29 ± 3.51). No significant differences was noted between the groups in terms of education ($P > 0.05$). Prior to their last episode, all patients were working in the capacity of unskilled and skilled workers, technicians, clerks, and academicians. While majority of

them were skilled workers only a small segment of them held academic positions. However, no significant differences were found between unimpaired and the impaired groups as far as occupation is concerned. Finally, no significant difference was found between two groups in terms of marital status. Analysis of data showed that none of the families of the respondents were spared from depression. The representation of patients with positive history of depression in the family was higher in the impaired group as compared to the unimpaired one and this difference was statistically significant ($P < 0.001$). All participants were taking antidepressants and reportedly, patients in the impaired group were more dependent on medical and social services as compared to their unimpaired counterparts (Table 2).

Clinical Characteristics

The unimpaired and the impaired groups were compared for episodes of depression, history of suicide attempt, duration of illness, and severity of depression. As compared to the unimpaired group, the impaired group reported more episodes of depression and this difference was statistically significant ($P < 0.001$). At least one suicide attempt was reported by all participants. At the time of this study no successful attempt was reported by either of the participants. However, the average of suicide attempt for the impaired group was higher than the unimpaired group ($P < 0.001$). Both groups differed in terms of illness duration with the longer average years of illness for the impaired group ($P < 0.001$). The groups scored different scores for severity of depression as measured by the BDI. The impaired group scored significantly higher score for depression as compared with the unimpaired group ($P < 0.001$). Statistically, analysis of data shows significant differences between the unimpaired and the impaired patients in terms of episodes of depression, past suicide attempt, duration, and severity of depression (Table 3).

Occupational Characteristics

Occupational history of the working and the unimpaired and the impaired groups were compared. The unimpaired group worked for nearly 10 years while the impaired group worked for about nearly 8 years. This difference was statistically significant ($P < 0.003$). The job turn over among the impaired group was higher than the unimpaired group. On an average, the unimpaired group changed their job 2.7 times as compared to the impaired group whose turn over was 3.5 times. This difference was statistically significant ($P < 0.01$). Overall occupational adjustment score for the impaired group was higher than that of the unimpaired group, indicating poorer occupational adjustment for the

Table 2 Demographic characteristics of the unimpaired versus the impaired patients

Characteristic	Unimpaired ($n_1 = 147$)	Impaired ($n_2 = 79$)	Chi square	df	P
Sex					
Male	46.9	46.8	0.001	1	0.550
Female	53.1	53.2			
Education					
Primary	37.4	36.7	0.664	2	0.718
Secondary	32.0	27.8			
Undergraduate	30.6	36.4			
Occupation					
Unskilled	20.4	17.7	2.164	4	0.706
Skilled	31.3	31.8			
Technical	20.4	20.3			
Clerical	19.0	25.3			
Academic	8.8	5.1			
Marital status					
Unmarried	32.7	26.6	0.906	2	0.636
Married	50.6	50.6			
Others	22.8	22.8			
Family history					
Yes	41.4	88.6	51.99	1	0.001
No	58.5	11.4			

Table 3 Select clinical features of the unimpaired and the impaired patients

Characteristic	Group	Mean \pm SD	df	T value	Significance
Depression episodes	Unimpaired	2.14 \pm 1.03	224	8.05	0.001
	Impaired	3.56 \pm 1.62			
Past suicide attempt	Unimpaired	1.33 \pm 0.94	224	7.52	0.001
	Impaired	2.20 \pm 0.47			
Illness duration (years)	Unimpaired	1.71 \pm 0.66	224	19.05	0.001
	Impaired	3.96 \pm 1.11			
Severity of depression	Unimpaired	32.63 \pm 9.73	224	12.70	0.001
	Impaired	50.25 \pm 10.34			

former group. For the six sub scales of the occupational adjustment scale, the impaired group scored more than the unimpaired group. These differences were statistically significant ($P < 0.01$). This shows that poorer adjustment of the impaired group in terms of ‘time lost’, ‘imperfect performance’, ‘friction’, ‘distress’, ‘disinterest’, and ‘feeling of inadequacy’ (Table 4).

Determinants of Patients’ Impairment

To ensure the fitness of the model, at the outset we run Omnibus tests of coefficient for the 226 respondents. As mentioned earlier, immediately after the last episode, occupational position of 147 patients remained intact (unimpaired) whereas, the remaining 79 lost their jobs (impaired). Statistical analysis shows that the proportion of

the latter group is 35% or 0.35 and the proportion of the former group is 65% (1.00–0.35). The Chi square value yielded from the Omnibus tests of model coefficients is significant (Chi square = 8.444; $df = 1$; $P < 0.004$). This shows that the logistic regression which employs independent variables can make better predictions of the dependent variable, i.e., patients’ working ability. Cox and Snell R^2 value yielded from the analysis showed that more than 64% of the variation in the outcome variable (i.e., working ability) is explained by variables such as suicide attempt, positive family history, time lost, severity of depression, pre-episode occupational adjustment, age, and illness duration. Since we were interested in predictor-model and all seven variables showed P value of 0.01, all were considered important risk factors of ability or disability to work (Table 5).

Table 4 Occupational parameters of the unimpaired and the impaired patients

Characteristic	Group	Mean \pm SD	df	T value	Significance
Work experience (years)	Unimpaired	10.09 \pm 4.73	224	3.02	0.003
	Impaired	8.14 \pm 4.97			
Frequency of job change	Unimpaired	2.67 \pm 2.20	224	2.51	0.01
	Impaired	3.49 \pm 2.60			
Occupational adjustment (pre episode)	Unimpaired	5.23 \pm 4.16	224	23.99	0.001
	Impaired	13.49 \pm 2.60			
Time lost	Unimpaired	2.39 \pm 0.79	224	22.53	0.001
	Impaired	4.80 \pm 0.72			
Imperfect performance	Unimpaired	2.43 \pm 0.75	224	23.90	0.001
	Impaired	4.82 \pm 0.66			
Friction	Unimpaired	2.44 \pm 0.83	224	21.82	0.001
	Impaired	4.81 \pm 0.68			
Distress	Unimpaired	2.46 \pm 0.85	224	20.94	0.001
	Impaired	4.81 \pm 0.70			
Disinterest	Unimpaired	2.70 \pm 0.89	224	18.98	0.001
	Impaired	4.81 \pm 0.70			
Feeling of inadequacy	Unimpaired	2.82 \pm 0.90	224	23.99	0.001
	Impaired	4.84 \pm 0.63			

Table 5 Case processing summary

Observed	Predicted		
	Job after		
	Continued	Job lost	Percentage correct
Job after continued	0	147	0.0
Overall percentage job lost	0	79	100 35.0

Table 6 shows the results of the logistic regression model and the association between each individual independent variable with the dependent variable of patients' working ability. The order of contribution of each variable in the model is represented by the Wald estimates, ranging from 8.06 to 2.07. In order of importance, history of 'suicide attempt', followed by 'positive family history' of

suicide, 'time lost', 'severity of depression'. 'pre-morbid occupational adjustment', 'age', and 'illness duration' turned out as responsible factors in increasing the patients' chances of job impairment. Based on the Exp (β) value for these variables, a patient with positive history of suicide has 24 times (95% CI 2.678 to 215.420%) more chances of impairment while a patient with positive family history of depression has nearly 4 times (95% CI 1.517 to 10.459%) chances of impairment. 'Time lost' is one of the sub-scales of occupational scale and emerged as the third important predictor of working ability, indicating an increased chance of 5.7 times more impairment for those patients with more days of absenteeism. 'Severity of depression' measured by the BDI turned out as the fourth important independent variable, 1.17 times increased chances of impairment for patients with severe depression. For the fifth important variable in the equation, namely,

Table 6 Risk factors of the patients' work impairment

Variable	B	SE	Wald	df	Sig.	Exp(B)	95% CI for (EXP(B))	
							Lower	Upper
Suicide attempt	3.179	1.119	8.062	1	0.01	24.011	2.676	215.420
Positive family history	1.382	0.493	7.874	1	0.00	3.983	1.517	10.459
Time lost	1.740	0.636	7.478	1	0.01	5.696	1.637	19.819
Severity of depression	1.753	0.662	7.008	1	0.01	1.173	0.047	0.634
Pre-morbid occupational adjustment	0.540	0.072	6.804	1	0.00	1.716	2.676	1.975
Age	0.199	0.034	3.428	1	0.00	1.219	0.766	0.877
Illness duration	1.375	0.307	2.072	1	0.00	1.155	2.167	7.219

Bold values are calculated from the factor analysis

‘pre-morbid occupational adjustment’, analysis of data showed that chances of becoming jobless in patients with better pre-morbid occupational adjustment was 1.7 times less as compared with those who reported poor pre-morbid occupational adjustment. ‘Age’ is the sixth important variable in the equation and an increase in one-year in age, has a 1.22% increased chances of impairment. ‘Duration of illness’ turned out to be the last important independent variable yielding a significant Wald value of 2.072. As a quantitative numerical variable and as illness duration gets prolonged, a patient’s chances of impairment increases by 15.5% ($1.000 - 1.155 = -0.155$).

Discussion

Depression is among the most debilitating health problems worldwide (Goldberg and Steury 2001). Moreover, previous research suggest that depression is associated with enormous social and economic burden (Kessler et al. 1999; Murray and Lopez 1996). Its negative impact on ability to work, absenteeism, and work productivity is widely dealt with in cross sectional observational or randomized controlled trails of depression treatment studies (Lerner et al. 2003, 2004; Goldberg et al. 1995; Wang et al. 2006; Molenaar et al. 2007; Rost 2009). However, in Iranian literature little is known about the social and economic costs of depression and the characteristics of depressed persons who do work and who do not, and are impaired. There is also dearth of literature about the factors associated with depressed persons’ working ability.

The research interest of the present cohort study was to estimate determinants of the working ability of 226 patients with the diagnosis of depression by DSM-IV criteria. Severity of depression in the study respondents was determined by the BDI. Occupational adjustment scale with six sub scales derived from the SAS measured their occupational functioning 2 months prior to their last episode. These measures included ‘time lost’, ‘imperfect performance’, ‘friction’, ‘distress’, ‘disinterest’, and ‘feeling of inadequacy’. Data were computer analyzed with SPSS 11.5 and running descriptive and analytical tests including *t*-student, Chi square and logistic regression.

The statistical analysis confirmed the authenticity of discriminating 226 respondents in being classified into 147 unimpaired (on the job) against 79 impaired (out of job; Table 1). The groups were almost similar in terms of age, sex, education, and marital status (Table 2). However, there were significant differences between them in terms of family history of depression, episodes of depression, history of suicide attempts, duration of illness, severity of depression (Table 3). Moreover, the working depressed group (unimpaired) differed significantly from the

impaired depressed group in terms of work experience, job turnover, and overall occupational adjustment. In specific, the study groups differed significantly on six specific sub scales of occupational adjustment, i.e., ‘time lost’, ‘imperfect performance’, ‘friction’, ‘distress’, ‘disinterest’, and ‘feeling of inadequacy’ (Table 4).

The logistic model could estimate the best predictors of the patients’ working ability (Table 5). History of suicide attempt, family history of depression, time lost, severity of depression, pre-morbid occupational adjustment, age, and illness duration emerged as the most important predictors, explaining 64% of the patients’ working ability. In order of importance, history of suicide attempt (8.1%), history of family depression (7.9%), time lost (7.5%), severity of depression (7%), pre-morbid occupational adjustment (6.8%), age (3.4%), and illness duration (2.1%) increase the chances of impairment in depressed patients (Table 6).

Time lost, age, and severity of depression are among the predictors of working ability in patients with depression. The association between age and working ability is partly related to process of aging and its psychosocial limitations. Lost days is a sub scale of occupational adjustment scale and as a predictor of working ability is the outcome of sick days, resulting from illness condition. These observations reinforce the idea that the impact of depression can increase with age (Druss et al. 2000). Ormel et al. (2004) have attributed the disability in depressed patients to their residual symptoms, pre morbid disability, and disability that developed during the episode. Accordingly, post morbid psychosocial disability in depressed patients is the continuation of pre morbid psychosocial disability. Our study shows a relatively strong association between the respondents’ pre morbid occupational adjustment and their working ability. Of course the occupational adjustment report is restricted to the last episode and we do not have any record about their performance with every episode.

Severity of depression is another predictor of the patients’ working ability. According to Ustun et al. (2004) major depression is a leading cause of non fatal burden of diseases and accounts for almost 21% of the total life lived with disability, encompassing various spheres of work, social life, parenthood, and marital relationships. Longer the course of depressive disorder, higher the severity of symptoms and higher the chances of psychosocial disability (Judd et al. 2000). At the levels of sub thresholds, depressive symptoms continue and the residual symptoms become important risk factors for relapse or recurrence of depression (Soloman et al. 2004; Kennedy and Paykel 2004). The level of psychosocial disability is a function of depressive symptoms (Judd et al. 2000). Elison et al. (2004) view the working depressed are better off because they less often perceive themselves disable, they may be healthier and less impaired by social, cognitive, and

physical limitations as compared to their non working counterparts. Conclusively, our observations reinforce the findings of Adler et al. (2006) about the job impairment caused by depression. Findings of our study demarcates the working depressed persons from the non working depressed ones by couple of indicators such as past suicide, time loss, and work absenteeism owing to illness condition, and decreased occupational adjustment.

However, we need to caution the readers for several limitations of this study. First, our hospital-based sample of persons with major depression are more likely to have a higher mean severity level than a similarly community-based sample of employees with depression (Noorbala et al. 2004). Moreover, our study excluded persons with certain co-morbid conditions. Therefore, the result may not be generalizable to the depressed employees who live in community at large.

Second, our study attributes work ability of the participants to factors such as suicide attempt, family history, time lost, severity of depression, pre-morbid occupational adjustment, age, and illness duration. However, our data were almost entirely self-reported and we did not have a longitudinal monitoring device to assess such parameter. Moreover, we did not assess the patients' job performance viz-a-viz their work outcome, previous job training, and the employers' attitude towards such cases.

Third, allocation and classification of the study groups was statistically appropriate. However, the possibility of selection or ascertainment bias can not be ruled out. As per exclusion and inclusion criteria majority of the respondents (67.3%) had high level of depressive symptoms. Accordingly, symptom improvement in the initial period may be over stated and individuals with highest limited work impairment, hoping for some incentive, might have participated in this study.

Fourth, as mentioned earlier, the respondents were identified cases of major depression by DSM-IV criteria. However, this study did not measure the work impact of psychotropic drugs. Patients' compliance differ and some might have succumbed to anti-depressant while others did not. By no measure this study differentiated able and impaired individuals viz-a-viz their compliance.

Fifth, this study is simply limited to the work ability of persons with major depression in a hospital-based sample. Despite making no appreciable efforts by Iranian scholars on rate of job retention, job turn over, presenteeism and absenteeism of individuals with depressive disorder, this study was limited to prediction of work ability by employing few occupational criteria.

Despite these limitations, the results have several intervention implications. First, all patients received psychiatric treatment with relatively good compliance as a strategy to make significant inroad into the large disease

burden of depression and job remission. Therefore, persuasion of pharmacological and psychotherapeutic treatment is imperative (Vos et al. 2004). Time to time inquiry about the impact of depression and regular monitoring of the impact of the depressive symptoms recovery of work functioning is possible through integration of mental health with the entire social system.

Second, in view of gap of the knowledge, our study adds to the literature of persons with depression in the Iranian context. The available interventions that might help employees to function better at work are yet to be geared towards this population. We are yet to have employment programmes which provide job entry services for adults with major depression. In developing nations job accommodations are generally aimed at individuals who meet the criteria of physical disability (Mc Donald-Wilson et al. 2001). Specific employee assistance programme for people with job performance problem related to depression is imperative. Therefore, it is not only essential to improve the quality of psychiatric care, but also introduce innovative programmes which help depressed employees to cope with the substantial job upheavals that many in this population will experience. In this respect, the workers' compensation system and the judicial system need to recognize depression as a work related disability. Moreover, employers have few incentives to treat and prevent work place depression and as a result they prefer to ask the employee to leave their jobs (Goldberg and Steury 2001). Attitudinal and behavioural changes in the employers is possible through continuous training mental health programmes and illness conditions such as depressive disorder, efficacy of effective treatment, and the employer's role in controlling workers' disability. The employers need to know that depression is cost-effective and helps to keep depressed person employed. This in turn improves the productivity of depressed persons who are already workers (Whooley and Simon 2000). In general, barriers to effective functioning of depressed patients can be better discovered through work focused interventions.

Third, literature shows that most of the depressed persons visit primary care doctors with physical problems and a large number of them go unrecognized (Rost 2009). In this respect, primary care quality improvement interventions which are cost efficient are essential (Kouzis and Eaton 1997; Ormel et al. 1999; Kessler et al. 1999). Primary care depression with its economic advantages has demonstrated substantial improvements in social and work specific functioning of patients with depression (Gilbody et al. 2006). Timely screening of persons with depression by primary care doctors is highly recommended.

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