Original article

Prevalence and sociodemographic correlates of depressive symptoms among male expatriate workers in Saudi Arabia

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Abstract

Background & Aim:

Expatriate workers are frequently marginalized and vulnerable but we know little about their mental health. Depressive disorders have been shown to have significant effects on workforce productivity and the economic development of a country. Thus, this research aims at determining the prevalence and sociodemographic factors associated with depressive symptoms in expatriate workers in Saudi Arabia.

Methods:

A cross-sectional interview survey of 4575 male expatriate workers from 270 randomly selected businesses/companies was conducted. The predictor variables are sociodemographic and workplace characteristics. Trained interviewers employed the Composite International Diagnostic Interview (CIDI) instrument to determine the Diagnostic and Statistical Manual (DSM-IV) for depressive symptoms (outcome variable). The relationship between sociodemographic, workplace correlates and depressives symptoms was investigated using multivariate regression analysis

Results:

الملخص

الخلفية و الأهداف :

كثيرا ما يتعرض العمال الأجانب للتهميش والضعف ، لكننا لا نعرف سوى القليل عن صحتهم العقلية. ثبت أن الاضطرابات الاكتئابية لها تأثيرات كبيرة على إنتاجية القوى العاملة والتنمية الاقتصادية للبلد. وبالتالي ، يهدف هذا البحث إلى تحديد مدى انتشار العوامل الاجتماعية الديموغرافية المرتبطة بأعراض الاكتئاب لدى العمال الوافدين في المملكة العربية السعودية.

طريقة البحث

تم إجراء مسح مقابلة مقطعية مع ٤٥٧٥ عامل أجنبي من ٢٧٠ شركة / شركة تم اختيارها عشوائيًا. المتغيرات التنبؤية هي الخصائص الاجتماعية والديموغرافية وخصائص مكان العمل. استخدم المقابلات المدربون أداة المقابلة التشخيصية الدولية المركبة (CIDI) لتحديد الدليل التشخيصي والإحصائي (DSM-IV) لأعراض الاكتئاب (متغير النتيجة). تم دراسة العلاقة بين الأعراض الاجتماعية والديموغرافية ، وأسباب الارتباط والاكتئاب ، باستخدام تحليل الانحدار متعدد المتغيرات.

النتائج :

بلغ معدل انتشار أعراض الاكتئاب ١٩,٧٪. تشمل عوامل خطر أعراض الاكتئاب العرق
(الفلبينيون (نسبة الأرجحية المعدلة - AOR = ١,٥١٠ (١,٠٥٤-٢,١٦٢) واليمنيين (AOR = ٢,٠١٠ (١,٤٥٥-٢,٧٧٦)) ، كبار

The depressive symptoms prevalence was 19.7%. Risk factors for depressive symptoms include ethnicity (Filipinos (adjusted odds ratio – AOR=1.510 (1.054-2.162) and Yemenis (AOR=2.010 (1.455-2.776)), older age ≥50 years (AOR = 2.648 (1.861-3.768)), diploma or university qualifications (AOR = 2.144 (1.602-2.870)), income >6000SAR (AOR = 2.024 (1.318-3.107)), poor physical health (AOR =1.709 (1.137-2.569)) and emotional health (AOR = 9.130 (5.664-14.716)).

Conclusions:

The prevalence of depressive symptoms is high among expatriates. The findings provide new understanding of the impact of the identified sociodemographic correlates on the occurrence of high levels of depressive symptoms such as ethnic differences are associated with greater depressive symptoms risk. These results suggest there may be a benefit in screening for depressive disorders, provision of ethnically bespoke, and adapted clinical interventions and workplace prevention programs to ensure equal quality care.

Keywords:

Depressive symptoms; Expatriate workers; Workplace; Sociodemographic; Prevalence

السن ≥٥٠ سنة (AOR = ٢,٦٤٨ (١,٨٦١-٣,٧٦٨)) ، دبلوم أو مؤهلات جامعية (AOR = ٢,١٤٤ (١,٦٠٢-٢,٨٧٠)) ، الدخل< ٦٠٠٠ ريال سعودي (AOR = ٢,٠٢٤ (١,٣١٨-٣,١٠٧)) ، سوء الصحة البدنية (AOR = ١,٧٠٩ (١,١٣٧-٢,٥٦٩)) والصحة العاطفية (AOR = ٩,١٣٠ (٥,٦٦٤-١٤,٧١٦)).

الخلاصة :

انتشار أعراض الاكتئاب مرتفع بين المغتربين. توفر النتائج فهمًا جديدًا لتأثير الارتباطات الاجتماعية والديموغرافية المحددة على حدوث مستويات عالية من أعراض الاكتئاب مثل الاختلافات العرقية المرتبطة بزيادة خطر الاكتئاب. تشير هذه النتائج إلى أنه قد تكون هناك فائدة في الكشف عن اضطرابات الاكتئاب ، وتوفير مفصل عرقيا ، والتدخلات السريرية المتكيفة وبرامج الوقاية في مكان العمل لضمان رعاية ذات جودة متساوية

INTRODUCTION

A recent World Health Organization report[1] describes depression as the most common mental illness, predominant cause of disability, a leading contributor to the global burden of disease with approximately 300 million people affected globally and contributes to 800000 suicides annually. Mental disorders are common in the Eastern Mediterranean Region (EMR) [2, 3]. Large-scale community surveys conducted in the region suggest rates of psychological distress between 15•6% and 35•5%, with higher rates in countries with complex emergencies. The prevalence of depression among expatriates in the United Arab Emirates and Bahrain varied from

13% to 25% [4, 5], and in Saudi Arabia, depression prevalence of 20% has been reported among expatriate workers [6].

Depression has significant effects on workforce productivity, society, and relationships which consequently impact organizational effectiveness and economic development of a country [7]. When expatriate workers arrive in the destination country, they are often healthier than similar indigenous populations. The reason is that of positive self-selection at the time of immigration and the positive selection, screening, and discrimination applied by the host countries [8]. However, the advantage of the healthy migrant effect may deteriorate over time due to negative aspects of the process by which expatriates change their attitudes, values, and behaviors as they are exposed to their host culture [9, 10]. Besides, a combination of personal transitions, distortion of psychosocial contexts, family, social systems, language, and financial constraints may give rise to anxiety and depression in this group [5, 7]. Crucially, expatriates tend to have low uptake of essential health insurance coverage, engage in an occupation that natives are reluctant to take up and labor long hours in energy-demanding industries [11, 12]. Consequently, expatriates are frequently viewed as marginalized and vulnerable, making them susceptible to depressive disorders [10, 13]. Research provides a strong argument for greater investment in mental health services in countries of all income levels. It suggests a fourfold increase in economic production and health outcomes for every United States Dollar (US$1) invested in scaling up treatment for depression and anxiety [14]. Interestingly, this finding is important in the context of the Kingdom of Saudi Arabia (KSA) given the goal of increased economic production outlined in Vision 2030 [15]. KSA has been largely dependent on migrant labor since the oil boom to the extent that one-third of its current population consists of expatriate workers [16]. Indeed, suicide is more common among expatriate workers compared to Saudi nationals and expatriates experience a greater risk of psychosis during hospital admissions [17]. We know little about the effect of sociodemographic and work-related factors on the risk of depression in the expatriate population in Saudi Arabia. The only available research involved interview surveys of immigrant workers in one company in Al-Qassim, Saudi Arabia [6]. The authors reported that perceived life stress and general health conditions were strong correlates of depression and expatriates aged ≥51 years were less likely to be depressed. However, the study focused only on the basic psychosocial correlates of depression in a small-scale sample of expatriates. The

detailed workplace and sociodemographic correlates such as age, income, ethnicity, and how these factors are independently associated with depressive symptoms have not been fully investigated in a large nationally representative sample. This study aims to extend existing work using data from a large scale cross-sectional study. A comprehensive understanding of the risk factors for depressive symptoms in this underserved group could provide an empiric basis for targeted workplace preventative mental health interventions. Therefore, the objectives of this study included
(1) to investigate the prevalence of depressive symptoms (2) to determine the sociodemographic and workplace correlates of depressive symptoms in a representative sample of expatriate workers.

MATERIALS AND METHODS

Respondents

This study reports on the aspect of the survey that investigated the prevalence, sociodemographic, and workplace correlates of depressive symptoms. The study used an approach that includes face-to-face interviews with a representative survey sampling to collect cross-sectional data from expatriate workers in Riyadh. Riyadh was chosen because most businesses/industries in Saudi Arabia have their main offices there. The surveys employed a multistage stratified cluster sampling method to collect self-reported sociodemographic and health-related information from expatriate workers in 102 495 companies randomly selected businesses/industries. The sample size of respondents required in the study was 4629. This study methods and sample size calculation have been described in detail elsewhere [18, 19]. The managers or relevant departments in the selected industry sectors provided the staff list from which respondents were randomly selected. The inclusion criteria are respondents must be 18 years and over and be non-Saudi nationals. Ten interviewers were employed in the study to administer the survey to respondents. The interviewers were trained during a full-time week and coached at regular meetings during the period of data collection on interview techniques, skills on how to advertise the importance of the survey, and educating respondents. The training ensured the interview process was the same for all respondents. To test and refine the questionnaire and procedure, a pilot study was conducted with a sample of 150 expatriate workers. Respondents selected in this study were informed they could withdraw from the study at any time without it affecting their employment or access to healthcare. Respondents who agreed to take part in the study were re-

quested to sign a consent form. The Institutional Review Board of King Abdullah International Medical Research Centre approved this study.

Measures

Demographic and workplace characteristics

The validated MEP questionnaire [20] was used to investigate the socio-economic, psychosocial, demographic, and workplace characteristics of respondents. They included ethnicity, first language, level of education, age, income, married or not married, duration of stay, occupation type, industry group, health insurance status, self-reported emotional and physical health statuses. To determine physical and emotional health statuses, respondents were provided with five options (excellent, very good, good, fair, and poor) to rate their physical and emotional health. The options were combined into two categories (good and poor) for the analyses.

Depressive symptoms

Depressive symptoms was the dependent variable and was estimated using the WHO Composite International Diagnostic Interview (CIDI). The CIDI is a validated and standardized diagnostic tool designed for the assessment of mental disorders by trained lay interviewers. The instrument is widely used to investigate the prevalence of mental disorders worldwide. The CIDI instrument [21] applicable to depressive disorders was used to determine DSM-IV symptoms criteria for major depressive disorder and episodes [22] using the full range of questions for the past 12 months. The DSM-IV categories for major depressive disorder and episodes are;

(1) no depression (2) depressive episode but did not meet criteria for major depressive disorder (MDD) and (3) met criteria for major depressive disorder. The categories were collapsed into two main outcomes (1. No, depressive symptoms, and 2. Yes, had depressive symptoms), Therefore, depressive symptoms in this study sample is described as expatriate workers who met the criteria for depressive episode and/or major depressive disorder [19, 23, 24].

Statistical analysis

The data were analyzed using descriptive statistics and logistic regressions. The software used to perform the analyses was the Statistical Package for the Social Sciences Windows Version 24.0. The prevalence rates were calculated for the study sample. The association between depressive symptoms and sociodemographic and workplace characteristics was investigated using the backward stepwise method in logistic regression analysis. All statistical analyses were two-sided and $p < 0.05$ was considered significant. Odds ratios and 95% confidence intervals (CIs) were calculated for

each variable.

RESULTS

In this study, the majority of the respondents completed the questionnaires (n=4575) resulting in a high response rate of 98.83%. Table 1, shows the frequency of the sociodemographic, and workplace characteristics of the study respondents. The highest population of respondents were from Bangladesh (25.3%), the majority were Arabic speakers (32.4%), manual workers (45.1%), earned income of 2000SAR or less per month (67.4%), between the ages of 30 and 49 years (69.4%), more than 5 years duration of stay (33.16%) and married but with family living outside Saudi Arabia (65.2%). The depressive symptoms prevalence among the sample was 19.7%. Table 2, indicates the highest prevalence of depressive symptoms was among expatriates workers from Yemen (26.86%), followed by Filipinos (22.18%), Indians (18.34%) and Pakistani (17.41%). The lowest prevalence was among the Bangladeshis (11.80%). For the age groups, the highest prevalence of depressive symptoms was reported in the age group ≥ 50, followed by the 30-49 age group (16.1%) and less than 30 years (15.6%). Among arterial language, the highest prevalence was found in expatriates that spoke Arabic (22.4%). A higher prevalence of depressive symptoms was also reported by expatriates with a diploma or university education (23.3%), followed by those with secondary school education (12.6%), and expatriates who attended elementary school or preschool (11.7%). Respondents' with income > 6000 Saudi Arabian Riyal had a higher prevalence of depressive symptoms (28.9%) than those with an income of 2001-6000 (21.8%) and income of ≤ 2000 (13%). The highest prevalence of depressive symptoms was found among specialist/ professional occupation and unskilled workers had the lowest prevalence. Table 2 shows the sociodemographic and workplace correlates of depressive symptoms in the univariate analysis.

Table 3 shows the multivariate logistic regression for depressive symptoms after the elimination of independent variables that were not statistically significant. Depressive symptoms were associated with reported ethnicity; Filipinos had 1.5 times and Yemenis 2.0 times greater odds of having depressive symptoms compared to Indians. Respondents in the age group ≥ 50 years were 2.7 times more likely to have depressive symptoms compared to the age group less than 30 years. Expatriate workers with a diploma or university degree had 2.1 times greater odds of depressive symptoms than respondents with elemen-

tary school education or less. Respondents receiving 2001-6000 Saudi Riyal per month were 1.3 times more likely to have depressive symptoms compared to those on income less than 2000SR. However, the risk of depressive symptoms was twice that of respondents earning more than 6000 Saudi Arabian Riyal per month. Respondents with poor physical health status had 1.7 times greater odds of depressive symptoms compared to expatriates with good health. Expatriates with poor emotional health had 9.0 times greater odds of depressive symptoms compared to those with good emotional health.

Table 1. Sociodemographic, workplace and health characteristics of study respondents

Variable	Number of study respondents, Total n (%) 4575 (100%)
Ethnicity	
Indians	1100 (24.0%)
Bangladeshi	1159 (25.3%)
Pakistanis	498 (10.9%)
Egyptians	819 17.9%)
Filipinos	200 (4.4%)
Yemenis	234 (5.1%)
Others	565 (12.3%)
First Language	
Arabic	1480 (32.4%)
Bengali	1111 (24.3%)
Urdu	949 (20.7%)
Hindi	443 (9.7%)
Malayalam	171 (3.7%)
Tagalog	182 (4.0%)
Others	239 (5.2%)
Age category (Years)	
< 30	1014 (22.2%)
30 - 49	3176 (69.4%)
≥ 50	385 (8.4%)
Education	
Primary school or less.	1331 (29.1%)
Intermediate and secondary school completed.	1654 (36.1%)
Diploma or university degree	1590 (34.8%)
Income (monthly)	
≤ 2000S AR	3085 (67.4%)
2001 - 6000SR	1342 (29.3%)
> 6000	148 (3.2%)
Marital Status	
Single/Divorced.	842 (18.4%)
Married, family in KSA.	750 16.4%)
Married, family outside KSA	2983 (65.2%)
Duration of stay in KSA (years)	
<1	818 (17.9%)
1 - 5	2233 (48.8%)
> 5	524 (33.3%)
Occupation group	
Specialist/Professionals.	1189 (26.0%)
Manual workers.	2064 (45.1%)
Unskilled workers.	1322 (28.9%)

Variable	Number of study respondents, Total n (%) 4575 (100%)
Industry group	
Agriculture	115 (2.5%)
Mining	78 (1.7%)
Manufacturing	644 (14.1%)
Power, Utilities	100 (2.2%)
Construction	905 (19.8%)
Trade	1467 (32.1%)
Transportation	242 (5.3%)
Finance	184 (4.0%)
Education	692 (15.1%)
Others	148 (3.2%)

Variable	Number of study respondents, Total n (%) 4575 (100%)
Health Insurance Status	
Uninsured	1518 (33.2%)
Insured	3057 (66.8%)
Self-reported physical health	
Good	4424 (96.7%)
Poor	151 (3.3%)
Self-reported emotional health	
Good	4468 (97.7%)
Poor	107 (2.3%)

Table 2: Prevalence and logistic regression (univariate analysis) of respondents' characteristics with depressive symptoms

Variable	Depressive symptoms n (%)	Crude odds ratio (95% CI)	P-value
Ethnicity			<0.001
Indians	247 (18.34%)	1	
Bangladeshi	155 (11.80%)	0.513 (0.406-0.648)	
Pakistanis	105 (17.41%)	0.926 (0.703-1.220)	
Egyptians	139 (14.51%)	0.634 (0.492-0.817)	
Filipinos	57 (22.18%)	1.526 (1.064-2.189)	
Yemenis	86 (26.86%)	2.064 (1.492-2.855)	
Others	110 (16.30%)	0.918 (0.702-1.202)	
First Language			<0.001
Arabic	428 (22.43%)	1	
Urdu	167 (14.96%)	0.871 (0.681-1.114)	
Hindi	34 (7.13%)	0.379 (0.252-0.569)	
Malayalam	26 (13.2%)	0.629 (0.394-1.004)	
Bengali	182 (14.08%)	0.878 (0.674-1.143)	
Tagalog	42 (18.75%)	0.833 (0.562-1.233)	
Others	20 (7.72%)	0.299 (0.179-0.501	
Age category (Years)			0.001
< 30	188 (15.64%)	1	
30 - 49	608 (16.07%)	1.564 (1.222-2.002)	
≥ 50	103 (21.11%)	2.650 (1.855-3.785	

Education			<0.001
Elementary school or less.	177 (11.74%)	1	
High school completed.	239 (12.63%)	1.114 (0.886-1.400)	
Diploma or university degree	483 (23.30%)	2.113 (1.577-2.831)	
Income (monthly)			<0.001
≤ 2000SAR	462 (13.03%)	1	
2001 - 6000SR	374 (21.79%)	1.296 (1.032-1.627)	
> 6000	63 (29.86)	2.172 (1.407-3.354)	
Marital Status			<0.001
Single/Divorced.	206 (19.66%)	1	
Married, family in KSA.	224 (23%)	0.598 (0.438-0.816)	
Married, family outside KSA.	469 (13.59%)	0.539 (0.421-0.690)	
Duration of stay (years)			0.007
<1	176 (17.71%)	1	<0.001
1 - 5	463 (17.17%)	0.990 (0.787-1.247)	
> 5	260 (33.16%)	0.632 (0.486-0.823)	
Occupation group			<0.001
Specialist/Professionals.	349 (22.69%)	1	
Manual workers.	385 (15.72%)	1.222 (0.953-1.565)	
Unskilled workers.	165 (11.1%)	0.912 (0.674-1.233)	
Industry group			0.033
Agriculture	14 (10.85%)	1	
Mining	15 (16.13%)	1.565 (0.679-3.608)	
Manufacturing	112 (14.82%)	1.231 (0.653-2.321)	
Power, Utilities	17 (14.53%)	1.233 (0.545-2.789)	
Construction	169 (15.74%)	1.320 (0.712-2.448)	
Trade	311 (17.49%)	1.546 (0.840-2.846)	
Transportation	49 (16.84%)	1.604 (0.811-3.173)	
Finance	30 (14.02%)	1.224 (0.592-2.532)	
Education	160 (18.78%)	1.648 (0.886-3.068)	
Others	22 (12.94%)	0.964 (0.447-2.079)	
Health Insurance Status			0.055
Uninsured	274 (15.29%)	1	
Insured	625 (16.97%)	1.665 (1.105-2.506)	
Self-reported emotional health			<0.001
Good	821 (15.52%)	1	
Poor	78 (42.16%)	9.320 (5.774-15.043)	
Self-reported emotional health			<0.001
Good	821 (15.52%)	1	
Poor	78 (42.16%)	9.320(5.774-15.043)	

Table 3. Multivariate association of respondents' characteristics with depressive symptoms

Variables	Adjusted OR	95% C.I
Filippinos	1.510	1.054-2.162
Yemenis	2.010	1.455-2.776
Age 30-49	1.558	1.219-1.991
Age ≥50	2.648	1.861-3.768
Had diploma or university degree	2.144	1.602-2.870
Earned 2001 – 6000 SAR per month	1.272	1.014-1.595
Earned > 6000 SAR per month	2.024	1.318-3.107
Had poor physical health	1.709	1.137-2.569
Had poor emotional health	9.130	5.664-14.716

OR: Odds Ratio
C.I: Confidence Interval; SAR: Saudi Riyal

DISCUSSION

This is the first study on the association between workplace and sociodemographic factors with depressive symptoms from a nationally representative sample of male expatriate workers in Saudi Arabia. The response rate was 98.83%, which is quite high. The prevalence of DSM-IV depressive symptoms in this group was 19.7%, which is higher than the 5.9% prevalence of MDD reported in the general KSA population [25]. However, the religious, legal, and cultural contexts of Saudi Arabia could result in underreporting and underestimation of the burden of depressive disorders among the population [26]. The difference could also be attributable to the different methodologies used in the studies and Saudi nationals have access to free comprehensive healthcare compared to expatriate workers [27]. Interestingly, the prevalence of depressive symptoms among the respondents was lower but comparable to the 20% prevalence recently reported by Nadim, AlOtaibi [6], and the prevalence reported among expatriates in the neighboring countries of United Arab Emirate and Bahrain (13% - 25%) [4-6].

This study found a higher prevalence and greater odds of depressive symptoms among Yemenis and Filipinos which persisted after controlling for several factors. The reasons for this are unclear. The ethnic differences may be due to differences in depressive symptoms reporting due to

cultural factors or true differences in depressive symptoms burden across ethnic groups. However, this finding is particularly important because existing work that investigated ethnic differences in the prevalence rates of depressive disorders among immigrants have found opposing evidence. Previous research that investigated the prevalence of major depressive disorder among various ethnic groups found rates that were much higher in Turkish migrants, comparable in Moroccan migrants, and lower in Surinamese migrants when compared to the Native Dutch [13, 28]. Other research conducted in the United States reported that Asians, Hispanic and black migrants had lower rates of MDD than native-born Americans [13, 29]. These findings are, therefore, inconclusive and suggest more studies are required. Importantly, this study finding provides the first evidence on the positive correlation between ethnicity and increased risk of depressive disorders in expatriate workers. The implication is that since the majority of depressive disorders can be effectively treated [1], this represents an important clinical observation. It also suggests a gap in national health policy that could be strengthened by measures such as regular or periodic screening and monitoring of depressive symptoms among expatriate workers.

This study found that the risk of depressive symptoms increases with age. This finding is similar to previous studies [30, 31] but inconsistent with the study conducted in Saudi Arabia [6] which could be a result of the different methodologies employed. Respondents with higher qualifications (diploma/university education) have greater odds of depressive symptoms. This was an interesting finding because lower educational levels are commonly associated with depression [32, 33]. However, in Saudi Arabia, it is not uncommon to find expatriates with higher educational qualifications employed in lower-level jobs [27]. Although one cannot rule out confounding factors, a plausible explanation could be highly qualified expatriates working in lower-level jobs suffer low self-esteem or confidence and in combination with poor working conditions increase the probability of developing depressive symptoms.

The probability of depressive symptoms was significantly increased for respondents with an income of more than 6000SAR. This was a unique finding because low income is a well-known correlate of depression [4, 13, 34]. There is no clear explanation for this unexpected finding but a possible reason could be that higher-earning expatriates encounter greater amounts of stress due to increased exposure to work demands, long working hours, and extensive travels, which may negatively affect their

mental health. Further studies are required to investigate the relationship between socioeconomic factors and the risk of depressive symptoms and how this association varies among expatriate workers.

This study found higher odds of depressive symptoms among expatriates reporting poor self-rated physical and emotional health. Again this is similar to previous evidence which found an increased risk of depression or major depressive episode associated with poorer self-reported physical and emotional health [35].

Given that depressive symptoms are associated with complications such as suicide, enormous financial and social burdens on workers, employers, and society (14), there is an urgent need for employers and policymakers to make available culturally appropriate and ethnically tailored mental health interventions freely accessible to expatriate workers. This will increase economic production and enable the kingdom of Saudi Arabia to meet the goals of vision 2030. Moreover, lacking freely accessible mental health care could result in underestimating the burden of depressive disorders in the expatriate population. This study supports the argument that the workplace [36] may be the logical setting to implement culturally appropriate and ethnically tailored mental health preventive interventions for expatriate workers. Yet the stigma associated with workplace mental health screening and other prevention programs could pose a challenge [37-39]. Embedding depression prevention interventions into less stigmatizing programs such as stress management and other wellness programs could lead to more successful outcomes. Also, employing internet-based depression prevention programs that are ethnically tailored and could be accessed anonymously may be successful in reducing the stigma associated with participating in prevention interventions.

I believe that this is the first study to find evidence of the identified risk factors associated with a higher risk of occurrence of depressive symptoms among expatriate workers in Saudi Arabia. This research, however, has limitations. The bidirectional nature of the study design made it impossible to conclude cause and effect. Also, this study focused on the male expatriate population due to female workplace segregation [40] limiting transferability to the general population. Lastly, respondents may have underreported depressive symptoms out of fear of stigmatization and losing their jobs. However, the comparable prevalence with the study conducted among expatriates in Saudi Arabia makes underreporting unlikely. Lastly, this study only focused on major depressive disorder and episodes and did not account for other mood disor-

ders such as bipolar disorders, anxiety, and stress.

A key strength of the present study is the research sample was nationally representative of the expatriate population in Saudi Arabia.

CONCLUSIONS

This study found a high prevalence of depressive symptoms among expatriate workers. Ethnicity, older age groups, higher educational qualifications, income, poor physical, and emotional health are significant correlates. Periodic screening for depressive symptoms, ethnically bespoke, and adapted clinical interventions and effective workplace prevention programs targeting the identified possible risk factors are clearly needed. Employers and policymakers should be aware of these needs. Further research is needed to investigate if ethnic differences in significant depressive symptoms are in part because of health and workplace factors that are linked to socioeconomic status.

Conflict of interest:

None to declare

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