Contents available at **PubMed**
www.anmm.org.mx

PERMANYER

Gac Med Mex. 2016;152:431-7

GACETA MÉDICA DE MÉXICO **ORIGINAL ARTICLE**

Preclinical horizon of depression in adults

María Valeria Jiménez-Báez[1,7], Horacio Márquez-González[2,7], Juan Leonardo Monsreal-Góngora[3,7], Gonzalo Góngora-González[4,7], Luis Sandoval-Jurado[5,7] and Rubén Boquer-Hernández[6,7]*

[1]Family Medicine, Medical Benefit Services Head Office, IMSS Quintana Roo; [2]Department of Congenital Heart Diseases, Cardiology Hospital, Centro Médico Nacional Siglo XXI, IMSS; [3]Family Medicine and Ophthalmology, Hospital General de Zona No.1, IMSS Yucatán; [4]Department of Psychiatry, Hospital General de Zona No. 3, Q. Roo; [5]Health Research Coordination, IMMS Quintana Roo; [6]Obstetrics and Gynecology Department, Health Management Coordination, IMSS Quintana Roo; [7]Clinical-Epidemilogical Research Group (GRICIQ), IMSS Quintana Roo, Mexico

Abstract

Objective: *Identify factors related to preclinical depression in healthy adults, their risk factors and concordance with family doctor diagnostic.* **Materials and methods:** *Case-control study in adult from family medicine consulting room. Beck inventory for depression was applied. The correlation between depression and the diagnosis by the family physician was evaluated. Odds ratio (OR) was determined.* **Results:** *Involved 138 patients randomly from four family medicine units (FMU) in the Northern Region of Quintana Roo, Mexico. The mean age 34.9 ± 11.4 years, 55.8% women, prevalence for depression was 26.1%. Being male OR: 3.76; 95% CI: 1.69-8.36, under 30 years OR: 2.76; 95% CI: 1.27-5.99, low socioeconomic status (SES) OR: 2.11; 95% CI: 0.97-4.59 and be married OR: 3.22; 95% CI: 1.41.-7.36 had depression risk. Diagnosis by the family physician and inventory Beck. Kappa Index 0.2, 95% CI: -0057-0176; p = 0.05.* **Conclusions:** *Almost a third of young adults have some depression degree in family medicine consulting room, it is necessary a depression screening for male patients, low SES, married, and under 30 years old, attending medical consultation familiar, for an early diagnosis and improve prognosis.* (Gac Med Mex. 2016;152:431-7)

Corresponding author: *María Valeria Jiménez-Báez, valeria.jimenezb@gmail.com*

KEY WORDS: *Depression. Adult. Family physicians.*

Introduction

Individuals' mental health is affected by multiple personal, biological, environmental and psychological factors[1], with depression being one of the main causes, since it produces changes in memory, thought, mood, physical functioning and behavior[2]. Its presentation ranges from sadness, grief, new circumstances' adaptive disorder, to formally major depression[3,4].

The main reason for consultation at primary care is because depression-generated somatic problems are not considered to be part of it and because incipient mood disorders are often ignored by the patient him/herself and the doctor[5].

Current health policies establish mental health care as a strategic line[3]. Fava et al., in the USA, propose interdisciplinary care models[6]. With this regard, Mexico's government, with the purpose to reduce underdiagnosis[7], has implemented depression prevention,

Correspondence:
*María Valeria Jiménez-Báez
Politécnico Nacional, s/n
IMSS Quintana Roo
Av. Politécnico Nacional, s/n, por Tepic y Kinic
Regino 510
C.P. 77510, Cancún, Q. Roo, México
E-mail: valeria.jimenezb@gmail.com

Date of reception: 06-08-2015
Date of acceptance: 07-08-2015

diagnosis and treatment guidelines[8]; however, geriatric patient care is essentially prioritized, as in many countries in the world[9-11].

In England, USA and Mexico, it is estimated that around 6 to 12% of the population between 18 and 65 years of age will experience an episode of major depression on their lifetime, at an average age of 27 years; one third of all patients with depression see a family doctor or general practitioner (GP) on a regular basis[2,12-14]. This piece of information alone shows the importance of this condition in general practitioners' routine activities: they are in charge of mental health initial care, because they must have the depression-screening radar turned on.

In secondary care hospitals psychiatry department, depressive disorders account for 50% of medical appointments, but only 4.7% are referred from primary care. For this reason, the purpose of this study was to study and analyze the factors related to depression diagnosis in apparently healthy adults by general practitioners, as well as to find out predictive factors and diagnostic concordance. We hypothesized that in zones with continuous demographic expansion and floating population there is some degree of depression in apparently healthy adults.

Material and methods

Study design

From 2008 to 2010, a prospective, analytical case-control study was carried out in family medicine units (UMF – *Unidad de Medicina Familiar)* from Quintana Roo. From the 8 existing units, 4 of them were randomly selected, where a target population of 176,757 adults between 18 and 65 years of age was obtained. The project was registered with the Local Committee of Research and Ethics in Research 2301. The informed consent letter was signed during medical appointment and explained by the treating physician, who was not involved with the research.

Participants

Selection criteria were: inclusion of patients attending the family medicine outpatient clinic with prior appointment or spontaneously, with no previous depression diagnosis and/or who had not received any form of treatment for depression, who answered 100% of the survey. Patients with any psychic deficiency that precluded their participation of the study were excluded; and incomplete surveys and patients who were not attended to by general practitioners were eliminated.

Selection of participant

Patients were invited to participate while waiting to be received for a family medicine appointment. In an isolated area within the unit to carry out the interview, patients were asked to sign the informed consent letter. Random selection was based on a software-generated table. Those patients diagnosed with any degree of depression were considered as cases, and they were incident cases because at that moment and, according to the assessment scale, they were positive to some degree of depression. The controls were those who had no signs or symptoms of depression; 2 cases were considered for each control, which were matched by age and sex.

The surveyors received training on how to apply the interview.

The applied instrument was Beck's inventory for depression, self-administered version validated into Spanish, with Cronbach's alpha internal consistency of 0.87, adapted to Spanish by Conde et al. and standardized in Mexican population[13,15,16].

Demographic and potentially confusing variables were inquired and recorded by the treating physician.

Variables

The outcome variable was regarded as the result on Beck's depression inventory.

To classify the degree of depression, Beck's questionnaire was interpreted as follows: Mild or moderate depression: 14-20 points, severe depression: higher than 20. The depression group was integrated with those with a score higher than or equal to 14, and no depression, those with a score lower than 14.

Independent variables were age, gender, marital status, and socioeconomic status (SES). Intervening variables included depression diagnosis by a general practitioner and assigned medical unit. Life stratus of the patient according to his/her social, cultural and economic characteristics was measured with Graffar scale: High 04-06, middle high 07-09, middle low 10-12, working class 13-16, marginal 17-20. The depression diagnosis was established by the general practitioner at a medical appointment. The remaining variables were obtained by direct questioning.

Table 1. Significant variables associated with the presence of depression in adult patients

Variable	Depression n (%)	No depression n (%)	p*
Gender			
Male	25 (67.6)	36 (35.6)	0.002
Female	12 (32.4)	64 (64.4)	
Age†	32.2 (10.9)	36.03 (11.57)	0.07
Marital status			
Married	27 (73.0)	47 (45.5)	0.003
Single	9 (24.3)	26 (25.7)	
Cohabiting	1 (2.7)	15 (14.9)	
Divorced		6 (7.9)	
Widowed		4 (4.0)	
Separated		2 (2)	
Socio-economic status			
Low	17 (54)	29 (28.8)	0.01
High	20 (46)	72 (71.2)	
Assigned UMF			
UMF 13	10 (27.02)	30 (29.7)	0.07
UMF 14	14 (37.8)	46 (45.5)	
UMF 15	6 (16.2)	7 (6.9)	
UMF 16	7 (18.9)	18 (17.8)	
Depression degree			
Mild	27 (71)	100 (100)	
Severe	10 (39)		

Chi-square test or Fisher's exact test.
*Statistical significance.
†Student's t-test.

Sample size

Version 6 of the EPI INFO statistical program was used for a case-control study with an expected frequency of depression in open population of 12% and an OR of at least 2, 95% confidence interval (CI) and an acceptable error risk, which corresponds to an alpha value of 0.05, with 95% power. The sample size is 120, with an attrition adjustment of 15%; attrition-adjusted sample size was 138 subjects. To extract the sample, Kish stratified probabilistic sampling was used (n = nh), N = total study population (176,757), n = sample (138), constant fraction: Kish = 138/176,756 = 0.00078073, per UMF unit: UMF 13, 40 subjects; UMF 14, 60 subjects; UMF 15, 13; UMF 16, 25.

Statistical analysis

Based on normality testing, the mean was used as central tendency measure and standard deviation as dispersion measure. Qualitative variables were expressed in frequencies and percentages.

Kappa was calculated to estimate concordance between test administrators.

Inferential analysis was made using the chi-square test or Fisher's exact test in case assumptions were not met. Risk was calculated by means of OR.

Variables with a p-value < 0.1 and biological plausibility underwent logistic regression multivariate analysis and confounder-adjusted risk was calculated by means of OR.

The information was analyzed with the SPSS statistical program (version 20.0) for Windows 7.

Results

One-hundred and thirty-eight patients were included in the study, out of which 55.8% were females; median age was 34.9 ± 11.4 years. Socio-demographic variables are shown in table 1 by groups with and without depression.

The frequency of depression was 26.1%, out of which almost one third (28%) had severe depression. Ages with most depression frequency are between 18 to 25 and 46 to 55 years (30%).

Table 2. Odds ratio by factor

Variable	Depression n (%)	No depression n (%)	OR (95% CI) (p) Crude	OR (95% CI) Adjusted
Age				
< 30	22	34	2.89	2.89
> 30	15	67	(1.33-6.27)	(1.33-6.27)
			0.06	
Socio-economic status				
Low and middle	17	29	2.110	2.110
Middle high and high	20	72	(0.97-4.59)	(0.97-4.59)
			0.04	
Gender				
Male	25	36	3.76	3.76
Female	12	65	(1.69-8.36)	(1.69-8.36)
			0.001	
Marital status				
Married	27	46	3.22	3.22
Other	10	55	(1.41-7.36)	(1.41-7.36)
			0.003	

OR: odds ratio; CI: 95% confidence interval.

Table 3. Binary logistic regression model

Variable	Depression n (%)	No depression n (%)	Exp B* (95% CI)	p-value†
Age				
< 30	22	34	5.56	0.001
> 30	15	67	(1.98-15.5)	
Socio-economic status				
Low and middle	17	29	23.99	0.0001
Middle high and high	20	72	(4.09-140.5)	
Gender				
Male	25	36	15.8	0.001
Female	12	65	(2.90-86.40)	
Marital status				
Married	27	46	7.66	0.001
Other	10	55	(2.33-25.15)	

Variable(s) included in step 1: age, marital status, socio-economic status, gender.
*Odds ratio adjusted in the model.
†Statistical significance.

The level of depression was mild or moderate in 62% of men vs. 5.1% of women, and severe in 21 vs. 5.1, respectively. Married subjects were found to experience depression more frequently (36.9%). Patients with low and marginal Socio-economic Status (SES) showed depression higher frequency.

Two groups of patients were integrated, with and without depression, in order to determine prevalence ratios and to predict risk factors for depression in adults. A p-value < 0.05 was considered to be significant (Table 2).

Variables with an OR of at least 1 and a p-value < 0.05 were entered in the binary logistic regression model, with low SES being found to be the most independent variable (Exp B = 23.9; p = 0.0001) (Table 3).

Concordance between general practitioner diagnosis (27%) and Beck's inventory (kappa index: 0.3) are shown in Table 4.

Tale 4. Concordance between general practitioner-diagnosed depression and Beck's inventory

	Depression	No depression	Total
Diagnosis by GP	10	2	12
No diagnosis by GP	27	99	126

Kappa = 0.35
GP: general practitioner.

Discussion

The tools for primary care interventions aimed to screen for depression are insufficient in spite of GPs' training and surveys provided on the subject[8]. Therefore, countries such as USA and Canada report on the efficacy of implementing specific depression diagnosis and treatment programs[17,18]. Similar results were found in this study, where when screening was made targeting an apparently healthy population, evidence was found on the disease, with a prevalence of 26%.

In Mexico, this issue has been addressed at different institutional levels in an attempt to offer opportune and preventive management; however, it should be noted that most these actions prioritize patients with chronic[19] and oncologic conditions[20] or elderly patiens[21], which is consistent with different healthcare systems in the world[10,22].

In our results, one out of every 4 patients attending a family medicine appointment had some degree of depression, which is higher than percentages mentioned by some authors[17-20,23-26], but similar to the figures reported by Al-Qahdi in 2014[23].

Something that locates our study in a novel context is the fact that it was focused on the preclinical horizon of a mental condition that is on expansion. Mexico is part of the 2000 WHO-coordinated international initiative, which assessed the situation of mental pathology in different countries in adults aged between 18 and 65 years, and found that 12.8% of interviewed individuals had one day of disability[12]. One out of every 4 inhabitants experiences some depressive period on his/her lifetime, and approximately 3% of the population suffers from chronic depression in Latin American countries such as Colombia[5].

Studies carried out at primary level of care in Spain and Africa show a frequency of depression as high as 30% in patients attending outpatient clinics without prior diagnosis of depression and, in some cases, 0% is diagnosed by first-contact physician[24].

This study demonstrates that males show more often some degree of depression with regard to women at a 2.5:1 ratio, which is consistent with other studies[10,14-15], and, in addition, depressive episodes are more severe (21%). The United States Preventive Services Task Force (USPS-TF) recommends for adult patients to be routinely surveyed for depression, since this enables depression early identification in these patients. In Mexico, Espinoza-Muñoz et al. reported in 2005 49% of depression in male adults attending primary care medical appointments, with most frequent age in males being 30-49 years[25].

There are self-administered and administered instruments for depressive disorders assessment, including Beck's scale, which assesses the severity of the depressive condition, that have been validated in Mexican populations[13,15.16,26.27]. Different factors can interfere in depression recognition at primary care, including symptoms, clinical variability and association with other conditions; however, the use of adequate tools allows for adequate diagnoses to be established by general practitioners[28]. Our results are in line with this information, since adults attend medical appointments for reasons other than depressive symptoms[29], which is a phenomenon likely to be similar in other primary care systems in the world (kappa = 0.3).

Married subjects showed higher frequency of depression (36.9%), as well as patients belonging to a low SES and to the working class (37%), with similar results being found in reviewed studies, suggesting that these circumstances are likely to generate more depression[11,22,23]. In addition, when the OR of age, low SES, male sex and marital status factors was determined, we found an increased risk for experiencing depression (OR > 2), which are results consistent with previous literature[23], with the most independent factor being low SES (Exp B = 23.9; 95% CI: 4.09-140), similar to the results reported by Kadder Maideen in 2014[30].

It is the duty of the primary care physician to address the patient's psychic sphere and not only the biological one and, for this reason, every patient should be systematically investigated with simple questions, as suggested by the USPSTF[31] and the Canadian Task Force on Preventive Health Care (CTF)[32] if there is any degree of depression, and provide the patient with comprehensive care, since the patient's psychological problems affect his/her physical and emotional development.

In spite of the existence of protocols aimed to standardize the care of patients with depressive disorders, these efforts are primarily focused on the elderly[33] and populations at risk, as in the study published by Martínez-Hernández in 2014, where the prevalence of depression in patients with obesity and type 2 diabetes from Tabasco, Mexico, was 49.78%[34], showing that there are still areas of opportunity for the care of this type of disorders in adult patients attending family medicine units with no apparent risk for mental conditions; therefore, establishing mental health-oriented measures in populations with risk factors is suggested in order to impact on mental conditions' preclinical horizon.

One of the limitations of our study is its design and, therefore, it would be convenient to design studies contemplating some other confounding variables that may generate depressive states, such as conflicting familiar dynamics, para-normative phenomena and, in general, situations related to support and family networks of the individual.

In Mexico, following this study, interventions are trying to be established in healthcare management models that enable to directly influence on the prevention of mental health conditions, similar models to those proposed by Shippee, involving the collaboration of different healthcare services[35].

The measures that can be suggested by the strengths of the study include routine depression screening at primary care in subjects with risk factors.

Funding

The present study has no funding sources.

Acknowledgements

To the IMSS No. 3 Hospital General de Zona (HGZ) in Quintana Roo.

- To the GRICIQ members.
- Dr. Laura Fátima Espinosa García. Health Education and Research Clinical Coordinator, HGZ No. 3.
- Dr. Fany Guadalupe Pat Espadas. Health Education and Research Clinical Coordinator, HGZ No. 13.
- Dr. Erika Jeanette Jiménez Ramírez. Family Medicine Professionalization Course Associate Professor.
- Dr. Luisa Enriqueta Hernández. Family Medicine Specialization Course Associate Professor.
- Dr. Adolfo de Jesús García. Health Education and Research Clinical Coordinator, Hospital General Regional No. 17.
- Dr. María Margarita Chávez Hernández. Health Education Auxiliary Coordinator.

Authors' contribution

María Valeria Jiménez Báez: statistical analysis, interpretation of results and writing of the manuscript. All authors participated in the design and conduction of the study and in the review and approval of the manuscript final version.

References

1. Murray C, López A. The global burden of disease. A comprehensive assessment of mortality and disability from disease, injuries, and risk factors in 1990 and projected to 2020. World Health Organization and The World Bank: Harvard University Press; 1996. Disponible en: http://apps.who.int/iris/bitstream/10665/41864/1/0965546608_eng.pdf.
2. Bello M, Puentes-Rosas E, Medina-Mora ME, Lozano R. Prevalencia y diagnóstico de depresión en población adulta en México. Salud Publica Mex. 2005;47 (Suppl 1):S4-11.
3. Calderón G. Depresión: causas, manifestaciones y tratamiento. 4a. Ed. Madrid: Editorial Trillas; 1990.
4. American Psychiatric Association. Manual diagnóstico y estadístico de los trastornos mentales DSM IV. Asociación Americana de Psiquiatría: Ed. Masson; 2003.
5. Medina-Mora M, Borges G, Benjet C, et al. Estudio de los trastornos mentales en México: resultados de la Encuesta Mundial de Salud Mental. En: Rodríguez J, Kohn R, Aguilar-Gaxiola SA (editores). Epidemiología de los trastornos mentales en América Latina y el Caribe. Washington, DC: PAHO; 2009. pp. 79-89.
6. Fava G, Park S, Dubovxky S. Centros de salud mental: un nuevo modelo. World Psychiatry (ed. español). 2008;6(3):49-53.
7. Tylee A. The importance of somatic symptoms in depression in primary care. J Clin Psychiatry. 2005;7:167-76.
8. Consejo de Salubridad General. Diagnóstico y Tratamiento del trastorno depresivo. En: Guía de Práctica Clínica. México: Secretaría de Salud (editor); 2009.
9. Stewart R, Hotopf M, Dewey M, et al. Current prevalence of dementia, depression and behavioural problems in the older adult care home sector: the South East London Care Home Survey. Age Ageing. 2014; 43(4):562-7.
10. Ruusunen A, Lehto SM, Mursu J, et al. Dietary patterns are associated with the prevalence of elevated depressive symptoms and the risk of getting a hospital discharge diagnosis of depression in middle-aged or older Finnish men. J Affect Disord. 2014;159:1-6.
11. Andreasen P, Lonnroos E, von Euler-Chelpin MC. Prevalence of depression among older adults with dementia living in low- and middle-income countries: a cross-sectional study. Eur J Public Health. 2014;24(1):40-4.
12. Berenzon S, Lara MA, Robles R, Medina-Mora ME. Depression: state of the art and the need for public policy and action plans in Mexico. Salud Publica Mex. 2013;55(1):74-80.
13. Dawes SE, Suarez P, Vaida F, et al. Demographic influences and suggested cut-scores for the Beck Depression Inventory in a non-clinical Spanish speaking population from the US-Mexico border region. Int J Cult Ment Health. 2010;3(1):34-42.

14. MacMillan HL, Patterson CJ, Wathen CN, et al. Screening for depression in primary care: recommendation statement from the Canadian Task Force on Preventive Health Care. CMAJ. 2005;172(1):33-5.
15. Vázquez C, Sanz J. Fiabilidad y validez factorial de la versión española del inventario de depresión de Beck. Barcelona: III Congreso de Evaluación Psicológica; 1991.
16. Moral de la Rubia, J. Validación de un formato simplificado del inventario de Depresión de Beck (BDI-2). Psicología Iberoamericana 2013;21(1):42-52.
17. US Preventive services task force recommendation statement screening for depression in adults. Ann Intern Med. 2009;151:784-92.
18. Olfson M, Tobin JN, Cassells A, Weissman M. Improving the detection of drug abuse, alcohol abuse, and depression in community health centers. J Health Care Poor Underserved. 2003;14:386-402.
19. Palmer C, Vorderstrasse A, Weil A, Colford C, Dolan-Soto D. Evaluation of a depression screening and treatment program in primary care for patients with diabetes mellitus: insights and future directions. J Am Assoc Nurse Pract. 2015;27(3):131-6.
20. Walker J, Holm Hansen C, Martin P, et al. Prevalence of depression in adults with cancer: a systematic review. Ann Oncol. 2013;24(4):895-900.
21. Ortiz G, Arias-Merino E, Flores-Saiffe M, Velázquez-Brizuela I, Macías-Islas MA, Pacheco-Moisés FP. Prevalence of cognitive impairment and depression among a population aged over 60 years in the metropolitan area of Guadalajara, México. Curr Gerontol Geriatr Res. 2012;2012: 175019.
22. Silva MT, Galvao TF, Martins SS, Pereira MG. Prevalence of depression morbidity among Brazilian adults: a systematic review and meta-analysis. Rev Bras Psiquiatr. 2014;36(3):262-70.
23. Al-Qadhi W, Ur Rahman S, Ferwana MS, Abdulmajeed IA. Adult depression screening in Saudi primary care: prevalence, instrument and cost. BMC Psychiatry. 2014;14:190.
24. Udedi M. The prevalence of depression among patients and its detection by primary health care workers at Matawale Health Centre (Zomba). Malawi Med J. 2014;26(2):34-7.
25. Espinosa-Muñoz M, Orozco-Ramírez LA, Ybarra Sagarduy JL. Síntomas de ansiedad, depresión y factores psicosociales en hombres que solicitan atención de salud en el primer nivel. Salud Mental. 2015;38(3):201-8.
26. Caraveo J, Medina-Mora ME. Depresión. Salud Mental. 1999;22(2):110.
27. Sanz J, Vázquez C. Fiabilidad, validez y datos normativos del inventario para la depresión de Beck. Psicothema. 1998;10(2):303-18.
28. Kirmayer LJ, Robbins JM. Patients who somatize in primary care: a longitudinal study of cognitive and social characteristics. Psychol Med. 1996;26(5):937-51.
29. Nimalasuriya K, Compton MT, Guillory VJ. Screening adults for depression in primary care: A position statement of the American College of Preventive Medicine. J Fam Pract. 2009;58(10):535-8.
30. Kader Maideen SF, Sidik SM, Rampal L, Mukhtar F. Prevalence, associated factors and predictors of depression among adults in the community of Selangor, Malaysia. PLoS One. 2014;9(4):e95395.
31. Preventive Services Task Force. Screening for depression in adults: U.S. preventive services task force recommendation statement. Ann Intern Med. 2009;151(11):784-92.
32. Thombs BD, Ziegelstein RC, Roseman M, Kloda LA, Ioannidis JP. There are no randomized controlled trials that support the United States Preventive Services Task Force Guideline on screening for depression in primary care: a systematic review. BMC Med. 2014;12:13.
33. Mojtabai R. Diagnosing depression in older adults in primary care. N Engl J Med. 2014;370(13):1180-2.
34. Martínez-Hernández F, Tovilla-Zárate CA, López-Narváez L, et al. Prevalencia y gravedad de la depresión y la ansiedad en pacientes con obesidad y diabetes de tipo 2: estudio en población de Tabasco, México. Gac Med Mex. 2014;150 Suppl 1:101-6.
35. Shippee ND, Rosen BH, Angstman KB, et al. Baseline screening tools as indicators for symptom outcomes and health services utilization in a collaborative care model for depression in primary care: a practice-based observational study. Gen Hosp Psychiatry. 2014; 36(6):563-9.