Intersectionality and depression symptoms in Mexican adults aged ≥50, MHAS 2001 and 2012

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Abstract

Objective. To analyze, from the perspective of intersectionality, the association of social inequality dimensions (occupation, poverty, and educational level) and socio-demographic and health characteristics with the proportion of depressive symptoms among males and females aged 50 years and older who participated in the 2001 and 2012 waves of the Mexican Health and Aging Study (MHAS). **Materials and methods.** Descriptive analysis and logistic regression models stratified by sex were performed, including interaction terms between poverty, educational level, and employment conditions on the presence of depressive symptoms. **Results.** The proportion of females with depressive symptoms was significantly higher than that of males in both waves. A high proportion of older females in poverty, with five years or less of education and manual occupational activities, reported depressive symptoms in the MHAS-2001. The interactions evaluated between occupation, poverty, and educational level were not statistically significant under adjusted models; however, disability and comorbidities were associated with depressive symptoms in both sexes. **Conclusion.** A higher proportion of females have depressive symptoms under conditions of inequality; however, the effect of the intersection between employment and socio-demographic characteristics on depressive symptoms was not observed under adjusted models.

Resumen

Objetivo. Analizar la asociación de las dimensiones de inequidad (ocupación, pobreza y escolaridad), características sociodemográficas y de salud, desde la perspectiva de interseccionalidad, sobre la proporción de síntomas depresivos entre hombres y mujeres mayores de 50 años, participantes en las rondas 2001 y 2012 de la Encuesta Nacional sobre Salud y Envejecimiento en México (Enasem). **Material y métodos.** Se realizaron análisis descriptivos y modelos de regresión logística estratificados por sexo, incluyendo términos de interacción entre pobreza, escolaridad y condiciones de empleo sobre la presencia de síntomas depresivos. **Resultados.** La proporción de mujeres con síntomas depresivos fue significativamente más alta que la de hombres en ambas rondas. Una mayor proporción de mujeres adultas mayores en condición de pobreza, con menos de cinco años de escolaridad y con ocupación en actividades manuales reportaron síntomas depresivos en la Enasem 2001. Las interacciones evaluadas entre ocupación, pobreza y escolaridad no fueron estadísticamente significativas bajo modelos ajustados. Las condiciones de discapacidad y comorbilidades estuvieron asociadas con la presencia de síntomas depresivos en ambos sexos. **Conclusión.** Una mayor proporción de mujeres tienen síntomas depresivos asociados con condiciones de inequidad; sin embargo, la intersección significativa entre

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empleo y características sociodemográficas con síntomas depresivos no pudo evidenciarse bajo modelos ajustados.

The burden of mental illness in the world has been increasing year by year; particularly depression is the leading cause of disability,[1] and its prevalence in the region of the Americas ranges between 5 and 6%. The age group of 50 and 65 exhibits the highest values (8%).[2] In Mexico, according to the 2018 Health and Nutrition Survey (Ensanut 2018), the overall prevalence of depression was around 13%, and women were more frequently affected (17%).[3]

Certain health outcomes are more frequent in women –e.g., dementia[4] and disability[5]–, and these differences are also notable in socio-demographic variables such as education level, type of employment, and income.[6] Therefore, the importance of gender-differentiated analyses has been pointed out because of the greater disparities in old age.[7]

The presence of depressive symptoms has adverse effects on the life quality of individuals. It can be understood as a response to highly complex risk factors that interact differentially, in magnitude and form, among women than among men.[3] Therefore, the study of the factors associated with depressive symptoms requires a conceptual model that takes into account the complexity of substantial gender-based differences. A promising analytical category for this purpose is the notion of intersectionality, which focuses on the overlapping oppression systems that result from power relations based on class, gender, race, or ethnicity.[8-11] This perspective invites us to critically inquire about the contexts that normalize social inequalities, which in turn produce health inequities.[12] One such context is the working and employment conditions.

The type of work and employment status related to intersectionality insofar as social class and environments of domination and discrimination interact to place disadvantaged population groups in lower labor market positions.[8] One of the most noteworthy examples of this situation is precarious employment, which is primarily informal, often risky, and seldom offers any type of protection to the worker.[13,14] In addition, precarious employment is associated with adverse effects on poor mental health, especially among vulnerable population groups.[15] For instance, females, who tend to occupy part-time jobs with greater flexibility, worse pay, and a greater discontinuity in the work trajectory, are frequently more exposed to health risk factors at work.[16]

Likewise, experiencing constant stress due to obstacles in reconciling their productive and reproductive roles is often associated with adverse mental health conditions[17] and interference with self-care.

The relationship between employment conditions and health is well documented.[18] Most studies have explored the effect of employment conditions and gender on depressive symptoms in adults.[19] Other studies have explored the effects of social disadvantages on mental health across a broad range of intersectional contexts, such as education, in European and Asian populations.[20,21] However, there is scarce information about the intersectionality perspective and mental health in Latin-American contexts. This study analyzes, from the perspective of intersectionality, the association of three dimensions of social inequality (occupation, poverty, and education) and socio-demographic and health characteristics with the proportion of depressive symptoms among males and females aged 50 years and older who participated in the 2001 and 2012 waves of the Mexican Health and Aging Study (MHAS).

Materials and methods

This study was a secondary analysis of data collected from the Mexican Health and Aging Study (MHAS), a national longitudinal study of Mexican adults aged 50 years and above. Methodological notes on the survey have been previously described elsewhere.[22] The baseline survey in 2001 included a nationally representative sample of Mexicans born in 1951 or earlier. The sample was distributed in all 32 states of the country in urban and rural areas. All interviews were conducted in person by trained full-time interviewers of the National Institute of Statistics and Geography (*Instituto Nacional de Estadística y Geografía*, INEGI) of Mexico. Follow-up interviews with surviving respondents were conducted in 2003, 2012, 2015, 2018, and 2021, with the addition of new samples. All the databases and documents consulted for this study are accessible from the MHAS website.[23]

Data from the 2001 and 2012 waves were used in this analysis because, unlike the other waves, these two have a larger sample size that incorporates comprehensive information on employment characteristics, e.g., age at which

individuals began working, years of experience in their current position, types of work activities they engage in, job title or position, and any benefits they received from their employment. The analysis was cross-sectional for each wave because we have a particular interest in the effects of gender, type of occupation, and other relevant socio-demographic variables and identify whether this effect differed between waves 2001 and 2012**.** The MHAS 2001 and 2012 survey samples comprised 15 186 and 18 465 respondents, respectively. After excluding the observations with missing values, proxy interviews, and persons who reported unpaid employment throughout their life, information from 9 540 and 4 081 participants, respectively included in the 2001 and 2012 waves was considered in the statistical analysis.

Variables

Dependent variable

Depressive symptoms. This variable was measured through the CESD-9 scale, which has been used as a screening instrument for depression based on the presence of clinically relevant depressive symptoms during the previous week of survey data collection. The questionnaire includes nine questions with dichotomous responses. The depression variable was constructed considering five points as the cut-off point, as suggested by Aguilar-Navarro and colleagues.[24] A dichotomous variable was coded as depressive symptoms yes=1/ no=0.

Independent variables (dimensions of inequality)

Education: years of schooling (six or more years=0, and five or less=1),

Poverty: self-perceived socioeconomic level (dichotomous variable yes=1/no=0)

Occupation

Occupation: Manual activities were measured in the 2001 and 2012 waves using the item "What is the name of the office, profession, or place where you worked in your main job?" Respondents chose one among all options. The classification of the type of occupation was based on the Mexican Classification of Occupations.[25] We created a dichotomized variable based on the responses: non-manual=0 and manual activities=1.

Precarious employment: This was computed taking into account three characteristics of the main job reported:

1) Type of employment (formal=0/informal=1).
2) Social security (with benefits=0/without any benefit=1).
3) Place of work (formal establishments=0, self-employment=1 informal or agriculture activities=2).

The score of each category was added (min.=0, max.=3), and a dichotomous variable was computed. Individuals with a score of 2 or 3 were classified as having precarious employment. Those with a score of 1 or 0 were classified as having non-precarious employment.

Control variables

Disability. This was created from the sum of activities of daily living (ADL) and instrumental activities of daily living (IADL). It was defined as 0 when the respondents did not experience any difficulty, and 1 when they had difficulty in any of these activities, generating a dichotomous variable. This classification has been used before.[26,27]

Number of comorbidities. The count variable was computed using the number of self-reported chronic diseases, such as hypertension, diabetes mellitus, heart attack, cancer, stroke, arthritis, and respiratory diseases. Based on the final quantity of comorbidities, a variable with three mutually exclusive categories was constructed: None=0, one=1, two and more=2.

Socio-demographic variables. Living with a partner (yes=1/ no=0), age self-reported in years and sex (female and male self-reported), age.

Ethical considerations

The study was approved by the Research and Ethics Committees of the University of Texas Medical Branch (UTMB), the INEGI, the University of Wisconsin, the National Institute of Geriatrics of Mexico (*Instituto Nacional de Geriatría*, Inger), and the *Instituto Nacional de Salud Pública* (INSP, Mexico). All potential participants read an informed consent letter, and data were collected only about those who accepted to participate in the study.

Statistical analysis

A separate descriptive analysis was done for each MHAS wave (2001 and 2012), where the differences by sex (female and male) were analyzed. Data for the groups were expressed as mean ± standard deviation (mean ± sd) and compared using the independent group t-test.

The categorical data were shown as a percentage (%); the chi square test was utilized for the comparison of frequency, and the proportion test, for the comparison of the proportions. The association between the social and demographic characteristics and the proportion of depressive symptoms was evaluated separately with multivariable logistic regression models for each MHAS wave (2001 and 2012), stratified by sex. Models were constructed and adjusted by relevant theoretical variables in order to identify the potential predictors to include in an interaction term and to approximate an intersectionality perspective based on a statistical analysis. The terms for the interactions between dimensions of social inequality were added to regression models adjusted by other variables, including themselves individually. In addition, the proportion of depressive symptoms was calculated for participants at the intersections of the three dimensions of social inequality (poverty, manual activities, five years or less of education). The results were charted in Venn diagrams (figure 1 and 2). The statistical analyses were carried out using the Stata 13 statistical package.

Results

Table I shows the distribution of participants' socio-demographic and health measures in the 2001 and 2012 waves, stratified by sex. In both waves, the females were younger than the males (wave 2001: 61.3 vs. 62 years; and wave 2012: 59.7 vs. 62.8 years). A higher proportion of the participants reported five or less years of education in 2001-wave than in the 2012 wave. In wave 2001, the females reported a higher proportion of five or less years of education than the males (58.6 vs. 57.7%). In contrast, the females had a lower proportion of five or less years of education than the males in wave-2012 (26.2 vs. 29.1%). In both waves, the females reported a lower proportion of living with a partner than the males. The proportion of depressive disorder in both waves was significantly higher among the females than among the males (wave 2001: 41.6 vs. 22.5%; wave 2012: 37.6 vs. 18.2%). A larger proportion of females than of males experienced disability and a high burden number of comorbidities (two or more comorbidities) in both the 2001 and 2012 waves (table II). Manual activities were more common among the females (86% in 2001 and 81.5% in 2012) than among the males (84.2% in 2001 and 80.8% in 2012). In 2001, precarious employment was not different between females and males. However, in 2012, the males reported a higher proportion of precarious employment than the females (75.9 vs. 73.8%). In addition, the proportion of people with informal and self-employment was higher among the females than among the males in both waves. There was no statistically significant difference between females and males in either wave regarding self-perceived poverty.

Table III shows the factors associated with depression disorder under an adjusted model stratified by sex (male and female) for each wave (2001 and 2012). Age was significantly associated with the likelihood of depression disorder in male participants of the 2001 wave but not in females. For the 2012 wave, age was not significantly associated for either sex. The odds of depressive disorders were higher for both sexes with five or less years of schooling in 2001 and 2012. Likewise, experiencing more than one comorbidity was associated with increased odds of depression disorder in both females and males. Disability was strongly associated with depression disorder in both women and men and in the two waves. Carrying out manual work was associated with 1.36 and 1.68-fold increased odds of depression in female participants in waves 2001 and 2012. Poverty was positively associated with depression in both males and females in 2001 and 2012. Living with a partner was associated with reduced odds of depression in the males in both waves (2001-aOR=0.63 and 2012-aOR= 0.61, *p*< 0.05) but not significantly in females in either wave (2001-aOR=0.96 and 2012-aOR= 0.82, *p*> 0.05).

Figure 1 illustrates the impact of intersectionality on the proportion of depression disorder in females, and Figure 2, its effect in male participants, both using the social inequalities selected in wave 2001. The sample size of wave 2012 was insufficient to calculate the intersectionality proportion of depression disorder. In the 2001 MHAS, older adults exhibiting the intersection of the three social inequalities examined —self-perceived poverty, five or less years of schooling, and manual occupational activities— had the highest proportion of depressive disorder. In addition, the females had a higher proportion of depressive disorder (68.9%) than males with the same social disadvantages (46.0%).

Table IV shows the intersectional effects of social inequalities on the occurrence of depression using adjusted multiple logistic models, stratified by sex (female and male) to each wave (2001 and 2012). None of the interaction terms between years of schooling, poverty, and manual work was significant. In contrast, living with a partner was a significant protector factor against depression in males but not in females in both waves (2001 and 2012) (aOR=0.63 and aOR=0.61, respectively). Also, disability was associated with more odds of depression in both females and males, and in both waves. Finally, older females and males with two and more comorbidities had higher odds of depression than older females and males without comorbidities.

Table I
SOCIODEMOGRAPHICS CHARACTERISTICS OF THE MHAS 2001 AND 2012 PARTICIPANTS. MÉXICO

Variables	2001 (n=9 540)					2012 (n= 4 081)				p-value
	Female n= 4 095		Male n= 5 445		p-value	Female n= 2 349		Male n= 1 732		
	n	%	n	%		n	%	n	%	
Depressive symptoms					<0.001*‡					<0.001*‡
No	2 393	58.44	4 218	77.5		1 862	62.4	3 639	81.8	
Yes	1 702	41.6	1 227	22.5		1 120	37.6	809	18.2	
Education (years)					<0.001*‡					0.041*‡
6 or over	1 695	41.4	2 305	42.3		1 278	73.8	1 665	70.9	
< 5	2 400	58.6	3 140	57.7		454	26.2	684	29.1	
Poverty (self-perceived)					0.748*					0.748*
No	3 241	83.1	4 169	83.4		2 518	87.4	3 621	87.8	
Yes	658	16.9	831	16.6		362	12.6	502	12.2	
Occupation					0.013*‡					0.465*
Non manual activities	573	14	862	15.8		551	18.5	852	19.2	
Manual activities	3 522	86	4 583	84.2		2 431	81.5	3 596	80.8	
Precarious employment					0.862*					0.045*‡
No	549	14.2	716	14.1		762	26.2	1 048	24.1	
Yes	3 322	85.8	4 379	85.9		2 143	73.8	3 292	75.9	
Type of employment					<0.001*‡					<0.001*‡
Formal	1 375	33.9	3 044	56.3		1 322	44.6	2 494	56.3	
Informal	2 684	66.1	2 362	43.7		1 641	55.4	1 933	43.7	
Social security					<0.001*‡					<0.001*‡
Without benefits	2 720	69.7	2 462	48		1 192	40.8	2 064	47.3	
With benefits	1 181	30.3	2 666	52		1 733	59.2	2 300	52.7	
Place of work										
Formal establishments	745	18.2	852	15.7	<0.001§‡	992	33.3	1 254	28.2	<0.001§‡
Self-employment or informal	1 240	30.4	1 644	30.3	0.950§	609	20.4	687	15.5	<0.001§‡
Agriculture activities	2 098	51.4	2 928	54	0.012§‡	1 379	46.3	2 502	56.3	<0.001§‡
Disability					<0.001*‡					<0.001*‡
No	3 538	86.5	5 000	92		2 552	85.6	3 997	89.9	
Yes	553	13.5	437	8		430	14.4	451	10.1	
Number of comorbidities										
None	1 325	33.1	2 697	51.8	<0.001§‡	1 148	38.9	2 248	51	<0.001§‡
1	1 492	37.3	1 614	31	<0.001§‡	1 092	37	1 391	31.5	<0.001§‡
2 or more	1 183	29.6	892	17.1	<0.001§‡	709	24	770	17.5	<0.001§‡
Living with partner					<0.001*‡					<0.001*‡
No	1 059	26	490	9.5		519	30	227	9.7	
Yes	3 009	74	4 670	90.5		1 213	70	2 122	90.3	
Age, years, mean (SD)	61.3 (9.2)		62 (9.3)		<0.001#‡	59.7 (7.4)		62.8 (8.3)		<0.001#‡

* chi squared test for comparison of frequency
‡ Statistically significant (*p*< 0.05)
§ proportion test for comparison of proportions
student-test
MHAS: Mexican Health and Aging Study

Table II
TYPE OF COMORBIDITIES OF THE MHAS 2001 AND 2012 PARTICIPANTS. MEXICO

| Variables	2001 (n=9 540)				p-value	2012 (n= 4 081)				p-value
	Female n= 4 095		Male n= 5 445			Female n= 2 349		Male n= 1 732		
	n	%	n	%		n	%	n	%	
Type of comorbidities										
Hypertension, yes vs no	1 870	46.5	1 527	29.2	<0.001*,‡	1 274	42.8	1 500	33.8	<0.001*,‡
Diabetes, yes vs no	713	17.7	709	13.5	<0.001*,‡	635	21.4	835	18.8	0.007*,‡
Cancer, yes vs no	115	2.9	46	0.9	<0.001*,‡	33	3	60	1.4	<0.001*,‡
Respiratory disease, yes vs no	309	7.7	298	5.7	<0.001*,‡	175	3.9	201	6.8	<0.001*,‡
Heart attack, yes vs no	116	2.9	197	3.8	0.021‡	69	2.3	163	3.7	0.001*,‡
Stroke, yes vs no	104	2.6	143	2.7	0.664‡	45	1.5	75	1.7	0.550‡
Rheumatoid arthritis, yes vs no	1 054	26.2	798	15.2	<0.001*,‡	431	14.5	350	7.9	<0.001*,‡

* Statistically significant ($p< 0.05$)
‡ x^2 test for comparison of frequency
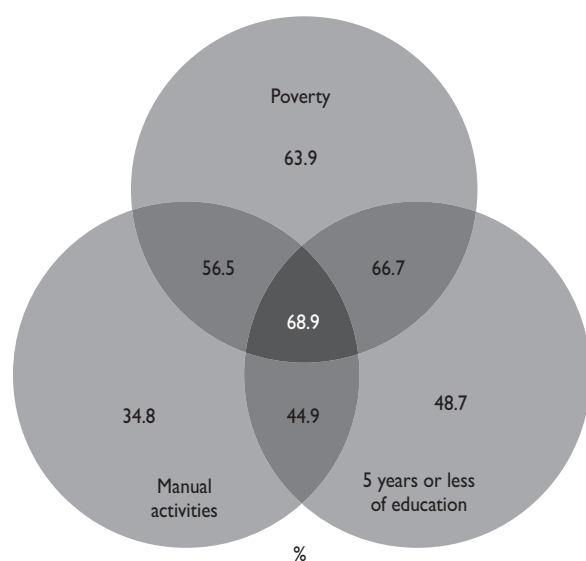
Female MHAS, 2001 (n= 4 095)
MHAS: Mexican Health and Aging Study

FIGURE 1. PREVALENCE OF DEPRESSIVE DISORDER ACROSS INTERSECTING DIMENSIONS OF INEQUALITY IN FEMALE PARTICIPANTS. MÉXICO, MHAS-2001
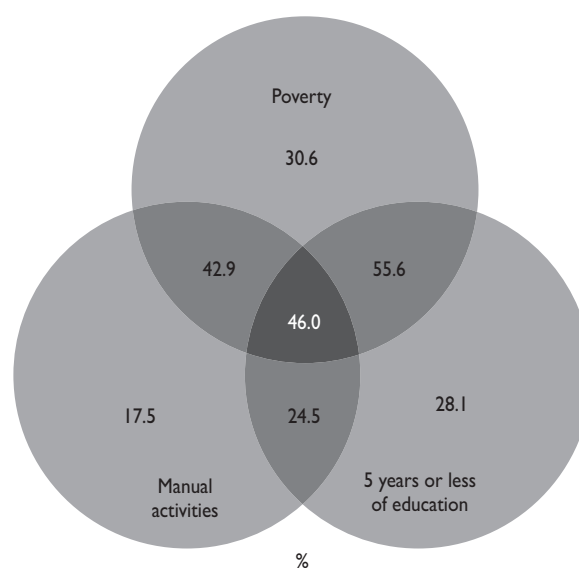
Male MHAS, 2001 (n= 5 445)
MHAS: Mexican Health and Aging Study

FIGURE 2. PREVALENCE OF DEPRESSIVE DISORDER ACROSS INTERSECTING DIMENSIONS OF INEQUALITY IN MALE PARTICIPANTS. MÉXICO, MHAS-2001

Discussion

In this paper, we attempted to contribute to the study of the relationship between intersectionality and mental health. For this purpose, we drew survey data from two waves of the MHAS and chose proxy variables of three social contexts (education, poverty, and employment) in which intersecting power systems are involved. We then analyzed the association of these variables with adverse mental health outcomes (depressive symptoms) differentiated by sex.

When compared to the males, several of our descriptive results point towards a worse mental health condition and social inequalities in the females. For both

Table III

Multiple logistic regression analysis of depressive disorder among MHAS 2001 and 2012 participants. Mexico

Variables	2001				2012						
	Depression		Adjusted			Depression	Adjusted		Depression	Adjusted	
	N	%	OR	CI95%	n	%	OR	CI95%	%	OR	CI95%
Education (years)											
6 or over	563	33.1	1	—	437	66.7	1	—	59.5	1	—
< 5	1 139	66.9	1.41	1.21,1.64*	218	33.3	1.36	1.07,1.73*	40.5	1.82	1.40,2.37*
Poverty (self-perceived)											
No	1 263	74.4	1	—	897	80.2	1	—	74.9	1	—
yes	435	25.6	2.75	2.28,3.32*	222	19.8	2.09	1.50,2.90*	25.1	2.93	2.15,3.99*
Occupation											
Non-manual activities	166	9.8	1	—	138	12.3	1	—	11.7	1	—
Manual activities	1 536	90.2	1.36	1.09,1.69*	982	87.7	1.68	1.27,2.24*	88.3	1.24	0.89,1.74
Disability											
No	1 337	78.7	1	—	855	76.3	1	—	77.4	1	—
Yes	362	21.3	2.82	2.27,3.51*	265	23.7	2.74	1.98,3.79*	22.6	3.38	2.34,4.89*
Number of comorbidities											
0	385	23.1	1	—	289	26.2	1	—	37.9	1	—
1	648	38.9	1.82	1.54,2.14*	435	39.4	1.88	1.48,2.40*	33	1.61	1.22,2.12*
2 or more	632	38	2.45	1.05,2.93*	380	34.4	2.79	2.09,3.71*	29	2.51	1.81,3.47*
Living with a partner											
No	452	26.6	1	—	211	32.2	1	—	13	1	—
Yes	1 250	73.4	0.96	0.82,1.13	444	67.8	0.82	0.65,1.03	87	0.61	0.42,0.89*
Age, years	1 702	NA	0.99	0.99,1.00	2 978	NA	0.98	0.95,1.00	N/A	0.98	0.96,1.00

*Statistically significant (*p*< 0.05)
OR: odds ratio adjusted
IC: interval confidence
MHAS: Mexican Health and Aging Study

Table IV
Multiple logistic regression, intersecting poverty perception, educational level and occupation, in MHAS 2001 and 2012 participants. México

Variables	2001				2012			
	Female		Male		Female		Male	
	Adjusted		Adjusted		Adjusted		Adjusted	
	OR	CI95%	OR	CI95%	OR	CI95%	OR	CI95%
Intersection								
5 YLE + poverty	0.48	0.09,2.37	1.29	0.26,6.35	WD		2.62	0.14,49.36
5 YLE + MA	0.56	0.27,1.61	0.58	0.33,1.02	1.14	0.32,4.04	1.04	0.26,4.16
Poverty+MA	0.54	0.24,1.24	1.16	0.54,2.47	1.14	0.32,4.04	0.53	0.18,1.56
5 YLE + poverty+MA	2.19	0.42,11.44	0.62	0.12,3.18	WD		0.51	0.03,10.37
Disability								
No	1		1		1		1	
Yes	2.82	2.27,3.52*	2.89	1.30,3.64*	2.72	1.96,3.77*	3.37	2.33,4.88*
Number of comorbidities								
0	1		1		1		1	
1	1.81	1.54,2.14*	1.53	1.31,1.79*	1.89	1.49,2.40*	1.61	1.22,2.12
2 and more	2.44	2.04,2.92*	2.32	1.92,2.79*	2.77	2.08,3.70*	2.52	1.82,3.49
Living with a partner								
No	1		1		1		1	
Yes	0.96	0.82,1.12	0.63	0.51,0.79*	0.82	0.65,1.028	0.61	0.42,0.89*
Age, years	0.99	0.99,1.00	1.01	1.00,1.02*	0.97	0.95,1.00	0.98	0.96,1.00*

*Statistically significant ($p< 0.05$)
OR: odds ratio adjusted
IC: interval confidence
WD: without data
5YLE: 5 years or less of educational level
MA: manual activities
MHAS: Mexican Health and Aging Study

waves, the females reported higher levels of depressive symptoms, lower educational level, and higher rates of informal employment. Likewise, when analyzing the number of comorbidities, manual activities (in 2001), and poverty (in 2001) as associated factors of depressive symptoms, our adjusted model estimated higher odds of depressive disorder for the females than for the males on each of the aforementioned factors.

These findings are consistent with previous research on depressive symptoms in China and Europe,[28,29] although a lower prevalence was observed in European countries for males (between 3.41% and 8.1%) than for females (between 1.71% and 13.24%).[29] Differences found by the present work could be attributed to sample characteristics, inclusion year of the population, the operational measure of depression, or the potential cross-cultural differences between countries. Similarly, higher levels of disability and comorbidities in females observed in this study coincide with similar trends in previous research conducted in 70 countries for disability (female: 40.1%; male: 23.8%)[30] and in the Netherlands and China, for comorbidities.[31-33] Finally, other inequality dimensions such as a low educational level (< 5 years = 58.6% in 2001 and 26.2% in 2012) and employment in manual activities (86% in 2001 and 81.5% in 2012) were more prevalent in females than in males. Both results are similar to those reported in other studies and are related to adverse outcomes among females, such as high mortality.[12,34]

Our results, which complement previously existing research on gender-based health disparities, are indicative of persistent social inequalities that overburden women's well-being and associate with adverse physical and mental health. As such, we observed that in all the social contexts analyzed, and where intersectionality is implied, the females had worse mental health outcomes. This was also suggested by our visual description of

intersectionality with 2001 data, where females categorized at the intersection of worse social conditions showed a higher prevalence of depressive symptoms than their male counterparts (68.9 vs. 46%). Nonetheless, when estimating the interaction effects of proxy variables of poverty, education, and employment, the hypothesized amplifying effect of intersectionality[35-37] on mental health was not observed. This finding, albeit unexpected, is similar to the result of another study that sought to disentangle the association of intersectionality on female quality employment.[38] Future studies should analyze this phenomenon by applying diverse statistical and methodological tools, such as multilevel modeling.

The number of comorbidities was strongly associated with a greater likelihood of depressive symptoms. This relationship is similar to the information reported in other studies, which should alert to the quality care improvement in this population, especially among the females who showed higher odds than the males.[31-33] Finally, a noteworthy result of this study is that the sole protective factor against depressive symptoms was living with a partner. However, the decrease in odds for depressive symptoms was only statistically significant for men. This could indicate that males are more benefited from the care provided by their female partners than the females by the care that they might obtain from their male partners.[39] It also suggests that the gender role of caregivers in women acts as a buffer against adverse mental health outcomes and that therein lies the most substantial benefit derived by their male partners.

The findings could provide information to enable public policies to consider these structural disadvantages from which women suffer throughout their life and which therefore make them more vulnerable to depression at a late age, as there is a need for interventions with gender and life course perspectives.

Limitations

This study was cross-sectional in design. Therefore, the causality between depressive disorder and the socio-demographic factors could not be investigated, and only associations were observed. In addition, the presence of depression was proxied with instruments of self-reported symptoms and not diagnosed through clinical examination. Variable sex was used to approximate the intersectionality perspective of gender. This study could not explore other relevant aspects of employment or psychosocial factors, such as job control, job stress, over-commitment, workplace bullying, and work-family conflicts.[40] Finally, this is a secondary data analysis, and the effect of the combination of current employment status (as a condition of risk exposure) and age of participants was not estimated. Future studies should explore the effect of the employment status at the moment of the interview.

Nevertheless, we consider that the strengths of our study outweigh its limitations. To date and to the best of our knowledge, this is the first estimation of the association of dimensions of inequality on depressive symptoms in Mexican older adults from an intersectionality perspective. Although our hypothesis on intersectionality was only supported to a lesser extent by the data and techniques applied, it does not mean that power systems oppressing women are non-existent, or that they do not have an effect on the opportunities for education, income, and work among women, thereby affecting their mental health. Therefore, we call for continuing the search for evidence from different perspectives that may allow us to clarify our view of this reality and envision creative proposals for its solutions.

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