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Prevalence of psychotropic and antidepressant use in a Brazilian Amazon city: analysis of two cross-sectional studies

Prevalência de uso de psicotrópicos e antidepressivos em uma cidade da Amazônia brasileira: análise de dois estudos transversais

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Abstract *This article aims to assess the prevalence of psychotropic and antidepressant use and associated factors in a Brazilian Amazon city. Two cross-sectional studies conducted in Manaus in 2015 and 2019 with adults selected by probabilistic sampling. Prevalence ratios (PR) and 95% confidence intervals (95%CI) were calculated by Poisson regression with robust variance. 3,479 participants were included in 2015 and 2,321 in 2019; 2.0% used psychotropics in 2015 and 2.7% in 2019. Antidepressants were used by 0.4% (2015) and 1.4% (2019). Psychotropic use was lower in younger (PR = 0.41; 95%CI: 0.19-0.90), partnerless (PR = 0.64; 95%CI: 0.44-0.93), and informal workers (PR=0.47; 95%CI: 0.25-0.86), but higher in people with poor health (PR=2.86; 95%CI: 1.71-4.80), multimorbidity (PR = 3.24; 95%CI: 1.87-5.60), and who visited doctors (PR = 3.04; 95%CI: 1.45-6.38) or dentists (PR = 1.50; 95%CI: 1.08-2.10). Antidepressant use was higher in 2019 (PR = 2.90; 95%CI: 1.52-5.54), people with poor health (PR = 2.77; 95%CI: 1.16-6.62), and multimorbidity (PR = 8.72; 95%CI: 2.71-28.00), while lower in informal workers (PR = 0.33; 95%CI: 0.12-0.87) and unemployed (PR = 0.26; 95%CI: 0.08-0.81). Use of psychotropics remained stable in Manaus from 2015 to 2019, while antidepressant use more than tripled, which was marked by social inequalities.*

Key words *Psychotropic drugs, Antidepressive agents, Drug utilization*

Resumo *O objetivo deste artigo é avaliar a prevalência do uso de psicotrópicos e antidepressivos e fatores associados em uma cidade da Amazônia. Dois estudos transversais foram realizados em Manaus, em 2015 e 2019, com adultos selecionados por amostragem probabilística. Razões de prevalência (RP) e intervalos de confiança de 95% (IC95%) foram calculados por regressão de Poisson. Foram incluídos 3.479 participantes em 2015 e 2.321 em 2019; 2,0% usaram psicotrópicos em 2015 e 2,7% em 2019. Antidepressivos foram usados por 0,4% (2015) e 1,4% (2019). O uso de psicotrópicos foi menor em jovens (RP = 0,41; IC95%: 0,19-0,90), sem companheiros (RP = 0,64; IC95%: 0,44-0,93) e trabalhadores informais (RP = 0,47; IC95%: 0,25-0,86), mas maior em pessoas com saúde ruim (RP = 2,86; IC95%: 1,71-4,80), multimorbidade (RP = 3,24; IC95%: 1,87-5,60) e que visitaram médico (RP = 3,04; IC95%: 1,45-6,38) ou dentista (RP = 1,50; IC95%: 1,08-2,10). O uso de antidepressivos foi maior em 2019 (RP = 2,90; IC95%: 1,52-5,54), e pessoas com saúde ruim (RP = 2,77; IC95%: 1,16-6,62) e multimorbidade (RP = 8,72; IC95%: 2,71-28,00), mas menor em trabalhadores informais (RP = 0,33; IC95%: 0,12-0,87) e desempregados (RP = 0,26; IC95%: 0,08-0,81). O uso de psicotrópicos permaneceu estável em Manaus de 2015 a 2019, enquanto o de antidepressivos triplicou, sendo marcados por desigualdades sociais.*

Palavras-chave *Psicotrópicos, Antidepressivos, Uso de medicamentos*

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Introduction

The burden of mental disorders increased from 80.0 million disability-adjusted life-years in 1990 to 125.3 million in 2019, being highest in Australasia, Latin America, and North America[1]. Psychotropic medicines are commonly used to treat these conditions and their use is more frequent in high-income settings. Antidepressant use, for example, is two-four times higher in high-income than in lower income countries, particularly for newer antidepressants[2]. On the other hand, investigation of psychotropic medicine use is especially relevant for poorer countries, where the availability of mental health services is lower compared to high-income economies, which in turn may result in lower access to appropriate treatments[3].

The Brazilian Amazon is a vulnerable region where low income, hazardous work conditions, high violence rates, increased exposure to infectious diseases, lack of household sanitation, and limited access to health services are present, with unequal distribution[4]. A high burden of mental illnesses was observed in the region in 2019: the prevalence of depressive symptoms reached 24%, while anxiety symptoms were present in 22% of the adults[5]. However, part of the Amazonian population may not have access to the medicines they need, including those used for the treatment of mental disorders[6].

Evidence on the prevalence of psychotropic and antidepressant use among individuals living in Manaus is scarce. The aim of this study was to assess the prevalence of psychotropic and antidepressant medicines use and associated factors in Manaus, Brazil in two distinct periods.

Methods

This was a panel of two population-based cross-sectional studies conducted in 2015 and 2019. The 2015 survey contemplated Manaus Metropolitan Region (including the capital city Manaus and seven other adjacent cities), whereas the 2019 survey was carried out exclusively in Manaus[7,8]. We considered only participants from Manaus city in the 2015 survey to allow the comparison between both studies.

In both surveys, participants were selected following a three-phase probabilistic sampling method considering sex and age quotas: census tracts (random), household (systematic), and individual (random)[7,8]. In the first stage, census tracts located in urban areas were randomly sorted. The second stage consisted of applying a systematic sampling method for the selection of households: a number from 1 to 20 was drawn to determine the first house to be visited; this process was repeated until the pre-determined number of interviewed participants for each census tract was reached. If the household was empty or in case of refusals, the household located immediately to the right was approached, and if it was also not available, the same process was applied to the one on the left. In the third stage, individuals aged ≥ 18 years were listed and randomly selected to participate in the interview based on sex and age quotas[7,8].

In 2015, based on a 50% prevalence of health services usage, confidence level of 95%, absolute precision of 2%, design effect of 1.5, and 2,106,322 adults living in the region, sample size was 4,000 participants[7]. In 2019, 2,300 individuals were planned to participate considering the 2015 prevalence of health services usage of 20%, 2,145,144 adult inhabitants of Manaus, and similar statistical parameters[8].

The household interviews were performed by experienced staff, who were hired and trained by the research team. Data were collected using pre-configured questionnaires in the software SurveyToGo (Dooblo Ltd, Israel), available in electronic devices.

The primary outcome was the prevalence of psychotropic medicine use in the previous 15 days. We also assessed the prevalence of antidepressant use in the previous fortnight. Independent variables included: sex (women, men), age group (18-24, 25-34, 34-44, 45-59, and ≥ 60 years old), skin color (white [white and Asian], non-white [black, brown, Indigenous]), marital status (with partner, without partner), social class (A/B, C, D/E, where A refers to the wealthiest and E to the poorest according to the Brazilian Economic Criteria of each year), education (higher education or above, high school, elementary school, less than elementary school), occupation (formal job [formal employment relationship which guarantees labor rights and social benefits], informal job [autonomous economic activity without social security or formal relationship with an employer], retired, student/housewife, unemployed), health insurance (no, yes), health status (good, fair, poor), visit to the doctor, dentist and hospital admission in the previous 12 months (no, yes), and number of chronic diseases (0, 1, ≥ 2).

We assessed the use of medicines by the following question: "In the previous 15 days (or two

weeks), have you taken any medicine?". If the answer was positive, the name of the medicine was registered. After data collection, the medicines were coded in accordance with the Anatomical Therapeutic Chemical (ATC) Classification System[9]. Psychotropic medicines were then selected if they belonged to the following ATC codes: N02A (opioids), N03 (antiepileptics), N04 (anti-Parkinson drugs), N05 (psycholeptics), and N06 (psychoanaleptics) including N06A (antidepressants). Antidepressants' most used subclasses were investigated according to the ATC classification: N06AB (non-selective monoamine reuptake inhibitors), N06AB (selective serotonin reuptake inhibitors), and N06AX (other antidepressants).

We described participants and calculated the prevalence ratios (PR) of psychotropic and antidepressant use with 95% confidence intervals (CI) by independent variables. Variables with p < 0,20 in the unadjusted analyses were included in the multivariable adjusted analysis. All analyses were conducted in Stata 14.2 and considered the complex sampling design.

Both 2015 and 2019 surveys were approved by the Ethics Research Committee from the University of Amazonas through the approval letters No. 974.428 from 3 March 2015 and No. 3.102.942 from 28 December 2018, respectively.

Results

In both surveys, 5,800 participants were included (3,479 in 2015 and 2,321 in 2019) (Figure 1). In 2015, out of the 8,587 households approached, 3,177 were closed or empty, 1,134 refused to participate, and 95 had non-eligible individuals, resulting in 4,001 participants from Manaus Metropolitan Region (response rate: 46.6%). Of those, 522 lived in cities other than Manaus. The final 2015 sample comprised 3,479 participants from Manaus. In 2019, 5,769 households were approached; 2,523 were closed or empty, 841 refused to participate, and 84 had non-eligible individuals, totalizing 2,321 participants from Manaus city (response rate: 40.2%). The mean age of participants was 38.4 (95%CI: 37.9-38.9) in the 2015 survey and 37.3 (95%CI: 36.6-37.9) in 2019.

The prevalence of psychotropic medicine use was 2.03% (95%CI: 1.55-2.52%) in 2015 and 2.66% (95%CI: 1.97-3.35%) in 2019. Antidepressants were used by 0.44% (95%CI: 0.21-0.66%) of adults from Manaus in 2015 and in 2019, this prevalence was 1.39% (95%CI: 0.88-1.90% (Table 1).

Out of the 182 psychotropic medicines used in 2015, antidepressants (n = 47; 25.8%), antiepileptics (n = 46; 25.3%), and antipsychotics (n = 30; 16.5%) were the most used. In 2019, a total of 89 psychotropics were used, of which antidepressants (n = 31; 34.8%), antiepileptics (n = 24; 27.0%), and antipsychotics (n = 15; 16.9%) were also the most used ones.

Considering the 47 antidepressants used in 2015, non-selective monoamine reuptake inhibitors (n = 20) and selective serotonin reuptake inhibitors (n = 20) were the most used, while other antidepressants were the least consumed (n = 7). Out of the 31 antidepressants reported in 2019, selective serotonin reuptake inhibitors were the most used (n = 13), followed by non-selective monoamine reuptake inhibitors (n = 11) and other antidepressants (n = 7) (Table 2).

After adjustments, the use of psychotropic medicines was lower in young adults (25-34 years old: PR = 0.41; 95%CI: 0.19-0.90), people without partners (PR = 0.64; 95%CI: 0.44-0.93), and informal workers (PR = 0.47; 95%CI: 0.25-0.86), but was higher in those with poor health (PR = 2.86; 95%CI: 1.71-4.80), people who visited the doctor (PR = 3.04; 95%CI: 1.45-6.38) and the dentist (PR = 1.50; 95%CI: 1.08-2.10) in the previous 12 months, and individuals with multimorbidity (PR = 3.24; 95%CI: 1.87-5.60). Antidepressant use was higher in 2019 in comparison to 2015 (PR = 2.90; 95%CI: 1.52-5.54), people with poor health (PR = 2.77; 95%CI: 1.16-6.62), and with multimorbidity (PR = 8.72; 95%CI: 2.71-28.00), while lower in informal workers (PR = 0.33; 95%CI: 0.12-0.87) and unemployed individuals (PR = 0.26; 95%CI: 0.08-0.81) (Table 3).

Discussion

The prevalence of psychotropic medicine use reached nearly two in every 100 inhabitants in both surveys. The prevalence of antidepressant use was less than 0.5% in 2015 and increased more than three times in 2019, which was higher in 2019 compared to 2015 and in individuals with poor health and multimorbidity, while lower in informal workers and unemployed people. Psychotropic medicine use was lower in young adults, partnerless, and informal workers, and higher in individuals with poor health, who visited a doctor and a dentist in the previous year, and with multimorbidity.

This study presents some limitations. Sample size calculations were based on estimates

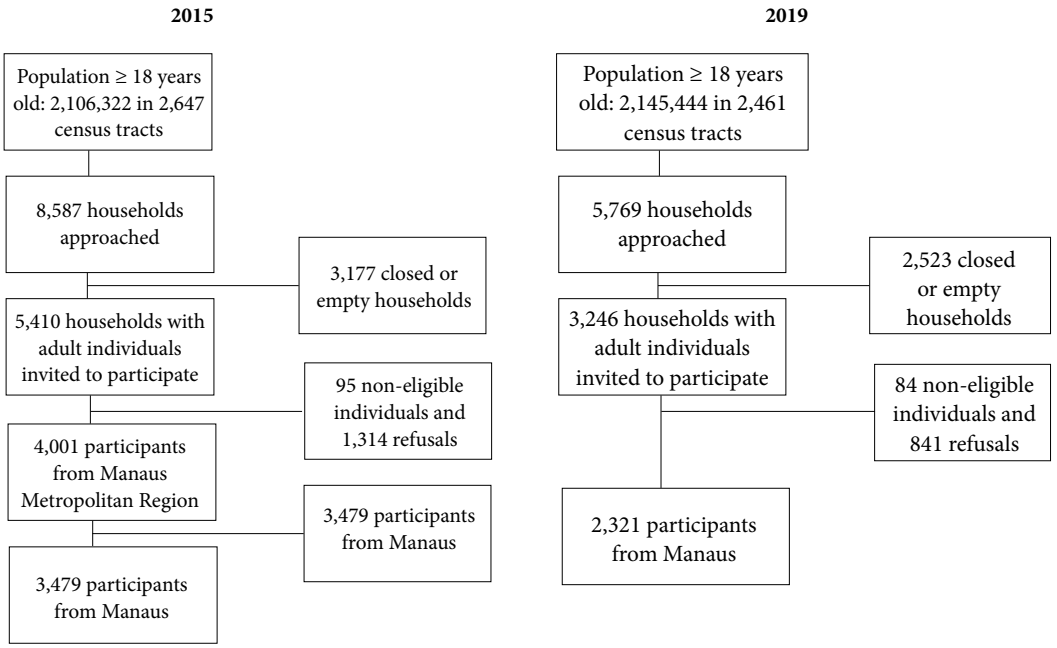

Figure 1. Recruitment processes for the population-based studies in Manaus (2015 and 2019).

Source: Authors.

of health services utilization, meaning that the surveys were not specifically powered to investigate the prevalence of psychotropic and antidepressant use. This research was not primarily designed as a comparative analysis; however, as the methodologies and assessments on each survey were conducted similarly, the investigation of changes in drug utilization patterns was feasible. Although medical prescriptions and medication packages were optionally confirmed when available during the interviews in 2019, recall bias was possible as the use of medicines was obtained by self-reporting. We used statistical parameters to select variables for inclusion in the adjusted analyses, but these criteria have been criticized by some authors, who suggest that the models are adjusted by potential confounders from an epidemiological perspective, and not solely on statistical cutoffs[10,11]. Despite using these statistical criteria, the selected variables are also epidemiologically relevant, such as age group, health status and doctor visits, which are intrinsically related to the use of psychotropic drugs.

The prevalence of psychotropic use found in our study was lower than the 9% reported in a Brazilian household survey conducted in 2013-2014 with 32,348 participants, which also observed a lower prevalence in the Northern region, where Manaus is located[12]. A cohort of adults from Rio de Janeiro, Southeastern Brazil also observed an increase in antidepressant use, from 1.4% in 1999 to 5.4% in 2012[13]. Inequities in the use and access to health services and medicines in the Amazon, particularly among vulnerable individuals, may explain the regional differences experienced by its inhabitants[14].

Marital status is a predictor of healthcare utilization as the 'spousal effect' may encourage partners to seek for medical consultations and treatments[15] and may explain the lower use of psychotropics by individuals without partners. The prevalence of psychotropic medicine use reported in the nationwide study previously mentioned was also higher in people with poor health and multimorbidity, similarly to our findings, while older individuals had higher use of psychotropic in that survey, a different pattern from ours[12]. Informal workers had lower use of psychotropic medicines, which might be due to their lower access to health services and treatments in comparison to formal workers. In Brazil, medical and dental health insurance coverage

Table 1. Participants' characteristics and frequencies of psychotropic and antidepressant use in 2015 (n = 3,479) and 2019 (n = 2,321), considering the complex sampling design.

Variables	Participants' characteristics				Psychotropics				Antidepressants			
	2015		2019		2015		2019		2015		2019	
	n	%	n	%	n	%	n	%	n	%	n	%
Sex												
Women	1,856	65.13	1,233	64.69	40	1.35	36	1.90	9	0.30	19	1.02
Men	1,623	34.87	1,088	35.31	31	0.69	22	0.76	6	0.14	10	0.37
Age group (years)												
18-24	716	16.23	405	13.52	11	0.26	6	0.22	1	0.02	1	0.04
25-34	1,010	31.43	586	25.22	6	0.17	5	0.23	1	0.02	1	0.05
35-44	744	22.19	553	24.96	15	0.44	18	0.82	5	0.14	12	0.53
45-59	674	18.99	526	23.86	33	0.96	20	0.95	8	0.24	10	0.48
≥ 60	335	11.15	251	12.44	6	0.21	9	0.45	0	0.00	5	0.28
Skin color												
White	674	19.17	349	14.93	10	0.29	10	0.49	5	0.15	4	0.21
Non-white	2,805	80.83	1,972	85.07	61	1.75	48	2.17	10	0.29	25	1.18
Marital status												
With partner	1,266	37.76	898	39.65	47	1.36	40	1.85	8	0.23	20	0.96
Without partner	2,213	62.24	1,423	60.35	24	0.67	18	0.81	7	0.20	9	0.43
Social class												
A/B	555	14.88	282	11.52	8	0.21	7	0.31	2	0.05	4	0.20
C	2,006	57.52	1,244	53.47	38	1.12	30	1.37	8	0.23	18	0.84
D/E	918	27.60	795	35.01	25	0.71	21	0.98	5	0.15	7	0.35
Education												
Higher education or above	131	3.90	153	6.89	4	0.10	4	0.18	2	0.04	1	0.05
High school	1,695	47.24	1,171	49.37	20	0.56	26	1.16	7	0.20	16	0.74
Elementary school	562	15.57	432	18.01	17	0.48	7	0.33	1	0.03	3	0.14
Less than elementary school	1,091	33.28	565	25.72	30	0.89	21	0.99	5	0.16	9	0.46
Occupation												
Formal job	652	16.61	415	16.27	15	0.38	11	0.44	4	0.13	8	0.34
Informal job	978	26.15	665	27.34	10	0.27	10	0.48	2	0.04	5	0.27
Retired	270	8.67	162	7.55	13	0.38	10	0.48	2	0.04	5	0.25
Student/housewife	1,069	34.23	632	31.33	18	0.59	20	1.01	6	0.19	8	0.42
Unemployed	510	14.34	447	17.51	15	0.41	7	0.26	1	0.02	3	0.11
Health insurance												
No	3,027	87.00	1,978	85.34	65	1.89	46	2.16	12	0.36	24	1.16
Yes	452	13.00	343	14.66	6	0.15	12	0.50	3	0.07	5	0.23
Health status												
Good	2,243	62.72	1,498	62.54	31	0.81	17	0.71	4	0.11	9	0.42
Fair	1,012	30.31	671	30.35	24	0.71	29	1.35	6	0.18	15	0.71
Poor	224	6.97	152	7.12	16	0.52	12	0.60	5	0.15	5	0.26
Visit to the doctor[a]												
No	802	21.26	587	23.66	4	0.09	4	0.17	0	0.00	2	0.12
Yes	2,677	78.74	1,734	76.34	67	1.94	54	2.49	15	0.44	27	1.27

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is concentrated in individuals with formal jobs[16], even though informal workers from the Brazilian Amazon present lower health-related quality of life[17], with possible higher needs of healthcare.

Table 1. Participants' characteristics and frequencies of psychotropic and antidepressant use in 2015 (n = 3,479) and 2019 (n = 2,321), considering the complex sampling design.

Variables	Participants' characteristics				Psychotropics				Antidepressants			
	2015		2019		2015		2019		2015		2019	
	n	%	n	%	n	%	n	%	n	%	n	%
Visit to the dentist[a]												
No	2,213	63.50	1,123	49.10	38	1.15	26	1.24	7	0.21	15	0.76
Yes	1,266	36.50	1,198	50.90	33	0.89	32	1.43	8	0.22	14	0.63
Hospital admission[a]												
No	3,226	92.11	2,071	88.50	59	1.66	48	2.19	13	0.37	25	1.21
Yes	253	7.89	250	11.50	12	0.38	10	0.47	2	0.06	4	0.18
Number of chronic diseases												
0	1,377	37.37	921	37.37	11	0.27	9	0.36	2	0.04	1	0.05
1	989	28.08	682	29.05	15	0.38	6	0.22	1	0.02	2	0.08
≥ 2	1,113	34.55	718	33.57	45	1.38	43	2.08	12	0.37	26	1.25
Total	3,479	100.00	2,321	100.00	71	2.03	58	2.66	15	0.44	29	1.39

[a]In the previous 12 months.

Source: Authors.

Table 2. Description of psychotropic agents used in the 15 days prior to interview in Manaus in 2015 (n = 182 psychotropics) and 2019 (n = 89 psychotropics).

Psychotropic agent	ATC code	2015		2019	
		n	%[a]	n	%[a]
Antidepressants	N06A	47	25.8	31	34.8
Non-selective monoamine reuptake inhibitors	N06AA	20	11.0	11	12.4
Selective serotonin reuptake inhibitors	N06AB	20	11.0	13	14.6
'Other' antidepressants	N06AX	7	3.8	7	7.9
Antiepileptics	N03A	46	25.3	24	27.0
Clonazepam	N03AE01	13	7.1	8	9.0
Phenobarbital	N03AA02	10	5.5	3	3.4
Carbamazepine	N03AF01	9	4.9	4	4.5
Phenytoin	N03AB02	8	4.4	3	3.4
Others[b]	-	6	3.3	6	6.7
Antipsychotics	N05A	30	16.5	15	16.9
Risperidone	N05AX08	16	8.8	8	9.0
Lithium	N05AN01	6	3.3	3	3.4
Others[c]	-	8	4.4	4	4.5
Anxiolytics	N05B	14	7.7	4	4.5
Diazepam	N05BA01	9	4.9	3	3.4
Others[d]	-	5	2.7	1	1.1
Hypnotics and sedatives	N05C	18	9.9	0	0.0
Scopolamine	N05CM05	13	7.1	0	0.0
Others[e]	-	5	2.7	0	0.0
Other psychotropic agents	-	27	14.8	15	16.9
Opioids	N02A	17	9.3	12	13.5
Anti-Parkinson drugs	N04	10	5.5	3	3.4

[a]The sum of frequencies of the therapeutic groups highlighted in bold equals 100%. [b]Includes valproic acid (N03AG01), topiramate (N03AX11), gabapentin (N03AX12), and pregabalin (N03AX16). [c]Includes chlorpromazine (N05AA01), levomepromazine (N05AA02), haloperidol (N05AD01), and quetiapine (N05AH04). [d]Includes lorazepam (N05BA06), bromazepam (N05BA08), alprazolam (N05BA12), and hydroxyzine (N05BB01). [e]Includes zolpidem (N05CF02) and *Valerianae radix* (N05CM09).

Source: Authors.

Table 3. Unadjusted and adjusted prevalence ratios (PR) and 95% confidence intervals (CI) of psychotropic and antidepressant use in Manaus (n = 5,800).

Variables	Psychotropics				Antidepressants			
	Unadjusted PR (95%CI)	p-value	Adjusted[a] PR (95%CI)	p-value	Unadjusted PR (95%CI)	p-value	Adjusted[b] PR (95%CI)	p-value
Year		0.134		0.526		< 0.001		0.001
2015	1.00		1.00		1.00		1.00	
2019	1.31 (0.92-1.86)		1.12 (0.78-1.62)		3.19 (1.70-5.99)		**2.90 (1.52-5.54)**	
Sex		0.364		-		0.308		-
Women	1.00		-		1.00		-	
Men	0.85 (0.60-1.21)		-		0.73 (0.39-1.34)		-	
Age group (years)		< 0.001		< 0.001		0.002		0.049
18-24	1.00		1.00		1.00		1.00	
25-34	0.41 (0.19-0.89)		**0.41 (0.19-0.90)**		0.54 (0.07-3.94)		0.41 (0.05-3.16)	
35-44	1.57 (0.86-2.84)		1.34 (0.71-2.54)		5.68 (1.31-24.59)		2.66 (0.60-11.71)	
45-59	2.84 (1.63-4.94)		1.76 (0.92-3.39)		7.14 (1.66-30.75)		1.97 (0.43-8.99)	
≥ 60	1.61 (0.79-3.28)		0.52 (0.21-1.26)		4.23 (0.82-21.90)		0.81 (0.14-4.89)	
Ethnicity		0.701		-		0.528		-
White	1.00		-		1.00		-	
Non-White	1.10 (0.68-1.78)		-		0.79 (0.37-1.65)		-	
Marital status		0.117		0.018		0.749		-
With partner	1.00		1.00		1.00		-	
Without partner	0.74 (0.51-1.08)		**0.64 (0.44-0.93)**		0.90 (0.48-1.68)		-	
Social class		0.357		-		0.957		-
A/B	1.00		-		1.00		-	
C	1.20 (0.68-2.11)		-		1.03 (0.42-2.53)		-	
D/E	1.47 (0.82-2.66)		-		0.93 (0.35-2.50)		-	
Educational level		0.025		0.322		0.687		-
Higher education or above	1.00		1.00		1.00		-	
High school	0.64 (0.30-1.37)		0.84 (0.39-1.80)		0.88 (0.26-2.99)		-	
Elementary school	0.98 (0.44-2.21)		1.32 (0.58-3.02)		0.49 (0.11-2.20)		-	
Less than elementary school	1.19 (0.56-2.52)		1.07 (0.50-2.28)		0.94 (0.26-3.32)		-	
Occupation		< 0.001		0.016		0.063		0.084
Formal job	1.00		1.00		1.00		1.00	
Informal job	0.54 (0.30-0.98)		**0.47 (0.25-0.86)**		0.40 (0.15-1.02)		**0.33 (0.12-0.87)**	
Retired	2.09 (1.19-3.68)		1.50 (0.76-2.96)		1.21 (0.47-3.11)		0.72 (0.23-2.30)	
Student/ Housewife	0.93 (0.56-1.54)		0.78 (0.46-1.31)		0.66 (0.31-1.44)		0.55 (0.26-1.19)	
Unemployed	0.91 (0.51-1.62)		0.86 (0.48-1.55)		0.28 (0.09-0.88)		**0.26 (0.08-0.81)**	

it continues

Table 3. Unadjusted and adjusted prevalence ratios (PR) and 95% confidence intervals (CI) of psychotropic and antidepressant use in Manaus (n = 5,800).

Variables	Psychotropics				Antidepressants			
	Unadjusted PR (95%CI)	p-value	Adjusted[a] PR (95%CI)	p-value	Unadjusted PR (95%CI)	p-value	Adjusted[b] PR (95%CI)	p-value
Health insurance		0.715		-		0.560		-
No	1.00		-		1.00		-	
Yes	0.91 (0.55-1.51)		-		1.26 (0.58-2.73)		-	
Health status		< 0.001		< 0.001		< 0.001		0.070
Good	1.00		1.00		1.00		1.00	
Fair	2.57 (1.73-3.82)		1.50 (0.97-2.33)		3.51 (1.74-7.07)		1.79 (0.86-3.71)	
Poor	6.34 (3.99-10.08)		**2.86 (1.71-4.80)**		7.42 (3.23-17.03)		**2.77 (1.16-6.62)**	
Visit to the doctor[c]		< 0.001		0.003		0.032		0.173
No	1.00		1.00		1.00		1.00	
Yes	4.78 (2.28-10.03)		**3.04 (1.45-6.38)**		4.74 (1.15-19.61)		2.62 (0.66-10.49)	
Visit to the dentist[c]		0.168		0.016		0.489		-
No	1.00		1.00		1.00		-	
Yes	1.28 (0.90-1.81)		**1.50 (1.08-2.10)**		1.23 (0.68-2.25)		-	
Hospital admission[c]		0.001		0.163		0.340		-
No	1.00		1.00		1.00		-	
Yes	2.14 (1.36-3.38)		1.38 (0.88-2.16)		1.52 (0.64-3.63)		-	
Number of chronic diseases		< 0.001		< 0.001		< 0.001		< 0.001
0	1.00		1.00		1.00		1.00	
1	1.36 (0.72-2.54)		1.11 (0.60-2.08)		1.33 (0.26-6.82)		1.05 (0.22-5.03)	
≥ 2	5.90 (3.59-9.68)		**3.24 (1.87-5.60)**		15.93 (4.77-53.22)		**8.72 (2.71-28.00)**	

[a]Adjusted by the variables: year, age group, marital status, educational level, occupation, health status, visit to the doctor, visit to the dentist, hospital admission, and number of chronic diseases ($p < 0.20$ in the unadjusted analysis). [b]Adjusted by the variables: year, age group, occupation, health status, visit to the doctor, and number of chronic diseases ($p < 0.20$ in the unadjusted analysis). [c]In the previous 12 month.

Source: Authors.

The rise in antidepressant use between 2015 and 2019 was higher in those with poor health and two or more chronic diseases, but lower in informal workers and unemployed individuals. Although the higher use of antidepressants was expected in those with health problems, our results highlight the social determinants of antidepressant use, particularly in individuals working under unfavorable labor conditions or without jobs, who face barriers in the access to health services in Brazil[16].

Conclusion

The prevalence of antidepressant use more than tripled in Manaus from 2015 to 2019. Antidepressants, antiepileptics, and antipsychotics were the most used psychotropics. Psychotropic and antidepressant use in the Brazilian Amazon was mainly driven by socioeconomic and health-related factors, which may represent barriers in the access to treatments, particularly among vulnerable individuals.

Collaborations

MT Silva and TF Galvão designed the work, analyzed and interpreted the data, critically reviewed the work for important intellectual content and approved the final version of this manuscript. Tiguman GMB analyzed and interpreted the data and drafted the work.

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