Quality of Life in the Face of Depression Among Older People: A Cross-Sectional Study in Brazil and Portugal

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ABSTRACT

Background: This study aimed to analyze and compare the association of depression levels with quality of life among older people in primary health care in Brazil and Portugal.

Methods: This was a cross-sectional study conducted with older people in primary health care. The Medical Outcomes Short-Form Health Quality of Life (SF-36) instrument was used to measure the quality of life, and the Beck Depression Inventory was used to evaluate depression. We grouped the depression level variables into "absent/mild" and "moderate/severe" and tested their association with the categorical variables of quality of life ("better quality of life" and "worse quality of life").

Results: The total sample was 150 participants (Brazil n = 100 and Portugal n = 50). Each group results in the subcategory of absent/mild depression (n = 129) indicated better quality of life in Portugal in physical role functioning ($P = .027$/odds ratio = 2.768), physical functioning ($P < .001$/odds ratio = 5.864), and the physical health dimension ($P = .002$/odds ratio = 3.752). The binary logistic regression analysis highlighted the domains physical role functioning (odds ratio = 1.01/CI for 95% = 1.00-1.03), physical functioning (odds ratio = 1.02/CI for 95% = 1.01-1.03), and the physical health dimension (odds ratio = 1.09/CI for 95% = 1.04-1.13).

Conclusion: There was an association between better assessments of the physical and functional aspects of quality of life and lower levels of depression, in which we could highlight those aspects related to physical health and functionality. Among the groups studied, Portugal had better quality of life evaluations than Brazil. However, none of the groups overlapped the other in levels of depression.

INTRODUCTION

Depression is a mental disorder that can have a strong negative impact on the physical and functional aspects of the individual affected by it and can also cause biological, psychological, and social problems.[1] Among older people, it is the most common psychiatric disorder, with complications that may be related to significant detrimental effects on quality of life (QoL).[2]

Quality of life, in turn, is a broad construct that encompasses multiple aspects of well-being, including physical, psychological, social, and environmental components. Its relationship with depression has been shown to be strong, especially among the older population.[3] Worldwide, it is estimated that more than 300 million people suffer from this disorder, which is the main cause of physical disabilities.[4] In Brazil, the National Health Survey of 2019 revealed that 13% of the older population suffers from this disease and is the most affected age group.[5] The National Health Survey of Portugal, conducted in 2019, showed that 24.3% of individuals over age 65 had some level of this disorder.[6]

A study carried out in primary health care (PHC) in Brazil showed an improvement in QoL in older people after the

application of interventions aimed at group socialization and physical activities.[7] Another comparative study between both countries that evaluated depression with functionality and nutrition showed that 38.0% of the Portuguese indicated some impairment in the depressive aspect, while the percentage of Brazilians in this aspect reached 52%. However, the evaluated groups also presented nutritional and functional impairments, which could influence the result.[8]

To promote the screening and early identification of diseases and conditions in the population, PHC has an important role in the prevention and intervention of depression.[9] The system has great potential for establishing a close relationship with users and allows a better understanding of the social, economic, and cultural conditions that contribute to overall well-being.[10]

Mental health policies in Portugal have evolved greatly over the past few decades. However, individuals still have difficulty accessing mental health care because PHC does not provide this specialized service.[9] Nonetheless, the public invested in Portugal's PHC and evaluates the system's performance higher than Brazilians rate their PHC.[11] Even so, there is a call for integrating mental health care into PHC services. The Comprehensive Mental Health Action Plan, proposed by the World Health Organization (WHO), established the goal of having at least 80% of countries worldwide offer mental health care as a PHC service by 2030, given the importance of mental disorders and their impact on QoL.[12]

Even with the availability of these findings and the context presented, new knowledge about the different environments in which older people with depressive disorders live raises questions about the possible impacts of depression on each aspect of QoL and whether there are different levels of this influence among different countries and cultures.[13] This scientific gap exerts the potential to offer subsidies in the field of PHC, in the prevention of mental disorders, as well as maintenance and improvement of QoL by diagnosing which of its aspects are most impacted by depression among older people citizens in the Brazilian and Portuguese contexts. It is also believed that PHC is the public health device with the greatest potential for preventing and following geriatric depression. Therefore,

this study carried out an assessment of this population living in these 2 countries with different socioeconomic and cultural backgrounds.

This study aims to analyze and compare the association of depression levels with QoL among older people PHC users in Brazil and Portugal. Our hypothesis was that depression is associated with changes in the QoL of older people in PHC in both countries.

MATERIAL AND METHODS

Study Design and Location

This was a cross-sectional, observational, and comparative study with a quantitative approach conducted with older patients seen in the PHC systems in Brazil and Portugal from 2017 to 2018. The study was conducted in the units of the PHC in the cities of Natal and Santa Cruz, both in the state of Rio Grande do Norte, Brazil, and of Évora, Portugal.

Ethical Considerations

The study was approved by the Research Ethics Committee of the Federal University of Rio Grande do Norte (opinion no. 562,318), in Brazil. In Portugal, it was approved by the Commission for Ethics and Research in the Areas of Human Health and Well-being of the University of Evora (opinion no. 14011 and opinion no. 17.006/2018).

Population and Sample

We obtained a nonprobabilistic sample (selected by convenience). The sample size was calculated individually for each scenario. In Brazil, the total older population treated in 2 PHC units, estimated at 135 people, was used for sample size calculation. In Portugal, we estimated at 70 patients. With a 95% CI and 5% margin of error, our calculations resulted in a total of n=100 in Brazil and n=60 in Portugal, whose result was obtained with the aid of an online calculator accessible at https://calcularecon verter.com.br/calculos-amostral. A total of 150 people completed the study (Brazil, n=100 and Portugal, n=50).

The Brazilian participants were the first interviewees. This group constituted a pairing parameter with the Portuguese. Thus, to prevent possible confounding factors generated by the distinction between both groups, the sociodemographic profiles of Brazilians were established by a set of 5 variables: age group (65-80 or 81-100 years), gender (male or female), marital status (with or without a partner), chronic diseases (presence or absence), and family income in minimum wages (up to 1 or >1). Each combination of these 5 variables that resulted in a code was used to identify each of the participants. It was established that, for each of these codes, there should be at least 1 individual from each group, and those that did not meet this criterion would be discarded.

MAIN POINTS

- There was an association between better assessments of the physical and functional aspects of quality of life (QoL) and lower levels of depression.
- As highlight of association analysis, we had those aspects related to physical health and functionality.
- The Portugal group had better QoL evaluations than the Brazil group.
- None of the groups overlapped the other in levels of depression.

The criteria for inclusion in the study are as follows: 65 years or older, active registration in the PHC for at least 6 months prior to the study, and cognitive capacity (attested by a minimum score of 17 points on the Mini-Mental State Examination).[14,15] The exclusionary criteria were as follows: permanent or transient physical disability at the time of data collection and reports of personal or family traumas within 6 months of the study.

Data Collection

Face-to-face interviews were conducted, with questions guided by the instruments printed by undergraduate and graduate students in nursing and nutrition. These students were, during graduation, linked to research groups at universities involved in the research. To prevent errors in the interpretation of the content of the instruments by the interviewers, successive training sessions were conducted with the team of researchers involved, prior to the data collection, addressing cultural aspects relevant to the countries during the training sessions. No incentives or remuneration were offered to any of those involved in the study, and there was no blinding of the parties.

The interviews took place on scheduled days at the PHC facilities or in the participants' homes, and they lasted approximately 60 minutes. The periods of implementation in Brazil were December 2017 to March 2018, and in Portugal, July 2018.

The data are available in the Mendeley Data repository, accessible through the link https://data.mendeley.com/datasets/3pm8wz626w/1.

Instruments and Variables

To measure the aspects inherent to the study, the following instruments were used: a questionnaire on sociodemographic and health data, containing categorized responses (age, gender, education, family income and marital status, presence or absence of chronic diseases); and the *Medical Outcomes Short-Form Health QoL* (SF-36) questionnaire, which includes 8 domains and 2 dimensions of QoL, with questions about participants' overall well-being, physical and emotional limitations, and expectations about their health, generating a score of 0 to 100.[16,17] "To contemplate the analyses of our study, we established 2 ordinal variables to classify QoL: better > 50 points and worse < 50 points. The Beck Depression Inventory was used to measure the levels of depression in this study through a score obtained from the responses to 21 groups of statements, among which participants selected the answer that most identifies their thoughts on the topic. The content of each set of prompts concerns several topics, for example, sadness, personal interaction when living with people, interest in sex, sleep, appetite and suicidal ideation, and responses classify the individual as having "absent," "mild," "moderate," and "severe"

depression.[18,19] For our research, we reclassified these variables into "absent/mild" and "moderate/severe." All instruments were translated and validated in Portuguese, the official languages of Brazil and Portugal.

Statistical Analysis

For the treatment and tabulation of the data in tables, Microsoft® Excel 2016 software (Microsoft Corporation, Washington, Wash, USA) was used. The Statistical Package for Social Sciences version 20.0 (IBM SPSS Corp.; Armonk, NY, USA) allowed the analysis of data normality (Kolmogorov–Smirnov test), through which the nonnormality of the variables of the QoL and depression levels were assessed. We used Pearson's chi-square test and Fisher's exact test to analyze the association between the categorical variables of sociodemographic and health characterizations and the QoL classification. For these variables, we also tested their odds ratio (OR) for "better" and" "worse" between the groups (95% CI). The OR of the QoL variables was also crossed with the categorical variables of the depression levels ("absent/mild" and "moderate/severe"). Given the characteristics of the variables, we chose to perform binary logistic regression of the scalar QoL aspects with the classification of depression (absent/mild). We used the "forward Logistic Regression (LR) model" to verify their Omnibus Model value, Hosmer Lemeshow test, β value, and the OR. To consider OR as predictive for the evaluated variables, we used the score parameter > 1.00. For all tests, we considered statistical significance, and the results had a $P < .05$.

RESULTS

Our initial sample consisted of 158 participants, 108 from the Brazilian group and 50 from Portugal. After applying the exclusion criteria, there were 150 participants, as shown in Figure 1.

The sociodemographic profile of the participants, shown in Table 1, showed that the majority of participants were aged 65-80 (n=132/88.0%) and female (n=114/76.0%). We observed significant differences in family income, with 100.0% of Portuguese (n=50) having more than 1 minimum wage ($P < .001$). Statistical significance was also observed in the level of education in Portugal, with more than 5 years of education (n=24/48.0%/$P < .001$), and the majority (n=31/62.0%) shared housing with other people ($P < .001$).

The characterization of the levels of depression was similar between individuals in Brazil and Portugal, but we found that, of the total, n=129 (86.0%) had no symptoms or mild symptoms ($P=.618$).

In the OR analysis for the classification of QoL, according to each of the depression variables between Brazil and Portugal (Table 3), we identified a significant score for
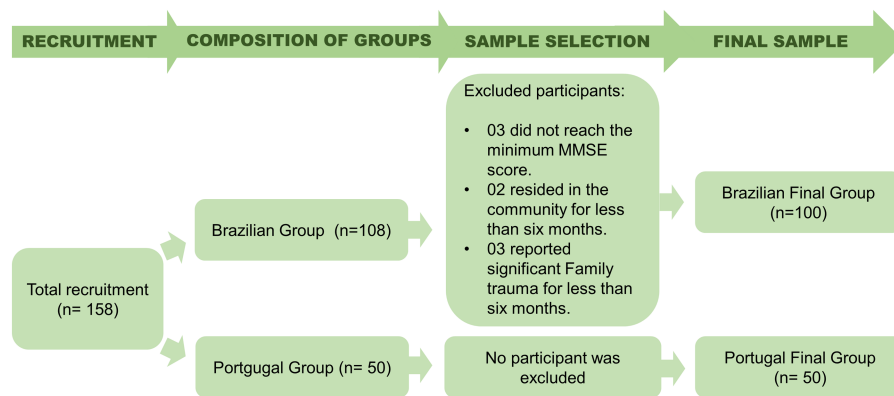
Figure 1. Flowchart of the sample selection process and distribution of study groups.

"better QoL" in Portugal in the physical role functioning domains (*P*=.027/OR=2.778), physical functioning (*P* < .001/OR=5.864), total score (*P*=.018/OR=3.330), and physical health dimension (*P*=.002/OR=3.752).

In Table 4, we applied binary logistic regression analysis to measure their likelihood ratio for the absent/mild depression variable (n=129). Among the QoL variables that predicted better QoL in these individuals, the domains physical role functioning (OR=1.01 /CI for 95%=1.00-1.03), physical functioning (OR=1.02/CI for 95%=1.01-1.03), and the physical health dimension (OR=1.09/CI for 95%=1.04-1.13).

Table 1. Sociodemographic and Health Characterizations in Brazil and Portugal

Variables		Brazil (n=100) n (%)	Portugal (n=50) n (%)	Total (n=150) n (%)	*P*[1]
Sociodemographic					
Age range, years	65-80	89 (89.0)	43 (86.0)	132 (88.0)	.594
	81-100	11 (11.0)	7 (14.0)	18 (12.0)	
Gender	Female	73 (73.0)	41 (82.0)	114 (76.0)	.220
	Male	27 (27.0)	9 (18.0)	36 (24.0)	
Marital status	Married/cohabitating	49 (49.0)	28 (56.0)	77 (51.3)	.410
	Single/widowed/divorced	51 (51.0)	22 (44.0)	73 (48.7)	
Household income, minimum wage	<1	42 (42.0)	50 (100.0)	92 (61.3)	<.001
	>1	58 (58.0)	0 (0.0)	58 (38.7)	
Educational attainment, years	<5	79 (79.0)	26 (52.0)	105 (70.0)	.001
	>5	21 (21.0)	24 (48.0)	45 (30.0)	
Live alone	Yes	14 (14.0)	19 (38.0)	33 (22.0)	.001
	No	86 (86.0)	31 (62.0)	117 (78.0)	
Health					
Chronic diseases	Yes	79 (79.0)	46 (92.0)	125 (83.3)	.044
	No	21 (21.0)	4 (8.0)	25 (16.7)	
Presence of pain	Yes	83 (83.0)	38 (76.0)	121 (80.7)	.306
	No	17 (17.0)	12 (24.0)	29 (19.3)	
Use of medication	Yes	86 (86.0)	48 (96.0)	134 (89.3)	.061
	No	14 (14.0)	2 (4.0)	16 (10.7)	
Depression (Beck Depression Inventory)					
Levels of depression	Absent/light	87 (87.0)	42 (84.0)	129 (86.0)	.618
	Moderate/severe	13 (87.0)	8 (16.0)	21 (14.0)	

Minimum wage: 954.00 (BRL) in Brazil/€618.00 (EUR) in Portugal (2018).
[1]Pearson's chi-square.

Table 2. Odds Ratio for QoL Classification Between Brazil and Portugal

QoL (SF-36)	Brazil (n=100) n (%)	Portugal (n=50) n (%)	P[1]	OR (CI 95%)
Domains				
Physical role functioning				
Better	61 (61.0)	36 (72.0)	.184	1.644
Worse	39 (39.0)	14 (28.0)		(0.78-3.43)
Physical functioning				
Better	48 (48.0)	41 (82.0)	<.001	4.935
Worse	52 (52.0)	9 (18.0)		(2.17-11.21)
Pain				
Better	27 (27.0)	5 (10.0)	.017	0.3
Worse	73 (73.0)	45 (90.0)		(0.10-0.83)
General health perceptions				
Better	27 (27.0)	18 (36.0)	.257	1.521
Worse	73 (73.0)	32 (64.0)		(0.73-3.14)
Vitality				
Better	45 (45.0)	20 (40.0)	.560	0.815
Worse	55 (55.0)	30 (60.0)		(0.40-1.62)
Social role functioning				
Better	23 (23.0)	4 (8.0)	.025	0.291
Worse	77 (77.0)	46 (92.0)		(0.09-0.89)
Emotional role functioning				
Better	68 (68.0)	40 (80.0)	.123	1.882
Worse	32 (32.0)	10 (20.0)		(0.83-4.23)
Mental health				
Better	83 (83.0)	33 (66.0)	.019	0.398
Worse	17 (17.0)	17 (34.0)		(0.18-0.87)
Total score				
Better	65 (65.0)	41 (82.0)	.031	2.453
Worse	35 (35.0)	9 (18.0)		(1.06-5.62)
Dimensions				
Physical health				
Better	48 (48.0)	37 (74.0)	.002	3.083
Worse	52 (52.0)	13 (26.0)		(1.46-6.48)
Mental health				
Better	65 (65.0)	38 (76.0)	.171	1.705
Worse	35 (35.0)	12 (24.0)		(0.79-3.67)

OR, odds ratio for better/worse QoL in Brazil and Portugal.
[1]Pearson's chi-square.

DISCUSSION

The results of our study mainly demonstrated the association between better assessments of the physical and functional aspects of QoL and lower levels of depression. In this context, the group from Portugal obtained better results in its domains and dimensions when compared to Brazil. We also found that among the components studied, better performance in the social role functioning and Mental health domains predicted greater absent/mild depression compared to the others.

Regarding the sociodemographic profile of participants, we found similarity to other finding in the literature.[3,20] We identified that the majority of participants were women and individuals aged 65-80 years and that the group from Portugal exhibited higher levels of income and education compared to that of Brazil. In this regard, researchers indicate that the health of an individual is determined by social and economic factors, since income and educational level are strongly associated with an individual's status.[21] Even though education was not a variable used in the matching process of the groups, it is important to question whether the difference in QoL and its relationship with depression can be explained by their different profiles, as this has been observed in other studies, especially those including physical and functional status, QoL, and depression.[22]

Regarding these aspects, when evaluating the QoL of our sample, we found a prediction for better evaluations in the group from Portugal compared to Brazil. The physical functioning domain and the physical health dimension stood out. The physical aspects also stood out in another Brazilian study, however, with deficits among the older population.[23] However, we observed that in Brazil, there was no significant predominance among those with good or bad evaluations in this aspect.

When we tested the cross between the absent/mild and moderate/severe subcategories with the QoL between both groups, the physical functioning domains and the physical health dimension were again highlighted. However, the physical role functioning domain also showed relevance for the absent/mild subcategory. Regarding this component, a Portuguese study indicated that functional decline may be associated not only with advancing age but also with the presence of chronic diseases and the use of medications.[24] In our sample, even with a predominance of individuals who used drugs and had some comorbidity, we observed that the physical role functioning domain stood out positively, but only among those in both groups who had absent or mild depression. In the intergroup comparison, Portugal overlapped Brazil, with higher scores in this regard.

The domain physical role functioning was also relevant in the logistic regression analysis of QoL variables within the subcategory of absent/mild depression. Studies have shown in different contexts that the preservation of physical fitness is a predictor of better QoL as well as a protective factor against depression and other mental disorders[8,25] and interventions that promote social interaction were effective to improve the QoL.[20] However, we did not investigate sociocultural influences or PHC structure in the research scenarios. Nevertheless, the WHO, in its Comprehensive Mental Health Action Plan (2013-2030), indicates that depending on the local context, certain

Table 3. Odds Ratio of QoL Classification in Brazil and Portugal, According to Depression Levels

QoL (SF-36)	Absent/Light (n=129)				Moderate/Severe (n=21)			
	Brazil (n=87)	Portugal (n=42)	P	OR	Brazil (n=13)	Portugal (n=8)	P	OR
	n (%)	n (%)		(CI-95%)	n (%)	n (%)		(CI-95%)
Domains								
Physical role functioning								
Better	56 (64.4)	35 (83.3)	.027[1]	2.768	5 (38.5)	1 (12.5)	0.336[2]	0.229
Worse	31 (35.6)	7 (16.7)		(1.10-6.96)	8 (61.5)	7 (87.5)		(0.02-2.45)
Physical functioning								
Better	44 (50.6)	36 (85.7)	<.001[1]	5.864	4 (30.8)	5 (62.5)	.203[2]	3.75
Worse	43 (49.4)	6 (14.3)		(2.24-15.33)	9 (69.2)	3 (37.5)		(0.58-23.93)
Pain								
Better	18 (20.7)	3 (7.1)	.051[2]	0.295	9 (69.2)	2 (25.0)	.080[2]	0.148
Worse	69 (79.3)	39 (92.9)		(0.08-1.06)	4 (30.8)	6 (75.0)		(0.02-1.58)
General health perceptions								
Better	19 (21.8)	12 (28.6)	.402[1]	1.432	8 (61.5)	6 (75.0)	.656[2]	1.875
Worse	68 (78.2)	30 (71.4)		(0.61-3.31)	5 (38.5)	2 (25.0)		(0.26-13.20)
Vitality								
Better	38 (43.7)	19 (45.2)	.867[1]	1.065	7 (53.8)	1 (12.5)	.085[2]	0.122
Worse	49 (56.3)	23 (54.8)		(0.50-2.23)	6 (46.2)	7 (87.5)		(0.01-1.30)
Social role functioning								
Better	19 (21.8)	2 (4.8)	.020[2]	0.179	4 (30.8)	2 (25.0)	1.00[2]	0.75
Worse	68 (78.2)	40 (95.2)		(0.04-0.80)	9 (68.2)	6 (75.0)		(0.10-5.47)
Emotional role functioning								
Better	63 (72.4)	36 (85.7)	.094[1]	2.286	5 (38.5)	4 (50.0)	.673[2]	1.6
Worse	24 (27.6)	6 (14.3)		(0.85-6.11)	8 (61.5)	4 (50.0)		(0.27-9.49)
Mental health								
Better	76 (87.4)	30 (71.4)	.027[1]	0.362	7 (53.8)	3 (35.5)	.659[2]	0.514
Worse	11 (12.6)	12 (28.6)		(0.14-0.90)	6 (46.2)	5 (62.5)		(0.08-3.10)
Total score								
Better	60 (69.0)	37 (88.1)	.018[1]	3.33	5 (38.5)	4 (50.0)	.673[2]	1.6
Worse	27 (31.0)	5 (11.9)		(1.17-9.40)	8 (61.5)	4 (50.0)		(0.27-9.49)
Dimensions								
Physical health								
Better	43 (49.4)	33 (78.6)	.002[1]	3.752	5 (38.5)	4 (50.0)	.673[2]	1.6
Worse	44 (50.6)	9 (21.4)		(1.60-8.76)	8 (61.5)	4 (50.0)		(0.27-9.49)
Mental health								
Better	60 (69.0)	34 (81.0)	.151[1]	1.913	5	4 (50.0)	.673[2]	1.6
Worse	27 (31.0)	8 (19.0)		(0.78-4.67)	8	4 (50.0)		(0.27-9.49)

OR, odds ratio for better/worse QoL in Brazil and Portugal.
[1]Pearson's chi-square.
[2]Fisher's exact test.

population groups are at higher risk for mental illnesses, including older people.[12]

It is known that between Brazil and Portugal, there are differences between the data found regarding the evaluation of user satisfaction and the level of access to PHC services. In this scenario, Portugal has better results.[26] Regarding Brazil, it is noteworthy that it is a large country and, therefore, has different evaluations, depending on the region studied. However, they are poor evaluations, especially in relation to the referral network for specialized care, which includes the demand for mental health services.[27]

Another important factor that can be related to the findings is the cultural component of both countries, in

Table 4. Binary Logistic Regression of Aspects of Better QoL in the Face Absent/Light Depression Between Brazil and Portugal

QoL (SF-36)	Brazil vs. Portugal with Absent/Light Depression Between (n=129)				
	P* LR Model	Hosmer Lemeshow Test (*P*)**	β	OR	95% CI
Domains					
Physical role functioning	.034	7.413 (0.387)	0.015	1.01	1.00-1.03
Physical functioning	<.001	2.128 (0.546)	0.022	1.02	1.01-1.03
Total score	.017	5.281 (0.727)	0.045	1.05	1.00-1.09
Dimensions					
Physical health	<.001	9.637 (0.291)	0.079	1.08	1.04-1.13

β: For better QoL in Brazil and Portugal; QoL, quality of life.
*Significance level of binary logistic regression (omnibus model).
**Chi-square (*P*-value).

relation to the way users use health services, their habits of life in general, and their language and interpretation of the items placed in the research instruments. Regarding this last aspect, even with the validation of the instruments in both countries and the great grammatical similarity between the languages of Brazil and Portugal,[16-19] the understanding of what is being asked can be influenced by the individual's schooling level, which can modify his or her own understanding of the concepts of QoL and depressive symptoms. Among the findings, the differences between groups regarding the length of schooling were significant and proportionally higher in Portugal.

Currently, both countries dedicate their PHC services primarily to the prevention of specific chronic diseases, such as hypertension and diabetes. However, this service is often limited to quick consultations and drug distribution.[28] This finding raises doubts about the efficacy in the possible inclusion of treatments aimed at depression and promotion of QoL, as it assumes the need for an effective bond between patients and the multidisciplinary team.[29] The WHO recognizes that health systems have not given due attention to mental disorders. In underdeveloped countries, up to 85% of the population with this type of disease does not receive treatment. Among developed countries, this percentage is approximately 50%.[12]

Our study is limited because of the reduced sample, especially for the group from Portugal, where the number of individuals estimated in the sample size calculation was not reached. The predominance of chronic diseases in the sample can be seen. This could interfere with the participants' QoL and depression levels, and we were unable to establish a cause-and-effect relationship in this study. In addition, we did not ask about the existence of adjuvant therapies that the sample components could be receiving in addition to conventional PHC. To reduce the possible biases and confounding factors, both groups of the sample were paired according to their sociodemographic profiles.

We conclude that there was an association between better assessments of the physical and functional aspects of QoL and lower levels of depression, in which we could highlight those aspects related to physical health and functionality. Among the groups studied, Portugal had better QoL evaluations than Brazil. However, none of the groups overlapped the other in levels of depression. Thus, the hypothesis proposed for the study was accepted.

The diagnosis made possible by the findings suggests that further investigations should be conducted, especially regarding possible sociocultural influences and PHC structure on depression and QoL between the scenarios studied, as well as in different realities. Thus, it will be possible to formulate public policies to mitigate mental health problems of older people.

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