ORIGINAL ARTICLE

Impact of multidimensional interventions on quality of life and depression among older adults in a primary care setting in Brazil: a quasi-experimental study

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Objective: To evaluate the impact of multidimensional interventions on quality of life (QoL) and depressive symptoms in Brazilian older adults living in the community.

Methods: Longitudinal, quasi-experimental study of older adults receiving conventional primary health care (PHC). The interventions were designed in response to a first round of data collection and validated through pilot testing in groups of older adults from another community. The validated interventions were then applied to an intervention group (IG). To measure their effect, we used the Medical Outcomes Short-Form Health Survey (SF-36) quality of life scale and the Geriatric Depression Scale (GDS-30).

Results: The sample comprised 118 participants. IG participants exhibited significant improvement in several QoL domains (SF-36): mental health (p = 0.010), general health perceptions (p = 0.016), and physical functioning (p = 0.045). No such improvement occurred in controls (p > 0.050). The prevalence of depression (GDS-30) fell from 36.7 to 23.3% in the IG, despite no significant difference (p = 0.272). Controls also reported a reduction in depressive symptoms, but only from 44.8 to 41.4% (p = 0.112).

Conclusions: This multidimensional intervention was associated with significant improvement in mental health, general health perceptions, and physical functioning in a sample of Brazilian older adults.

Clinical trial registration: RBR-92dbtx

Keywords: Elderly; depression; quality of life; primary health care; intervention study

Introduction

Depression is a highly prevalent disorder with impacts on physical, social, and emotional aspects alike.[1,2] Affected individuals experience symptoms such as lack of meaning of life, social withdrawal, and low self-esteem.[2] The incidence is particularly high in older adults.[3,4] Considered a major public health problem by the World Health Organization (WHO), depression affected approximately 121 million people and represented the fourth leading cause of disease worldwide in 2000, and is expected to become the second by 2020.[5] According to the 2008 National Household Sample Survey (Pesquisa Nacional por Amostra de Domicílios [PNAD]), 9.2% of people aged 60 years or older in Brazil reported experiencing depression.[6]

Given its prominent impact on public health and its increasing prevalence with increasing age,[7] it is clear that depression plays an important role in quality of life (QoL).[1]

The evaluation and treatment of older adults with depressive symptoms should occur predominantly in primary health care (PHC) settings, which allow the establishment of a strong bond between users and care providers, based on the goals of disease prevention and maintenance and improvement of QoL.[8] However, Brazilian PHC is beset by deficits in human, financial, and material resources.[9] Currently, the predominant PHC setting in the country is the Family Health Strategy (Estratégia Saúde da Família [ESF]), which involves a multidisciplinary team of general practitioners and is designed to serve approximately 80% of health care

needs in the country.[10] Within this context, the ESF scenario is an ideal proving ground for proposals of innovative, creative, low-cost strategies that demand few resources, but may help meet the needs of the older population. Such experiments have been successful in the past.[11,12] It is well known that health care demands related to depressive problems are potential targets for intervention in the community, even in developed countries.[13]

Furthermore, Brazil has for several years been struggling with a protracted economic crisis, which directly affects the health conditions of the population.[14] In such a scenario, PHC actions should seek the promotion, prevention, and recovery of mental health and QoL.[15,16]

Previous studies which proposed interventions on different dimensions had a narrow focus, with analyses focusing on limited aspects of mental health and, therefore, having little if any relevant impact on users' QoL.[17,18] Conversely, interventions focusing simultaneously on multiple domains appear to yield increasingly robust results, e.g., as behavioral activation and behavioral change activities are included.[19] The present study thus proposes one such multidimensional intervention, so named because we believe it will have a broad spectrum of impact on several QoL domains of interest, and based on the perspective that the presence or absence of depressive symptoms is strongly associated with changes in healthy lifestyle habits.

Our objective was to evaluate the impact of multidimensional interventions on QoL and depressive symptoms in Brazilian older adults living in the community. Our hypothesis was that exposure to multidimensional interventions would improve QoL and reduce depressive symptoms.

Methods

Study design

We used a longitudinal, quasi-experimental design to evaluate the impact of multidimensional interventions on older adults covered by the ESF in the municipalities of Natal and Santa Cruz, state of Rio Grande do Norte, Brazil.

Study population

A non-random, convenience sampling strategy was employed. No sample size calculation was performed. Older adults registered for PHC were recruited to make up the intervention group (IG). Sociodemographic data were collected and entered into a spreadsheet organized by the following variables: sex, age range, marital status, presence or absence of chronic illness, and household income (categorized as a function of minimum wage). Each set of variables was assigned a code, which was then assigned to each IG participant. Each code thus represented one or more IG participants with the same set of variables (similar sex, age range, marital status, presence or absence of chronic illness, and household income). Once the number of IG participants in each code was defined, a control group (CG) was recruited accordingly in an attempt to match these participants and

thus minimize between-group comparison biases. To be eligible for inclusion in the IG, participants were required to be part of one or more social groups for older adults at their health facility or be included in such a group before the start of the study.

The other inclusion criteria were: age 60 years or older, as defined in Brazilian law[20]; be actively registered as patients with the municipal ESF; and having no cognitive impairment that might hinder comprehension of the study instruments, as assessed by the Mini Mental Status Examination (MMSE). An MMSE cutoff of 17 points or more was used for inclusion in the study, regardless of educational attainment.[21] The exclusion criteria were: permanent or temporary physical disability; death during the observation period; evident cognitive impairment; having lived in the target municipality for less than 6 months; and attending fewer than five intervention sessions (for IG participants).

Instruments

The instruments used for data collection were: a questionnaire for demographic data, designed to collect information on age, sex, marital status, household income, and educational attainment; the Medical Outcomes Short-Form Health Survey (SF-36),[22] a QoL scale validated for use in Brazil, which includes eight domains and two dimensions of QoL, with clear, objective questions about the participant's perceptions of health, physical and emotional limitations, and expectations about his or her health; the 30-item Geriatric Depression Scale (GDS),[23] an instrument widely used in research with older adults which consists of objective questions about depressive symptoms, all taking yes or no answers, generating a score which can then be used to classify the presence and severity of geriatric depression; and the MMSE,[21] used solely to assess eligibility for inclusion in the study, since we consider that the inclusion of older adults with cognitive impairment often limits the reliability of answers given during research interviews.

Data collection

Two rounds of data collection were conducted (December 2015 to March 2016 and December 2016 to January 2017) by masters' and doctoral students in health sciences, including nurses, dietitians, and physical therapists, as well as undergraduate students in nursing, undergraduate researchers, and volunteers, all of whom had been previously trained by the research coordinator and received no compensation, as well as some investigators who had not been involved in the data collection process. Interviews were individual and took place at participants' homes or at available spaces in the health facilities. There was no blinding of any parties involved in the study.

Interventions

After analysis of data collected during the first round, the deficits present in each QoL domain in IG participants

were identified. The results of this analysis were used to plan the subsequent study interventions, with the assistance of the multidisciplinary team. The goal was to achieve improvement in each of the deficient QoL domains by addressing their specific aspects. Thus, the interventions were deliberately designed, using active methodologies, to adapt to the needs of older adults. The seven intervention scenarios thus designed were then tested on another group of older subjects in the city of Natal. Efficacy was observed in most of the aspects addressed. Any necessary adjustments identified during the pre-test phase were made, and the multidisciplinary team was trained to administer the interventions effectively. By definition, the interventions were administered to the IG alone. Their main objective was to change lifestyle habits and promote social interaction, with assistance from the previously trained members of the multidisciplinary team, as well as from invited professionals (a physical educator, a dietitian, and a physical therapist), using subgroup methodology. Sessions were held sequentially every 15 days at a venue set aside for this purpose within the community. Sessions lasted 2 hours each. Supporting material included overhead projectors, computers, tablets, smartphones, mobile phones, TV sets, a Nintendo Wii gaming console, and a printer (to print evaluation forms). Descriptions of each intervention are given below.

Intervention 1: realistic supermarket simulation

A mock supermarket, including products for sale, was set up. The IG was divided into groups of four participants, who were given a set amount of play money and instructed to "shop for groceries" for a healthy diet. This intervention incorporates the gamification method.[24]

Intervention 2: nutritional approach and dietary habits

For this session, photographs of each of the subgroups' purchases made during the previous intervention were projected and their nutritional content discussed. This intervention combined gamification strategies[25] with memory activation techniques to enhance learning of dietary habits.[26]

Intervention 3: handling technology and social interaction

Subjects were divided into four subgroups, which took turns at four stations set up to introduce them to technologies: one containing a laptop computer and simple software, such as a word processor and online search engines; one containing smartphones set up for WhatsApp group interactions (sending audio and video messages); one set up with tablets containing games and interactive applications; and one with a Nintendo Wii console running a bowling game. This intervention was based on the hypothesis that contact with technology promotes empowerment, creativity, and cognitive activation in older adults.[27]

Intervention 4: accessible exercise and physical activity

Brooms, buckets, and water-filled plastic bottles were used as weights and supports for a series of exercises.

Under the guidance of an invited physical educator, the participants were instructed on the correct posture and execution of each exercise. This intervention has enormous *a priori* potential for positive outcomes on practically all domains of QoL and depression.[28]

Intervention 5: gamification of dietary habits

Using gamification methods, bingo cards were generated which contained the foods presented in Intervention 2 instead of numbers. Foods were randomly called out; in order to score, participants had to demonstrate knowledge about each of the foods present on their cards.[24,26]

Intervention 6: online food research

To leverage what participants had learned about using computers, they were instructed to conduct online research on healthy recipes and prepare the selected recipe. Each group was tasked with finding a recipe based on healthy, affordable ingredients. This intervention sought to combine contact with technology and knowledge-seeking for the improvement of dietary health.[26,27]

Intervention 7: technology for entertainment

Each group was instructed to search for entertainment content online, at their discretion. Some watched videos of their favorite performers, others continued to search for recipes, others sought religious content (music, prayers, etc.). After this free-form interaction with the presented technologies, the participants were allowed to taste the recipes they had researched for Intervention 6. Again, contact with technology was a key feature of this intervention, which sought to highlight the importance and utility of technology for the activities of daily living, as well as its link with autonomy[27] and acquisition of healthy lifestyle habits.[26]

Data analysis

Data were tabulated in Microsoft® Excel 2016 and analyzed in IBM SPSS for Windows, version 20.0. As the sample was non-normally distributed, Pearson's chi-square test was used for analyses of association between categorical variables (sociodemographic data and GDS-30 scores). The Mann-Whitney U test was used to compare median SF-36 and GDS-30 scores between the IG and the CG at the two time points of assessment. The Wilcoxon test was used for within-group comparisons. The sign test was used to determine whether the progression (worse, unchanged, improved) of individual QoL domains was significant. Correlation scores between the scales were investigated using Spearman coefficients. The strength of correlation was categorized as weak ($r < 0.40$), moderate (r 0.40-0.49), or strong ($r > 0.50$). The confidence interval was 95% (95%CI) (significance accepted at $p \leqslant 0.05$).

Ethics statement

This study was approved by the Hospital Universitário Onofre Lopes, Universidade Federal do Rio Grande do

Norte ethics committee (protocol 21996313.7.0000. 5537). Prior to inclusion, all participants provided written informed consent in compliance with Brazilian National Health Council Resolution no. 466 of 2012,[29] which sets forth guidelines and regulatory standards for human subject research in Brazil.

Results

During the recruitment process, three potential subjects refused to participate in the study, and four did not meet the eligibility criteria. The initial sample consisted of 120 older adults interviewed for the first stage of the study. Two CG participants died between the first and second time points of analysis. Of the final sample of 118 older adults, 60 participated in multidimensional interventions (IG). No significant differences in demographic variables were observed between the IG and CG, as shown in Table 1.

On within-group analysis, 36.7% of the IG participants presented depressive symptoms at the start of the study. This had declined to 23.3% at the second assessment. In the CG, 44.8% of participants presented depressive symptoms at the start of the study, and 41.4% at the second assessment.

As shown in Table 2, IG participants experienced a reduction in median GDS score, representing a reduction in depressive symptoms, while the median GDS score increased in the CG. Regarding SF-36 scores, the total score ($p = 0.014$), mental health domain ($p = 0.011$), social role functioning domain ($p = 0.020$), and mental health dimension ($p = 0.003$) scores all showed significant improvement (95%CI). On within-group evaluation, IG participants experienced significant improvement in mental health ($p = 0.010$) and physical functioning ($p = 0.016$), as well as significant worsening of pain ($p < 0.001$).

In turn, controls experienced significant worsening of vitality ($p = 0.015$) and pain ($p < 0.001$) scores.

As shown in Table 3, according to the GDS-30, one more subject achieved a reduction in depressive symptoms in IG (n = 31) than in CG (n = 30); outcomes were therefore similar. Regarding SF-36 scores, significant improvement was achieved in the following domains: mental health ($p = 0.010$), general health perceptions ($p = 0.016$), and physical functioning ($p = 0.045$). Conversely, the vitality ($p = 0.015$) and pain ($p < 0.001$) domains were significantly worse in the CG (95%CI).

Table 4 describes the correlation between GDS-30 and SF-36 scores. Changes in the strength of correlation (r) were observed between the two time points of assessment. In the IG, the strength of correlation between the mental health domain of SF-36 and the mental health and physical health dimensions of GDS-30 changed from moderate to strong, while correlations with the physical functioning, vitality, and social role functioning domains of SF-36 changed from weak to strong (95%CI).

The strength of correlation did not change in controls. Correlations with the general health perceptions, social role functioning, and pain domains remained moderate, while correlations with the physical functioning, physical role functioning, and social role functioning domains were weak.

Discussion

This study provides evidence of the efficacy of multidimensional interventions. The impact of these interventions was demonstrated by changes observed in individual SF-36 dimensions and domains, such as mental health, general health perceptions, and physical role functioning among IG participants.

One of the key features sought in all interventions was their applicability in smaller or larger group settings, as we

Table 1 Sociodemographic profile of the intervention and control groups, Brazil, 2017

Variable	Intervention	Control	Overall	p-value*
Age range, years				
60-75	45 (38.1)	41 (34.7)	86 (72.9)	0.599
76-91	15 (12.7)	17 (14.4)	32 (27.1)	
Sex				
Female	50 (42.4)	48 (40.7)	98 (83.1)	0.934
Male	10 (8.5)	10 (8.5)	20 (16.9)	
Educational attainment, years				
$\leqslant$ 3	26 (22.0)	33 (28.0)	59 (50.0)	0.144
> 3	34 (28.8)	25 (21.2)	59 (50.0)	
Marital status				
Married/cohabitating	30 (25.4)	29 (24.6)	59 (50.0)	1.000
Single/widowed/divorced	30 (25.4)	29 (24.6)	59 (50.0)	
Household income, $\times$ minimum wage[†]				
$\leqslant$ 1	21 (17.8)	20 (16.9)	41 (34.7)	0.953
> 1	39 (33.1)	38 (32.2)	77 (65.3)	

Data presented as n (%).
* Pearson's chi-square test.
[†] Minimum wage R$ 880.00 (2016).

Table 2 Comparison of quality of life scores between the intervention and control groups before and after the interventions, 2015-2017

Analyzed aspects	Before intervention	After intervention	p-value*
Depression (GDS-30)			
IG	8.5	7.0	0.151
CG	8.0	8.5	0.163
p-value†	0.998	0.197	-
QoL (SF-36) domains			
Mental health			
IG	80.0	92.0	**0.010**
CG	76.0	80.0	0.993
p-value	0.190	**0.011**	-
General health perceptions			
IG	50.5	56.0	**0.016**
CG	46.0	52.0	0.210
p-value	0.715	0.325	-
Physical role functioning			
IG	70.0	72.5	**0.045**
CG	70.0	65.0	0.751
p-value	0.833	0.164	-
Physical functioning			
IG	87.5	100.0	0.637
CG	62.5	25.0	0.562
p-value	0.440	0.086	-
Vitality			
IG	70.0	70.0	0.540
CG	70.0	65.0	**0.015**
p-value	0.974	0.169	-
Social role functioning			
IG	87.5	100.0	0.391
CG	87.5	87.5	0.943
p-value	0.228	**0.020**	-
Emotional role functioning			
IG	100.0	100.0	1.000
CG	100.0	100.0	0.198
p-value	0.148	0.349	-
Pain			
IG	52.0	26.5	< **0.001**
CG	52.0	22.0	< **0.001**
p-value	0.742	0.792	-
Total score			
IG	70.0	72.2	0.851
CG	67.0	61.9	0.339
p-value	0.667	**0.014**	-
QoL (SF-36) summary measures			
Mental health			
IG	75.7	81.0	0.134
CG	73.3	69.0	0.665
p-value	0.437	**0.003**	-
Physical health			
IG	61.5	59.3	0.450
CG	51.9	53.5	0.074
p-value	0.933	0.064	-

Data presented as median.
Bold type denotes statistical significance.
CG = control group; GDS-30 = Geriatric Depression Scale; IG = intervention group; QoL = quality of life; SF-36 = Medical Outcomes Short-Form Health Survey.
* Wilcoxon text.
† Mann-Whitney *U* test.

Table 3 Progression of quality of life among participants in the intervention and control groups, 2015-2017

Analyzed aspects	IG (n=60)		CG (n=58)	
	n	p-value	n	p-value
Depression (GDS-30)				
Worse	22	0.272	18	0.112
Improved	31		30	
Unchanged	7		10	
QoL (SF-36) domains				
Mental health				
Worse	13	**0.010**	24	0.993
Improved	34		28	
Unchanged	13		6	
General health perceptions				
Worse	22	**0.016**	22	0.207
Improved	37		33	
Unchanged	1		3	
Physical role functioning				
Worse	20	**0.045**	26	0.051
Improved	34		19	
Unchanged	6		13	
Physical functioning				
Worse	14	0.637	16	0.562
Improved	14		12	
Unchanged	32		30	
Vitality				
Worse	24	0.540	33	**0.015**
Improved	23		12	
Unchanged	13		13	
Social role functioning				
Worse	16	0.391	17	0.943
Improved	23		19	
Unchanged	21		22	
Emotional role functioning				
Worse	8	1.000	8	0.198
Improved	8		11	
Unchanged	44		39	
Pain				
Worse	41	< **0.001**	43	< **0.001**
Improved	13		8	
Unchanged	6		7	
Total score				
Worse	30	0.851	30	0.339
Improved	30		28	
Unchanged	0		0	
QoL (SF-36) summary measures				
Mental health				
Worse	26	0.134	28	0.665
Improved	34		30	
Unchanged	0		0	
Physical health				
Worse	34	0.450	33	0.074
Improved	26		25	
Unchanged	0		0	

Data presented as n and p-value (sign test).
Bold type denotes statistical significance.
CG = control group; GDS-30 = Geriatric Depression Scale; IG = intervention group; QoL = quality of life; SF-36 = Medical Outcomes Short-Form Health Survey.

believed that social interaction might have positive effects not only on depressive symptoms, but on several QoL domains as well.[30] A study conducted in Turkey found a strong, significant correlation between functional capacity and QoL, depression, and social support.[31] In Brazil, participation in social groups has been shown to predict better performance on measures of active aging.[32] These findings suggest a trend toward favorable outcomes (i.e., improvement of both QoL and depression) in older adults who participate in interventions designed to promote role functioning. It bears stressing that this domain was intensely targeted by our interventions.

Table 4 Correlation between quality of life and depression for the intervention and control groups, 2015-2017

| | Depression symptoms (GDS-30) | | | |
| | IG (n=60) | | CG (n=58) | |
	Before	After	Before	After
QoL (SF-36)				
Mental health	-0.47 (< **0.001**)	-0.65 (< **0.001**)	-0.72 (< **0.001**)	-0.75 (< **0.001**)
General health perceptions	-0.44 (< **0.001**)	-0.38 (**0.003**)	-0.45 (< **0.001**)	-0.48 (< **0.001**)
Physical role functioning	-0.30 (**0.019**)	-0.40 (**0.001**)	-0.34 (**0.008**)	-0.27 (**0.036**)
Physical functioning	-0.29 **0.023**)	-0.60 (< **0.001**)	-0.35 (**0.006**)	-0.37 (**0.004**)
Vitality	-0.19 (0.134)	-0.57 (< **0.001**)	-0.67 (< **0.001**)	-0.63 (< **0.001**)
Social role functioning	-0.19 (0.146)	-0.63 (< **0.001**)	-0.46 (< **0.001**)	-0.40 (**0.001**)
Emotional role functioning	-0.29 (**0.021**)	-0.46 (< **0.001**)	-0.38 (**0.003**)	-0.13 (0.322)
Pain	-0.04 (0.709)	-0.19 (0.147)	-0.47 (< **0.001**)	0.04 (0.756)
Total score	-0.54 (< **0.001**)	-0.75 (< **0.001**)	-0.57 (< **0.001**)	-0.56 (< **0.001**)
Summary measures				
Mental health	-0.46 (< **0.001**)	-0.69 (< **0.001**)	-0.63 (< **0.001**)	-0.70 (< **0.001**)
Physical health	-0.49 (< **0.001**)	-0.72 (< **0.001**)	-0.52 (< **0.001**)	-0.47 (< **0.001**)

Data presented as *r* (Spearman correlation at baseline) and p-value (Spearman's statistical significance).
Bold type denotes statistical significance.
CG = control group; GDS-30 = Geriatric Depression Scale; IG = intervention group; QoL = quality of life; SF-36 = Medical Outcomes Short-Form Health Survey.

Their median scores on these scales increased significantly from baseline to the second time point of assessment, while not such improvement occurred in the CG. The physical role functioning domain stood out in particular, as the strength of its correlation with depression changed from weak and significant to moderate and significant. Conversely, the majority of CG participants experienced worsening in this domain, and the strength of its correlation with depression was weak and significant at both time points of assessment. Intervention 4 focused on improving physical role functioning in IG participants by exercising its key aspects (mobility, muscle strength, and balance), a method that has proven effective in previous studies with older adults[28]; however, optimal implementation of this intervention requires a large, flat, and open or well-ventilated space, which is not always available.

Another important aspect in relation to QoL was the behavior of the pain domain, which worsened significantly in both groups. However, the strength of correlation between the pain domain and GDS-30 scores was weak and not significant for the IG and declined from moderate to significant to weak and nonsignificant in controls. Intervention 4 also focused on pain management, and we expected positive results in this aspect. Our findings run counter to those of a randomized intervention study in which no significant change was observed, although the duration of exposure in that study was 6 months.[17] However, innovative interventions have proven effective in reducing chronic pain, such as the use of web-based instruments,[33] a strategy also used in our multidimensional interventions.

Among the various QoL domains, most interventions applied in the present study focused on those of a mental, emotional, and cognitive nature. Intervention 1 (Realistic supermarket simulation) employed task simulation and gamification, strategies widely used for educational purposes and selected in this study for their ability to stimulate creativity, memory activation, arithmetic skills, and logical reasoning within a familiar setting, with proven efficacy[24,25]; however, this activity required material

resources (such as packaging props) and extensive planning. Interventions 3, 5, and 7 had a similar proposal, but employed "hard technologies," such as laptop computers, smartphones, overhead projectors, and audiovisual equipment, which may limit their applicability in larger groups; in these settings, there may not be enough devices for all participants, and the desired mental health outcomes (namely, reduction of depressive symptoms) may not be achieved.

In this context, median SF-36 scores in the IG also showed a significant increase in the mental health domain between the two time points of assessment, with a shift in the strength of correlation with depression from moderate and significant to strong and significant. Although median scores in this domain also increased in the CG between the time points of assessment, the correlation was not significant. The mental health summary score behaved similarly in both groups, except regarding improvement; although the results for the IG were better than those observed in controls, the increase in score was not significant.

Regarding GDS-30 scores, the prevalence of depressive symptoms declined from 36.7 to 23.3% after the study intervention in the IG. The CG also exhibited a reduction in symptoms, but to a lesser extent (from 44.8 to 41.4%). The more favorable outcome in the IG is consistent with previous studies that explored behavioral activation interventions.[34-36]

Participation in social groups, physical activity, and active relationships with friends – hallmarks of active aging – have all been significantly associated with a low prevalence of depressive symptoms, as demonstrated in previous studies in Brazil.[32] There is evidence of a strong association between QoL and social aspects, which have been extensively explored in the context of active aging.[30] Our IG was exposed to interventions designed precisely to improve cognitive, functional, social, and mental aspects, among other dimensions of QoL, with evidence of effectiveness. Other investigators have tested telephone-based

interventions[37]; others still focused on specialized consultations and individualized treatment plans,[38] but did not find favorable impact on QoL. Another key focus of our interventions was dietary guidance (addressed in interventions 2, 5, 6, and 7), explored in such a manner as to replace the conventional model of visits by appointment and jargon-filled instructions with innovative, playful, and essentially educational approaches,[24,25] in an attempt to enhance learning and encourage participants to change their habits.[26]

Limitations of the present study include the small sample size and the fact that older adults in the CG were not monitored regarding the frequency and use of basic municipal PHC services, which may have been a source of bias in within-group comparison. In addition, the external validity and generalizability of our findings are limited by the non-randomized design. To improve the accuracy of analysis, further research could focus on testing for association between each of the QoL domains and depression in relation to each of the types of intervention applied in this study. Nevertheless, we believe our findings demonstrate excellent applicability of the tested interventions in other settings, particularly for socioeconomically vulnerable community-dwelling older adults.

In conclusion, the changes observed after administration of the multidimensional interventions converged to a favorable outcome in the IG compared to the CG. A reduction in depressive symptoms, as well as improvement in the mental health, general health perceptions, and physical role functioning QoL domains, was observed in IG participants. Considering these are older adults affected by many limiting factors, such as low income and low educational attainment, this is a promising outcome.

Work in the community demands great creativity and innovation potential from clinical teams. Person-oriented interventions should be holistic and multifaceted, rather than narrow in focus and superficial.

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Disclosure

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