QUALITY OF LIFE, PHYSICAL ACTIVITY, AND FUNCTIONALITY IN OLDER PRIMARY CARE USERS IN PORTO ALEGRE-RS

Qualidade de vida, atividade física e funcionalidade de idosos da atenção primária de Porto Alegre, RS

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ABSTRACT

OBJECTIVE: To study the possible relation between quality of life and sociodemographic, anthropometric, functional and physical activity characteristics in older users of the Family Health Strategy in Porto Alegre-RS. **METHODS:** Cross-sectional and analytical study with older subjects (≥ 60 years). Data were prospectively collected in a random sample of 30 health units. The following variables were analyzed: sociodemographic (age, marital status, education); anthropometric (weight, height, body mass index); functional (walking speed, handgrip strength, Sit/Stand test). The Flanagan Quality of Life Scale and the Minnesota Physical Activity and Leisure Questionnaire (level of physical activity) were applied. Logistic Regression (Backward Conditional Method) was used for data analysis. **RESULTS:** Among the 577 older subjects evaluated (68.5 ± 6.4 years; 63.7% women), the majority (87%) presented high quality of life. In the initial multivariate (saturated) model, the following variables were considered as predictors of quality of life: gender, marital coexistence, time spent walking 10 m, higher Sit/Stand test score, handgrip strength, moderate, intense and total physical activity. The final model (6 steps) consisted of four variables: cohabitation, higher Sit/Stand test score, higher handgrip strength and engagement in intense physical activity. **CONCLUSION:** As observed, a high quality of life was related to older people who lived with a partner, presented higher upper and lower limb strength, and spent more time in the practice of intense physical activity.

KEYWORDS: quality of life; aged; physical activity; primary health care.

RESUMO

OBJETIVO: Estudar a possível relação entre qualidade de vida e características sociodemográficas, antropométricas, funcionais e de atividade física em idosos da Estratégia Saúde da Família de Porto Alegre (RS). **MÉTODOS:** Estudo transversal e analítico com idosos (≥ 60 anos). Os dados foram coletados de forma prospectiva em amostra aleatória de 30 unidades de saúde. As variáveis pesquisadas foram: sociodemográficas (idade, estado civil, escolaridade); antropométricas (peso, altura, índice de massa corporal); e funcionais (velocidade de marcha, força de preensão manual, teste senta/levanta). Foi aplicada a escala de qualidade de vida de Flanagan e o questionário de Minnesota de atividade física e de lazer para o nível de atividade física. Analisaram-se os dados utilizando regressão logística pelo método *backward conditional*. **RESULTADOS:** Entre os 577 idosos avaliados (68,5 ± 6,4 anos; 63,7% mulheres), a qualidade de vida de 87% foi classificada como alta. No modelo multivariado inicial (saturado), foram consideradas variáveis preditoras de qualidade de vida: sexo, convivência marital, tempo gasto para caminhar 10 m, escore do teste senta/levanta, força de preensão manual e atividade física moderada, intensa e total. O modelo final (seis etapas) foi composto de quatro variáveis: conviver maritalmente, maior escore do teste senta/levanta, maior força de preensão manual e prática de atividade física intensa. **CONCLUSÃO:** Conforme observado, a alta qualidade de vida relacionou-se a idosos que convivem maritalmente, apresentam maior força de membros superiores e inferiores e despendem mais tempo na prática de atividade física intensa.

PALAVRAS-CHAVE: qualidade de vida; idoso; atividade física; atenção primária à saúde.

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INTRODUCTION

Population aging is a multifaceted phenomenon that requires social adaptations to contemplate the older population. Such demands express the need to meet the specificities of this age group, 60 years or older, in order to maintain autonomy, independence and quality of life (QoL).[1] The latter, in turn, is a multidimensional construct that is difficult to define, which makes it challenging to use and understand.[2] However, in the health area, the search for the understanding and use of QoL is increasing, considering all its subjectivity and multidimensionality, since it can be used as an instrument to measure the impact of therapeutic behaviors and health services for older adutls.[3]

Regarding the evaluation of the QoL in older adults, it should be emphasized the importance of using heterogeneous assessment criteria, such as those contemplated in the scale proposed by Flanagan, which considers intersubjective aspects that may occur more in older adults than in young adults. They are: illness, loss of occupational roles and affective loss. In addition, this scale analyzes the degree of individual or perceived satisfaction with 5 dimensions of life: physical and material well-being; relationships; social, community and civic activities; personal development and fulfillment; and recreation.[4]

Given the above, studies that conceive the theme of QoL in older adults, its health implications and associated factors are of great scientific and social importance, as they contribute to their understanding and the generation of intervention alternatives, actions and policies for older adults, seeking to meet the demands of this population.

Associated with QoL, we have the functional health of older adults, independence in daily activities, as well as the practice of regular physical activity.[5] In this sense, the present study aimed to study the possible relationship between QoL and sociodemographic, anthropometric, functional and physical activity characteristics in the older adults of the Family Health Strategy (FHS) in Porto Alegre (RS, Brazil).

METHODS

Cross-sectional and analytical study, with data from the database originated by research called "The multidimensional study of the elderly in the Family Health Strategy in Porto Alegre, Brazil (EMI-SUS)." The investigation was conducted in a random sample, involving 36 individuals selected from each of the 30 different teams of the FHS. Data collection was performed between March 2011 and December 2012.[6]

Inclusion criteria were: age 60 years or older and being registered in the FHS. A total of 178 individuals who were unable to attend the multiprofessional assessment or who refused to participate were excluded.[6]

The researched variables were: sociodemographic (age, marital status, education), anthropometric (weight, height, body mass index — BMI) and functional (time to walk 10 m, sit-to-stand test, handgrip strength, level of physical activity and quality of life).

The description of the variables, their categorization, the assessment instruments used and the places of collection are described in Box 1, while in Box 2 shows the measurements, the description of the instruments, the specific procedures of each measurement, and the diagnostic criteria used for the collection of anthropometric and functional data.

Data were analyzed using SPSS, version 20.0 (SPSS Inc., Chicago, IL, United States). For statistical decision criteria, significance was established at 5%. The results were presented by descriptive statistics. The Kolmogorov-Smirnov test was used for the study of the continuous variables' distribution.

For the bivariate analysis between categorical variables, the χ^2 test was used, in which the 2x2 contingency tables used the continuity correction, with estimated effect measure, and the crude odds ratio (OR), with a 95% confidence interval (95%CI). For continuous variables, when the comparison was between 2 independent groups, Student's t-test was applied. The Mann-Whitney test was used in situations where the variables did not present an approximately normal distribution.

All variables with p < 0.200 in the bivariate analysis were selected for the initial logistic regression model. The backward conditional method was applied on the saturated model. In it, the odds ratio and *p* presented were adjusted for the variables that made up each step of the generated models. The association was assessed with the likelihood ratio test (*likelihood-ratio test* — 2LL or -2log). Nagelkerke and Hosmer-Lemeshow were used to assess the quality of fit of the final logistic regression model. The probability of gradual entry of variables into the model was 0.05 and for removal, 0.10. Significance was 0.05 for a maximum of 20 interactions. Significance levels below 0.01 were considered significant based on the Bonferroni criterion.

The study was approved by the Research Ethics Committee of the Pontifícia Universidade Católica do Rio Grande do Sul (approval number: 10/04967) and the Municipal Health Department of the City of Porto Alegre (approval protocol: 001.021434.10.7), in compliance with the Research Regulatory Guidelines and Standards of Resolution no. 196/96 of the National Health Council of the Ministry of Health.

RESULTS

The following results refer to a sample of 577 individuals, whose Flanagan scale score ranged from 33 to 105 points, with a mean of 86.1 (standard deviation — SD = 10.9). In 87% of the sample, QoL was classified as high, in 12.3% as medium and in 0.7%, as low. Given the low percentage of individuals with low QoL, in all subsequent analyzes their data were grouped with those with medium QoL, and comparisons became dichotomous — low/medium × high QoL (Table 1).

As shown in Table 1, a statistically significant association was detected with sex, in which women were associated with low / medium QoL, while men, with high QoL, were 1.08 times more likely to have high QoL. High QoL was also significantly associated with marital coexistence: people living with a partner were 1.1 times more likely to have high QoL. Schooling differed significantly between the scores for QoL. Participants with medium /high education were 5.68 times more likely to have high QoL when compared to illiterate. No significant associations were detected between high QoL and age, age group, BMI or BMI categories.

In the analyzes related to the applied functional tests, it was observed that the group with high QoL spent significantly shorter mean time to walk 10 m than individuals with low / mean QoL (Table 2).

Regarding the sit/stand test, individuals with higher mean repetitions were 1.25 times more likely to belong to the group with high QoL, when compared to cases with the lowest number of repetitions in this same test (Table 2).

The mean for handgrip strength (HGS) was dependent on QoL, so that the group with high QoL presented significantly higher medium than the group with low / medium QoL, as and were 1.10 times more likely to have higher QoL than those with lower strength (Table 2).

Regarding the time spent in physical activities (Table 2), it was found that for light activity there was no significant difference between the classifications for QoL. However, for both moderate and intense activity, the time spent by individuals with high QoL was significantly longer than for those with low / medium QoL. Thus, individuals with greater engagement in moderate and intense physical activities were 1.11 and 1.23 times more likely, respectively, to have high QoL.

Box 1 Variables presented, their categorization, assessment instruments and places of collection. Porto Alegre, RS, Brazil, 2019.

Variables	Categories	Data Collection	
		Instrument	Place
Sociodemographic			
Age	No	QAGI	Residence
Age range	60 to 69 years; 70 to 79 years; ≥ 80 years	QAGI	Residence
Education	Illiterate; low (1–8 years); medium (9–11 years); high education (> 11 years)	QAGI	Residence
Marital status	Lives with a partner / does not live with a partner	QAGI	Residence
Anthropometric			
Weight (kg)	No	Welmy® Scale	HSL
Height (m)	No	Measuring tape	HSL
BMI	Low weight/thinness; eutrophy;overweight/obesity	Quételet (BMI = weight/height²)	HSL
Functional			
Time (s) to walk 10 meters	No	Timer	HSL
Sit/stand test	No	Timer	HSL
Handgrip strength	No	Crown® Dynamometer	HSL
Level of physical activity	total; light; moderate; intense	Minessota Questionnaire	HSL
Quality of life	low (7 to 45 points), medium (46 to 74 points), high (above 75 points)	Flanagan scale of quality of life	HSL

QAGI: global assessment questionnaire for the older population; HSL: Hospital São Lucas of Pontifícia Universidade Católica do Rio Grande do Sul; BMI: body mass index.

In order to compose the initial multivariate (saturated) model, the following variables were considered as predictors of high QoL: sex, marital status, education, time to walk 10 m, sit / stand test, HGS and moderate, intense and total physical activity practice (Table 3).

The final (reduced) model was established in 6 steps and, besides being significant, presented a representative fit quality. Due to the loss of the predictive potential of certain variables, the final model was composed of 4 variables: marital coexistence, better sit/ stand performance, higher HGS, and greater engagement in the practice of intense physical activity. The final model indicated significant predictive capacity for high QoL, since the total number of correct answers was 82.1%. The model correctly classified 68.4% of cases with low/medium QoL and 95.8% of cases with high QoL.

DISCUSSION

The present study, conducted with 577 older adults from the community of Porto Alegre, identified high QoL (87%), which was strongly related to married/cohabiting older people, with higher upper and lower limbs strength and spending more time in the practice of intense physical activity.

Similar findings were found in other studies using the Flanagan QoL scale.[11,12] Nagel et al.[11] assessed 668 adults and older adults living in the city of Tubarão (SC) and found

Box 2 Instruments used, specific procedures of each measurement and diagnostic criteria used to collect anthropometric and functional measurements. Porto Alegre, RS, Brazil, 2019.

Variables	Instruments/diagnostic criteria
Weight	Measurement (kg) on Welmy scale® with the participant without shoes, props or adornments.[7]
Height	Measurement (m) with stadiometer attached to the Welmy scale®: participants standing upright with the body raised to the fullest extent and the head erect, looking forward with the feet together and the arms extended along the body.[7]
BMI	Quételet Index = weight (kg)/height (m)^2 The evaluation criteria were:[8] - Low weight/thinness: < 22 kg/m^2; - Eutrophy: between 22 and 27 kg/m^2; - Overweight/obesity: above 27 kg/m^2.
Time to walk 10 m	Measured by means of a stopwatch from start to finish, participants were instructed to walk a 10-meter course at their usual pace. The time to complete the walk was recorded accurately to the nearest hundredth of a second. This value was divided by the distance to obtain the average speed (m/s).[9]
Sit/stand test	Measured by means of a timer with the participant initially sitting in the chair, with the back erect (without touching the back of the chair), feet flat on the floor and arms crossed against the chest. At the signal of the evaluator, the participant gets up, standing fully, and then returns to the fully seated position. The subject was instructed to stand and sit completely as many times as possible for 30 seconds.[9]
HGS	Measured using the Crown® dynamometer with the participant sitting in an armless chair with his back erect, keeping the knee flexion angle at 90º, the shoulder positioned at adduction and neutral rotation, elbow flexed at 90º, with the forearm in semipronation and the pulse in neutral position. The arm was kept suspended in the air, supported by the evaluator. Three measurements were performed within 60 seconds of each other, alternating between dominant and non-dominant side.[9]
Level of physical activity	Minnesota Physical and Leisure Questionnaire consists of 2 sets of items: active sports and exercise; and performing household chores.[10] Total minutes per week spent on activities considered mild, moderate or intense in terms of energy expenditure were used, as well as the sum of all minutes spent on the 3 levels of physical activity (mild; moderate; intense), i.e., the total score.
QoL	Flanagan scale of quality of life. The minimum score is 0 and the maximum 105, which allows to classify the quality of life in 3 levels:[4] - Low (7 to 45 points); - Medium (46 to 74 points); - High (above 75 points).

BMI: body mass index; HGS: handgrip strength; QoL: quality of life.

that 91.5% of their sample had high QoL. In another study conducted in the same state, Silva et al.[12] assessed 219 adults in the municipality of Braço do Norte and found that 87.2% presented high QoL. However, a lower prevalence (55.1%) of high QoL was observed by Campos et al.[13] in the sample of 107 older adults in the countryside of the state of Minas Gerais, whose evaluation occurred with the World Health Organization Quality of Life for Older Adults (WHOQOL-Old), another instrument that measures QoL. It is possible that this difference can be explained by the use of different instruments, as well as by the size and composition of the samples.

The fact that men have higher QoL is corroborated by Roncon et al.[14] They observed that men have better QoL that women in all domains of QoL (physical psychological, social, environmental and general). Findings as such make us reflect that although women live longer than men, this longer period of life may not necessarily be lived with better QoL.

As for education, older adults with medium / high education are more likely to have high QoL. This finding can be explained by the social context most favorable to the people who study, in view of the level of education influence on the access to basic services, opportunities for social participation and understanding of their health care.[15]

Table 1 Sociodemographic and anthropometric characteristics of the sample, according to the quality of life measured with the Flanagan scale. Porto Alegre, RS, Brazil, 2019.

| Variables | Quality of Life | | | | p | Odds Ratio gross |
| | Low/Median (n = 75) | | High (n = 502) | | | |
	n	%	n	%		Risk (95%CI)
Sex						
Male	18	24.0	191	38.0	0,018§	1.08 (1.01–1.15)
Female	57	76.0	311	62.0		1.0
Age (years)						
Median ± SD	68.5 ± 6.4		68.9 ± 7.2		0.624¥	1.01 (0.97–1.04)
(Range)	(60.0–84.2)		(60.0–103.8)			
Age range						
60 to 69 years	45	60.0	319	63.5		1.0
70 to 79 years	27	36.0	139	27.7	0.202§	0.73 (0.43–1.22)
80 years or more	3	4.0	44	8.8		2.07 (0.62–6.41)
Marital status						
Lives with partner	16	21.3	195	38.8	0.003§	1.10 (1.04–1.17)
Does not live with partner	59	78.7	307	61.2		1.0
Education						
Illiterate	27	36.0	107	21.3		1.0
Low	46	61.3	349	69.5	0.007§	1.91 (1.13–3.23)
Median and high	2	2.7	45	9.0		5.68 (1.29–24.89)
BMI (kg/m²)						
Mean ± SD	28.9 ± 5.4		25.6 ± 5.6		0.685€	0.99 (0.95–1.04)
(Range)	(17.5–42.8)		(13.7–54.1)			
BMI Category						
Low weight	5	7.4	43	8.8		1.19 (0.45–3.19)
Eutrophic	24	35.3	165	33.7	0.911§	0.94 (0.55–1.64)
Overweight/obesity	39	57.4	281	57.5		1.0

95%CI: 95% confidence interval for gross *odds ratio*; SD: standard deviation; § Pearson's χ^2; ¥: Student's *t* test for independent groups assuming variance homogeneity; €: Students *t* test for independent groups assuming variance heterogeneity; BMI: body mass index; low weight: BMI < 22; eutrophic: BMI between 22 and 27; overweight/obesity: BMI > 27.

In this study, one of the predictors of high QoL was marital coexistence, a finding corroborated by Vahdani Nia et al.[16] and Faller et al.[17] This result may suggest that having a partner to live with contributes for better perceptions of QoL.

Regarding functional characteristics, previous research has shown that individuals with better performance in functional tests have better QoL,[18,19] in line with findings of the present research. These results are not limited to observational studies, such as the present study and that of Gadelha et al.[19], as shown by Mariano et al.[20], who obtained improvements in QoL in the domains functional capacity, general health, vitality and mental health, after training that led to significant strength gain.

Regular engagement in the practice of intense physical activity was another predictor of high QoL, similarly to what was presented by Barbosa et al.[21] and Toscano and Oliveira.[22] The latter observed higher QoL in all domains studied in older women who spent more time performing moderate to vigorous physical activity. It is possible that the higher QoL is a reflection of the physical activity practice, since it improves not only the motor skills of the practitioners, but also their general health.[23,24] However, there is a possibility that there is indeed a difference in QoL between cities.

Considering that 2 of the 3 predictors of high QoL are aspects related to the practice of physical activity, it is suggested that physical activity should be offered at the primary care level, given the physical proximity of users with the units and the bond established with the health professionals. The practice of physical activity improves fitness and cognition, broadens social life and has psycho-affective gains,

Table 2 Functional characteristics and level of physical activity of the sample, according to the Flanagan scale of quality of life classification. Porto Alegre, RS, Brazil, 2019.

Variables	Quality of Life				p	Odds ratio gross
	Low/Mean (n = 75)		High (n = 502)			
	n	%	n	%		Risk (95%CI)
Time to walk 10 m(s)						
Mean ± SD (Range)	7.8 ± 2.3 (4.0–16.0)		6.5 ± 1.9 (3.0–20.0)		< 0.001¥	0.78 (0.69–0.88)
Median (1st-3rd Quartile)	8.0 (6.0–9.0)		6.0 (5.0–7.0)			
Sit/stand test (n. times/30s)						
Mean ± SD (Range)	7.1 ± 2.6 (1.0–15.0)		8.9 ± 3.1 (1.0–23.0)		< 0.001¥	1.25 (1.13–1.40)
Median (1st-3rd Quartile)	7.0 (6.0–9.0)		9.0 (7.0–11.0)			
Handgrip strength (hgs)						
Mean ± SD (Range)	20.2 ± 7.5 (5.7–41.7)		27.1 ± 9.2 (5.2–50.0)		< 0.001€	1.10 (1.06–1.14)
Median (1st-3rd Quartile)	18.3 (16.0–25.8)		25.8 (20.0–34.2)			
Light physical activity (minutes/week)*						
Mean ± SD (Range)	2.929.8 ± 3.443.3 (0.0–24.683.9)		3.151.6 ± 3.643.9 (0.0–27.696.3)		0.667¶	1.09 (0.62–1.30)
Median (1st-3rd Quartile)	2.381.8 (1.184.7–3.764.9)		2.115.9 (1.016.6–37.984)			
Moderate physical activity (minutes/week)*						
Mean ± SD (Range)	950.4 ± 1.803.4 (0.0–8.246.2)		1.762.3 ± 4.477.4 (0.0–54.792.5)		0.016¶	1.11 (1.07–1.22)
Median (1st-3rd Quartile)	0.0 (0.0–1.563.4)		337.0 (0.0–1.886.9)			
Intense physical activity (minutes/week)*						
Mean ± SD (Range)	144.3 ± 403.6 (0.0–1.893.2)		702.4 ± 2.359.9 (0.0–26.949.5)		< 0.001¶	1.23 (1.05–2.07)
Median (1st-3rd Quartile)	0.0 (0.0–0.0)		0.0 (0.0–262.2)			
Total physical activity (minutes/week)*						
Mean ± SD (Range)	4.024.7 ± 3.951.6 (257.8–1.767.8)		5.616.3 ± 7.949.8 (46.21–84.992.8)		0.018¶	1.19 (1.04–1.56)
Median (1st-3rd Quartile)	3.153.2 (1.767.8–4.812.1)		3.302.0 (1.662.2–7.042.7)			

95%CI: 95% confidence interval for odds ratio; SD: mean standard deviation; *Minnesota Leisure Time Physical Activity Questionnaire; ¥: Student t test for independent groups assuming variance homogeneity; €: Students' t test for independent groups assuming variance heterogeneity; ¶: Mann-Whitney test.

Table 3 Multivariate binary logistic regression models for predicting high quality of life relative to the Flanagan scale. Porto Alegre, RS, Brazil, 2019.

Independent Variables	High Quality of Life					
	Regression Coefficient			Odds ratio adjusted		
	G_gross	SE	Sig.	Exp(B)	IC95%	
					Lower	Upper
Initial model (saturated)						
Women	-0.370	0.605	0.540	0.690	0.211	2.258
Living with partner	0.777	0.442	0.079	2.175	0.915	5.174
Low education level	0.482	0.386	0.212	1.619	0.760	3.449
Medium and high schooling	0.657	0.815	0.420	1.929	0.390	9.531
Time to walk 10 m	-0.080	0.094	0.394	0.923	0.768	1.109
Sit/stand test*	0.088	0.076	0.247	1.092	0.941	1.266
Handgrip strength (kgf)	0.064	0.030	0.032	1.066	1.005	1.130
Moderate physical activity**	0.009	0.003	0.599	1.009	0.856	1.102
Intense physical activity**	0.012	0.009	0.314	1.011	1.084	1.101
Total physical activity**	0.056	0.011	0.631	1.018	0.655	1.222
Final model (stage 6)						
Living with partner	0.664	0.421	0.115	1.942	0.851	4.429
Sit/stand test	0.225	0.068	0.007	1.133	1.091	1.395
Handgrip strength (kgf)	0.162	0.023	0.017	1.064	1.017	1.114
Intense physical activity**	0.102	0.011	0.39	1.017	1.090	1.231

95%CI: confidence interval of 95% do *odds ratio*; G_gross: gross regression coefficient; SE: standard error for the regression coefficient; Sig.: minimum significance level for the regression coefficient; Exp(B): *odds ratio*; *number of times/30 s; **physical activity measured with the Minnesota Leisure Time Physical Activity Questionnaire (minutes/week); initial model: R2 de Nagelkerke = 0.481; Hosmer-Lemeshow test (χ^2 = 5.222; p = 0.488); Cox & Snell = 0.475; general proportion of correct answers — confusion matrix = 78.9%; final model: R2 de Nagelkerke = 0.454; Hosmer-Lemeshow test (χ^2 = 5.143; p = 0.431); Cox & Snell = 0.454; general proportion of correct answers — confusion matrix = 82.1%.

among many other health and well-being benefits, as found in research by Langoni et al.[25]

In this context, it is possible to assume that primary care units would be privileged places for the promotion of health and better QoL, by offering regular physical activity,[25,26] since they serve vulnerable populations, without access to suitable places for the practice or professional guidance.

Thus, it is possible that the inclusion of physical education and/or physical therapy professionals in primary health care teams contributes to the better use of urban spaces, squares and outdoor gyms for body practices and physical activities directed at this population.

Regarding the limitations of this study, we can consider the year of data collection (2011–2012), which was more than 5 years from publication, as well as the cross-sectional design with only one measurement point, since the direction of the causal relationship between QoL and predictor factors cannot be determined, because this association can also be bidirectional. Despite this limitation, it is important to highlight the representativeness of the investigated sample, of sufficient size for a prevalence study, selected at random and proportionally in all health districts of the city of Porto Alegre, which may have reduced the selection bias.

CONCLUSION

This research showed that high QoL was related to older people who lived with a partner, have higher strength of the upper and lower limbs and spend more time in the practice of intense physical activity.

In this context, it is expected that the results described may contribute to the discussion and planning of actions, strategies and policies that favor the promotion of health and quality of life of older adults.

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CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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