doi: https://doi.org/10.1590/1983-1447.2019.20180225

# Senior caregivers in different housing arrangements: comparison of health and care profiles



Idosos cuidadores em diferentes arranjos de moradia: comparação do perfil de saúde e de cuidado

Ancianos cuidadores en diferentes arrealos de vivienda: comparación del perfil de salud y de cuidado

Nathalia Alves de Oliveira<sup>a</sup> (1)

Érica Nestor Souzaª 🗓

Allan Gustavo Brigola 🗓

Estefani Serafim Rossettia 🗓

Marielli Terassia 🗓

Bruna Moretti Luchesi<sup>b</sup> 🕕

Keika Inouye<sup>c</sup>

Sofia Cristina lost Pavarinid 📵

# How to cite this article:

Oliveira NA, Souza EM, Brigola AG, Rossetti FS, Terassi M. Luchesi BM, Inouve K. Pavarini SCI. Senior caregivers in different housing arrangements: comparison of health and care profiles. Rev Gaúcha Enferm. 2019;40:e20180225. doi: https://doi. org/10.1590/1983-1447.2019.20180225.

#### **ABSTRACT**

**Objective:** To compare the physical, cognitive and psychological health profile and care context of elder caregivers of the elderly in different home arrangements.

Method: Quantitative and transversal study with elderly caregivers. The sample consisted of 349 caregivers divided into mono--gerational, bi-gerational and multi-generational housing arrangements. Sociodemographic and care questionnaires and physical, cognitive and psychological health assessment instruments were used for evaluation. The Chi-square distribution and Mann Whitney's U were used for data analysis.

Results: Elderly caregivers in mono-generational homes were significantly older and independent for instrumental activities of daily living. In multigenerational households there was a significantly greater proportion of caregivers who considered family income insufficient, received emotional help, and felt overwhelmed and stressed.

**Conclusion:** The differences identified between the groups can contribute to the elaboration of care policies and for the health promotion of elderly caregivers.

**Keywords:** Aged. Caregivers. Family. Family relations.

## **RESUMO**

Objetivo: Comparar o perfil de saúde física, cognitiva e psicológica e o contexto de cuidado de idosos cuidadores de idosos em diferentes arranjos de moradia.

Método: Estudo quantitativo e transversal realizado com 349 cuidadores divididos em arranios de moradia unigeracional, bigeracional e multigeracional. Para avaliação foram utilizados questionários sociodemográfico e de cuidado, e instrumentos de avaliações da saúde física, cognitiva e psicológica. Para análises dos dados foram utilizados os testes Qui-quadrado e U Mann Whitney.

Resultados: Os idosos cuidadores de lares unigeracionais eram mais velhos e independentes para as atividades instrumentais de vida diária. Nos arranjos de moradia multigeracionais houve proporção significativamente maior de cuidadores que consideravam a renda familiar insuficiente, recebiam ajuda emocional e sentiam-se mais sobrecarregados e estressados.

Conclusão: As diferenças identificadas entre os grupos podem contribuir para elaboração de políticas de cuidado e promoção da saúde de idosos cuidadores.

Palavras-chave: Idoso. Cuidadores. Família. Relações familiares.

#### <sup>a</sup> Universidade Federal de São Carlos (UFSCar), Programa de Pós-Graduação em Enfermagem. São

<sup>b</sup> Universidade Federal do Mato Grosso do Sul (UFMS), Departamento de Medicina, Campus de Três Lagoas. Três Lagoas, Mato Grosso do Sul, Brasil.

Carlos, São Paulo, Brasil.

- <sup>c</sup> Universidade Federal de São Carlos (UFSCar), Departamento de Gerontologia, Programa de Pós--Graduação em Gerontologia. São Carlos, São Paulo, Brasil.
- d Universidade Federal de São Carlos (UFSCar), Departamento de Gerontologia, Programa de Pós-Graduação em Enfermagem, Programa de Pós-Graduação em Gerontologia. São Carlos, São Paulo, Brasil.

#### RESUMEN

Objetivo: Comparar el perfil de salud física, cognitiva y psicológica y el contexto de cuidado de cuidadores ancianos en diferentes arreglos habitacionales.

**Método:** Estudio cuantitativo y transversal con cuidadores de ancianos. La muestra fue formada por 349 cuidadores divididos en arreglos de vivienda unigeracionales, bigeracionales y multigeracionales. Para la evaluación, se utilizaron cuestionarios sociodemográficos, asistenciales y de estudio de salud física, cognitiva y psicológica. Las pruebas de Chi cuadrado y U Mann Whitney se utilizaron para el análisis de datos.

Resultados: Los cuidadores unigeracionales ancianos fueron significativamente más viejos e independientes para las actividades instrumentales de la vida diaria. En los arreglos de alojamiento multigeracional, una proporción significativamente mayor de cuidadores que consideraban la renta familiar insuficiente recibía ayuda emocional y se sentía más sobrecargada y estresada.

Conclusión: Las diferencias identificadas entre los grupos pueden contribuir al desarrollo de políticas de cuidado y promoción de la salud del anciano cuidador.

Palabras clave: Anciano. Cuidadores. Familia. Relaciones familiares.

## **■ INTRODUCTION**

The expression "living arrangements" refers to the number of people who form a family unit and the generation relations that exist among them<sup>(1)</sup>. Recently, the characteristics and determining factors of senior citizens' living arrangements have been the target of many studies, since they have important implications for wellbeing and the social interaction, and can define the exposure of the seniors to risk factors, as well as their access to health protection<sup>(2)</sup>.

Researches have shown that situations in which the elder lives with other members of the family are related to factors such as culture, health conditions of the elder, social support network, and economic situation. These studies show that there are many different living arrangements according to these factors<sup>(1-3)</sup>. Living with a spouse has been considered as one of the most beneficial living arrangements when it comes to the emotional and physical wellbeing of the elder<sup>(3-4)</sup>.

A study performed in rural areas in China with 1651 elders showed that living arrangements in which there are people from multiple generations had beneficial effects to the psychological health of the elders. This type of living arrangement is seen there as a sign of a well-functioning family, while in the United States this arrangement is associated to by an intermediary generation that abandoned their children<sup>(5)</sup>. In South Korea, living alone, as well as living among two or three generations, in houses where the child of the eldest is not married, were associated to lower quality of life<sup>(6)</sup>.

The family is frequently the main source of care and support for elders, especially in low-to-medium income countries, in which social and health services are limited. In Brazil, a study that investigated the connection between the family arrangements and demographic health characteristics of 134 elders found that most were the head of the family and lived with their descendants, and that elder women tended to demand more expenses and to have worse physical health than elder men<sup>(1)</sup>.

Although the family is a strong support system to elders, family structures have been going through incessant alterations that result from the combination of longevity and social changes. As a consequence, there is a decreasing number of family members that are available to offer care<sup>(7)</sup>. In this context, less limited elders have been standing out as the main caregivers of other, more dependent seniors<sup>(7)</sup>.

Considering the changes in family structures, which are reflected in living arrangements, their influence on the health of elders, the increased number of elders who are the caregivers of other elders, and the small number of studies

on the subject in Brazil, the objective of this study is comparing the physical, cognitive, and psychological health profiles of the elders who are caregivers, and whose living arrangements include people from one, two, or multiple generations. The hypothesis is that elder caregivers in multi-generational homes receive more help to offer daily care to the older seniors, and as a result, have a better health profile.

#### METHOD

This is a cross-sectional quantitative study, developed in a Family Health Unit (USF) in the city of São Carlos, in the state of São Paulo, Brazil. The sample was made up of elders who are caregivers and of elders who are dependent on them, considering those registered in the 18 USFs of the city. Seniors were eligible for participation when they were: 60 y/o or older; registered in a USF and living in the area it covers; were informal caregivers (not receiving payment) in the house of an elder who depended on them to perform at least one Activity of Daily Living (ADL), according to the Katz Index<sup>(8)</sup>, and/or Instrumental Activity of Daily Living (IADL), according to the Lawton-Brody Scale<sup>(9)</sup>. To participate, the elders who received care needed to be: 60 y/o or older; registered in a USF and live in the area it covers; dependent on the care of a senior who lived in the same house as them.

Were excluded all cases in which all elders in the residence were independent according to ADL and IADL evaluations, in which there had been a death, the potential participants had moved to a different address, and cases in which they could not be found after three visits in different days and hours.

The survey of possible participants was carried out with the help of the health teams of the 18 USF, who listed all residencies with two or more elders in their respective areas. In this first stage, 594 residencies were found, all of which were included in the study. A team, made up of Gerontologists, Nurses, and undergraduates of the Gerontology course, was trained to apply the instruments, and visited the 594 houses. In 26 households, one of the elders had passed; 28 had moved, 69 could not be found, and 84 refused participation. Among the 387 houses left, the elders were evaluated. In 36 of them, all elders present were independent according to both ADL and IADL, and, therefore, were excluded. Two others, from the 351 evaluated, were excluded, since they did not provide all the data necessary for the objectives of this article. The final sample included n=698 seniors, n=349 of which were caregivers, while n=349 were dependent on their care. They were separated in three groups, according to their living arrangements. G1: mono-generational arrangements (in which only elders  $\geq$ 60 lived); G2: bi-generational arrangements (houses with elders and adults — from 18 to 59 y/o); G3: multi-generational arrangements (made up of seniors, adults, and children — < 18 y/o).

All interviews were carried out by a pair of evaluators, at the house of the elders. Data collection took part in single sessions that lasted approximately one hour and a half and took place from April to November 2014.

To evaluate both the elderly caregivers and the dependent ones, the following assessment tools were used:

- Katz Index<sup>(8)</sup>: to evaluate the ADLs. The elders were considered entirely dependent if their score was equal or below two points, partially dependent when their score was from three to five points, and independent if they scored 6 points.
- The Layton-Brody Scale<sup>(9)</sup>: to evaluate IADL. The elders were considered entirely dependent if their score was equal to seven points, partially dependent when their score was from 8 to 20 points, and independent if they scored 21 points.
- Addenbrooke's Cognitive Examination Revised (ACE-R) <sup>(10)</sup>: used to evaluate the cognitive function. This assessment evaluates cognitive domains focus/attention; memory; fluency; language; and visuospatial ability. The general score varies from 0 to 100, and the highest the result, the better the cognitive function. In a Brazilian study who used a sample of elders from the community, the cut off point for this assessment was 65, with a sensibility of 75.6% and a specificity of 73.8%<sup>(10)</sup>. To our analyses, the same cut off point was used (65 points), and the reference was the group of elders who were caregivers and were below this point (current study Cronbach's alpha = 0.94).
- Weakness: assessed according to the phenotype of Fried et al.(11), including the self-reported unintentional weight loss components (elders scored here if they reported to have lost 4.5kg or 5% of their body weight in the last year); fatigue, evaluated by the questions: "How often, last week, did you feel that everything you did required a big effort?" and "How often, last week, did you feel that you would not be able to carry on your actions?", being that those who answered "always" or "most times" in any question marked this score; low grip strength, measured using a jamar hydraulic dynamometer, model SH5001, made by SAEHAN® (Lafayette, Illinois, USA) and calculated according to the Body Mass Index (BMI)(the BMI cut off points were, for men: BMI  $\leq$  24 grip strength  $\leq$  29, BMI 24.1 - 26 grip strength  $\leq$  30, BMI 26.1 - 28 grip strength  $\leq$  30, BMI > 28 grip strength  $\leq$  32; for women, they were BMI  $\leq$  23 grip strength ≤ 17, BMI 23.1- 26 grip strength ≤ 17.3, BMI 26.1

- 29 grip strength  $\leq$  18, BMI > 29 grip strength  $\leq$  21); slow gait measured by the time spent to walk 4.6 meters in a straight line, calculated according to height and sex (the cut off points to mark in this score were, for men: height  $\leq$  173 cm time  $\geq$  7 seconds, height > 173 cm time  $\geq$  6 seconds; for women: height  $\leq$  159 cm time  $\geq$  7 seconds, height > 159 cm time  $\ge 6$  seconds); and little practice of physical activities, as assessed by the question: "Do you think you perform less physical activities today than you did twelve months ago?" — an affirmative answer to this question meant a mark in this score. Elders who marked in three or more components were classified as weak; those with one or two were classified as pre-weak; and those with no marks were classified as not weak. For a comparison analysis, the pre-weak group, with one or two marks, was used as a reference.

The evaluation of the senior who was the caregiver included:

Sociodemographic profile: sex (female, male), age (continuous variable); educational level (continuous variable); family income (continuous variable); whether they consider their income sufficient (yes, no).

Physical, cognitive, and psychological health profiles:

- Pain, as evaluated by the question "Do you feel pain in any region of the body?" (yes, no).
- Depressive symptoms: evaluated by the Geriatric Depression Scale (GDS-15)<sup>(12)</sup>, which includes 15 items with binomial answers; results above five indicate the presence of depressive symptoms. For a comparison analysis, the group with no depressive symptoms (0-5 points) was used as a reference.
- Family Functioning: the family APGAR was used<sup>(13)</sup> to evaluate the satisfaction regarding adaptability, partnership, growth, affection, and resolve. The score varies from 0 to 20, and scores above 13 indicate that the family functioning is well. For a comparison analysis, the group with good family functioning was used as a reference.
- Overload of caregiver chores: evaluated by the Zarit Burden Interview (ZBI)<sup>(14)</sup>, which evaluates the impact perceived in the act of caring for physical and social health, and for financial conditions. The score may vary from 0 to 88, and the greater it is, the higher the burden of care. For a comparative analysis, a median of the sample as a whole (n=349) was calculated, resulting in 18 points. The groups were divided as those above and those below the median. The reference group was the one above the median.
- Stress: evaluated through the Perceived Stress Scale (EEP)<sup>(15)</sup>, which contains 14 questions to evaluate the levels of perceived stress. The final score is obtained through the sum of the items and may vary from 0 to 56. The higher it is,

the higher the level of perceived stress. For a comparative analysis, a median of the sample (n=349) was calculated, resulting in 18 points. The groups were divided in those above and those below the median. The reference group was the one below the median.

- Satisfaction with life: evaluated through the following question: "Are you satisfied with your life?" (little/more or less/very). For a comparative analysis, the group of people who stated to be very satisfied was used as a reference.
- Care context: kinship degree with the caregiver (spouse, father or mother, father-in-law or mother-in-law; brother or sister; other), daily hours of care (continuous variable), monthly expenses with care (continuous variable), whether anyone helps financially and/or emotionally with the care (yes/no), number of people in the house (continuous variable).

The evaluation of the elder who received care included:

- Sociodemographic profile: sex (female, male), age (continuous variable); educational level (continuous variable).

For the analysis, the data was inserted and validated through double input in the software Epidata 3.1 and ex-

ported for the software Statistical Package for the Social Sciences (SPSS) for Windows, version 20.0. The Kolmogorov-Smirnov test was used to analyze the normality of data, and when that was not possible (p=0.00), the Chi-square test was used in dichotomic variables, and Mann-Whitney's U was used for the continuous variables. For all tests, the statistical significance level was 5% (p≤0,05). The research was approved by the Research Ethics Committee of the Universidade Federal de São Carlos (protocol nº416. 467/2013), and followed the directives of Resolution 466/2012, as prescribed by the National Council of Health. The Free and Informed Consent Form was presented, discussed, and after any clarification needed, signed. A copy of the document was given to each participant.

## **RESULTS**

From the 349 pairs evaluated, 48.8% (n=169) were in group G1, 30.3% (n=106) in G3, and 21.3% (n=74) in G3. Table 1 shows frequency data, medians, and p-values for the comparisons of sociodemographic and economical features.

**Table 1 -** Frequency distribution, median, and p-value of sociodemographic and economic variables of elder caregivers (n=349) according to living arrangements. São Carlos, São Paulo, Brazil, 2014

Variables	Frequency/median according to living arrangements			P-value comparisons (CI 95%)		
	G1 (n=169)	G2 (n=106)	G3 (n=74)	G1 vs. G2	G1 vs. G3	G2 vs. G3
Sociodemographic						
Sex (Female) <sup>1</sup>	75.7% (128)	72.6% (77)	83.8% (62)	0.56	0.16	0.07
Age (years) <sup>2</sup>	70.0	66.0	66.0	0.00	0.00	0.93
Educational level (years) <sup>2</sup>	4.0	3.0	4.0	0.37	0.90	0.56
Economic						
Family income (R\$) <sup>2</sup>	1,599.00	2,040.00	2,000.00	0.13	0.12	0.86
Is the income sufficient for the family (yes) <sup>1</sup>	57.4% (97)	42.6% (49)	28.4% (21)	0.19	0.00	0.02
Marital Status						
Married (Yes) <sup>1</sup>	88.8% (150)	89.6% (95)	94.6% (70)	0.35	0.31	0.18

Source: Research data, 2014.

<sup>1</sup>Chi-squared test; <sup>2</sup>Mann-Whitney's U.

Table 2 shows the variables of the health profile and the context of care of the elder caregivers, as divided per group, according to their living arrangements.

Table 3 shows the comparison between sociodemo-

graphic and health characteristics of the elders who are dependent. The groups of dependent elders were similar regarding the variables evaluated, except for age, case in which the G1 elders were proportionally older than the G3 elders.

**Table 2 -** Frequency distribution, median, and p-value of health profile variables and elder caregiver care context variables (n=349) according to living arrangements. São Carlos, São Paulo, Brazil, 2014

Variables	Frequency/median according to living arrangements			P-value comparisons (CI 95%)		
	G1	G2	G3	G1	G1	G2
	(n=169)	(n=106)	(n=74)	vs. G2	vs. G3	vs. G3
Physical health						
Katz (independent) <sup>1</sup>	87.0% (147)	88.7% (94)	83.8% (62)	0.83	0.59	0.37
Lawton (independent) <sup>1</sup>	47.3% (80)	34.0% (36)	41.9% (31)	0.02	0.43	0.27
Feels pain (yes) <sup>1</sup>	62.1% (105)	57.5% (61)	63.5% (47)	0.46	0.78	0.39
Weakness (pre-weak) <sup>1</sup>	59.2% (100)	47.2% (50)	60.8% (45)	0.82	0.96	0.13
Cognitive health						
ACER (below the cut off score) <sup>1</sup>	49.1% (83)	56.6% (60)	51.4% (38)	0.22	0.74	0.48
Psychological health						
GDS (no depressive symptoms) <sup>1</sup>	78.1% (132)	81,1% (86)	70.3% (52)	0.52	0.11	0.27
APGAR (good family functioning) <sup>1</sup>	84.6% (143)	84.9% (90)	83.8% (62)	0.89	0.79	0.72
ZBI (below the median) <sup>1</sup>	61.5% (104)	60.4% (64)	44.6% (33)	0.84	0.01	0.03
EEP (below the median) <sup>1</sup>	56.2% (105)	53.8% (57)	35.1% (26)	0.68	0.04	0.01
Satisfaction with life (very satisfied) <sup>1</sup>	78.7% (133)	80.2% (85)	68.9% (51)	0.93	0.11	0.09
Care context						
Number of people in the residence <sup>2</sup>	2.0	3.0	4.0	0.00	0.00	0.00
Kinship degree to the caregiver (spouse) <sup>1</sup>	89.9% (152)	73,6% (78)	90.5% (67)	0.00	0.18	0.28
Monthly expenses with care (R\$) <sup>2</sup>	178.00	174.28	230.00	0.62	0.94	0.36
Financial aid for the care (yes) <sup>1</sup>	14.8% (25)	20.8% (22)	10.8% (8)	0.19	0.04	0.14
Emotional aid for the care (yes) <sup>1</sup>	43.2% (72)	44.3% (47)	56.8% (42)	0.43	0.05	0.20
Daily hours of care <sup>2</sup>	4.0	4.0	5.0	0.32	0.41	0.29

Source: Research data, 2014.

<sup>1</sup>Chi-squared test; <sup>2</sup>Mann-Whitney's U. GDS = Geriatric Depression

Scale. ACE-R= Addenbrooke's Cognitive Examination Revised. ZBI — Zarit Burden Interview. EEP = Perceived Stress Scale.

**Table 3 -** Frequency distribution, median, and p-value of demographic and health characteristics of elders who depend on care (n=349), according to living arrangements. São Carlos, São Paulo, Brazil, 2014

Variables	Frequency/median according to living arrangements			P-value comparisons (Cl 95%)			
	G1 (n=169)	G2 (n=106)	G3 (n=74)	G1 vs. G2	G1 vs. G3	G2 vs. G3	
Elder who depends on care							
Sex (male) <sup>1</sup>	68.6% (116)	62.3% (66)	79.7% (59)	p=0.20	p=0.76	p=0.12	
Age (years) <sup>2</sup>	73.0	71.0	71.7	p=0.16	p=0.00	p=0.75	

Educational level (years) <sup>2</sup>	3.0	3.0	3.0	p=0.35	p=0.98	p=0.45
Katz (independent) <sup>1</sup>	66.9% (113)	70.8% (75)	12.2% (9)	p=0.15	p=0.83	p=0.82
Lawton (partial dependence) <sup>1</sup>	84.0% (142)	87.7% (93)	90.5% (67)	p=0.75	p=0.36	p=0.55
Weakness (pre- weak) <sup>1</sup>	46.2% (78)	47.2% (50)	54.1% (40)	p=0.83	p=0.65	p=0.62
ACER (below the median) <sup>1</sup>	60.4% (102)	59.4% (63)	55.4% (41)	p=0.41	p=0.42	p=0.27

Source: Research data, 2014.

# **■ DISCUSSION**

In this research we examine the differences in physical, cognitive, and psychological health, as well as the context of care for elders who are caregivers and elders who receive their care, according to their living arrangements. Differences were found for sex, age, whether the family income was sufficient, independence level, number of people in the house, kinship, burden of care, perceived stress, emotional and financial aid received to offer daily care.

In all family arrangements analyzed, most caregivers were women. However, G3 was the one with the highest number of female caregivers. It is hard to say why this was the case, but a possible explanation involves the fact that women's role as caregivers has been culturally established throughout the years<sup>(1)</sup>, meaning they might be more apt to care for both the elder who needs it, and for people from other generations that might live in the same house, such as children and grandchildren.

Generally, an increased age is directly related to the advance of diseases that contribute for dependence. This is one of the reasons that lead elders to decide to live with the younger generations, both in developed and in developing countries<sup>(5-7)</sup>. That was not the case in our study, in which older seniors lived in mono-generational living arrangements.

However, caretaking elders in mono-generational homes, despite being older, were more independent regarding the IADLs. In the United States, data from the National Health Interview Survey is on par with the results found in this study, as they show that elders who lived in mono-generational homes had less physical limitations in their activities of daily living<sup>(16)</sup>. The functional capacity of performing the IADLs is an important indication of better health, independence, and autonomy. It is significantly associated to the living arrangements of elders who live alone or in mono-generational households<sup>(1-3)</sup>.

As expected, the number of people in the house was different for each group evaluated. The multi-generation group was the one that presented the greatest amount of

people in the same house. This can be connected to the evaluation of the family income sufficiency, since a lower percentage of G3 caregivers, who lived with more people at home, considered their income sufficient. That is, living with more people does not necessarily mean having a bigger income, and as a result, this income can be insufficient for expenditure related to the survival of the members of the family and to caring for them.

Another feature that stands out in the study is the marital status. G1 and G3 were the ones with the highest percentage of elders caring for their spouses, while in G2 elders also were found to care for other relatives. Regarding this aspect, it should be highlighted that, although data suggests that elders in multi-generational homes are living there due to issues such as being widows/widowers or divorced<sup>(1-3)</sup>, there are still couples living in such types of arrangement. Additionally, these couples may live in multi-generational arrangements because they need help to perform the role of caregivers.

A research with 4,862 65 y/o or older American participants showed that elders who live alone or with other people who are not their spouses have a lower psychological wellbeing than those who live only with their spouse<sup>(18)</sup>. The association between living with a spouse and having better health is still questionable, according to scientific literature. Despite studies that show that living with the spouse is beneficial to one's health<sup>(2-3)</sup>, in contexts of care this information is controversial in literature.

The health profiles of 40 elders who were caregivers and lived in contexts of social vulnerability were analyzed by Brazilian researchers, who found a prevalence of mono-generational homes, in which elders, despite being classified as pre-weak, were still independent enough to carry out their IADLs, and did not show depressive symptoms<sup>(18)</sup>. A possible explanation for the differences between the results of the studies may be in the level of dependency of the caregiving elders. In this research, most elders in mono-generational houses took care of spouses who had little dependence when carrying out their IADLs. This may have led to a better functionality in the IADL of the caregivers.

<sup>&</sup>lt;sup>1</sup>Chi-squared test; <sup>2</sup>Mann-Whitney's U. ACE-R= Addenbrooke's Cognitive Examination Revised.

The initial hypothesis of this study was partly confirmed as we found that senior caregivers who live in multi-generational households receive more emotional and financial aid to offer this daily care. A study developed with Mexican seniors in the United States evaluated living arrangements and showed that the multi-generational households offer more financial support and aid for the activities of daily living of the elders. The researchers highlight the programs of healthcare targeted at these families, due to the fast social and economic changes that make this model increasingly common<sup>(3)</sup>.

Despite the fact that they receive more emotional and financial help in providing care, senior caregivers in multi-generational households were also found to have a higher burden and a higher perceived stress level. This needs to be analyzed and explored, as it may help directing policies for the attention to families who live in multi-generational households, in which an elder is the main caregiver for another elder.

Generally, studies with elder caregivers have revealed a close relation between burden and stress levels<sup>(7-19)</sup>. The excessive burdens are defined as multi-dimensional answers to a negative care-related evaluation, while the perceived stress is the negative perception of a person regarding their daily life situations as a whole. Both result from a high number of daily activities in which the caregiver is exposed to them, which can lead to damages to one's physical and mental health, social and financial stability, and to the psychological wellbeing of caregivers<sup>(12-14)</sup>.

The results of a research previously published by a research group, which found what were the factors associated to the perceived stress of elders who were family caregivers of other elders, found that more people living in the same house and higher levels of burden are associated to high levels of perceived stress<sup>(19)</sup>. The higher burden and perceived stress levels among elders who are caregivers in multi-generational households may be related to the role these elders have in their family, since, in addition to the care they offer to the elders, they might be caring for other members of the family, thus facing a higher number of competing demands. It is important for future researches to seek to analyze the tasks carried out by elders in families in which many generations live together.

The families were the main source of support in caring for elders, and programs targeted at multi-generational families in contexts of care are extremely important, since the relationship between the generations influences the way a family functions and the decisions of care<sup>(6)</sup>. A Chinese study discussed family support and the preparations for future care, highlighting how important it is to discuss

with the families about the culture of care through the planning of solutions that can precede the first needs for care, minimizing the chances of burdens and stress<sup>(20)</sup>.

Some limitations of this study need to be considered before interpreting its data and should also be observed in future studies whose focus is the living arrangements of elder caregivers. Firstly, the data here cannot be generalized to other populations of elders, since the sample was limited to the areas covered by the USF in only one city in the state of São Paulo. Secondly, the cross-sectional design of the study does not allow for the action of time on the variables to be verified. Additionally, other variables such as the quality of inter-generational relations, the intensity of the care offered to the dependent elders, the functions of the senior caregiver in each family structure, can also influence the data, and need to be considered in future researches.

## CONCLUSION

This research found that, regarding the physical health of elders in mono-generational households, they were older and less independent regarding IADLs. Regarding the cognitive health, no significant differences were found in the contexts. When it comes to psychological health, senior caregivers in multi-generational households have a higher level of burdens and perceived stress. Regarding the context of care, it was found that elder caregivers in multi-generational households receive more emotional and financial aid to offer care to the other elders.

In this study, we found important differences, depending on the living arrangements, that may influence not only the health of the caregivers and their context of care, but also their relations and the intergenerational support that comes from the family environment. These results can contribute for the elaboration of policies regarding the elder caregiver in different family arrangements, and can also be used by the primary health care network to promote the physical and psychological health of these caregivers. Additionally, this study indicates the relevance of future longitudinally designed researches, that can evaluate how families react to healthcare demands and what is the support system established for the caregiver through time.

# **■ REFERENCES**

- 1. Rabelo DF, Neri AL. [The emotional complexity of intergenerational relationships and elderly mental health]. Pensando Fam. 2015;18(1);138-53. Portuguese.
- Gubhaju B, Ostbye T, Chan A. Living arrangements of community-dwelling older Singaporeans: predictors and consequences. Ageing Soc. 2018;38(6):1174–98. doi: https://doi.org/10.1017/S0144686X16001495.

#### Oliveira NA, Souza EM, Brigola AG, Rossetti ES, Terassi M, Luchesi BM, Inouye K, Pavarini SCI

- 3. Cantu PA, Angel JL. Demography of living arrangements among oldest-old Mexican Americans: evidence from the Hispanic Epidemiologic Study of the Elderly. J Aging Health. 2017;29(6):1015–38. doi: https://doi.org/10.1177/0898264317727790.
- Herm A, Anson J, Poulain M. Living arrangements and marital status: a register-based study of survival of older adults in Belgium at the beginning of the 21st century. Ageing Soc. 2016;36(10):2141-62. doi: https://doi.org/10.1017/S0144686X15001002.
- Huo M, Kim K, Zarit SH, Fingerman KL. Support grandparents give to their adult grandchildren. J Gerontol B Psychol Sci Soc Sci. 2018;73(6):1006–15. doi: https://doi.org/10.1093/geronb/gbw208.
- Kim J, Choi Y, Park S, Cho, KH, Ju, YJ, Park, EC. The impact of living arrangements on quality of life among Korean elderly: findings from the Korean Longitudinal Study of Aging (2006–2012). Qual Life Res. 2017;26(5):1303–14. doi: https:// doi.org/10.1007/s11136-016-1448-6.
- 7. Oliveira NA, Souza EN, Luchesi BM, Inouye K, Pavarini SCI. Stress and optimism of elderlies who are caregivers for elderlies and live with children. Rev Bras Enferm. 2017;70(4):697–703. doi: https://doi.org/10.1590/0034-7167-2017-0088.
- 8. Katz S, Ford AB, Moskowitz RW, Jackson BA, Jaffe MW. Studies of illness in the aged: the index of ADL: a standardized measure of biological and psychosocial function. JAMA. 1963;185(12):914–9. doi: https://doi.org/10.1001/jama.1963.03060120024016.
- Lawton MP, Brody EM. Assessment of older people: self-maintaining and instrumental activities of daily living. Gerontologist. 1969;9(3):179–86.
- César KG, Yassuda MS, Porto FHG, Brucki SMD, Nitrini R. Addenbrooke's cognitive examination-revised: normative and accuracy data for seniors with heterogeneous educational level in Brazil. Int Psychogeriatr. 2017;29(8);1345–53. doi: https://doi.org/10.1017/S1041610217000734.
- 11. Fried LP, Tangen CM, Waltson J, Newman AB, Hirshc C, Gottdiener J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56(3):M146-56. doi: https://doi.org/10.1093/gerona/56.3.M146.

- 12. Almeida OP, Almeida SA. Short versions of the geriatric depression scale: a study of their validity for the diagnosis of major depressive episode according to ICD-10 and DSM-IV. Int J Geriatric Psychiatry. 1999;14(10):858-65. doi: https://doi.org/10.1002/(SICI)1099-1166(199910)14:10<858::AID-GPS35>3.0.CO;2-8.
- 13. Duarte YAO. Família: rede de suporte ou fator estressor: a ótica de idosos e cuidadores familiares [tese]. São Paulo(SP): Universidade de São Paulo; 2001.
- 14. Scazufca M. Brazilian version of the Burden Interview scale for the assessment of burden of care in carers of people with mental illnesses. Rev Bras Psiquiatr. 2002;24(1):12–7. doi: https://doi.org/10.1590/S1516-44462002000100006.
- 15. Luft CB, Sanches SO, Mazo GZ, Andrade A. Versão brasileira da Escala de Estresse Percebido: tradução e validação para idosos. Rev Saúde Publica. 2007;41(4):606-15. doi: https://doi.org/10.1590/S0034-89102007000400015.
- 16. Weissman JD, Russell D. Relationships between living arrangements and health status among older adults in the United States, 2009–2014: findings from the National Health Interview Survey. J Appl Gerontol. 2016;37(1);7–25. doi: https://doi.org/10.1177/0733464816655439.
- 17. Smith CH. Quality of life and psychological distress among older adults: the role of living arrangements. J Applied Gerontol. 2014;35(1):39-61. doi: https://doi.org/10.1177/0733464814530805.
- Santos-Orlandi AA, Brito TRP, Ottaviani AC, Rossetti ES, Zazzetta MS, Gratão ACM, et al. Profile of older adults caring for other older adults in contexts of high social vulnerability. Esc Anna Nery. 2017;21(1):e20170013. doi: https:// doi.org/10.5935/1414-8145.20170013.
- Luchesi BM, Souza EN, Gratão ACM, Gomes GAO, Inouye K, Alexandre TS, et al.
   The evaluation of perceived stress and associated factors in elderly caregivers.
   Arch Gerontol Geriatr. 2016;67:7–13. doi: https://doi.org/10.1016/j.arch-qer.2016.06.017.
- 20. Song Y, Sörensen S, Yan ECW. Family support and preparation for future care needs among urban Chinese baby boomers. J Gerontol B Psychol Sci Soc Sci, 2018;73(6):1066-76. doi: https://doi.org/10.1093/qeronb/gbw062.

Corresponding author:

Nathalia Alves de Oliveira E-mail: nathaliaalves.oliveira@gmail.com Received: 07.20.2018 Approved: 03.07.2019

