







## **FAMILY ARRANGEMENT, SOCIAL SUPPORT AND FRAILTY AMONG COMMUNITY-DWELLING OLDER ADULTS: A MIXED METHODS LONGITUDINAL STUDY**

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### **ABSTRACT**

**Objective:** to analyze, over time, the constitution of the older adults' family arrangements and their relationship with social support, frailty, quality of life and cognition; in addition to verifying existing tensions in the family context from the perspective of these subjects.

**Method:** a longitudinal study, using mixed methods and concomitant triangulation. A sociodemographic interview, the Edmonton Frailty Scale, WHOQOL-BREF and OLD, The Montreal Cognitive Assessment, Genogram and Ecomap were applied. The quantitative data used the Wilcoxon and Mann Whitney comparison test; and those with a qualitative approach were treated according to Bardin's content analysis, with dialectical materialism as a theoretical framework.

**Results:** most of the 84 aged people in the study period (2012/2016–2019) were over 70 years old and female (83.3%). Frailty and cognition did not present a statistically significant relationship with the type of family arrangement. Aged people who lived alone had a worse quality of life in the physical ( $p=0.044$ ) and psychological ( $p=0.031$ ) domains. Older adults who lived with grandchildren showed worsening in the social relationship domain ( $p=0.047$ ) and improvement in the death and dying domain ( $p<0.001$ ). Three categories and nine subcategories were found, which highlighted the importance of interdependent and supportive relationships in the family. Data integration showed that the family size arrangement and the types of its members do not determine the existence of support, but the bonds formed with family and community.

**Conclusion:** frailty and cognition presented no statistical difference with the type of family arrangement, although this relationship was found in some quality of life domains.

**DESCRIPTORS:** Family relations. Frailty. Social support. Quality of life. Cognition. Geriatric nursing.

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# ARRANJO FAMILIAR, APOIO SOCIAL E FRAGILIDADE EM IDOSOS DA COMUNIDADE: ESTUDO LONGITUDINAL COM MÉTODOS MISTOS

## RESUMO

**Objetivo:** analisar, ao longo do tempo, a constituição dos arranjos familiares de idosos e a relação destes com o apoio social, a fragilidade, qualidade de vida e cognição. Também, verificar, na perspectiva destes sujeitos, tensões existentes no contexto familiar.

**Método:** estudo longitudinal, com métodos mistos e triangulação concomitante. Aplicaram-se entrevista sociodemográfica, Escala de Fragilidade de Edmonton, WHOQOL-BREF e OLD, *The Montreal Cognitive Assessment*, Genograma e Ecomapa. Os dados quantitativos utilizaram teste de comparação de Wilcoxon e Mann Whitney; e os de abordagem qualitativa, a análise de conteúdo de Bardin, com o materialismo dialético como referencial teórico.

**Resultados:** dos 84 idosos no período do estudo (2012/2016–2019), a maioria tinha mais de 70 anos e era do sexo feminino (83,3%). A fragilidade e cognição não apresentaram relação estatística significativa com o tipo de arranjo familiar. Idosos que moravam sozinhos apresentaram pior qualidade de vida nos domínios físico ( $p=0,044$ ) e psicológico ( $p=0,031$ ). Idosos que moravam com netos apresentaram piora no domínio relação social ( $p=0,047$ ) e melhora no domínio morte e morrer ( $p<0,001$ ). Encontraram-se três categorias e nove subcategorias, as quais evidenciaram a importância das relações de interdependência e apoio na família. A integração dos dados demonstrou que o tamanho do arranjo familiar e os tipos de membros não determinam a existência de apoio, mas os vínculos formados com a família e comunidade.

**Conclusão:** a fragilidade e cognição não apresentaram diferença estatística com o tipo de arranjo familiar, porém essa relação foi encontrada em alguns domínios da qualidade de vida.

**DESCRITORES:** Relações familiares. Fragilidade. Apoio social. Qualidade de vida. Cognição. Enfermagem geriátrica.

# CONFORMACIÓN FAMILIAR, APOYO SOCIAL Y FRAGILIDAD EN ANCIANOS QUE VIVEN EN LA COMUNIDAD: ESTUDIO LONGITUDINAL CON MÉTODOS MIXTOS

## RESUMEN

**Objetivo:** analizar a lo largo del tiempo la constitución de las conformaciones familiares de los ancianos y su relación con el apoyo social, la fragilidad, la calidad de vida y la cognición; al igual que verificar, desde la perspectiva de estos sujetos, diversas tensiones existentes en el contexto familiar.

**Método:** estudio longitudinal que recurrió al uso de métodos mixtos, con triangulación concomitante. Se aplicó una entrevista sociodemográfica, la Escala de Fragilidad de Edmonton, los instrumentos WHOQOL-BREF y OLD, *The Montreal Cognitive Assessment*, y las técnicas de Genograma y Ecomapa. Los datos cuantitativos se sometieron a la prueba de comparación de Wilcoxon y Mann Whitney y los de enfoque cualitativo, al análisis de contenido de Bardin, con el materialismo dialéctico como referencial teórico.

**Resultados:** la mayoría de los 84 ancianos incluidos en el período del estudio (2012/2016–2019) tenía más de 70 años de edad y pertenecía al sexo femenino (83,3%). La fragilidad y la cognición no presentaron ninguna relación estadística significativa con el tipo de conformación familiar. Los ancianos que vivían solos presentaron peores niveles de calidad de vida en los dominios físico ( $p=0,044$ ) y psicológico ( $p=0,031$ ), mientras que los que vivían con nietos presentaron peores valores en el dominio de relaciones sociales ( $p=0,047$ ) y una mejoría en el dominio relacionado con la muerte y morir ( $p<0,001$ ). Surgieron tres categorías y nueve subcategorías, que hicieron evidente la importancia de las relaciones de interdependencia y apoyo en la familia. La integración de los datos demostró que el tamaño de la familia y los tipos de familiares no determinan la existencia de apoyo, pero sí los vínculos que se establecen con la familia y la comunidad.

**Conclusión:** la fragilidad y la cognición no presentaron ninguna diferencia estadística con el tipo de conformación familiar, pese a que esta relación sí se encontró en algunos dominios de la calidad de vida.

**DESCRITORES:** Relaciones familiares. Fragilidad. Apoyo social. Calidad de vida. Cognición. Enfermería geriátrica.

## INTRODUCTION

The family is considered the main assistance, interaction and support network in old age<sup>1</sup>, defined by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE) as “a type of arrangement in which the members, living in the same household, are linked by kinship ties to a specific degree, through blood, adoption or marriage”<sup>2:146</sup>. However, changes arising from contemporary social life, such as the intensification of women’s participation in the labor market and intergenerational conflicts, have contributed to increasing instability in this support network<sup>1-3</sup>.

Thus, using tools that facilitate understanding the family dynamics provides a differential in the provision of care. The application of instruments, such as Genograms and Ecomaps, during Nursing consultations, has allowed not only the identification of the patient’s previous history and the respective family, but also the relationships maintained between the members and with the community, being able to identify situations such as those of violence and lack of support. This contributes to Nursing care more focused on the older adults’ real needs<sup>3-4</sup>.

In addition to the family, the social support network can be constituted by neighbors, friends and associations (informal support) as well as organizations, institutions focused on the implementation of public policies and those providing services to the population (formal support)<sup>5</sup>. When properly offered, this network is an indispensable protective factor against frailty and exerts an influence on improvements in Quality of Life (QoL) and cognition, promoting a healthy aging<sup>6</sup>.

Frailty is a multidimensional syndrome, defined as a clinical state of extreme vulnerability that contributes to homeostatic imbalance in the organism, decline of the physiological system, and cognitive, psychological and social changes. Its prevalence increases with age, and can result in greater disability and dependence in old age<sup>6-7</sup>. A mixed methods study conducted with 121 potentially frail community-dwelling older adults showed the importance of the support provided by the family, neighbors and friends as a strategy for coping with the condition of frailty<sup>8</sup>.

In this context, recent studies have found low QoL in community-dwelling aged people, especially frail subjects<sup>8-9</sup>. Although there is still no consensus on the definition of Quality of Life, it has a subjective and comprehensive nature, being considered by the World Health Organization as the individuals’ perception of their own position in life and the cultural context in which they live, in addition to relationships, expectations, standards, goals and concerns<sup>10</sup>.

A number of studies have also shown the influence of family arrangements on older adults’ quality of life, which can either improve or compromise the health and well-being of the oldest members of a family<sup>11-12</sup>. This happens because conflicts, concerns and sadness are present in interpersonal relationships, which tense up with the need for care in old age. These confrontations negatively interfere with QoL and, consequently, increase the stress and suffering levels<sup>12</sup>.

Another important factor to be analyzed in the aged population is cognition. Recent findings indicate a positive relationship between the social support network and cognitive health, with social and family ties being considered a protective factor<sup>13</sup>.

Despite the large number of studies on frailty, social support, QoL and cognition in the aged population, there are few studies devoted to investigating the relationship between family arrangements and these findings<sup>1,3,11-12</sup>. In addition to that, the longitudinal evaluation that permeates this study allows for the potential identification of the older adults’ family dynamics, in order to investigate the performance of this network at different moments. Studies proposing this approach are scarce, both in the national and in the international literature.

Therefore, the relevance and innovation of this study is highlighted, as it proposes to identify the constitution of family arrangements and the health conditions of these aged individuals over time. The longitudinal analysis encompasses variables of clinical health conditions and perceptions of the support received and the quality of existing relationships in the family context, through the integration of qualitative and quantitative data. In this way, the mixed methods study can identify possible demands that the care services will also face, as a result of the changes observed in the family arrangements of today's society.

Consequently, this study aimed at analyzing, over time, the constitution of the older adults' family arrangements and their relationship with social support, frailty, quality of life and cognition; in addition to verifying existing tensions in the family context from the perspective of these subjects.

## METHOD

This is an observational, longitudinal, retrospective and analytical study, using mixed methods to investigate and analyze the data obtained in the second phase of the research<sup>14</sup>.

The database of a previous study entitled "Quality of life, social support and frailty in older adults treated at a Reference Center for Social Assistance" was used to continue the longitudinal analysis. The previous research study was carried out in a municipality from the inland of the state of São Paulo, Brazil, with aged people registered in five Social Assistance Reference Centers (*Centros de Referência da Assistência Social*, CRAS) from the municipality, classified by the São Paulo Social Vulnerability Index (*Índice Paulista de Vulnerabilidade Social*, IPVS), based on socioeconomic and demographic dimensions, such as high (three CRAS), medium (one CRAS) and low (one CRAS) social vulnerability<sup>9,15</sup>.

This database has a sample of 247 aged people evaluated from 2012 to 2016<sup>9</sup>. It was not possible to include 70 of them in the study due to the social isolation measures adopted in the face of the COVID-19 pandemic, which precluded home interviews. A total of 177 older adults received visits. There were 92 losses due to: refusal (n=18), death (n=22), not meeting the inclusion criteria (n=7) and change of address (n=45). Thus, the participants were 84 aged individuals.

In this longitudinal study (2012/2016–2019), the same participants were reassessed regarding the sociodemographic variables, frailty, QoL, cognition and constitution of the family arrangements. A qualitative description of family arrangements and quality of relationships between its members was added, as well as a description of the social support network, through the analysis of the recorded interviews carried out during elaboration of the Genogram and Ecomap.

We opted for the simultaneous collection of quantitative and qualitative data, through the concomitant triangulation strategy, in which the data are compared in order to determine convergences, differences and combinations. The points of integration of both perspectives (qualitative-quantitative) took place at the time of identifying the aged participants in the database, during the new data collection phase and, especially, in the analysis of the results. The same importance was attributed to the quantitative and qualitative data<sup>14</sup>.

To access those registered in the CRAS, contacts were made with the managers responsible for the institutions, who provided a list with name, age and address of the each older adult registered. With this information in hand, the evaluators, members of the Research Group on Aging Management and previously trained, began visiting the homes. After the invitation and acceptance by the aged person to participate in the study, the Free and Informed Consent Form (FICF) was presented and, with consent, an individual interview was scheduled, on business days and hours to carry out the research, in a single session, at the interviewee's home and lasting approximately one hour. The data were collected from April to September 2019. The inclusion criteria were as follows: being 60 years of age or older, being registered in one of the CRAS from the city, having participated in the first phase

of the study, and being in due conditions for understanding and communication. The exclusion criteria were the following: being bedridden or living in a Long-Term Institution for Older Adults (*Instituição de Longa Permanência para Idosos*, ILPI).

For data collection, instruments validated for the Brazilian culture and widely used in research with aged participants were applied. The quantitative data were collected using the following instruments: sociodemographic information questionnaire, containing information on age, gender, ethnicity, religious belief, marital status, schooling and current occupation. To assess family arrangement and social support, the Genogram and Ecomap were used, respectively. The Genogram is a graphic representation instrument that, through semiology, presents family composition, difficulties, conflicts, behaviors and relationships existing both inside and outside the house, producing a family map<sup>4</sup>. The Ecomap identifies places and diverse equipment present in the community used by the interviewee<sup>4</sup>.

Regarding the analysis of the quantitative data, the types of arrangement classified as single-person, with the presence of children, with the presence of grandchildren and only spouse were evaluated. In addition, the type of bond maintained between the older adults and the family members was analyzed, considering the close, conflicting and distant relationships. In relation to Ecomap, the places that the aged people used to frequent in the community were considered.

Concerning the assessment of frailty, the Edmonton Frailty Scale (EFS) was applied, comprising nine domains (cognition, general health status, functional independence, social support, medication use, nutrition, mood, continence and functional performance) and 11 items, which classify the individual as not frail (0-4 points), apparently vulnerable (5-6 points), mild frailty (7-8 points), moderate frailty (9-10 points) and severe frailty (11 or more points)<sup>16</sup>. For the purposes of statistical analysis, frailty levels (mild, moderate and severe frailty) were grouped into a single group (frail), and the data from apparently vulnerable and non-frail aged people among those who did not present frailty.

Regarding the QoL assessment, the following was adopted: *The World Health Organization Quality of Life-Bref* (WHOQOL-BREF) and *The World Health Organization Quality of Life for Older Persons* (WHOQOL-OLD). The WHOQOL-BREF contains 26 questions separated into general questions (self-perception and health status assessment) and questions related to the physical, psychological, social and environmental domains, with a maximum score of 100 points<sup>17</sup>. The WHOQOL-OLD, a specific instrument for measuring QoL in older adults, consists of 24 questions that are divided into six sub-items: sensory functioning (impact of the loss of sensory functioning on QoL), autonomy (being able and free to live autonomously and to make one's own decisions), past, present and future activities (satisfaction with accomplishments in life and with goals achieved), social participation (participation in activities of daily living especially in the community), death and dying (worries and fears about death and dying) and intimacy (being able to have intimate and personal relationships). The instrument score can reach a maximum of 100 points<sup>18</sup>.

The Montreal Cognitive Assessment (MoCA) is a screening tool that aims at detecting signs of mild cognitive impairment and mild dementia. MoCA consists of 12 items with different domains, capable of assessing cognitive perception, including short-term memory, visuospatial ability, attention, language and orientation in time and space. It has scores varying from zero to 30, in which the higher the score, the better the person's cognitive state, with a score indicative of cognitive decline when a value below 26 points is obtained, with an increase of 1 point indicated for individuals with 12 years of study or less<sup>19</sup>.

Qualitative data collection was carried out through triggering questions, during the elaboration of the Genogram and Ecomap<sup>4</sup>. All 84 participants of the quantitative collection were included in the qualitative collection. The questions were based on the following: the family nucleus: "Who lives with you in this house?"; "Which is the degree of kinship of each person?"; family relationships: "Among the people we drew in this Genogram, which ones do you have a closer relationship with?"; "Are

there members of your family that you have conflicts with?"; "Any family member who considers you distant?"; family support: "Who in your family helps you when you really need it?"; community relations: "Which institutions do you usually attend?"; "How is your relationship with them?". At this stage, the interviews were audio-recorded with the participants' consent.

Dialectical materialism was adopted as a theoretical perspective, with emphasis on the dimensions of historicity and totality<sup>20</sup>. Historicity is a category of dialectics that relates to behavior and to the particularities that society builds over time. Through it, the transformations that have occurred in society are observed, as the actions of the current generations are influenced by those of the previous ones. The totality informs that nothing can be understood in isolation and, therefore, the whole and the parts must be sought, as well as the relationships, ruptures and contradictions<sup>20</sup>.

The quantitative data were stored in the *Microsoft Office Excel* software, version 2016, paired (first and second phase data) and analyzed using descriptive statistics, with elaboration of frequency tables, position (mean, median, minimum and maximum) and dispersion (standard deviation) measures, as well as valid and omitted cases and the Wilcoxon and Mann Whitney comparison test. The significance level adopted for the statistical tests was 5% ( $p < 0.05$ ).

To analyze the qualitative data we used Bardin's content analysis technique<sup>21</sup>, divided into three correlated stages, including Pre-analysis: the moment dedicated to data organization. The audios underwent prior quality assessment, excluding the inaudible ones. After verification, they were transcribed and floating reading was initiated. During this period, resonant elements (important for understanding the study object), repetitions (speeches, expressions that were present with some frequency in the discourse) and strategic elements (speeches that analyzed the public services and policies offered to this population). Exploration of the material: after a thorough reading (paragraph by paragraph), ideas, thoughts, stories and expressions linked to the research purpose were identified, which were grouped, giving rise to 38 registration units. Thus, after a continuous movement between the data and the theory used, categories and subcategories emerged directed to the research purpose of this study. Treatment of results: after selecting the categories and subcategories, the data were analyzed using inference and interpretation in the light of dialectical materialism, specifically by the epistemological categories of historicity and totality.

The analysis process was monitored by a researcher experienced in qualitative research and underwent a checking and verification. In addition to that, in order to ensure greater reliability, validity and quality in the elaboration of the qualitative research, this study used the *Consolidated Criteria for Reporting Qualitative Research* (COREQ) as support tool<sup>22</sup>. In order to ensure quality and reliability in the mixed methods study, an experienced researcher in the method evaluated the design and the steps proposed, as recommended by the *Mixed Methods Appraisal Tool*<sup>23</sup>.

## RESULTS

### Quantitative stage

Of the 84 (100%) aged people participating in the study, 83.3% were female. In relation to age, the participants had a mean of 72.5 ( $\pm 7.2$ ) years old, 3.9 years older when compared to the first research stage. There was also predominance of aged people, widows (47.6%), white-skinned individuals (56.0%), with one to four years of study (64.3%) and living in regions of high social vulnerability (45.3%). In both phases of the study, most of the older adults lived with a family member (73.8%), 11.9% underwent a change in constitution of the arrangement, leaving their family to live alone, 8.3% remained in a single-person arrangement and 6.0% began to live with a family member. In relation to the first phase of the study, there was a 5.9% increase in the number of aged people in a single-person arrangement and 14.2% in relation to those who live with grandchildren.

It was observed that most of the interviewees remained with close ties; however, there was an increase in reports of conflicting relationships at home (7.2% increase) and with family members outside the house (42.8% increase); this increase was also observed in distant relationships, both internal (2.4% increase) and external (greater than 21.4%) to the home.

In addition to the family relationships, the existing ties with the community were evaluated. Most (54.7%) of the older adults increased the number of ties over time, 31.0% reduced it and 14.3% remained with the same number of relationships. The most cited social support ties in the first phase of the study were religious institutions (57.1%), with preponderance of health services in the second phase (60.7%), which showed a 20.2% increase. There was an addition of links with leisure (22.7%) and family (13.1% increase) activities and a reduction in the number of links with social institutions (2.4% decrease) and work (4.7% loss).

When performing the Wilcoxon test, a statistical analysis of comparison between the first and the second phases of the study was conducted to assess the frailty, QoL and cognition variables. There was a significant worsening in the frailty assessment ( $p=0.013$ ). IN relation to WHOQOL-BREF, there was a significant reduction in the physical ( $p=0.009$ ) and social relationships ( $p=0.002$ ) domains. The only significant improvement observed was in sensory functioning ( $p=0.037$ ), belonging to WHOQOL-OLD. In this same instrument, there was worsening in the scores for autonomy ( $p<0.001$ ) and social participation ( $p<0.001$ ). Cognition presented a significant improvement over the years ( $<0.001$ ), even though most of the population studied (92.7%) remained with signs of cognitive decline (score  $\leq 26$  points).

The type of family arrangement showed no significant change in relation to the frailty and cognition data. However, some changes were noticed in QoL, as shown in Table 1.

**Table 1** – Comparison of the quality of life domains in both phases of the study with the type of arrangement presented in the second phase. São Carlos, SP, Brazil, 2022. (n=84)

Quality of life domains	Single-person arrangement n=17		Presence of children n=40		Presence of grandchildren n=46		Single-person arrangement n=8	
	Mean (SD)	p-value†	Mean (SD)	p-value†	Mean (SD)	p-value†	Mean (SD)	p-value†
WHOQOL-BREF								
Physical Domain, 1 <sup>st</sup> phase	60.1 (15.3)	<b>0.044</b>	62.1 (16.4)	0.6	57.8 (17.3)	0.051	65.2 (14.3)	0.531
Physical Domain, 2 <sup>nd</sup> phase	49.2 (16.2)		54.3 (17.3)		54.3 (17.4)		64.7 (15.8)	
Psychological Domain, 1 <sup>st</sup> phase	60.2 (21.0)	<b>0.031</b>	62.8 (15.9)	0.7	59.2 (17.9)	0.218	68.2 (6.7)	0.269
Psychological Domain, 2 <sup>nd</sup> phase	54.7 (14.3)		56.5 (15.3)		59.2 (14.9)		58.9 (21.1)	
Social Relationships Domain, 1 <sup>st</sup> phase	65.7 (14.4)	0.290	68.7 (11.7)	0.4	65.8 (12.1)	<b>0.047</b>	70.8 (8.9)	0.446
Social Relationships Domain, 2 <sup>nd</sup> phase	60.8 (17.9)		59.4 (16.4)		59.8 (17.5)		57.3 (21.6)	

Table 1 – Cont.

Quality of life domains	Single-person arrangement n=17		Presence of children n=40		Presence of grandchildren n=46		Single-person arrangement n=8	
	Mean (SD)	p-value†	Mean (SD)	p-value†	Mean (SD)	p-value†	Mean (SD)	p-value†
Environment Domain, 1 <sup>st</sup> phase	54.2 (19.9)	0.740	54.9 (15.4)	0.7	55.5 (15.7)	0.903	62.5 (7.8)	0.109
Environment Domain, 2 <sup>nd</sup> phase	52.9 (16.4)		50.7 (13.3)		53.0 (14.6)		51.2 (12.9)	
WHOQOL-OLD								
Sensory Functioning Domain, 1 <sup>st</sup> phase	57.7 (18.9)	0.293	64.5 (20.6)	0.4	62.1 (22.7)	0.832	78.9 (18.9)	<b>0.022</b>
Sensory Functioning Domain, 2 <sup>nd</sup> phase	66.4 (23.6)		65.2 (23.3)		67.1 (22.1)		70.3 (23.1)	
Autonomy Domain, 1 <sup>st</sup> phase	61.8 (16.1)	0.324	65.2 (13.1)	0.991	65.2 (14.3)	0.88	64.1 (12.4)	0.804
Autonomy Domain, 2 <sup>nd</sup> phase	57.4 (14.8)		56.6 (13.4)		60.7 (12.2)		64.8 (7.4)	
Activities Domain*, 1 <sup>st</sup> phase	56.3 (18.8)	0.261	60.6 (15.4)	0.881	59.6 (15.1)	0.249	65.6 (11.1)	0.413
Activities Domain*, 2 <sup>nd</sup> phase	57.4 (15.5)		55.8 (14.1)		59.4 (15.6)		59.4 (18.6)	
Social Participation Domain, 1 <sup>st</sup> phase	62.1 (16.5)	0.696	64.7 (13.0)	0.729	62.9 (14.8)	0.248	63.3 (10.3)	0.395
Social Participation Domain, 2 <sup>nd</sup> phase	75.0 (11.6)		55.8 (14.8)		58.2 (14.5)		62.5 (18.9)	
Death and Dying Domain, 1 <sup>st</sup> phase	65.4 (27.3)	0.285	68.6 (22.8)	0.334	64.4 (22.5)	<b>&lt;0.001</b>	55.5 (20.2)	<b>0.028</b>
Death and Dying Domain, 2 <sup>nd</sup> phase	68.1 (22.5)		73.1 (21.8)		68.2 (21.3)		67.2 (22.6)	
Intimacy Domain, 1 <sup>st</sup> phase	59.2 (15.8)	0.107	61.9 (15.0)	0.175	61.7 (18.8)	0.592	67.2 (15.2)	0.412
Intimacy Domain, 2 <sup>nd</sup> phase	67.6 (13.5)		66.5 (14.7)		67.8 (15.4)		71.1 (18.3)	

Note: Mann Whitney Test;\* Past Present and Future Activities Domain; †p-value<0.05

## Qualitative stage

After performing the analyses, the participants' statements were grouped into categories in light of the theoretical perspective used in this study. Thus, three categories and nine subcategories emerged, presented in Chart 1.



**Chart 1** – Categories and subcategories obtained from the analysis of the Genograms and Ecomaps. São Carlos, SP, Brazil, 2022.

Categories	Subcategories	Tensions
1. Relational processes of the older adults with the family	a) Close and harmonious relationships b) Distant and conflicted relationship	Positive family relationship X Negative family relationship
2. Changes in the older adults' family configuration	a) Blended families b) Loss of a loved one	Family union X Family separation
3. Social assistance and support offered and received	a) Remote support b) Public institution c) Neighbors d) Aged caregiver e) Lack of support	Need for support X Older adult without support

## Data integration

It was perceived that the sample is comprised by an aged population mainly consisting in women, widows, individuals with low schooling and living in regions of social vulnerability. The environment of vulnerability in which they are inserted permeates conflicting relationships with children who use alcohol and drugs, indicated in the “Distant and conflicted relationship” subcategory, exemplified in the following speech: *Yesterday [...] the mother was crying here because he (son) wanted to beat her up, because he wanted the mother to give him money for drugs, and the mother didn't want to* (e1).

In addition, as observed in the “Close and harmonious relationships” subcategory, there are family ties of interdependence, in which the aged person offers support to family members in situations of financial need and receives care in return, as observed in the following speech: *We get along well because we're in need (the wife is bedridden) [...] they (granddaughter and husband) were there without a job and came here because they couldn't pay the rent [...]. She (granddaughter) already lives with us, so when she goes to get our payment, we give her some financial help* (e2).

In addition to that, there was worsening of frailty ( $p=0.013$ ), which indicated a greater need for care and dependence on the part of the older adult, corroborated by the expansion of close relationships with family members, increased ties with the community and greater demand for health services (20% increase). However, these data contrast with the difficulties faced by the aged people to gain access to a support network, observed in the “Social assistance and support offered and received” category, represented in the lines below: *It's very difficult, you see, I don't even attend (the Basic Health Unit) because they don't do anything for me* (e3). *When I need something? It's me and myself. I wash the clothes, iron them [...] I cook food for the neighbor and she brings me a package of food* (e4).

There was no significant relationship between frailty and the types of arrangement in the quantitative data; however, the qualitative data reinforced that it was not the conformation of an arrangement with children, grandchildren or a spouse that determined maintenance of the health conditions, but the relationships of support built within the family members. The “Distance support” subcategory reinforces the importance of a family support network for the older adult outside the house, comprised by children who cannot be with the aged person constantly, but are ready to help when requested, as exemplified by the following speech: *My son, I haven't seen him for two months, but I talk to him, he says he doesn't have time because he's working, but if I say that I need something, he comes* (e5).

In addition to that, a new social tie was mentioned, especially among the most frail, from which the “Neighbors” subcategory emerged, which appeared in the speeches as a street conversation contact, without much intimacy, but important enough to be listed as a bond built inside the community.

When compared to the arrangements, the QoL assessment presented some significant changes in relation to the aged person who lives alone, with a decrease in the physical ( $p=0.044$ ) and psychological ( $p=0.031$ ) domains. This worsening of the physical and psychological situation intensifies the need for a formal and informal support network, which was identified as deficient in the “Public institution” and “Lack of support” subcategories.

Aged people who live with grandchildren presented a decrease in QoL in social relationships ( $p=0.047$ ). In addition, they are the main caregivers of the family, mainly of the grandchildren, as observed in the “Aged caregiver” subcategory, according to the speech below: *So, I'm the one who raises them (the grandchildren), the way she does, telling the truth she abandoned her sick children, it's a sin. If you raise the children you have to take care of them (e6).*

In addition to that, there was an improvement in the death and dying domain ( $p<0.001$ ). Death and dying also presented a significant improvement in those who live only with their spouse ( $p=0.028$ ) and had grandchildren in the household ( $p<0.001$ ). In the joint analysis of qualitative data, the transformations that occurred in the family were observed, with experiences of loss reported in the “Loss of a loved one” subcategory, which showed that the death of a family member or multiple deaths caused changes in configuration of the family and in the aged person's own life, as highlighted: *My first girl got married and 15 days after her wedding her car crashed and she died in the accident. Then (another child) died of cirrhosis [...] then I had another one, he was 52 years old, he died of meningitis. The other also died of a stroke, six months pregnant. One after the other, my daughter (e7).*

In this study, there was a significant increase in the older adults' cognition ( $p<0.001$ ), with no relationship with constitution of the arrangement. However, factors that may have influenced these findings were observed in the qualitative data. For example, the relationship of the older adults with the social networks shown in the “Remote support” subcategory, observed in the following speech: *The Internet, I think it's my best friend [...] It's because that's where I have friends, where I get distracted [...] I have Facebook, Instagram, WhatsApp and I even have two cell phones (e8).*

Therefore, the joint analysis of the quantitative and qualitative data obtained in this study was fundamental to understand the profile of the older adults and the constitution of their family arrangement, in order to observe the influence of family relationships, tensions and health conditions.

## DISCUSSION

Through the longitudinal analysis it was observed that most of the older adults remained living with a family member. This finding is similar to that found in a longitudinal study carried out in the city of Uberaba, Brazil<sup>24</sup>. However, the single-person arrangements presented a 5.9% increase in the population studied.

A study carried out in China pointed out some difficulties of the older adults who lived alone, namely: lack of food, no one to take care of them, depression and health problems<sup>25</sup>. These data are in agreement with those shown in the “Lack of support” subcategory, including reports of aged people in single-person arrangements who felt helpless.

Another increase observed was that of aged people who lived with grandchildren. A study carried out in the United States and Romania also observed an increase in the prevalence of families comprised by grandparents and grandchildren. This fact was related to poverty, economic instability

and broken marriages. In the face of adversity, grandparents became the main support providers for the family<sup>26</sup>. These data are consistent with the “Aged caregiver” subcategory, including aged people who not only care for sick family members, but also for grandchildren who were abandoned or orphaned.

A considerable percentage of the older adults under study lived in intergenerational arrangements, but the fact of living with a family member was not a guarantee of support and care within the house. This is because the main source of support reported was distant. A number of researchers point out that there is a positive association between the frequency of contact with friends and family members and a reduced risk of frailty<sup>8</sup>. In addition, in the “Distant and conflicted relationships” subcategory it was possible to perceive aged people who lived with a family member but who had a negative relationship, which can interfere with the older adults’ QoL, increasing the stress and suffering levels<sup>27</sup>.

In this study, the older adults presented worsening of frailty, with no significant relationship with the type of arrangement. On the other hand, a cross-sectional study carried out in South Korea with 2,128 aged individuals found that those who lived only with a spouse or with a spouse and children presented lower prevalence of frailty<sup>28</sup>. The non-relationship found in this study can be related to the small sample size and, as it is a specific population in a situation of social vulnerability, there are no research studies in the literature devoted to the relationship between family arrangement and frailty in this specific population.

With regard to the worsening of frailty in the older adults investigated, it is emphasized that this syndrome has a tendency of annual progression, being even more intensified with increasing age and unfavorable health conditions<sup>29</sup>. In view of this, the results of this study may be related to the length of the segment and to the fact that this is a socially vulnerable population.

The QoL data presented a significant worsening in the physical and social domains of WHOQOL-BREF; as well as in WHOQOL-OLD’s autonomy and social participation. On the contrary, the Ecomap data showed an increase in ties with health institutions, leisure activities and family, in addition to a new link: the neighbors. Thus, despite the fact that the older adults presented an intensification of bonds with the community (data extracted from the Ecomap), the perception of their own personal and social relationships (assessed in the social and social participation domains) did not exert a positive influence on QoL. The worsening of frailty observed in this study may have influenced the results, as the literature has indicated an inverse correlation between frailty and QoL<sup>8-9</sup>.

In addition, frail older adults tend to expand the bond with the community, as they are more dependent on health institutions and family members<sup>8</sup>. The qualitative data corroborate these findings, as the emergence of the “Neighbors” category signals greater interaction with this social support network, most cited among the most fragile.

QoL presented a statistical relationship with the type of arrangement: those who lived alone had worse QoL in the physical and psychological domains. In a Brazilian study that used the same instruments, the worst results were found among aged people with this type of arrangement, in the social relationships, death and dying and intimacy domains<sup>11</sup>.

Aged people who lived with grandchildren presented an improvement in the death and dying domain, as well as those who lived only with their spouse. Although in this study this domain did not present significant changes in the general population, in these specific groups it was the domain with the highest mean during follow-up, as well as in another study developed with older adults<sup>9</sup>. Death is part of everyone’s everyday life, as aged people deal with losses throughout life, as shown in the “Loss of a loved one” subcategory; this can generate greater acceptance of death, to the point of not negatively interfering with QoL.

Although a number of studies found an association between frailty and cognition, the results of this longitudinal research pointed to worsening in frailty and to improved cognition levels. It is inferred that the justification for this contradiction is related to the family support offered at a distance and to the use of social networks available on the Internet to maintain the bond with family members who lived outside the arrangement.

A longitudinal study carried out in Brazil with community-dwelling aged people found a significant association between continuing to use the Internet and cognitive performance, with a greater chance of cognitive gain and less cognitive loss for the older adults who continued using the Internet; Without application of any cognitive training tool<sup>30</sup>.

In addition to that, by recognizing the aged population, over time, alterations and changes inherent to the historical process were identified, encompassed by historicity<sup>20</sup>. Aged people who use the Internet are a target for remote care. The epistemological category of totality also assisted in reflection and discussion of the results, considering the heterogeneity existing in this population, the diversity in the constitution of family arrangements and the relationships of old age with the family group and society, understanding that all these aspects are connected. In addition, the analyses of the tensions were also essential for the development of this study since, for dialectical materialism, they are responsible for the transformation and overcoming movements observed in society<sup>20</sup>.

In this study, positive family relationships (interdependent, harmonious and close relationships) versus negative family relationships formed by conflicting relationships were observed. In the constitution of the family arrangements, there was the tension of family union, guided by the need for proximity to the family members, versus family separation, the formation of a new arrangement or the death of a loved one. There was also apprehension between the need for support on the part of the older adult, aggravated by the worsening of health conditions and tensioned by the lack of support.

Therefore, for the concerns found in the older adults' family context to be overcome it is necessary to conduct appropriate interventions, with public policies that actually cover those in need, applying strategies aimed at family guidance and rescue of broken ties.

The limitations of this study are related to the small number of participants, due to the impossibilities imposed by the COVID-19 pandemic. This is the first mixed methods study to investigate this complex phenomenon in the light of dialectical materialism. It is suggested that future studies deepen this knowledge, as well as the possible transformation of arrangements and comparison over time, in order to address health and well-being conditions, in addition to the networks available for the support and care of older adults, mainly in the context of social vulnerability.

## CONCLUSION

The study did not find a significant relationship between frailty and cognition with the types of family arrangement, but the association was identified in some QoL domains, as aged people who lived alone presented worsening in the physical and psychological domains, those who had presence of grandchildren in the family composition had worsening in the social relationship domain and an improvement in the death and dying assessments, as well as those who lived only with their spouse.

In addition, data integration in the mixed methods study showed that family support was not limited to the size of the arrangement or to the specificity of its members. In addition to that, it can be offered at a distance, being influenced by the relationships and bonds formed by the family.

Therefore, health professionals, such as nurses, play an important role in promoting and protecting older adults' health. However, care for this population segment must consider the family and social context in which it is inserted, as family composition, relationships and interactions built over time can interfere with older adults' health and well-being.

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## NOTES

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### CONTRIBUTION OF AUTHORITY

Study design: Mota GMP, Zazzetta MS.

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Discussion of the results: Mota GMP, Zazzetta MS

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Review and final approval of the final version: Zazzetta MS, Lorenzini E.

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### CONFLICT OF INTEREST

There is no conflict of interests.

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