

***Profiles of Health-Feeding-Care of Older Adults in Argentina,
With Emphasis on the Modalities of Aging Typical in Córdoba***

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The Asian Conference on Aging & Gerontology 2024
Official Conference Proceedings

Abstract

To construct profiles of health-feeding-care of older adults (OA) in Argentina, identifying the quality of life according to provincial aggregation level (period 2019-2022) and to analyze the predominant aging patterns in the province of Córdoba.

Methods: An epidemiological-ecological and cross-sectional study was developed. Profiles of health-feeding-care were constructed based on cluster analysis with a provincial level and their distribution was illustrated (n=24). We used contextual and individual variables from the secondary sources. For the quality of life index, a linear regression analysis was carried out between this index and variables related to aging. To analyze the predominant aging profiles in Córdoba, the study population consisted of n=487 OA. Inferential statistics were used to analyze the relationships between variables, and a multiple linear regression model was also carried out, providing information on the degree, strength and direction of the relationship between variables.

Results: 5 clusters were identified but 3 stand out as the most representative (85% of population). The Regions were identified with significant disparities in the sociodemographic and living conditions of OA, their self-perceived health and well-being. The association between the quality of life index and aging variables allowed us to identify specific links between living conditions, health and healthy eating. When analyzed at local level, the heterogeneity observed among the elderly in Córdoba requires intermediate analyses that take into account the specificities of each population.

Conclusions: This study provides guidance for the design of comprehensive policies to reduce the vulnerability of OA and the adaptation of health care systems.

Keywords: Elderly, Ecological, Argentina, Health, Sociodemographic

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Introduction

Population ageing is one of the main demographic challenges the countries of the Latin American region are facing in the 21st century (Huenchuan, 2010). The result of scientific, medical and social advances, and should therefore be seen as an achievement. It is a profound and multifaceted process that affects family structures, leisure and culture, economies, the labor market, urban accessibility, political systems, consumption patterns, etc. (OISS, 2014). The care of older adults (OA) is a central component and a particular challenge for health care systems, social security systems in old age and humanity in general (Huenchuan, 2010). This situation becomes even more complex in the current context where social, economic and environmental factors act synergistically on health problems, increasing comorbidities and multimorbidities (Mendenhall et al., 2017). However, when addressing the health of OA, it is necessary to complexify the view of ageing as a process of physical and mental deficits and losses, and to integrate the life course perspective and with it the interpretations of health that are permeated by cultural, moral and existential categories. Thus, a higher level of well-being - a human construct open to multiple definitions, cultural and historical variations - is linked to a better perception of health. Dimensions such as autonomy, mastery of the environment, personal growth, purpose in life, social relationships and self-acceptance are key to a comprehensive view of health in OA (Cortese, 2018) (Cachioni et al., 2021).

In Latin America, the OA are in heterogeneous situations, with deep inequalities that affect the quality of life of this population, making this construct and its constituent factors more relevant, such as economic security, health, community integration and, in this case, the specificities of old age (Marquez Terraza, 2021). The countries of the region show great disparities in life expectancy, which is reflected in significant differences in the number of OAs per country. However, the region is expected to experience accelerated population ageing by 2060 (Huenchuan, 2018).

Argentina, along with Uruguay and Chile, are the most ageing countries in South America, going through a stage of advanced demographic transition, with a fertility rate below replacement level and a percentage of the population aged 60 and over of between 15% and 17% (United Nations, 2015). In Argentina, life expectancy at birth is 72.4 years for men and 79.9 years for women, above the regional average. Although older women have a longer life expectancy, recognized as the feminization of old age, this does not guarantee a better quality of life (Tinoboras, 2018). Likewise, these are the countries that have developed the most the human rights paradigm in their policies related to OA and the improvement of quality of life.

Specifically, in the province of Córdoba in Argentina, the second most populous and located in the center of the country, OA represents 16.6% (595 thousand over 60 years old and 107 thousand over 80 years old).

According to intercensal data (2001-2010-2022), this age group has grown faster than the rest of the population over this period (Abraham et al, 2021). This process of population ageing has been accompanied by changes in the prevailing health profiles. In this sense, local population studies have shown that 70% of OAs suffer from at least one chronic disease, with type 2 diabetes, hypertension and excessive malnutrition being the most prevalent (Martinez & Gaminde, 2011). The SARS-CoV2 (COVID-19) pandemic contributed to putting the OA situation in Argentina on the public health scene, with 80% of deaths occurring in people over 60 years of age, mainly in those with co-morbidities such as obesity, diabetes or chronic obstructive pulmonary disease (COPD) or other chronic health conditions. The OAs, in turn,

have had multiple effects, including reduced social contact, increased use of medications and psychotropic drugs, and a sedentary lifestyle with an accentuation of non-communicable diseases (Schwars, 2021; Abraham et al 2022). The health crisis that motivated and/or deepened the SARS-CoV2 pandemic exacerbated the care crisis as a major interrelated problem (Rico & Pautassi, 2021).

At this point, social medicine recognizes care as part of the historical and social processes of health-illness care, practice and disposition that contribute to the support and recovery of vulnerable bodies, both individually and collectively (Hersch Martinez & Salamanca González, 2022). It is emphasized that care is a social responsibility, a legal obligation and a right, which is why it must be shared (Pautassi, 2007). In this sense, the term 'care diamond' refers to the way in which families, the state, the market and community organizations produce and distribute care in an interrelated way (Razavi, 2007). Different approaches show its familial and feminized nature, as well as its denial and invisibility (Shokida et al, 2021). Meanwhile, the organization/distribution of care determines the ways in which caregivers and care recipients interpret and experience the world (Gherardi et al, 2012).

In the context of OA, care is a central category for understanding the possible and/or desirable ways of "going through life" that are expressed in self-care practices (Muñoz Franco, 2009). This perspective -care diamond- invites us to highlight the paradigm based on old age as a symptom/state - pathology - of fragility and passivity, in order to strengthen the one which recognizes old age as a natural stage of the life course, healthy and active, in terms of maintaining functional capacity.

Introducing the concept of care within the framework of social medicine allows us to explore the structural conditions that favour, hinder or impede the lives of OA (Hersch Martinez & Salamanca González, 2021). Meanwhile, the problematization of current ageing scenarios deepens and sharpens the debate on the challenges care systems are facing (which include social security, the health system and the multiple ageing processes) in Argentina in general and the province of Córdoba in particular, with the aim of reflecting on what change implies with individual and collective responsibility, under paradigms that articulate old age-health-care.

Therefore, this work aims to construct profiles of health-feeding-care of older adults in Argentina, identifying the quality of life according to provincial aggregation level (period 2019-2022) and to analyze the predominant aging patterns in the province of Cordoba.

Methods

Population Study and Design

The applied methodology will be addressed according to its frameworks analysis: national (Argentina) and local (Córdoba). At the national level, an ecological and cross-sectional epidemiological study was carried out, for which data from state secondary information sources were used (period 2018-2022), considering people over 60 years of age. The sources used were: the 4th edition of the National Survey of Risk Factors (ENFR, 2019), the National Census of Population, Households and Housing (CENSO, 2022), open data offered on the INSSJP¹ portal and the quality of life built by Velazquez (2020).

¹ Instituto Nacional de Servicios Sociales para Jubilados y Pensionados (PAMI)

At the local level, an observational, cross-sectional epidemiological study was carried out. The population study was formed through a non-probabilistic sample considering the size and population structure of this social group for the city of Córdoba and greater Córdoba, obtaining a total sample of $n=487$ OA. The inclusion criteria included being over 60 years of age and giving consent to participate in the study. Those people who were institutionalized could not be part of the selected sample.

A validated semi-structured survey was administered built from nationally and internationally validated instruments, such as: National Survey on Quality of Life of Older Adults (ENCaViAM) (INDEC, 2012) of the National Institute of Statistics and Census (INDEC, 2010); Survey of health, well-being and aging (SABE, 2005) of the Pan American Health Organization and Barometer of Social Debt with the Elderly of the Argentine Catholic University. It investigated sociodemographic and lifestyle data, as well as the dimensions of care and health status.

Statistical Analysis

At the national level, the hierarchical and cluster analysis technique was used to identify groupings of provinces (23 jurisdictions and the Autonomous City of Buenos Aires), using the ward method, in order to develop profiles of health, nutrition and care for older adults. This analysis included all relevant variables related to the contextual and individual dimensions of health, nutrition, care and socio-demographics. The contextual variables considered included health coverage (access through social service, prepaid system or emergency service vs. public coverage), educational level (up to incomplete primary/up to incomplete secondary/complete secondary and more), socioeconomic level (categorized into household quintiles according to income per consumer unit) and ageing index. The variables considered at the individual level were self-perceived general health and mood, level of autonomy, presence of co-morbidities (hypertension, diabetes, etc.), cohabitation status and lifestyle factors (level of physical activity, fruit and vegetable consumption, alcohol and tobacco consumption). Once the clusters had been created, their main characteristics were identified using analysis of variance (ANOVA).

Next, using the quality of life index (QLI) calculated by Velazquez et al. (2019), which includes socioeconomic and environmental dimensions for the Argentine territory, multiple linear regression models were constructed to identify possible associations between this index and variables related to the ageing process. Finally, those that showed a significant association with the QLI were included as covariates, such as the level of anxiety, the level of autonomy, the consumption of fruits and vegetables, the level of physical activity, the cohabitation status and the Health Vulnerability Index (HVI) (Vazquez et al, 2019).

In the second stage, at the local level, the predominant aging modalities in Córdoba ($n=487$) were characterized through the construction of indicators related to: food practices (food groups, methods of preparation, dietary changes), care practices (commensality, mobility and resolution of daily activities, formation of formal and informal containment networks, active and passive participation in recreational spaces) and health status (self-perception of health and mood, clinical and sensory evaluation, presence of non-communicable diseases, self-definition of independence). Chi-square tests or Fisher's exact tests, Student's t-tests and Pearson correlations were used to analyze the relationships between variables, depending on the nature of the variables.

StataV17 software (StataCorp. Texas. USA) was used to develop all the proposed analyses, as well as QGIS 3.28.3 software to display the spatial distribution of the profiles.

Ethical Statement

It is important to clarify that the data to be used at the national level were derived from secondary, publicly available and anonymized sources; no ethics committee review was required. For the second stage, at the local level, the confidentiality of the information was protected in all cases, and an informed consent process was implemented to guarantee the conditions of information, understanding and voluntariness of the participating subjects. The project was approved by the Ethics Committee of the National Hospital of Clinics.

Results

National Level: Argentina

Profiles of Health-Feeding-Care

The first step was to construct profiles of health-feeding-care. As shown in Figure 1, 5 profiles were identified, of which 3 (clusters 2, 3 and 4) stood out as the most representative, representing 85% of the total population. Firstly, cluster 2 (n=7) consisted of the central and southern provinces and was characterized by the highest educational attainment, socio-economic level and consumption of healthy food. Secondly, cluster 3 (n=8) was made up of provinces in the center of the country, where 60% of the Argentine population is concentrated. It had greater health coverage through social work, prepaid systems or emergency services, a higher average level of education, a higher ageing rate and self-perceived good health. Thirdly, cluster 4 (n=6), represented by provinces in the northwest of the country, was characterized by higher socioeconomic and lower educational levels, greater public health coverage, a lower ageing rate and low levels of physical activity. Finally, cluster 5 (represented by the Autonomous City of Buenos Aires) is mentioned because it differs significantly from the rest of the country, with characteristics above the population average, with 21% of the elderly population (national average 15%), a higher socioeconomic and educational level achieved, preferential use of health care through social work, prepaid system or emergency service, high levels of physical activity and autonomy, and a slight decrease in the presence of non-communicable diseases compared to the national average, although it shows a trend towards higher levels of tobacco and alcohol consumption. The variables included were significantly associated ($p<0.05$).

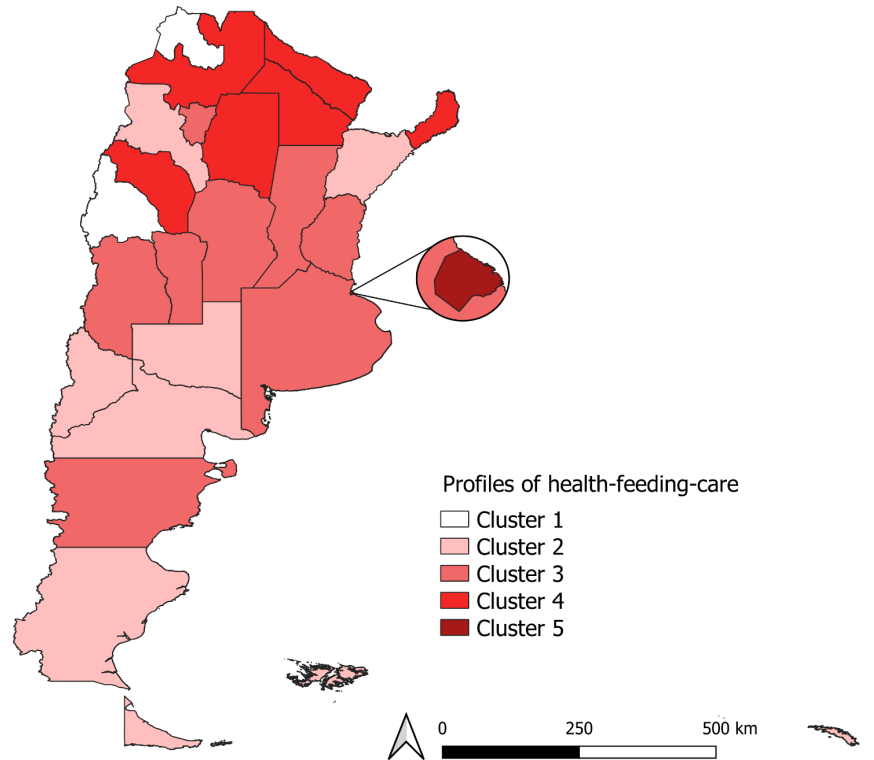


Figure 1. Provincial distribution of profiles of health-feeding-care for older people, Argentina (2018-2022).

Quality of Life Index and Aging Variables

In order to characterize the QLI associated with the ageing process in OA, several individual and contextual variables were analyzed. Figure 2 shows the distribution of the variables of interest according to the QLI.

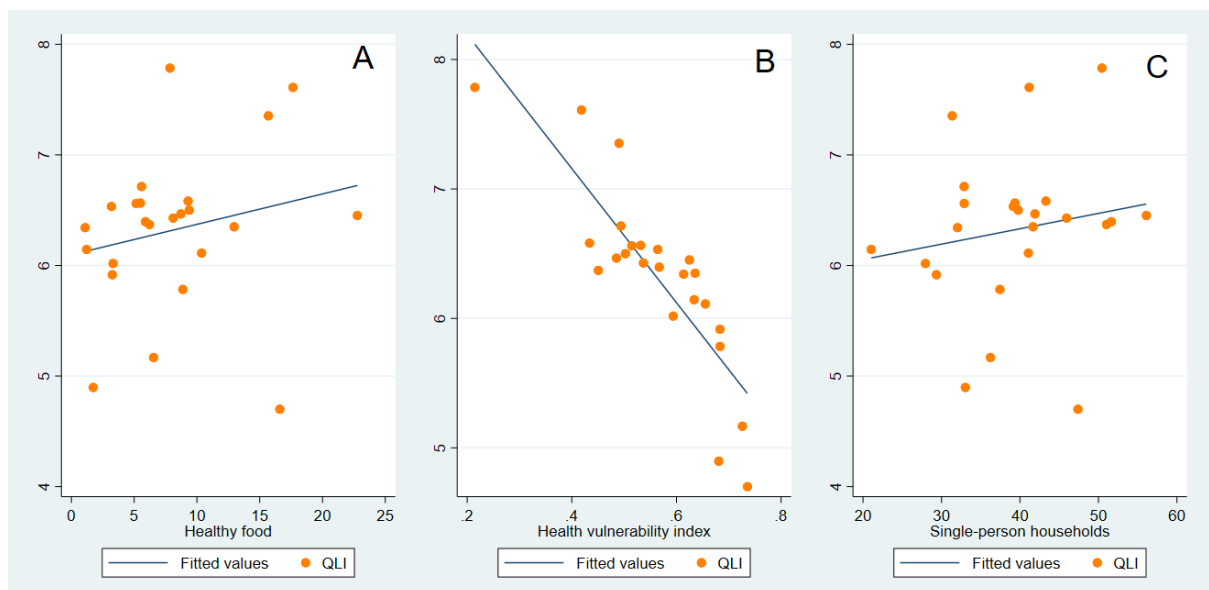


Figure 2. Distribution of the quality of life index according to: (A) consumption of healthy foods, (B) health vulnerability index and (C) proportion of single-person households.

From the multiple linear regression model, healthy diet (mainly associated with fruit and vegetable consumption), HVI (which includes not only the percentage of health insurance but also access to it) and cohabitation status represented by single-person households (living alone) showed a significant association ($p<0.05$) with QLI. It was found that as the proportion of people consuming a healthy diet increases, so does the QLI ($\beta=0.04$, 95% CI 0.004; 0.08, Table 1). Conversely, as both the HVI and the number of single-person households increase, the QLI decreases ($\beta=-4.80$, 95% CI -6.75;-2.86 and $\beta=-0.02$, 95% CI -0.05;-0.00006, respectively).

Variable	Coefficient β CI 95%
Low level of physical activity	-0.01 (-0.04;0.02)
High level of physical activity	0.01 (-0.03;0.06)
Single-person households	-0.02* (-0.05;0.00)
Health vulnerability index	-4.80** (-6.75;-2.86)
Fruits and vegetables consumption	0.04 (0.004;0.08)*
Autonomy level 3	-0.14 (-0.40;0.10)
Autonomy level 1	-0.01 (-0.08;0.05)
Low level of anxiety	0.01 (-0.04;0.06)
High level of anxiety	0.01 (-0.12;0.15)
*$p<0.05$ **$p<0.01$	

Table 1. Estimates of the linear regression coefficients and 95% confidence intervals for the covariates of interest, considering the quality of life index as the response variable. Argentina 2018.

Local Level: Ciudad de Córdoba

Local Aging Variables

The city of Córdoba has an ageing index of 56 (higher than the national average). This study, represented by OAs from 66 neighborhoods in the city of Córdoba and the Córdoba metropolitan area, presents socio-demographic characteristics and differentiated living conditions in terms of basic services, infrastructure, public services, income levels and education, among others.

Table 2 shows that 91% of the OAs interviewed consider themselves to be autonomous; 34% live alone, of which more than 60% are women, which is a significant value ($p<0.05$) for this group. With regard to people living alone, their relationship with the environment can be assessed through their frequent contacts, including family, neighbours and friends. 75% of all people with OA in the study considered their health to be good or very good. However, 85% reported having a non-communicable disease, 92% took medication regularly and 40% had

physical limitations related to mobility, with no significant differences between men and women ($p>0.05$).

		Women 78,6% (n=383)	Men 21,3% (n=104)	Entire Sample n % (n=487)
Coexistence Status	Live alone	32,1% (n=123)	21,1% (n=22)	29,8% (n=145)
	Single generation family	29,2% (n=112)	33,6%(n=35)	30,2% (n=147)
	Multigenerational family	38,6%(n=148)	45,2%(n=47)	40%=(n=195)
Feel autonomous	Yes	94,3% (n=365)	76,1% (n=79)	91,1% (n=444)
	No	4,7%(n=18)	24%(n=25)	8,9% (n=43)
Self-perception of health	Good/very good	80,7%(n=309)	53,8%(n=56)	74,9% (n=365)
	Regular/bad	19,3%(n=74)	46,1%(n=48)	25,1% (n=122)
Presence Non-Communicable Diseases	Yes	82,5%(n=316)	94,2%(n=98)	85% (n=414)
	No	17,5%(n=67)	5,8%(n=6)	15% (n=73)
Take medication	Yes	91,4%(n=350)	95,2%(n=99)	92,3% (n=449)
	No	8,6%(n=33)	4,8%(n=5)	7,7% (n=38)

Table 2: Frequency distribution of population characteristics of the Elderly, according to sex. Study with older people, City of Córdoba and Greater Córdoba, 2016-2019.

Stories From Older Adults From the City of Córdoba

Complementary to the results presented, stories from OAs from the city of Córdoba are recovered, which contribute to the understanding of local aging patterns linked to autonomy in carrying out and resolving activities of daily life *"I do the shopping"*, *"I'm going to get paid"*, *"I go for a walk"*, *"I live alone"*; participation in recreational spaces *"Participating in the garden renews my energy, we talk, it makes me feel good"*; self-care practices linked to health mainly *"I take care of myself with food, but what does me best is dancing"*; and finally the social support networks that allow the sustainability of the life of the OA *"Some of my children or the neighbors always stop by during the week"*.

Discussion

Comparing the results obtained in this work, links are found with population studies that show a marked trend towards greater ageing in the center of the country, which is estimated to be due to greater access to services in general and, in particular, to care and health (INDEC, 2023). For its part, the Argentine Social Debt Observatory (2023), referring to the state of coexistence of OA, postulates that people living in single-generation households have

greater emotional support (represented by care practices) and economic support compared to single-person and multi-generation households, which creates a protective environment for OA.

Different profiles of health-feeding-care were identified by regions with significant disparities in the socio-demographic and living conditions of OA, their self-perceived health and well-being. These results are directly related to studies claiming a direct link between greater socioeconomic inequality and lower levels of self-perceived health (Rodríguez Lopez et al., 2017). Among the different profiles, a higher proportion of women was found, with values close to 60% between clusters 1 and 3. This situation does not escape the global reality of OA, where the aforementioned phenomenon of feminization of old age is recognized, which often faces precarious conditions due to low income, care burden, lower economic participation that generates greater vulnerability and lower social coverage (Pelaez & Minoldo, 2018). Similar results were observed by Rodríguez López et al. (2022), who found that life expectancy was higher in the center and northwest of the city of Córdoba, especially among women. Thus, the increase in the demand for care in old age undoubtedly requires a gender perspective, since the dependent older adult population in the not too distant future will be made up to a greater extent of women who, in addition to needing care, will also have to take care of other adults (OA caring for OA), due to the double task imposed on them by society.

An analysis of the HVI shows that the province of Córdoba has a medium-low level of vulnerability, ranking tenth among the other Argentine provinces, and recognizing a high level of health coverage. However, a more detailed analysis of the city of Córdoba shows an increase in health vulnerability compared to the provincial average, with greater difficulties in accessing health services in the different neighborhoods of the city. This situation shows that OAs have to travel long distances to access more complex services or higher quality health care, a situation that is associated with lower quality of life and poorer self-perceived health (Prieto-Flores et al., 2021).

In recent years, according to the ENFR (2018), there have been some improvements in access to preventive health care and a decrease in smoking; however, rates of obesity, physical inactivity and unhealthy diet have increased. Only 6% of people over the age of 18 met the recommended dietary intake. Meanwhile, in the present work, fruit and vegetable consumption was associated with better quality of life in OA, highlighting their importance as health-protective factors. In the same vein, other work has found that lower socioeconomic levels are associated with inequality and poorer diet quality (Kovalskys I et al, 2020).

From a local perspective, and in line with studies carried out in the same area, health takes on a different meaning in terms of a more positive self-perception, despite the high prevalence of noncommunicable diseases and medication use. This is mainly due to the link with daily self-care practices. Recognized self-care practices include those of socialization, mental health, physical activity and autonomy. This approach allows us to see that the characteristics of the life of OA, such as daily dynamics, housing realities, family and community networks, health and nutritional conditions, socialization practices, constitute contextual conditions of ageing processes. Meanwhile, Abraham et al. (2021) recognize that analyzing the health and nutrition of older adults in their context allows us to identify points of convergence between dominant ways of ageing, making visible the beginnings of social change. In this sense, the proposals of Vanoli and Beltramone (2021) are recovered, who observed a great heterogeneity in the distribution of older people, with conglomerates of census radii with a

heterogeneous old-age dependency index, highlighting that 28% of the OA do not have a green space within 300 meters. Mazzetti and Crissi (2018) analyzed the ageing of the population as a component of the territorial planning of Córdoba, highlighting, among other things, the high concentration of OA in the central, western and eastern areas of the province, given the natural, economic, educational and cultural conditions that tend to favor migration processes (within the province and even from other provinces) in search of greater contact with nature. This has a particular relationship with self-perceptions of quality of life and changes in the dynamics that ensure well-being.

The data provided by this study allow us to show the great heterogeneity of the aging process in Argentina, expressed in the quality of life index presented by Velazquez et al. (2019), which, when analyzed at the local level, the ways of inhabiting the territories and the different forms of community insertion, take into account micro realities that construct diverse scenarios that are impossible to unify (Mazzetti and Crissi, 2018). Meanwhile, the idea is confirmed that the ageing process is not uniform, linear or homogeneous, largely due to the different social processes that generate inequalities (Tinoboras, 2018).

Conclusion

The results offered by this study constitute an important contribution at the national level in terms of the diversity of Profiles of Health-feeding-care and their distribution according to the socio-demographic and living conditions of the OA. However, when analyzing the data at the local level - the city of Córdoba - the heterogeneity observed among the OAs raises the need for intermediate analyzes that recognize the specificities of each population.

Therefore this study provides guidance for the design of comprehensive policies to reduce the vulnerability, inequality of OA and the adaptation of health care systems. The value of this lies in the need to rethink social policies in which representative and participatory, comprehensive and sustainable designs are implemented, based on the rights of active and autonomous transparency; that is, social policies where old age and aging are conceived as a process, contemplating the course of life and its discourses, and incorporating the analysis of the intermediate level, linked to community and local social fabrics. In turn, the formation of an interdisciplinary team allowed a comprehensive and complementary look at the variables under study, incorporating different work perspectives.

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