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Functionality of the elderly in Chile: Results based on the REM-P5 (2012-2016)

Funcionalidad de las personas mayores en Chile: Resultados basados en el REM-P5 (2012-2016)

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ABSTRACT

Background: In Chile the older people increasing in the last decades. Have settled com- prehensive policies of positive aging whit the objective of protecting the functional health of older people. However, there is a little bit of evidence on the current situation's functionality of this age group population.

Objetive: To characterize the functionality of Chilean older people based in reports to REM-P5 between 2012 -2016 years.

Materials and methods: Study with quantitative approach whit no experimental design, of descriptive scope and retrospective cut. National and regional records were taken from the years 2012-2016 of REM-P5 Section A, as well as the entry and exit records of the Mas Self-Employed Seniors program were recorded.

Results: A decrease in functionality was evidenced between 2012-2016 (1.4%). During this period, a higher percentage of functionality was observed in men than in women and a decrease in functionality as they aged. The northern and extreme south areas concentrated the highest percentage of older people with high levels of functionality and total dependence. Related to the "Más Adultos Mayores Autovalentes" Program, the number of people who maintained self-valence increased over those who improved their self-valence (7% difference) between years 2015-2016.

Conclusion: The functionality of older people in Chile has been decreasing, with differences by sex and region. These findings could help focus intervention and monitoring health policies aimed at the functionality of older people.

Keywords: aged, aging, personal autonomy, frail elderly, public policy [MeSH].

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RESUMEN

Antecedentes: En Chile la población de personas mayores se ha incrementado en las últimas décadas. Se han establecido durante los años políticas integrales de envejecimiento positivo con el fin de proteger la salud funcional de las personas mayores. No obstante, existe escasa evidencia sobre las características poblaciones de la funcionalidad de este grupoetario.

Objetivos: Caracterizar la funcionalidad de personas mayores chilenas basadas en reportes del REM-P5 entre 2012-2016 según sexo, edad y zona geográfica y describir los ingresos y egresos del programa Más Adultos Mayores Autovalentes.

Materiales y métodos: Estudio de diseño no experimental, de alcance descriptivo y de corte retrospectivo. Se tomaron registros nacionales y por región de los años 2012-2016 del REM-P5 Sección A, así como los registros de ingreso y egreso del programa Mas Adultos Mayores Autovalentes.

Resultados: Se evidenció una disminución de funcionalidad entre 2012-2016 (1,4 %). Durante este periodo se observó un mayor porcentaje de funcionalidad en hombres que en mujeres y un descenso de la funcionalidad a medida que envejecían. Las zona norte y extremo sur concentraron el mayor porcentaje de personas mayores con altos niveles de funcionalidad y dependencia total. En el Programa Más Adultos Mayores Autovalentes, aumentaron las personas mayores que mantuvieron autovalencia sobre quienes mejoraron su autovalencia (Δ=7% de diferencia) entre 2015-2016.

Conclusión: La funcionalidad de las personas mayores en Chile ha disminuido con los años, existiendo diferencias por sexo y región. Estos hallazgos podrían ayudar a enfocar las políticas sanitarias de intervención y monitorización orientadas a la funcionalidad de personas mayores.

Palabras clave: anciano, envejecimiento, autonomía personal, anciano frágil, política pública [DECs].

INTRODUCTION

Aging is a normal process that causes structural, functional and molecular changes (1,2), altering the homeostatic balance of the organism and promoting repercussions at the social, cognitive and physical levels (3,4). By 2020, worldwide the number of people will exceed the group ≤5 years, reaching 2000 million by 2050 (5). In Chile, this reality is no different, since according to CENSO 2017 the population aged ≥60 years corresponds to 2 850 171 people (16.2 % of the population) (6) and it is predicted that by 2035 the elderly will reach 3 993 821 (18.9 % of the population) (7).

In view of this situation, the World Health Organization (WHO) has established multisectoral action plans for the healthy and active aging of the population (8). In Chile, strategic objectives and a comprehensive policy of positive aging focused on the elderly have been developed, with the objectives of reducing morbidity and mortality, improving the health of people throughout the life cycle and improving their functionality (9). In this line, the Functionality Examination of the Elderly (EFAM) is used to assess the level of functionality (10,11) and the Barthel Index (BI) to measure the ability to perform activities of daily living and to assess the ability to perform activities of daily living (11,12), to quantify the level of dependence (12,13). The IB is applied in elderly people with technical aids or orthoses that require assistance or who are mentally handicapped (11).

The data on the application of predictors of functionality in the elderly are organized and recorded in the P5 Monthly Statistical Register (REM), which measures the population under control according to EFAM or IB (14). Despite the existence of freely accessible digital platforms with health information, such as the Department of Health Statistics and Information (DEIS), derived from the REM, which have data on population impact and can contribute to the creation of ministerial policies, there is little scientific evidence and analysis based on their results. A study focused on creating a map of the functionality of the elderly in Chile would make it possible to know the changes generated over the years, provide epidemiological input to identify gaps and good practices according to geographical areas and generate sectorized public policies.

Two objectives were set: a) to characterize the functionality of Chilean elderly based on REM-P5 reports between 2012-2016, according to sex, age and geographic area, and b) to describe the admissions to and discharges from the Más Adultos Mayores Autovalentes program between 2015-2016.

MATERIALS AND METHOD

Study design: A non-experimental, descriptive, descriptive and temporally retrospective study.

Population and sample: Data were taken from the years 2012-2016 obtained from REM-P5 Section A, which corresponds to the entire Chilean population under control by public health functionality condition. The data obtained are representative of the national population in the period of years analyzed and were national and regional.

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At the time of the study, the territorial division in Chile included 15 regions: Arica and Parinacota, Tarapacá, Antofagasta, Atacama, Coquimbo, Valparaíso, Metropolitana de Santiago, Libertador Bernardo O'Higgins, Maule, Bíobío, Araucanía, Los Ríos, Los Lagos, Aysén del General Carlos Ibáñez del Campo and the Region of Magallanes and Chilean Antarctica. In 2017, from the division of the Bíobío Region, the Ñuble Region was created, which came into effect in 2018, increasing the total number of regions to 16. The records by province, commune, health service and establishment were excluded because it was considered that there was too much geographical disaggregation of the information. In addition, we excluded data from native peoples and emigrants, since their registration began in 2014. The research was ascribed to the Helsinki declaration and its actualization in Fortaleza, Brazil (2013), and was reviewed and approved by a scientific ethics committee of a private university in southern Chile (approval code 18.20).

Variables

Functionality: It was measured through the national statistical information system REM-P5 Section A. It considered individuals who had an appointment with the different health professionals up to a maximum of 11 months and 29 days of non-attendance at the cut-off date (15). These health statistics are periodically sent to the DEIS by the facilities belonging to the National Health Services System, constituting a tool for monitoring health programs and agreements (16). The DEIS, for its part, is a body whose objective is to ensure the quality of the data from the information sources declared as official, to ensure their dissemination, and to provide this information for health sector management at different levels (17).

After application of the EFAM, the elderly are categorized according to level of self-valence into self-valent with risk, self-valent without risk and at risk of dependence, and after application of the Barthel Index they are categorized according to level of dependence into mild, moderate, severe or total dependence (18).

Incomes and outputs of the Más Adultos Mayores Autovalentes program: The Más Adultos Mayores Autovalentes (+AMA) program is a government program that aims to contribute to improving the quality of life of the elderly, prolonging their self-valence with comprehensive care based on the family and community health model. It begins with the participation of the elderly people who have been found in the EFAM to be self-valence, self-valence with risk and at risk of dependency

(19,20). The registry of admissions and discharges to +AMA is found in REM Series A05 Section M and the existence of the population under control in the +AMA program by functional condition in REM P5 Section A.1 (21). This program was implemented and approved by the Undersecretary of Health Care Networks in 2015, so information from this year to 2016 is used, which corresponds to the latest data validated by the DEIS at the time of registration for this study.

Statistical analysis: The data were tabulated and analyzed using Excel-Office 365. Absolute and percentage frequencies were used to present the qualitative variables. A synthesis of the findings from the data obtained from REM-P5 was presented. The data was organized in figures, maps and tables.

RESULTS

A decrease in the functionality of the elderly was observed from 2012 to 2016 (87 to 85.6%; Δ= -1.4%). Between each year, except between 2014-2015, there was a decrease in functionality and consequently an increase in dependency (Figure 1).

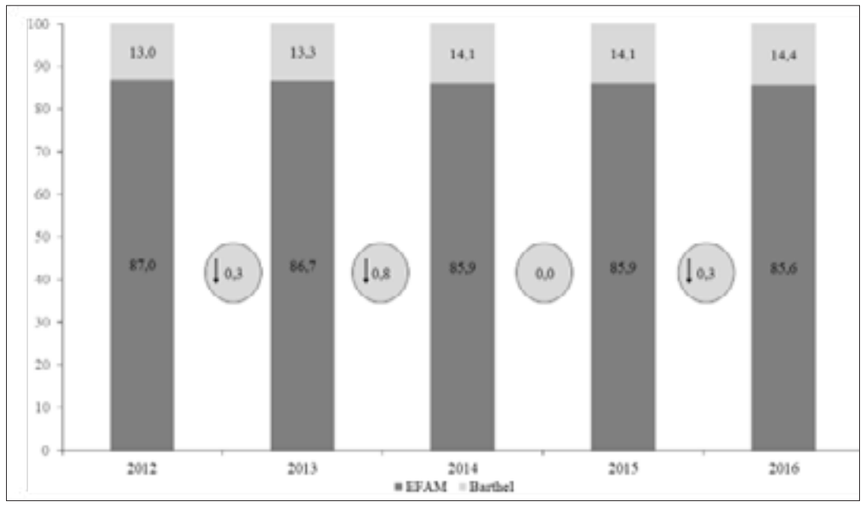

Figure 1. Functionality and total dependency of the elderly in Chile between 2012-2016. Data are presented in percentages

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When the level of functionality of all older people was analyzed during 2012 and 2016, an increase in self-valence without risk (41.2 to 43.2 %; Δ= 2 %) and a decrease in self-valence with risk (28.7 to 27.5 %; Δ=-1.2 %) and risk of dependence (17.2 to 14.8 %; Δ=-2.4 %) were observed. When the levels of dependency are analyzed, it is observed that the mildly and totally dependent elderly increased (6.6 to 8.7 %; Δ=2.1 % and 1.8 to 2.0 %; Δ=0.2 %, respectively), the moderately dependent decreased (3.0 to 2.2 %; Δ=-0.8 %), and the dependent severe were maintained (1.7 to 1.7 %; Δ=0 %). These trends in functionality and dependence between 2012-2016 were maintained in men and women and across age ranges (Table 1).

When comparing functionality by sex, in each year a higher percentage of self-valid patients without risk was observed in men than in women and, conversely, a lower percentage of self-valid patients with risk and with risk of dependence. With respect to the levels of dependency, a higher percentage of men with mild dependency than women were observed in each year. On the contrary, a higher percentage of women with moderate, severe and total dependence was observed with respect to men (Table 1).

When comparing functionality between age ranges, a greater number of self-valence older persons without risk and self-valence with risk were observed in each year between 65-69 years than between 70-79 years and ≥80 years, and a lower number of older persons with risk of dependency between 65-69 years than between 70-79 years and ≥80 years. With respect to the levels of dependency, fewer older persons with mild, moderate, severe and total dependency were observed in each year between 65-69 years than between 70-79 years and ≥80 years (Table 1).

Table 1. Functionality and dependency of older persons in Chile between 2012-2016, by sex and age range

Assessment instrument/ Functional and dependency status			2012	2013	2014	2015	2016
EFAM	Self-valent without risk	Man	44,6	44,4	44,7	46,0	46,6
		Woman	39,0	38,8	39,0	40,3	40,8
		65-69 years	52,1	51,9	52,4	54,1	54,4
		70-79 years	43,7	43,7	44,1	45,7	46,9
		80 and over	25,5	25,5	25,5	25,8	26,2
		Total	**41,2**	**41,0**	**41,2**	**42,5**	**43,2**
	Self-valent with risk	Man	27,6	28,1	28,0	27,2	27,0
		Woman	29,3	29,5	29,8	28,7	28,2
		65-69 years	32,5	33,1	33,1	32,3	31,9
		70-79 years	30,7	30,8	31,1	30,3	29,7
		80 and over	21,1	21,5	21,6	20,3	19,4
		Total	**28,7**	**28,9**	**29,1**	**28,1**	**27,5**
Barthel	Risk of dependence	Man	15,8	15,5	14,5	14,1	13,6
		Woman	18,0	17,7	16,4	16,0	15,5
		65-69 years	10,3	9,8	9,2	8,4	8,4
		70-79 years	16,0	15,7	14,6	14	13,4
		80 and over	26,1	25,7	23,6	24,1	23,3
		Total	17,2	16,8	15,6	15,3	14,8
	Slightly dependent	Man	6,2	6,7	7,1	7,3	7,3
		Woman	6,9	7,6	8,0	8,6	9,0
		65-69 years	2,9	3,0	3,0	3,2	3,5
		70-79 years	5,4	6,0	6,1	6,4	6,6
		80 and over	12,5	13,7	14,6	15,9	17,2
		Total	**6,6**	**7,3**	**7,6**	**8,1**	**8,7**
	Moderate dependent	Man	2,7	2,3	2,1	2,0	2,0
		Woman	3,1	2,7	2,4	2,3	2,3
		65-69 years	1,0	0,9	0,8	0,8	0,8
		70-79 years	2,0	1,7	1,5	1,4	1,4
		80 and over	6,7	5,5	4,9	4,9	4,9
		Total	**3,0**	**2,5**	**2,3**	**2,2**	**2,2**
	Severely dependent	Man	1,5	1,5	1,5	2,1	1,5
		Woman	1,8	1,7	2,4	1,8	1,8
		65-69 years	0,6	0,6	0,8	0,6	0,5
		70-79 years	1,1	1,0	1,5	1,0	0,9
		80 and over	3,8	3,7	5,1	4,0	4,1
		Total	**1,7**	**1,6**	**2,3**	**1,7**	**1,7**
	Total Dependent	Man	1,5	1,6	1,6	1,8	1,8
		Woman	1,9	2,0	2,1	2,3	2,4
		65-69 years	0,6	0,6	0,6	0,7	0,6
		70-79 years	1,1	1,1	1,1	1,2	1,1
		80 and over	4,2	4,3	4,8	5,1	4,9
		Total	**1,8**	**1,9**	**1,9**	**2,1**	**2,0**

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When analyzing the elderly evaluated with EFAM, according to functional status and geographic location, it was observed that the three regions with the highest percentage of self- valence elderly without risk of dependency were Arica y Parinacota (62.2%), Tarapacá (58.1%) and Aysén del General Carlos Ibáñez del Campo (52.7%). The regions with the highest percentage of self-valence elderly people at risk of dependency were Maule (38.8%), Los Ríos (34.5%) and Los Lagos (34.0%). On the other hand, the three regions with the highest percentage of elderly people at risk of dependency are in the southern part of the country, in Araucanía, Los Ríos and Los Lagos, with 24.2%, 24.0% and 23.1%, respectively (Figure 2).

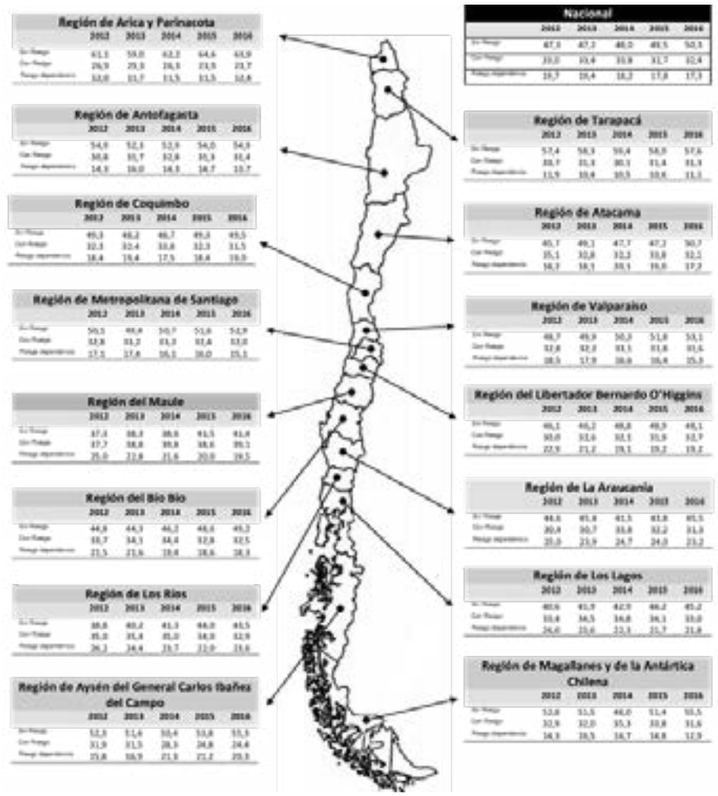

Figure 2. Elderly people evaluated with EFAM, according to condition of functionality and geographic location

When analyzed with IB, according to level of dependency and geographic location, the three regions with the highest percentage of elderly people at risk of mild dependency were: Arica y Parinacota (66.0 %), Valparaíso (61.6 %) and Maule (59.9 %). The three regions with the highest percentage of elderly people at risk of moderate dependency were Tarapacá (22.6%), Coquimbo (20.1%) and the region of Bernardo O'Higgins (19.5%). The three regions with the highest percentage of elderly people at risk of severe dependency were Antofagasta (19.2%), Tarapacá (18.4%) and Araucanía (15.2%). Finally, the three regions with the highest percentage of elderly people at risk of total dependency were Magallanes y de la Antártica (26.6%), Tarapacá (22.1%) and Aysén (18.4%) (Figure3).

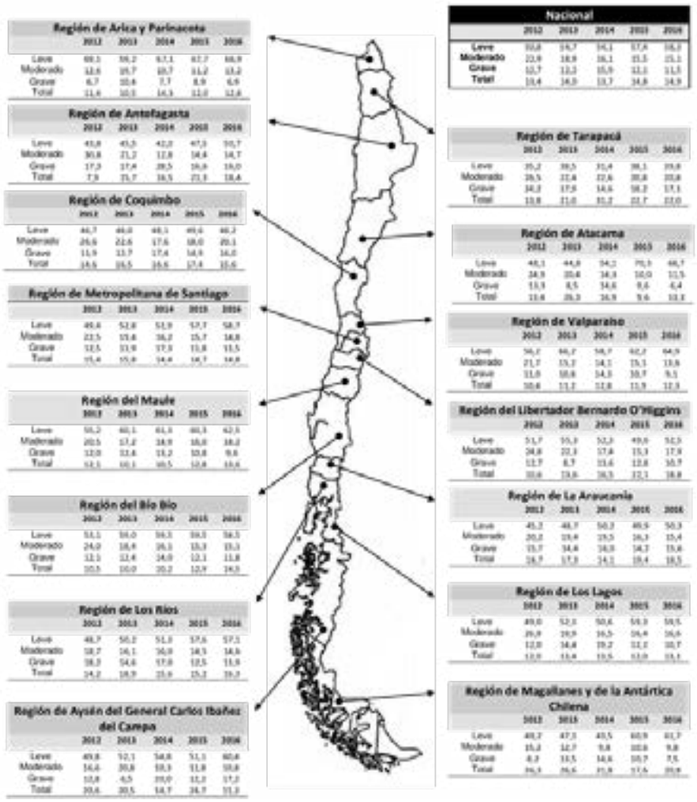

Figure 3. Elderly people evaluated with Barthel index. level of dependence and geographic location

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When analyzing the entries and exits of elderly people to the +AMA program between 2015-2016, it is evident that there is a decrease in entries between these years and an increase in the number of elderly people who maintain functionality over those who improve. When analyzed by region, it was observed that the three regions that presented the lowest percentage of admissions to the program, on average between the years evaluated, were Arica and Parinacota (3.3%), Antofagasta (5.7%) and Aysén (7.2%).

%). In terms of discharges, the three regions with the fewest patients discharged with improved functionality were Araucanía (20.3 %), Antofagasta (31.5 %) and Arica y Parinacota (32.7 %) (Table 2).

Table 2. Incomes and outflows of the Más Adultos Mayores Autovalentes program between 2015-2016, by functionality status and geographic location

Regions	2015						2016					
	Revenues				Expenses		Revenues				Expenses	
	SR	CR	RD	Total	maintain functionality	improve functionality	SR	CR	RD	Total	maintain functionality	improve functionality
R. of Arica and Parinacota	5,1	5,0	3,0	4,8	68,7	31,3	2,0	1,8	0,8	1,8	66,0	34,0
R. of Tarapacá	22,7	13,0	7,6	18,0	55,0	45,0	9,7	10,5	4,8	9,4	66,8	33,2
R. of Antofagasta	8,5	7,6	6,3	7,9	64,5	35,5	4,2	2,7	3,3	3,6	72,6	27,4
R. of Atacama	2,3	2,6	3,5	2,6	46,0	54,0	15,9	12,4	12,8	14,3	39,5	60,5
R. of Coquimbo	7,8	4,7	2,9	5,9	62,9	37,1	13,4	7,6	4,0	9,8	59,3	40,7
R. of Valparaíso	11,7	10,6	7,1	10,6	57,4	42,6	7,2	6,5	3,7	6,5	59,5	40,5
R. Metropolitan	14,1	11,6	8,1	12,3	52,9	47,1	13,3	10,4	5,9	11,2	60,2	39,8
R. of O'Higgins	13,1	12,4	11,3	12,5	55,3	44,7	20,4	16,2	10,4	17,2	59,2	40,8
R. of Maule	11,7	12,4	13,5	12,3	49,1	50,9	9,5	6,9	4,6	7,5	58,0	42,0
R. of Biobío	15,5	12,9	9,1	13,5	51,4	48,6	17,6	11,5	6,5	13,6	60,0	40,0
R. de la Araucanía	9,7	13,4	8,5	10,6	79,0	21,0	8,6	8,0	3,9	7,4	80,4	19,6
R. of Los Rios	7,3	8,3	6,4	7,5	32,7	67,3	9,3	6,6	3,6	7,1	42,6	57,4
R. de Los Lagos	12,6	13,0	7,3	11,6	49,9	50,1	18,5	12,0	5,6	13,7	72,9	27,1
R. of Aysén	8,1	11,4	15,4	10,5	44,0	56,0	4,4	2,7	5,8	4,2	78,1	21,9
R. of Magallanes and the Antarctica	6,9	6,6	9,4	7,2	58,8	41,2	10,1	9,5	7,3	9,6	66,9	33,1
Grand total	12,7	11,3	8,4	11,5	54,5	45,5	12,6	9,5	5,6	10,4	61,5	38,5

SR: Without Risk, CR: With Risk, RD: Dependency Risk.

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DISCUSSION

The main results suggest that functionality decreased, and dependence increased among the elderly between 2012-2016. Mainly, there was a decrease in self- valence elderly people at risk and at risk of dependency and an increase in elderly people with mild and total dependency. During this period, a higher percentage of functional men than women and a decrease in functionality with increasing age were observed. In relation to geographic location, the north and extreme south of Chile had the highest percentage of elderly people with high levels of functionality and total dependence. In terms of +AMA, there was a decrease in admissions between 2015-2016 and an increase in patients who maintain functionality over those who improve.

The longitudinal analysis showed a decrease in the number of functional elderly and an increase in the number of dependent elderly. These changes represent a major public health problem. According to current reports, the country is not prepared for the accelerated aging of the population and the long-term care of dependent people (22,23). Existing initiatives are local, fragmented, driven by different approaches, institutions and priorities, making it necessary to generate a coordinated long-term care system in which various alternatives are considered in relation to administration, benefits and financing (22).

Our findings ratify the evidence suggesting that age is a factor associated with the level of functionality and dependence (24,25,26). As people age, there is a decrease in physical capacity, loss of functionality, and an increased risk of falls (27,28,29). This higher prevalence of functional limitation in the elderly is associated with physical and physiological changes, increased morbidity, demand for long-term care (30), as well as the lower income they receive compared to the general population (31).

Additionally, women presented greater functional loss compared to men, which is consistent with international and national evidence. In this regard, the 2017 CASEN survey evidence that in Chile women are more dependent than men (22 % vs. 15 %) (31,32). This difference could be explained because they are more prone to suffer changes associated with menopause, such as joint degeneration, loss of calcium and minerals and a more abrupt presentation of sarcopenia (33,34).

In this context, the relationship between age, sex and functional capacity of the elderly found in this study was corroborated in different Latin American studies. For example, in a study conducted in Peru (2014) with 92 older people, it was concluded that those who were older also had a lower functional capacity. (35). Along the same lines, in a study conducted in 346 Colombian elderly people (2018) and another conducted in 1750 Brazilian elderly people observed a positive relationship between age and functional dependence and indicated that women had greater functional dependence than men, which they attributed to their longer life expectancy (36,37).

In relation to the geographic area, older persons in the northern and extreme south of Chile concentrated the highest levels of functionality and total dependency. These results differ from the findings of the CASEN 2017 survey (26), which when analyzing the level of dependency by region defines values below the national average in the northern and southern areas of the country. In this same survey, the regions of Valparaíso, Maule, Ñuble, Biobío and Araucanía presented the highest levels of dependency and at the same time the highest rates of poverty and the lowest average years of schooling. The contrast of higher functionality and total dependency found in the extreme areas of the country could be explained by characteristics of the same regions that generate inequality among their cities. Latin American evidence suggests that the environmental context (geographic and social) is related to life expectancy and the quality of aging (38) and that health inequity can be caused by risk situations or health, social and environmental barriers (39). Thus, environmental barriers (inside and outside the home) decrease autonomy, increase accidentability and prevent movement in a safe environment (40).

Participation and adherence to the +AMA program, which aims to prolong the self-sufficiency of adults aged ≥65, is very low, which is consistent with studies conducted on other primary care programs in our country (38). This is a current problem and one of the main challenges faced by public health systems and may be influenced by the socioeconomic and educational level, perceived social and family support, lack of trust or low quality of the relationship between the user and health personnel (41,42).

In relation to the impact of programs aimed at maintaining or improving self-valence and functional capacity in the elderly, the results found are consistent with Latin American studies that report the benefits of maintaining and/or improving physical capacity, and quality of life generated by these programs. In this context, in a study conducted in Peru (2020), in elderly people who attended an elderly program in a health center, it was concluded that after an intervention program, the elderly improved functionality in basic and instrumental activities of daily living and

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decreased cognitive impairment (35). In this same line, in a study carried out in Colombia (2017), for 18 months, to 75 elderly people, in which they performed educational activities, strengthening of functional capacity and self-care, their results indicated that 71.4 % went from having a moderate to mild degree of dependence and 30.7 % a degree of mild to independent dependence at the exit of the intervention (43).

Regarding limitations, information from 2012-2016 was used, since later data were not validated by the DEIS at the time of the analysis; neither the immigrant population nor ethnicities were considered, making it a challenge to know their functional status. In addition, functionality was considered only in terms of physical capacity, without addressing social and psychological dimensions, and only sociodemographic factors were analyzed. Future studies should consider other social determinants (access to health, health beliefs, socioeconomic and educational level) to have an integrated view of functionality.

According to the research, this is the first investigation focused on functionality in Chile by geographic sector. The data provides an input for analysis to recognize functional assessment and its progress, the use of intervention policies and regional coverage. The findings could channel the resources allocated to the different regions, the implementation or expansion of public policies that promote the functionality of this population, reducing resources derived from dependency.

CONCLUSIONS

The functionality of older people decreased by 1.4% between 2012-2016. Lower functionality was observed in women and as people age. The north and extreme south of Chile concentrated the largest number of elderly people with high levels of functionality and total dependence. In addition, a decrease in admissions (1.1 %) and discharges that improved functionality (Δ=7 %) was evidenced in the +AMA program between 2015-2016. It is hoped that this research will encourage further research on functionality from a country perspective, caracterizing regional similarities and differences in order to improve sectoral public policies for intervention and monitoring.

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Functionality of the elderly in Chile: Results based on the REM-P5 (2012-2016)

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