



Comprehensive family and community health model in primary care in Chile*

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ABSTRACT

Objective. Describe the current status of implementation of the Comprehensive Family and Community Health Model (Modelo de Atención Integral de Salud Familiar y Comunitaria—MAIS) in primary care in Chile.

Methods. This cross-sectional study evaluated MAIS implementation in a total of 1,263 primary care facilities. Correlations were used to study the relationship between internal self-evaluation and external evaluation by health services for each facility. Factors associated with the level of implementation of the MAIS (facility, municipal, and regional level) were evaluated with multilevel analyses.

Results. The correlation between internal self-evaluation and external evaluation of overall MAIS implementation was very high (0.819, $p < 0.001$). Technology was the factor that showed the highest implementation (83.0% completion), and the family-approach factor showed the lowest (37.8%). The facilities with the highest implementation were family health centers, those in urban municipalities, in municipalities with the highest number of enrollees, and with the lowest poverty index. No statistically significant association was found between MAIS implementation and total municipal expenditure ($p = 0.122$) or health expenditure ($p = 0.244$).

Conclusions. Most primary care health facilities evaluated their level of MAIS implementation. Strategies that support MAIS implementation should prioritize primary care facilities located in rural areas with a low number of registered users. Persisting challenges include stepping up a family approach and improving the quality of care as key aspects of health care.

Keywords

Primary health care; health services; health services research; family practice; Chile.

In recent decades, Chile's demographic and epidemiological profile has changed significantly. The demographic transition towards an aging population, associated with a decline in fertility and a general reduction in mortality, has led

to a rising population of older adults, while the proportion of those under 15 has dropped (1). With regard to Chile's epidemiological profile, although infectious diseases were the leading cause of mortality at the beginning of the

century, they have been supplanted by causes related to noncommunicable diseases, such as cardiovascular disease and malignant neoplasms (2). This has also had an impact on the national morbidity profile, now led by chronic diseases characterized by a high prevalence of risk factors such as overweight (74.2% of the Chilean population), hypertension (27.6%), diabetes mellitus (12.3%), a sedentary lifestyle (86.7%), tobacco use (33.3%), high-risk alcohol

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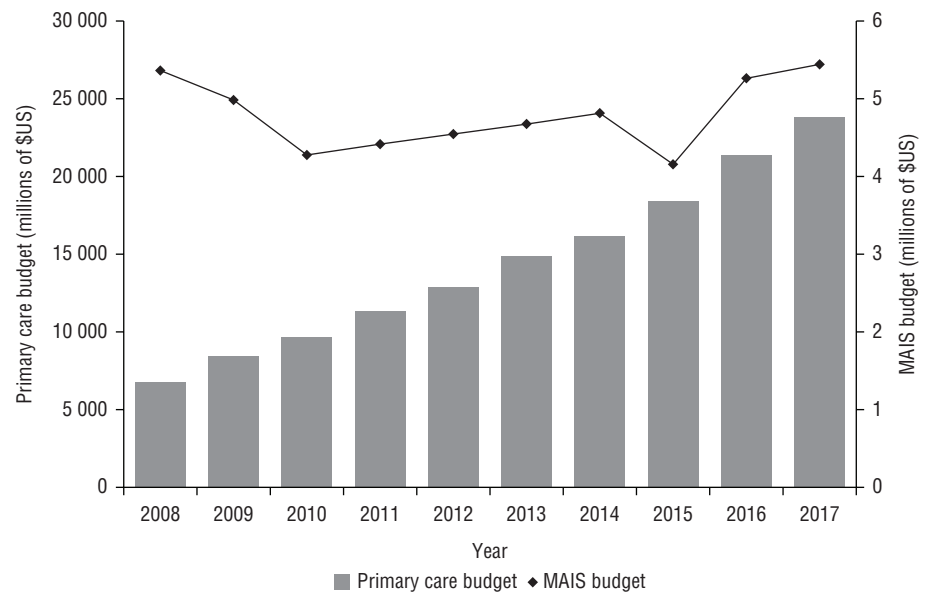
consumption (11.7%), and mood disorders (17.2%) (3).

This new demographic and epidemiological profile has required a transformative adaptation of the traditional health care model, which was largely curative, with an intense focus on the hospital as the primary space for resolving health problems (4). Since 2005, and within the framework of Chile's health system reform, the country began to implement a new model centered on primary health care (PHC) that emphasizes disease prevention, health promotion, comprehensive outpatient treatment for most health problems; rational, efficient, and evidence-based use of resources; and the strengthening of primary care. The result is what is known today as the Comprehensive Family and Community Health Model (*Modelo de Atención Integral de Salud Familiar y Comunitaria*), known by its Spanish acronym, MAIS (4, 5).

MAIS encompasses a set of actions contributing to efficient, effective, and timely care, centered on people and their health needs, considering them in their physical and mental totality as members of families and communities who are constantly adapting and integrating in their physical, social, and cultural environments (5). MAIS is based on three core principles: people-centered, comprehensive, and continuous care (5). With this in mind, nine key action areas were defined: health promotion, disease prevention, a family health approach, intersectoralism and territoriality, quality of care, open care, social participation, technology, and the development of PHC staff.

Multidisciplinary teams at primary care facilities have been at the forefront of implementing these nine key action areas, achieving a response capacity of at least 90% (5). Furthermore, the Ministry of Health has facilitated the implementation of activities and services specifically linked to MAIS through a special budget allocation to support the program, while steadily raising per capita spending based on the population registered in the system (5). These include preventive health services, family counseling, comprehensive home visits, assistance for multidisciplinary teams to establish cooperative horizontal relationships with the community, and community empowerment to make people the principal stakeholders in health care and self-care (5).

FIGURE 1. Funds allocated for primary care in Chile, and for implementing MAIS, 2008 to 2017



Source: Based on data from the Primary Care Division of the Ministry of Health of Chile (1 \$US = 630 \$CLP).

Figure 1 shows the evolution of national expenditure on PHC, and specifically, on MAIS.

Abundant research evidence supports the idea of developing primary care as a core strategy for health systems. Countries with strengthened primary care show better levels of health, less use of emergency services and lower rates of unnecessary hospitalizations, better access to care, lower expenditure levels, and more equity (6–8). For the same reason, since the Declaration of Alma-Ata in 1978 (9), there has been a focus on strengthening primary care, promoting universal access, and focusing on communities and integrated, intersectoral, and multidisciplinary work. All of these efforts have been backed by the World Health Organization (WHO) in its World Health Report (10).

Given the importance of MAIS and the advances in developing validated instruments related to it, this paper aims to describe the current state of MAIS implementation in Chile's PHC, and to examine factors involved in its application. This evaluation is an initial measurement of the model's impact on the health of the population.

MATERIALS AND METHODS

This cross-sectional study used data on the implementation of MAIS in

Chilean health facilities, from 2015 to 20 October 2017.

Chile comprises 15 regions, each with a regional health secretariat. Together with the 29 health services, these regional secretariats develop and implement local guidelines for the different levels of care. Within this system, the municipalities (*comunas*) are the basic local unit of the political and administrative structure. (Table 1 and figure 2 present information on every region of the country.)

The primary care network comprises four types of establishments: 589 Family Health Centers (CESFAMs), which cover catchment areas of more than 10,000 registered individuals; 218 Community Family Health Centers (CECOSFs), serving between 5,000 and 10,000 people; 1,166 rural health posts, each serving less than 5,000 people; and 104 community hospitals, having basic facilities, whose workload depends on outpatient demand from the neighboring municipalities. (11). Nearly 91% of these facilities (346) are under the administrative aegis of a municipality; 8%, under health services; and 1%, under nonprofit organizations. Regardless of their source of financing, all of these facilities implement the Ministry of Health's directives.

Since 2015, MAIS implementation has been evaluated through using the Instrument for Evaluation and Certification of MAIS Development [*Instrumento para*

TABLE 1 and FIGURE 2. Percentage of full implementation of MAIS, by region of Chile

Region	Population registered in the public health system	Population over 65 years of age registered in the public health system (%)	Regional index of rurality (%)	Regional index of poverty (%)	Proportion of CESFAMs in the region (%)	Health expenditure (%)	Compliance with MAIS (%)
Arica y Parinacota	193 448	12.0 (11.3; 12.5)	75.0	21.0 (14.5; 35.9)	33.3 (0; 41.7)	59.9 (54.0; 68.0)	75.4 (47.2; 87.5)
Tarapacá	266 325	8.9 (5.3; 13.4)	57.1	20.5 (10.3; 29.1)	39.3 (20.0; 57.1)	42.3 (17.5; 62.7)	74.8 (36.7; 99.1)
Antofagasta	359 143	11.4 (8.2; 14.4)	55.6	17.2 (8.2; 34.7)	44.8 (0; 87.5)	35.0 (11.1; 77.8)	68.1 (44.3; 99.1)
Atacama	118 903	10.6 (7.0; 15.0)	50.0	26.3 (3.1; 26.1)	52.8 (20.0; 100)	37.2 (8.3; 75.6)	66.2 (38.7; 98.4)
Coquimbo	583 939	13.2 (10.9; 17.7)	85.7	23.9 (5.2; 37.0)	18.8 (0; 46.2)	36.6 (5.6; 59.8)	58.1 (23.5; 88.8)
Valparaíso	971 266	13.3 (10.4; 22.0)	68.4	18.2 (9.0; 41.9)	48.4 (0; 100)	31.0 (3.9; 58.7)	57.8 (28.4; 94.8)
Metropolitana de Santiago	4 783 535	12.9 (6.8; 28.3)	29.4	20.1 (0.3; 44.3)	62.3 (0; 100)	39.0 (7.0; 74.1)	57.5 (25.3; 98.8)
Libertador General Bernardo O'Higgins	641 444	12.5 (8.6; 19.4)	87.9	23.0 (5.7; 36.1)	28.3 (0; 100)	30.4 (1.0; 73.7)	56.2 (18.6; 96.3)
Maule	909 455	12.4 (9.1; 18.9)	90.0	22.4 (5.1; 40.0)	19.6 (0; 63.6)	34.3 (5.5; 66.2)	55.9 (26.1; 99.1)
Bío-Bío	1 433 283	12.4 (6.1; 19.8)	77.8	19.2 (5.3; 59.7)	27.9 (0; 100)	34.4 (7.7; 76.5)	54.3 (18.8; 99.0)
Araucanía	836 848	13.5 (7.4; 17.1)	93.8	29.2 (14.1; 57.1)	16.2 (0; 55.6)	38.8 (2.6; 87.6)	53.2 (10.2; 86.3)
Los Ríos	353 790	12.5 (10.9; 14.5)	91.7	22.6 (12.8; 39.2)	18.1 (0; 100)	47.3 (10.5; 71.4)	48.7 (28.4; 87.7)
Los Lagos	746 244	13.1 (7.1; 20.7)	86.7	23.2 (7.4; 48.2)	14.4 (0; 60.0)	39.4 (8.0; 84.0)	47.2 (7.8; 87.1)
Aysén del General Carlos Ibáñez del Campo	51 303	9.0 (6.9; 11.7)	90.0	16.9 (8.2; 29.5)	6.1 (0; 22.2)	37.0 (10.4; 65.4)	46.6 (19.9; 52.9)
Magallanes and Antártica Chilena	141 478	12.7 (9.8; 13.3)	70.0	9.1 (2.7; 17.4)	35.3 (0; 55.6)	34.6 (10.2; 62.4)	39.6 (22.4; 96.5)
National total	12 390 404	12.9	73.3	21.1	29.6	36.3	56.2

Note: The figures in parentheses correspond to the ranges observed in the municipalities belonging to each region. The estimates of the average compliance with MAIS in each region are adjusted according to the characteristics of the municipality where the centers are located, including rurality, size of the catchment population, proportion of older adults, poverty, and the municipality's total expenditure and health expenditure.

Source: Statistics Department (DEIS), Ministry of Health, National Statistics Institute (INE), National Health Fund (FONASA), and 2015 National Socio-Economic Survey (CASEN).



Evaluación y Certificación de Desarrollo del MAIS] (table 2). This instrument was designed by panel of primary care experts, with representatives from Chile's Ministry of Health, health services, and universities. The instrument includes 72 indicators for urban facilities and 64 indicators for rural facilities, all grouped into the nine key action areas of MAIS. A pilot study on the instrument was conducted at a health service, and validated through factorial exploratory analysis (Cronbach's $\alpha = 0.91$).

Primary care facilities measure the degree of implementation of MAIS through a self-evaluation reported to the health service, which then makes an on-the-ground evaluation. The degree of implementation for each key area is determined by benchmarking, comparing

the facility's performance in each key area against an evidence-based gold standard, and is given a score on a scale of 0 to 1. These scores are then totaled to determine the degree of implementation achieved, expressed as a percentage to simplify interpreting the results. Finally, based on the health service's evaluation, facilities should design and implement plans to close the identified gaps. Subsequently, MAIS implementation is evaluated again within two years (12).

This study's dependent variables were: 1) the difference between the overall percentage of MAIS implementation reported on the facilities' self-evaluations, and on the health services' evaluations; 2) the percentage of implementation of each key area of MAIS; and 3) the percentage of

MAIS implementation at each facility, according to the health services' evaluations. The independent variables were: 1) the type of facility (CESFAM, CECOSF, rural health posts, and community hospitals); and 2) the characteristics of the municipality, (e.g. rural or not rural) as determined by the National Statistics Institute (INE); the total number of people registered in primary care in the catchment area; the proportion of older adults (according to the National Health Fund—FONASA); the poverty level (according to the 2015 National Socio-Economic Survey—CASEN); the municipality's total expenditure and health expenditure (as reported by the Ministry of Health); and which region of the country the municipality is in ($n = 15$).

TABLE 2. Description of the dimensions evaluated in the assessment guidelines for Chile's Comprehensive Family and Community Health Care Model (MAIS), with examples of an indicator for each dimension

Dimension	Principle of Comprehensive Family and Community Care			Example of indicator
	Continuous	Comprehensive	People-centered	
Health promotion: All actions that advance well-being, health, and human and economic development, bearing in mind social, cultural, environmental, and other aspects, both of individuals and of the society in which they live	12 cross-cutting indicators			Awareness campaigns for adults aged 25-64 years on responsible alcohol consumption, tobacco use, and physical activity
Disease prevention: Actions, procedures, and interventions to identify risk factors for diseases, and to prevent or minimize harm to health through early response	4	1	6	Multidisciplinary team at primary health facility comprehensively evaluates and intervenes in cases of at-risk families
Family approach: Work that should be carried out with families according to the risks and protective factors in each case	3	3	2	A set of guidelines or a protocol for assisting families that are going through expected life-course events
Quality: Process that provides the user with the maximum level of well-being after assessing the relationship between gains and losses	4	2	2	Number of users registered at the facility who are heavy users of emergency primary care services or other emergency services
Intersectoral approach and territoriality: Coordinated efforts that involve institutions representing a variety of social sectors, institutions, and organizations present in the territory	1	3	1	Networked activities, reflected in the care received by people registered at the facility, with auditing of files
Focus on open care: All possible strategies, coordination, and networked activities are used to prevent hospitalizations, with special emphasis on those most susceptible, such as older adults and persons with chronic diseases	2	1	4	Plan of care for registered users discharged from hospital after an acute myocardial infarction or stroke
Technology: Any medical device or clinical or health management procedure that facilitates health promotion, disease prevention, diagnosis, treatment, rehabilitation, or care	3	1	2	Mechanisms to disseminate reports on primary care indicators, health targets, or life course programs based on technology or other method
Community participation in health: Empowerment and exercise of the rights of people or communities, incorporating views into health management	4	1	1	Annual social participation plan, including at least three organizations other than the Local Development Council, based on a diagnosis of social health determinants in that territory
Management of the development of people and of the organization: Degree to which health facilities ensure the development of the people on their work teams	9 cross-cutting indicators			Diagnosis of the workplace environment for the development of annual improvement plans

Note: The complete instrument is available at: <https://es.slideshare.net/Jorgelpez53/instrumento-para-la-evaluacion-y-certificacion-del-modelo-de-salud-familiar-y-comunitario>.

After calculating the difference between the percentages on the self-evaluations and on the health services' evaluations, facilities were classified into two groups: under-reporters, if they self-reported a percentage of MAIS implementation 5% or lower than the health services' scores; and over-reporters, if the self-evaluation gave a MAIS implementation of at least 5% higher.

After this step, the relationship between the percentages of each facility's self-evaluation and the percentages of the health services' evaluations was examined using Pearson's correlation, since these variables had a normal distribution. Correlations between 0.6 and 0.79 were considered high, and those > 0.8 were considered very high (13).

Since the health facilities are within *municipalities*, each of which is under the aegis of a health service, which is itself under the aegis of a Chilean region, this four-level hierarchy was considered in all of the analyses using mixed

regression models with independent covariance. Initially, models were developed in which only the dependent variable had a fixed effect. Subsequently, covariates were included at the municipal level of the equations as random effects. Finally, the fixed effects of the independent variables of interest were estimated through separate models. The association between the level of reporting (i.e., whether facilities were under-reporters or over-reporters) and the municipal factors was explored through mixed logistic regressions that estimated odds ratios and their corresponding confidence intervals (CI 95%). Based on these data, the proportions were calculated for each of the groups compared. To evaluate the development of MAIS and its components, mixed linear regressions were used to estimate implementation averages and their CI 95%. Comparisons between types of facilities and between regions of the country were adjusted using Bonferroni's correction.

To treat missing data, multiple imputation was used, with 25 data sets. This method first estimates the missing data, then carries out analyses using the different data sets, and finally combines the results for an estimate that very closely resembles the one that would have been reached if the original data were complete (14).

All statistical analyses were made with STATA 14.2 (StataCorp, College Station, Texas), and the results were visualized using Tableau (Tableau Software, Seattle, Washington). The level of statistical significance was set at $\alpha = 0.05$.

RESULTS

The majority of primary care facilities in Chile completed a self-evaluation of their implementation of MAIS ($n = 1,263$, 60.8%), although the highest percentage was among CESFAMs ($n = 559$, 94.9%), and the lowest among rural health posts ($n = 468$, 40.1%). Most municipalities had

facilities that self-evaluated and whose MAIS implementation was evaluated externally ($n = 325$, 93.9%). The municipalities that did not complete their MAIS self-evaluations were mainly rural (85.7%, vs to 72.5%, $p = 0.038$), with a smaller number of registered users (6,596 vs 37,814, $p = 0.011$). No statistically significant differences were found between poverty levels, total municipal expenditure, and municipal health expenditure ($p > 0.05$ for all comparisons).

The correlation between facilities' self-evaluation and the evaluations by the health services was very high, when the total percentage of implementation of MAIS was compared (0.819, $p < 0.001$). The key areas with the highest association were health promotion (0.827, $p < 0.001$), using a family approach (0.777, $p < 0.001$), and technology (0.748, $p < 0.001$); those with the lowest association were disease prevention (0.626, $p < 0.001$) and a focus on open care (0.659, $p < 0.001$).

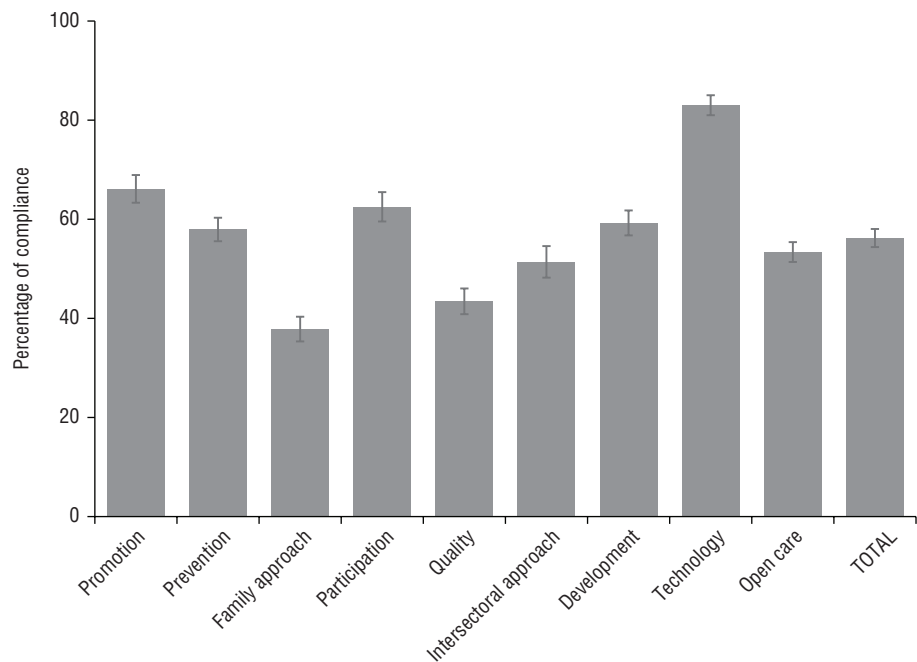
Although, on average, the self-evaluated percentages of MAIS implementation were similar to the percentages evaluated by the health services (there was no difference in this average between groups), 312 facilities were classified as over-reporters, and 308 as under-reporters. The highest proportion of over-reporters were located in municipalities that were rural ($p < 0.001$), with a smaller registered population ($p = 0.026$), and with higher levels of poverty ($p = 0.010$). There were no statistically significant differences by type of center ($p = 0.233$).

Figure 3 shows the results of the evaluations conducted by the health services for key aspects of MAIS implementation in all facilities, by region. MAIS has been implemented completely in 56.2% of facilities nationwide. The key element with the highest level of implementation was technology, and the one with the lowest was using a family approach (figure 3).

The type of center, characteristics of the municipality, and region in which the center was located were all related to MAIS implementation.

Type of center. CESFAMs were the type of center showing the highest MAIS implementation, whereas rural health posts were those with the lowest level of implementation of this health model, since the latter were incorporated into the MAIS evaluation process in 2015, after CESFAMs (table 3).

FIGURE 3. Average percent implementation (CI 95%) of each dimension of the evaluation tool for the Family and Community Comprehensive Health Model (all facilities evaluated in Chile)



Note: Estimates are adjusted according to the characteristics of the municipality in which the facilities are located, including rurality, size of the registered population, proportion of older adults, poverty, total community expenditure and health expenditure.

TABLE 3. Average (CI 95%) percent implementation of each dimension of evaluation tool for the Family and Community Comprehensive Health Model, according to type of facility in Chile

Dimension	CESFAM ¹ (n=559)	CECOSF ² (n=173)	Hospital (n=63)	Rural Post ³ (n=468)
Health promotion	68.3 ^a (65.8; 70.8)	66.2 ^a (62.4; 70.0)	58.5 ^b (52.6; 64.4)	57.5 ^b (53.8; 61.2)
Disease prevention	65.5 (62.9; 68.0)	61.3 (57.7; 64.8)	47.3 ^a (41.9; 52.6)	49.9 ^a (46.3; 53.5)
Family approach	43.9 (40.9; 46.9)	37.5 ^a (33.2; 41.9)	33.0 ^{ab} (27.3; 38.7)	30.8 ^b (27.6; 34.3)
Community participation	67.5 (64.2; 70.8)	61.4 ^a (56.4; 66.4)	54.9 ^a (45.9; 63.9)	57.5 ^a (52.4; 61.6)
Quality	51.9 ^a (49.0; 54.8)	41.3 ^{b,c} (34.5; 48.1)	45.9 ^{a,b} (38.3; 53.5)	33.0 ^c (28.6; 37.4)
Intersectoral approach and territoriality	59.0 (55.3; 62.6)	51.8 ^a (46.2; 57.4)	49.6 ^a (41.3; 57.8)	40.1 (34.8; 45.3)
Management of people	59.0 (56.2; 61.8)	49.9 ^a (43.9; 55.8)	51.2 ^a (44.5; 58.0)	65.1 (61.4; 68.9)
Technology	89.2 ^a (87.2; 91.2)	81.7 ^b (78.2; 85.2)	85.9 ^{ab} (78.7; 93.0)	72.9 (68.1; 77.6)
Open care	56.8 ^a (54.8; 58.9)	52.4 ^{ab} (48.0; 56.9)	52.7 ^{ab} (48.0; 57.5)	48.3 ^b (45.0; 51.5)
Total	61.3 (59.2; 63.3)	54.7 ^a (52.0; 57.4)	53.3 ^{ab} (49.0; 57.5)	50.0 ^b (47.4; 52.6)

¹ CESFAM, Family Health Center (serves more than 10,000 registered individuals)

² CECOSF: Community Family Health Center (serves 5,000 to 10,000)

³ Rural health post (serves less than 5,000)

Note: In facilities having the same superscript letters, no statistically significant differences were found ($p > 0.05$).

Characteristics of the municipality. On average, facilities located in rural municipalities showed a lower level of MAIS implementation than those in urban municipalities (52.3% compared to 63.7%, $p < 0.001$). MAIS implementation was greater in municipalities with a higher number of people registered, and a lower poverty index. For every 10,000 people registered in a municipality, its MAIS implementation rose 0.67% (CI 95%: 4.2-9.3, $p < 0.001$). For each unit of poverty in the municipality, MAIS implementation dropped 0.28% (CI 95%: 0.13-0.43, $p < 0.001$). Nevertheless, MAIS implementation did not have a statistically significant association with total expenditure ($p = 0.132$) or health expenditure ($p = 0.244$) in a municipality, nor with the percentage of total expenditure devoted to health in a municipality ($p = 0.873$).

Region of Chile. MAIS implementation varied notably according to facilities' geographical location. Facilities located in regions showing lower MAIS implementation levels obtained an average percentage between 40% and 50%, whereas those located in regions with higher MAIS implementation obtained average percentages between 70 and 80% ($p < 0.001$) (figure 2).

DISCUSSION

MAIS was adopted in Chile in 2005 as a result of the country's health system reform (15) and as part of the Ministry of Health's strategy for addressing nationwide epidemiological and demographic changes (1, 2). This model provided specific guidelines for actions that were first launched at the national primary care level in the early 1990s (15, 16) to transform clinics and health teams focused on acute and chronic illness into family health centers using a comprehensive biopsychosocial approach, serving a defined catchment area, with community participation and multidisciplinary teams. As part of this change, the Ministry of Health has trained multidisciplinary health teams to put families at the center of care, and to develop continuous and comprehensive care systems for them (5). In 2008, to measure the transformation process at these facilities, a certification instrument was designed to determine their degree of MAIS implementation (average, high average, and

high); this was used until 2014. A decade after MAIS implementation, the evaluation process was updated and adapted to focus more on evaluating the level of MAIS development than on the transformation process.

Even though the municipal health care teams and health services evaluated positively the introduction of the new instrument, which is better adjusted to primary care (17), this study found that the facilities' self-evaluation was insufficient to measure their level of MAIS implementation. Although the association of their own scores with those determined by the health services is high or very high, approximately 50% of the facilities showed differences of at least 5%, compared with the external evaluation. Of these discrepancies, the most striking is over-reporting, which indicates that facilities are overestimating the actions taken to implement MAIS. This finding highlights that it is important for health services to continue conducting external evaluations to resolve discrepancies in MAIS implementation (8).

Although Chile's primary care system has been implementing MAIS for a number of years, its general level of implementation was close to 60% of the total indicators evaluated. This study found a high level of implementation in key areas related to technologies, health promotion, and community participation, with a lower level of development in the key areas of quality and family approach. This could be explained by the Ministry of Health's recent policy of strengthening those key areas in PHC that scored the highest (5). Moreover, the less developed key elements can be understood as reflecting the dominant organizational culture, which emphasizes a biomedical approach, as well as the high rotation of health teams, which constantly need to train new members in quality improvement tools and the use of a family approach. Family health centers and urban municipalities (having a higher proportion of registered individuals in their catchment area and lower poverty rates) also presented better results in MAIS implementation; this could be due to urban family health centers having more implementation experience, and also to their being the first to undergo the evaluation process. Furthermore, it could be because these municipalities allocate more resources to health.

The fact that improvement plans are required once the evaluation process is complete emphasizes that evaluation focuses on improving performance more than on merely complying with indicators. In addition to stronger mainstreaming of MAIS implementation in Chile, new policies need to focus resources on facilities and districts that show low implementation of the health model. This will give people living in these areas access to comprehensive, continuous health services that are centered on their needs, with a view to strengthening health equity. Special emphasis should be placed on those key areas of MAIS that were found to have a low level of development. A strategy to achieve this could be increasing specific budget allocations for MAIS, which during the last decade have been relatively stagnant despite increases in the overall primary care budget.

National and international results suggest that the impact of decisive, comprehensive primary care has been positive, supporting the soundness of MAIS as a public health strategy for Chile (6-10). However, the impact of MAIS implementation on population health is unknown. Future evaluations should focus on determining the relationship between the level of implementation of this model of care and people's level of health.

The principal strength of this study is that it presents a national evaluation on the level of MAIS implementation in Chilean primary care, more than a decade after the program was launched. The use of an evaluation instrument that combines self-reporting with external evaluation provided robust data. Furthermore, the use of mixed statistical models made it possible to adjust for the different organizational levels within the Chilean health system.

Despite these strengths, this study presents limitations. The most important is that, although statistical adjustments were made for municipal-level features of MAIS implementation, there was no information on variables that could have had a confounding effect at the facility level, such as their human resource capacity. Furthermore, other variables related to municipal-level management, such as interest in MAIS implementation or local strategies for implementing its key areas, could be confounding the estimates of observed effects. Future evaluations will have to

incorporate analyses with a higher number of covariates.

MAIS is widely implemented in Chilean primary care. The factors related to this implementation were related to the type of facilities, the characteristics of each municipality, and geographical location. In the future, external evaluation should be maintained, with greater

assistance to facilities in rural areas and in areas with a low density of registered individuals.

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RESUMEN

Modelo de atención integral en salud familiar y comunitaria en la atención primaria chilena

Objetivo. Describir el estado actual de la implementación de Modelo de Atención Integral en Salud Familiar y Comunitaria (MAIS) en la atención primaria de Chile.

Métodos. Estudio transversal que evaluó la implementación del MAIS en un total de 1 263 establecimientos de atención primaria. Por medio de correlaciones se estudió la relación entre la autoevaluación (interna) y la evaluación de los servicios de salud (externa) para cada centro. Con los análisis multinivel se evaluaron los factores de establecimientos, comunas y regiones asociados con el nivel de implementación del MAIS.

Resultados. La correlación entre autoevaluación interna y la evaluación externa de la implementación total del MAIS fue muy alta (0,819, $p < 0,001$). El eje tecnología presentó mayor implementación (83,0% de cumplimiento) y enfoque familiar (37,8% de cumplimiento), el menor. Los centros de salud familiar, las comunas urbanas, aquellas con mayor número de inscritos y con menor índice de pobreza, fueron los establecimientos que presentaron mayor implementación. No se identificó una asociación estadísticamente significativa entre la implementación del MAIS y los gastos comunales totales ($p = 0,132$) ni específicos de salud ($p = 0,244$).

Conclusiones. La mayoría de los establecimientos de salud de atención primaria han evaluado el nivel de implementación del MAIS. Las estrategias de acompañamiento para su implementación son prioritarias para establecimientos de atención primaria ubicados en zonas rurales y con bajo número de usuarios inscritos. Aún persiste el desafío de avanzar en la instalación del enfoque familiar y la calidad del cuidado como centro de la atención de salud.

Palabras clave

Atención primaria de salud; servicios de salud; investigación en servicios de salud; medicina familiar y comunitaria; Chile.

RESUMO

Modelo de atenção integral na saúde da família e da comunidade na atenção básica chilena

Objetivo. Descrever o estado atual da implementação do Modelo de Assistência Integral em Saúde da Família e da Comunidade (MAIS) na atenção primária no Chile.

Métodos. Estudo transversal que avaliou a implementação do MAIS em um total de 1 263 estabelecimentos de atenção primária. Por meio de correlações, foi estudada a relação entre a autoavaliação (interna) e a avaliação dos serviços de saúde (externa) para cada centro. Os fatores dos estabelecimentos, municípios e regiões associados ao nível de implementação do MAIS foram avaliados com análises multiníveis.

Resultados. A correlação entre a autoavaliação interna e a avaliação externa da implementação total do MAIS foi muito alta (0,819, $p < 0,001$). O eixo tecnológico apresentou maior implementação (83,0% de cumprimento) e foco familiar o menor (37,8% de cumprimento). Os centros de saúde da família, as comunas urbanas, aqueles com maior número de inscritos e com o menor índice de pobreza, foram os estabelecimentos que apresentaram a maior implementação. Não foi identificada associação estatisticamente significativa entre a implementação do MAIS e as despesas totais da comunidade ($p = 0,122$) nem gastos específicos com saúde ($p = 0,244$).

Conclusões. A maioria dos estabelecimentos de atenção primária avaliaram o nível de implementação do MAIS. As estratégias de acompanhamento para sua implementação são prioritárias para estabelecimentos de atenção primária em áreas rurais e com baixo número de usuários cadastrados. Enfatiza-se o desafio de avançar na instalação do enfoque familiar e na qualidade de atenção.

Palavras-chave

Atenção primária à saúde; serviços de saúde; pesquisa sobre serviços de saúde; medicina de família e comunidade; Chile.