

# Effectiveness of intervention programs in primary care for the robust elderly

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## Abstract

**Objective.** This study aimed to search the literature for intervention programs in primary care with a multiprofessional character, specifically directed at the robust elderly, and with viable and cost-effective interventions. **Materials and methods.** The search strategies were applied in Cochrane, Lilacs, Pubmed, Scopus, WHOLIS, Embase, Medcarib, Scielo, Web of Science, and PAHO databases. **Results.** 3 665 articles were found and 32 remained for analysis, grouped into four categories: care management; multidisciplinary intervention; interventions on the basis of risk; and educational interventions with health professionals. **Conclusion.** Strategies such as domestic interventions can promote health and functionality of elderlies, as well as reduce mortality, use of the health system and costs. Besides that, the use of hard and light-hard technologies are important for risk prevention and care management for the elderly. There is a need to create programs for risk prevention and effective management of elderly care at the primary level.

Key words: ambulatory care; primary health care; aging; comparative effectiveness research

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## Resumen

**Objetivo.** Buscar en la literatura programas de intervención en atención primaria de carácter multiprofesional, dirigidos especialmente a los adultos mayores robustos, con modelos viables y rentables de intervención. **Material y métodos.** Las estrategias de búsqueda se aplicaron en las bases de datos Cochrane, Lilacs, Pubmed, Scopus, WHOLIS, Embase, Medcarib, Scielo, Web of Science y la OPS. **Resultados.** Se encontraron 3 665 artículos, de los cuales 32 permanecieron para el análisis agrupados en cuatro categorías: gestión de cuidados, intervención multidisciplinaria, intervenciones sobre la base del riesgo e intervenciones educativas con profesionales de la salud. **Conclusiones.** Las estrategias como las intervenciones domiciliarias pueden promover la salud y la funcionalidad de las personas mayores, así como reducir la mortalidad, el uso del sistema de salud y los costos. El uso de las *tecnologías duras y ligeras-duras*, junto con la creación de programas de cuidado de ancianos en el nivel primario, es importante para el cuidado de la salud de las personas mayores.

Palabras clave: atención ambulatoria; atención primaria de salud; envejecimiento; investigación sobre la eficacia comparativa

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Demographic transition occasioned by the aging world population brings with it relevant social impacts, especially in the field of health, since the proportional increase of elderly people is generally followed by changes in a population's morbidity-mortality indicators. In this scenario, the epidemiological profile tends to present an increase in the prevalence of non-communicable chronic diseases, as opposed to acute losses that are typical of infectious and parasitical conditions.<sup>1,2</sup> Such changes mainly require strategic planning, expansion of the health care network, costs assessment, training and development of health professionals, and the construction of care management tools for the elderly, particularly in primary care.

Despite the importance of the consensus regarding prevention services and health promotion since the 1978 Alma-Ata Conference, in practice the supremacy of a model of assistance persists that is centered on the execution of hospital procedures, super specialized, individualized and guided by the biological paradigm for the health/sickness process.<sup>3,4</sup> This is of profound concern when facing population aging because the strategies for prevention and health promotion are indispensable for the early diagnosis of risks and diseases, access to adequate treatment, better quality of life, and for combatting physical and cognitive deficiencies, excessive use of medications and other conditions that promote fragility among the elderly.<sup>5,6</sup>

Notwithstanding, the model centered on the illness-hospital-treatment triad demonstrates its hegemony even in the scientific universe, where the greater part of studies published in indexed periodicals are geared toward the frail elderly or focus their interest on specific diseases. In contrast, the literature lacks research on primary care strategies oriented toward the robust elderly, those who are independent enough for the principal activities of daily living and with medical conditions under control.<sup>7,8</sup>

Faced with this antagonism, the importance of literature reviews reveals itself, that is, instruments that synthesize what is produced on a global level on a particular theme, in this specific case the synthesis of knowledge related to robust adult primary care as an element that makes possible the reorientation of practices targeting this population. This is essentially justified by departing from the premise that however much these individuals maintain intact functional capacities, they are still vulnerable to the effects of the aging process. Thus, the aim of this work was to search the literature for intervention programs in primary care with a multi-professional character, specifically directed at the robust elderly, and with viable and cost-effective interventions.

## Materials and methods

This study is about the care level that orients itself on the primary care demands coming from the elderly. For theoretical and clinical reasons that differentiate the treatment of the fragile elderly, we have chosen to produce separate analyses for these groups, thus this particular study has as its focus the robust elderly.

In October 2013 a review of the scientific literature was conducted, respecting the criteria of Beyea and Nicoll,<sup>9</sup> which establishes the following steps for conducting an integrative review: definition of the databases for the search, establishment of criteria for sample selection, identification of the overview of search strategies, building a record of the data, analysis of the data, interpretation of the results, and, lastly, presentation of the review from the selection of selected articles.

The databases consulted were Cochrane, Lilacs, Pubmed, Scopus, WHOLIS, Embase, Medcarib, Scielo, Web of Science and PAHO with search strategies "ambulatory care" or "primary care" and "aged" or "aged, 80 and over" or "elderly" or "health services for the aged" and "program evaluation" or "health evaluation" or "effectiveness" / "health services for the aged" and "primary health care" or "primary care" and not "frail elderly". The studies selected were those with a quantitative approach that dealt with primary health care for the elderly and development of programs or health actions aimed at the robust elderly. The effectiveness of the programs was analyzed following the criteria established by Assis and colleagues<sup>10</sup> and Araújo and colleagues.<sup>11</sup>

National and international articles were included in the review, without time delimitation, published in English, Portuguese or Spanish. Excluded were editorials, summaries, conference proceedings, as well as doctoral dissertations and master's theses. Initially, the five researchers jointly conducted the search in the Pubmed database and from the number of articles found an agreement was reached regarding which articles to select after assessment, as a way to ensure that the examiners were in calibration with each other. Articles for full text reading were included based on the title and abstract and, finally, the reviewers performed a detailed analysis of the studies that met the eligibility criteria. Data extraction was performed by means of annotated indexing. The results were displayed in tables and classified by thematic areas according to article content. The discussion was organized to identify successful experiences around the challenge of reflecting on the creation of primary care models for robust elderly.

## Results

The number of studies found and selected during the search process is detailed in figure 1.

Based on the search strategies in the 10 databases, 3 665 articles were found. After the initial selection based on title and abstract, and subsequent exclusion of duplicates, 252 articles were selected *a priori*. We then proceeded to read the papers to apply the other criteria for inclusion adopted by the study, resulting in 32 documents selected to comprise the final analysis. These documents were read in their entirety. The results are presented below.

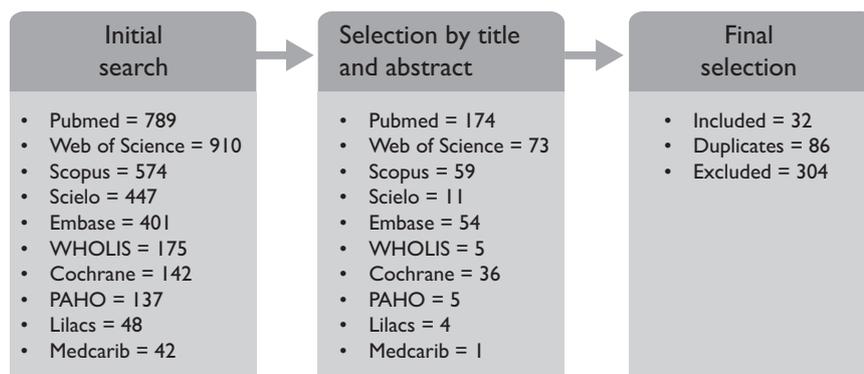
The studies shown in table I treat the care management of elderly in primary care. The programs used different strategies to improve the management of care, such as regular meetings of the primary care team, information technologies to facilitate the clinical practice and boost the consistency of care, in addition to encouraging the acceptance of preventive care home visits by means of letters and no-cost home visits. Improvements were identified, such as the reduction of mortality and costs per individual, an increase in the performance of early detection screening tests for specific diseases and the percentage of immunizations. In longitudinal studies the intervention period ranged from 1 to 2 years. Of these, one studied the effectiveness of the results 20 months after completion of the intervention.

Table II shows the 10 studies that performed a multidisciplinary intervention directed at the elderly. The strategies most used in the programs were physical activity, health education, social actions in the community, and adjustments in the pharmacological treatment of the elderly and the individual health maintenance plan and illness prevention. Five programs utilized home visits. The duration of the interventions ranged from three months to two years.

Four studies performed follow-ups in a period between 3 and 12 months after the completion of the program, and one study utilized a cohort of 10 years of monitoring.<sup>23</sup> Nine studies reported positive results, such as reduction in the number of hospitalizations and medical visits, satisfaction of the elderly and health professionals involved, increase in the level of physical activity and improvement in the quality of life, increase in the functional capacity, and decrease in costs related to use of the health system.

The studies displayed in table III discuss primary care programs, with a focus on potential risk interventions for various elderly health-related problems: falls, physical incapacity, depression, cognitive deficit, hypertension, sedentary lifestyle, and improper diet. Twelve articles were found, published in an interval of 18 years between 1993 and 2011. Only one of the articles is not a clinical trial.<sup>32</sup> In the experimental studies, the shortest intervention lasted on average 69 minutes and the longest lasted 24 months. Two of them performed follow-ups to assess long term results and the health professionals most present in the interventions were physicians and nurses. Two of the studies did not present significant results from a statistical standpoint.<sup>36,37</sup>

The studies that performed educational interventions with health professionals (table IV) used interdisciplinarity as a focus to improve the care of the elderly in primary care. The time of intervention was between 1 and 3 years and only one study, which evaluated improvements in the prescriptions performed by pharmacists, did not attain positive results. Two studies did the evaluation in a stratified way for age groups of 75 and 80 years, and both verified that only in the group with 80 year olds the interventions produced significant improvements. In relation to sex, one study observed that the intervention was able to reduce mortality and improve functional capacity only with the women.<sup>40</sup>



**FIGURE 1. STUDIES FOUND AND SELECTED DURING THE SEARCH PROCESS**

**Table I**  
**SUMMARY OF THE MAIN ASPECTS OF THE STUDIES DEALING WITH CARE MANAGEMENT**

Study	Size and characteristics of the sample	Intervention	Health professionals involved	Duration of intervention	Follow up	Outcome variables	Results (negative, insignificant, or positive)
German and colleagues (1995) <sup>12</sup>	65 years or older, 2 105 in the experimental group and 2 090 in the control group	Incentive via explanatory letter and voucher for free medical visit for primary care guidance	Physician	2 years	-	Reduction in mortality	Positive
Toth-Pal and colleagues (2004) <sup>13</sup>	70 years or older, 602 individuals in the experimental group and 1 989 in the control group	Computerization program for the primary care for elderly clinical practice (electronic prompt-book with reminders for periodic appointments and check-ups)	Physician	20 months	20 months	Early detection exams for diabetes, hypertension, vitamin B12 deficiency, Hypothyroidism and anemia	Positive
Roni Peleg and colleagues (2008) <sup>14</sup>	65 years or older, patients with chronic diseases and a history of hospitalizations	Periodic meetings of the primary care team with the goal of increasing the response to demands of ambulatory services and the relationship at the hospital level	General Practitioner, nurse and geriatric physician	1 year	-	Overall expenditure per individual, hospitalization rate, adjusted number of days hospitalized per 1 000 patients, average cost and time of hospitalization, and falls.	Positive
Wolinsky and colleagues (2010) <sup>15</sup>	70 years or older, 5 457 self-respondents individuals who were not enrolled in managed care plans	Eight months intervals between two outpatient appointments with the same primary care physician with the criteria of care continuity	Physician	2 years	-	Reduction in mortality	Positive
Loo and colleagues (2011) <sup>16</sup>	65 or older, Experimental Group I with 1 336 patients and 17 physicians, Experimental Group II with 1 394 patients and 17 physicians and control group with 1 930 patients and 20 physicians	Electronic Medical Record Reminders (EMR), with or without management panel	Physician	1 year	-	Designation of a health care assignee, osteoporosis screening (initial bone density), annual administration of flu vaccine, and administration of pneumococcus vaccine	Positive
Fishman and colleagues (2012) <sup>17</sup>	65 years or older; 678 in the experimental group and 944 in the control group	Primary care at one pilot clinic (based on trained multidisciplinary teams) versus control clinics	Primary care physicians, specialists in internal medicine, nurses and pharmacists	2 years	-	Specific instruments to evaluate the results (Ambulatory Care Experiences Survey (ACES)-Short Form, Patient Assessment of Chronic Illness Care (PACIC), Health Care Effectiveness Data and Information Set (HEDIS)	Insignificant.

**Table II**  
**SUMMARY OF THE MAIN ASPECTS OF THE STUDIES THAT PERFORMED**  
**A MULTIDISCIPLINARY INTERVENTION FOR THE ELDERLY**

Study	Size and characteristics of sample	Intervention	Health professionals involved	Duration of intervention	Follow up	Outcome variables	Results (negative, insignificant, or positive)
Burton and colleagues (1995) <sup>18</sup>	≥65 years; 2 105 in the experimental group and 2 090 in the control group	Preventive services: evaluation and physical exam, immunization and lab exams, counseling on health risks	Primary care physicians	No information	Evaluation during the first and second year	Costs of intervention and costs and use of health system at the different levels of complexity	Positive; moderate improvement in health without increase in costs
Sommers and colleagues (2000) <sup>19</sup>	≥ 65 years with chronic diseases; 280 in the experimental group and 263 in the control group	1) Home visit with evaluation 2) Individual risk reduction plan and self-treatment for chronic diseases. 3) Monitoring and review of treatment plans	Primary care physician, nurse and social worker	18 months	-	Number of hospital admissions and readmissions, consultations, first aid visits, costs of using the health system and changes in physical, emotional and social functionality	Positive; decrease in hospitalizations, readmissions, medical consultations, and decrease in costs
Coleman and colleagues (2001) <sup>20</sup>	≥60 years with chronic diseases and frequent use of the health system; 146 in the experimental group and 149 in the control group.	Monthly home visits with focus on self-care of chronic diseases and professional support	Mainly primary care physicians, nurses and pharmacists. Periodically nutritionists, social workers and physiotherapists	No information	Insufficient information (follow-up after 2 years from the start of the study)	Number of visits to first aid, hospitalizations and visits to primary care	Positive; decrease in hospitalizations and visits to first aid
Vass and colleagues (2004) <sup>21</sup>	75 and 80 years; 2 092 in the experimental group and 1 942 in the control group	Intervention at municipal level based on home visits, interdisciplinary instruction of professionals, introduction to prevention of falls and brief assessment program performed by physicians, who also receive prior instruction	Physicians and others	No information	Follow-up at 18 months and 3 years from the start of the study	Functional capacity, MOB-H Mobility Scale and number of home visits	Positive; improvement in functional capacity of the women but not the men
Kerse and colleagues (2005) <sup>22</sup>	≥ 65 years; 130 in the experimental group and 140 in the control group	Evaluation and counseling by the physicians and nurses; individualized physical activity with follow-up with physical activity specialists by telephone and written material	Primary care physicians, nurses and specialists in physical activity	3 months	9 months	SF-36 quality of life survey, hours of physical activity, total energy output, blood pressure, musculoskeletal lesions, falls and hospitalizations	Positivos; increase in total energy output, increase 1 hour weekly in moderate physical activity; increase in self-perceived vitality and general health and decrease in hospitalizations.
Sahlen and colleagues (2008) <sup>23</sup>	≥75 years, healthy; 196 in the experimental group and 346 in the control group	Preventive care home visits (biannual)	Nurses.	2 years	Base line at 10 years after beginning of study	Costs of intervention and for use of the health system, deaths, quality of life survey EuroQoL5	Positive; decrease in hospitalizations and costs and increase in quality of life.
Levine and colleagues (2009) <sup>24</sup>	≥65 years; 221 elderly with high use of the health system in the experimental group and 1015 in the control group	90 minute monthly home visits with elderly health care discussion	Primary care physicians and nurses	12 months.	-	Costs of use of the health system, hospitalizations, medical visits, satisfaction of elderly patients and physicians, increased confidence in self-care	Positive; decreased costs (8 845 dollars versus 10 288 dollars), however the difference was not statistically significant; elevated levels of satisfaction among the elderly and the professionals
Rana and colleagues (2009) <sup>25</sup>	≥60 years; 425 in the experimental group and 414 in the control group	Physical activity; healthy diet, counseling and attention to health; social intervention (popular theater, documentaries, workshops and group meetings)	Physician and others not specified	15 months	3 months	Their own quality-of-life instrument	Positive; better quality of life in the physical, social, spiritual, environmental and general domains
Fagan and colleagues (2010) <sup>26</sup>	≥65 years with diabetes; 1 597 in the experimental group and 19 365 in the control group	Evaluations and prescriptions through the physician, directing the prescriptions and continuance with the local coordinator and control of the nurses, as well as bonuses to the physicians	Coordinators, Physicians and nurses	No information	12 months	Care quality measures: screening exams, vaccinations, hemoglobin test or vision exams, among others. Costs and visits to first aid	Insignificant
Molina and colleagues (2011) <sup>27</sup>	>65 years with disease or cardiovascular disease risk; 164 in the experimental group and 159 in the control group	Review and adjustment of pharmacological treatment of elderly, development of proposals and modifications and application through by the physician and nurse	Pharmacists, primary care physicians and nurses	No information	10 months	Percentage of patients with adequate use of aspirin in low doses, blood pressure, cholesterol, hemoglobin and quality of life	Lightly positive; increase in the percentage of patients that took aspirin in low doses (statistically significant) and improved quality of life (statistically insignificant)

**Table III**  
**SUMMARY OF THE MAIN ASPECTS OF THE STUDIES THAT BASED THEIR INTERVENTIONS ON RISK FACTORS**

Study	Size and characteristics of sample	Intervention	Health professionals involved	Duration of intervention	Adherence time	Outcome variables	Results (negative, insignificant, or positive)
James and colleagues (1993) <sup>28</sup>	≥60 years; 907 in intervention group I; 962 in intervention group II and 252 in the control group	Group I: risk evaluation and monitoring; Group II: risk evaluation and control only in the second half of the project; Control group: only risk evaluation.	Physicians	24 months	-	Costs; health and risk assessment	Positive; significant decrease in costs; less risks and better health condition.
Wallace and colleagues (1998) <sup>29</sup>	≥65 years; 53 subjects in the intervention group and 47 in the control group	Risk evaluation and control, regular physical activity and nutritional guidance	Nurse and physical education specialist	6 months	-	Depression, general health evaluation, physical restrictions and rate of bedridden	Positive; less depression and better health evaluation
Peña and colleagues (2002) <sup>30</sup>	≥60 years; 345 in the experimental group and 338 in the control group	Home visits to promote health.	Nurses.	6 months	-	Individual cost; institutional cost and reduced blood pressure.	Positive; costs reduction and improved blood pressure.
Figar and colleagues (2004) <sup>31</sup>	≥60 years old, hypertensives; 250 subjects in the experimental group and 250 in the control	Health education done by specialists and students; primary care physician monitoring	Physicians and medical students	12 months	-	Blood pressure	Positive; decrease in systolic blood pressure
Mitchell E (2004) <sup>32</sup>	≥75 years; one group of 56 individuals	Assessment of risk of falls followed by monitoring	Physicians, nurses, physical therapists and social workers	12 months	-	Risk of falls	Positive; effective in the prevention of falls
Sjosten and colleagues (2007) <sup>33</sup>	≥65 years with a falling incident in the last 12 months; 274 subjects in the experimental group and 256 in the control group	Experimental group: physical exercise in small groups, psychosocial activity, lectures and exercises at home. Control group: educational counseling.	Physicians and nurses	12 months	-	Physical and cognitive functioning; depression; Fear of falling and risks of a fall	Positive; improvement in physical and cognitive capacity greater in the women; decrease in fears of falling and sensation of loneliness.
Shumway-Cook and colleagues (2007) <sup>34</sup>	≥65 years; 212 subjects in the experimental group and 217 in the control group	Experimental group: group exercises, education for the prevention of falls and evaluations of risk of falls. Control group: received written materials on the risk of falls	Nurses and physical therapists	12 months	-	Primary outcome: incidence rate of falls informed monthly for 12 months. Secondary outcomes: leg strength tests, equilibrium and mobility.	Positive; improvement in equilibrium, mobility and strength of legs
Wyman and colleagues (2007) <sup>35</sup>	Women ≥70 years; 126 subject in the experimental group and 126 in the control	Experimental group: evaluation of risk, prevention program, physical exercise, incentive to acquire security devices and visits. Control group: health education topics, but not related to falls	Physicians and nurses	12 weeks	-	Risk of fall	Positive; discrete improvements in risks in the bathroom, lighting, and total risks.
Harari and colleagues (2008) <sup>36</sup>	≥65 years, robust; 940 subjects in the experimental group and 1 066 in control	Comprehensive initial risk assessment, prescription of individual treatment with help of software, list of recommendations delivered and discussed together with patients	Physicians and nurses	6 months	12 months	Measures of risk and efficiency of written instruments	Insignificant
Ploeg and colleagues (2010) <sup>37</sup>	≥75 years; 311 in experimental group and 330 in control	Initial health evaluation, collaborative care planned with patients, their families and physicians; health promotion, and referral for social assistance services.	Physicians, nurses and social workers	12 months	-	Quality of life, use of health and social services, costs, functional state, self-assessment of health and mortality.	Insignificant
Min and colleagues (2011) <sup>38</sup>	≥75 years; 133 in the urinary incontinence prevention group and 328 in the falls prevention group.	Identification of needs, intervention for change of risk behaviors, physician monitoring and guidance	Physician	10 months	-	Quality of life	Positive; improvement in the quality of life
Drenna and colleagues <sup>39</sup>	≥75 years; 215 in the experimental group and 105 in the control.	The experimental group: evaluation of the risks of the elderly with the aid of the Camberwell instrument. The control group received brief visits, where the focus was the management of health problems	Nurses and social workers	69 minutes on average	3 months	Elderly health risks	Positive; improved risk detection related to diet, physical and cognitive condition

**Table IV**  
**SUMMARY OF THE MAIN ASPECTS OF THE STUDIES THAT PERFORMED EDUCATIONAL INTERVENTION WITH HEALTH PROFESSIONALS**

Study	Size and characteristics of sample	Intervention	Health professionals involved	Duration of intervention	Adherence time	Outcome variables	Results (negative, insignificant, or positive)
Avlund and colleagues (2005) <sup>40</sup>	2 092 in the intervention group and 1 942 in the control group	Initial interdisciplinary instruction for all professionals involved in preventive home visits, (2) instruction of two key people at each location, (3) implementation of fall prevention strategies and (4) instruction of groups of generalist physicians.	Physicians and home visitors	3 years	18 months	Functional capacity and mortality	Positive for women and insignificant for men
Kronborg and colleagues (2006) <sup>41</sup>	75 years, 1 460 in the intervention group and 1 403 in the control group. 80 years, 632 in the intervention group and 539 in the control group	Training for physicians with the objective of encouraging interdisciplinarity and identify important signs of incapacity	Physician and other health professionals	3 years	-	Incremental cost-effectiveness per year of active life	Positive for the group of 80 years and insignificant for the group of 75 years
Avlund and colleagues (2007) <sup>42</sup>	75 years, 759 in the intervention group and 721 in the control group. 80 years, 229 in the intervention group and 180 in the control group	Initial interdisciplinary instruction for all professionals involved in preventive care home visits, (2) the instruction of two key people at each location, (3) implementation of fall prevention strategies and (4) instruction of groups of general physicians	Physicians and home visitors	3 years	-	Fatigue in daily activities	Positive for the group of 80 years and insignificant for the group of 75 years
Richmond and colleagues (2010) <sup>43</sup>	75 years or more, 673 patients and 551 at the end of adherence	Instruction of pharmacists in collaborating with physicians to improve the efficacy of pharmaceutical assistance with the elderly	Physicians and pharmacists	1 year	1 year	Adjustment of pre-scribed medication	Insignificant

## Discussion

A health service for the elderly should be considered to attend to people in different conditions of functionality. In addition, the structure and organization of the primary care service should be interlinked with the other levels of care, to meet the demands and facilitate the effectiveness of the system. In this sense, the intention of this study was to look for actions developed in primary care, performed by a group of professionals or multidisciplinary team, aimed at robust elderly. Because we are dealing with functionally independent individuals who are nonetheless vulnerable to the effects of the aging process, the primary care action should necessarily have as a focus the maintenance of functionality and quality of life of this population.

Improvements in the management of care emerge as a key element in the maintenance of elderly functionality. The continuity of contact between the health team and the patient, whether through home visits or outpatient visits, resulted in improvements in functional

capacity, reductions in mortality, hospitalization rates, number of days hospitalized, average cost per hospitalization and overall expenditure of the health system per individual.<sup>12,14,15,20,21,23,24,30,42</sup> The criteria for continuity in care, however, need to be evaluated in order to ensure a low-cost service without harming the monitoring and maintenance of the health condition of the elderly patients. Wolinsky and colleagues<sup>15</sup> analyzed two characteristics related to continuity of care: the eight month interval between outpatient visits and the patient's link to the same physician for those visits. Both measures of continuity were associated with lower mortality, even after adjusting for demographic variables, socioeconomic status, social support, lifestyle and morbidity.

The home visits were one of the forms of contact commonly developed in the programs between the team and the elderly. These were performed mainly by nurses, with a frequency that varied between monthly and twice-yearly, resulting in evaluation actions, health promotion and maintenance, as well as prevention of complications. Although there is still some controversy in the scientific

literature, systematic reviews have suggested that home interventions can promote the health conditions and functionality of the elderly, as well as reduce mortality, use of the health care system and costs.<sup>23,30</sup>

The utilization of information technology was proposed by two studies as an efficient method to improve the use of early detection exams for diseases and functional alterations common among the elderly, such as osteoporosis, diabetes, hypertension, and vitamin B12 deficiency.<sup>13,16</sup> The computerization of the clinical practice, by means of electronic prompters and periodic check-up appointment reminders, were also strategies used by primary care physicians to increase the annual flu and pneumococcus vaccination rate, as well as assist in the prevention of health risks for the elderly.<sup>16,36</sup> The alliance between health teams and information technology professionals may be considered, therefore, as an essential component for health services. Traditionally, technology is used more as an instrument in the organization of care on a secondary or tertiary level. The studies included in this review, despite showing strategies that are still incipient, indicate the need to expand the use of such technologies in primary care.

The interventions focused on risks are important for elderly primary care because they endeavor, ultimately, to maintain or improve the quality of life and functional capacity, fundamental conditions for detaining the increasing frailty of these individuals. In this sense, five studies were identified that focus on the topics mentioned above.<sup>33,34,37-39</sup> However, the research of Ploeg and colleagues,<sup>37</sup> which aimed to analyze the quality of life, functional state and mortality among elderly with more than 75 years, did not obtain statistically significant results, despite presenting a methodologically sound format. The authors confirmed that the primary prevention with people above this age range has less effect on the quality of life when compared with interventions with younger elderly.

The notion of primary risk prevention as a strategy to decrease costs was addressed by Peña and colleagues<sup>30</sup> and James and colleagues.<sup>28</sup> The link between costs and risks has been a challenge for public and private health systems, mainly in relation to the allocation of resources. Nevertheless, only two articles focused on this theme were published. This demonstrates the need to intensify the scientific discussion on the economics of health care with the aim of building solid instruments for coherent decision-making from a financial and management standpoint, especially in the field of elderly health care.

The majority of studies on risk focused their interventions on specific problems: those related to increased arterial hypertension, as well as proposals

for interventions to combat this condition,<sup>30,31</sup> intervention programs related to the risk of falls<sup>32,33,35</sup> and interventions to avoid depression.<sup>29,33</sup> Doubtless, this type of concern is important, however by focusing the interventions on specific problems, they do not consider the reality of the majority of elderly who, in general, present various risk conditions and more than two chronic diseases. In these conditions, such interventions have little concrete impact on the quality of life or general clinical condition of the majority of elderly. Thus, it becomes clear the importance of risk intervention programs for the elderly in primary care that break with the logic of the unidirectional view of illnesses and complications, and advances in the sense of performing broader assessments that are also more consistent with the health/sickness process among elderly people.

Another central point of this discussion is the realization of multidisciplinary interventions in primary care. On this point, suffice it to underscore that the great majority of programs include the figure of the physician on the health team and, frequently, the primary care physician. In addition to this health professional, the presence of nursing professionals is also common, comprising the traditional doctor-nurse binary in primary care. Other health professionals, among others that can contribute substantially to the team, today are still seldom present in the primary care programs. In the present study we did not find research comparing the efficacy of different types of multidisciplinary teams. It seems that there is a consensus in the scientific literature on the necessity of these teams to deal with elderly people, generally with multiple and concomitant chronic illnesses, requiring a comprehensive approach.

Work in teams is complex, nevertheless, and currently it is not clear whether the participation of other health professionals in the planning of the treatment performed by physicians and nurses is able to obtain greater benefits for the health of the elderly, nor even if these multidisciplinary programs are more cost effective.<sup>32</sup>

With regard to the work of the multidisciplinary team in primary care, another key point is the professional training of its members in addressing the special needs of elderly patients. Based on this point, some studies present proposals for educational interventions with the health professional.<sup>40-43</sup> The educational interventions with general practitioners and other health professionals had as their main objectives the fostering of interdisciplinarity and improvements in the diagnosis of functional capacity. Avlund and colleagues (2007)<sup>43</sup> utilized fatigue in daily activities as a main element for preventive diagnosis of functional incapacity. Through the educational work of the team involved with the

home visits they achieved significant results for the group of 80 years and older.

This article had some limitations because some of the texts initially selected from the databases were not available as complete documents and we were not able to obtain them through bibliographic substitution or even by contacting the authors. The number of documents not located was nevertheless small in relation to the total number of articles analyzed, limiting possible detriment. The work of searching for and reviewing the articles was done by five researchers separately. Nonetheless, to limit the effect of information bias a prior meeting was held with the researchers to standardize the search strategy and calibrate the selection of articles. During the analyses two more meetings were held to discuss remaining doubts regarding the inclusion or exclusion of articles.

## Conclusions

One can perceive the importance of more traditional strategies in the outpatient sphere, such as home interventions, that can promote a condition of health and functionality for the elderly as well as reduce mortality, use of the health system and costs. Notwithstanding, one of the studies indicated that preventive strategies have less clinical and economic effect with the elderly over 75 years old. Concurrently, this review showed that the use of hard and light-hard technologies,\* traditionally more common at tertiary and secondary care levels, are important for risk prevention and care management for the elderly.

Gaps were detected in the area of knowledge, given that few directly dealt with the discussions on strategies to reduce primary care costs. Moreover, for the elderly in primary care it became apparent that it is important to have risk prevention strategies that break with the logic of the unidirectional way of seeing illnesses and complications, and to advance in the sense of performing assessments that are broader and more consistent with the health/illness process of the elderly. The multiprofessional work demonstrated its efficacy, although still centered on the physician-nurse binary. No studies were found comparing the efficacy of different types of multidisciplinary teams, despite being aware of the existing demands, suppressed due to the absence of other health professionals in the primary care.

\* Hard technology: technological equipment like machinery, equipment, standards, organizational structures. Light-hard technology: well-structured knowledge present in the health work process, such as clinical work, epidemiology, among others. Light technology: relational technologies like bonding, listening.<sup>44</sup>

Moreover, the vast majority of studies found in this review were performed in Europe or the United States, and in less proportion in Asia and Latin America. The development of research in Latin American countries is important because they represent different realities, cultural and individual biopsychosocial differences that, in turn, can interfere with the efficiency and effectiveness of the strategies developed in primary health care.

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