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DEVELOPMENT OF PRIMARY CARE BASED ON FAMILY MEDICINE IN THE REPUBLIC OF MOLDOVA AND DETERMINANTS OF EFFECTIVENESS

331.03 – SOCIAL MEDICINE AND MANAGEMENT

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RESEARCH CONCEPTUAL HIGHLIGHTS

The actuality and importance of the addressed topic. The level of contemporary medical care in many countries of the world has been transformed by the development and implementation of a series of national acts and practical actions, aimed at the essential reform of the health system in accordance with the World Health Organization's Alma-Ata Declaration (1978). The purpose of the reforms in the Republic of Moldova consisted in trying out the health system development strategy under new economic conditions, and according to I. Ababii and co-authors (2006) - "in the energic implementation of family medicine as a practical, scientific and academic specialty, on which the primary healthcare sector is based" [1].

Despite a precarious financing level and the lack of necessary resources, Moldova managed to take important steps in "[...] creating a favourable environment for family medicine and for the reforms taking place in this segment". According to the current situation of primary healthcare, as described in the *Health System Development Strategy for the 2008-2017 period*, "family medicine has become a specialty by law, and primary care is considered a priority and represents the outpost of the health system" [19].

Family medicine is considered the most efficient and effective form of primary care regarding cost and impact on health indicators, offering accessibility, continuity and solving up to 80% of population requests. However, the health system responsiveness to the needs of the population remains a pending problem.

Reasoning behind the choice of the research topic. The problems that need to be solved in the Republic of Moldova, and not only, relate to directing the health system, optimizing its financing and the payment mechanisms for health services, providing these services, and resource management. Also, the available specialized literature has focused for a long time on resource management and primarily on studying the notions of *access* and *efficiency*, important parameters especially for health systems characterized by limited financial resources. However, the notion of *result* was overlooked, and any financial expenditures that do not have a clear expected result cannot be called investments. In order to go back to understanding the importance of not only the process of providing medical services, but also of improving the results regarding the beneficiaries'/population's health, the attention of the research was directed towards the notions of *quality* and *performance indicators*.

The notion of ***quality*** does not have a universally accepted definition. One of the definitions states: "The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." Integrating global and national quality measurement efforts is essential to

ensure that countries collect important data and use it to transform and improve their service delivery systems. Among the factors known to influence the effectiveness of medical services are access, accuracy in determining the target population and interventions, provider compliance and consumer adherence (*see diagram*).

O distribuție aproximativ simetrică a datelor se poate observa doar la compartimentul A. *Accesibilitatea primului contact*. Asimetrie negativă se constată la compartimentele: E. *Comprehensivitate – servicii disponibile*, F. *Comprehensivitate – servicii primite* și H. *Orientare comunitară*, fapt confirmat prin predominarea răspunsurilor ”niciodată” și ”uneori”. În același timp, o asimetrie pronunțată pozitivă se constată la compartimentele: B. *Primul contact-utilizare*, G. *Centrarea pe familie* și I. *Competență culturală*, toate conținând un număr mic de întrebări (3, 2 și, respectiv, 3). Compartimentele C. *Îngrijire continuă* și D. *Coordonarea serviciului* de asemenea prezintă o asimetrie pozitivă, predominând răspunsurile ”adesea” și ”totdeauna”.

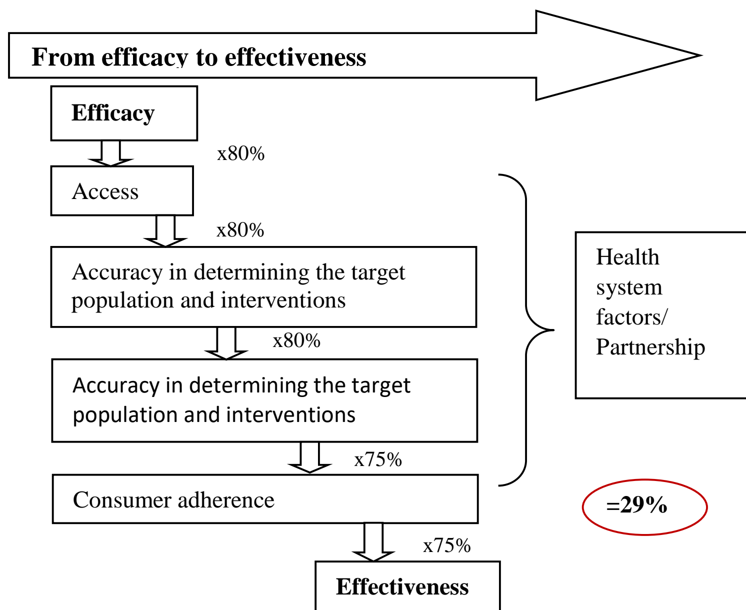


Diagram 1. Health system factors influencing the dynamics of efficacy towards effectiveness (Source: *SSPH+ 15 years, COVID and Public Health: The Swiss and global response*, online).

Research problem. Despite the considerable achievements registered in recent years, the reform agenda of the health system is far from completed, "[...] and the progress achieved so far doesn't guarantee the success of some essential indicators", such as the quality of health services, their accessibility, especially in rural areas, which counts as a punishable lack of efficiency of the existing health services infrastructure. Since the implementation of family medicine throughout the territory of the Republic of Moldova, no studies have been carried out that would determine the level of development or identify the effectiveness of family medicine and the factors with potential influence, especially in the new financing conditions through mandatory health insurance. Understanding the current situation regarding the development of family medicine and its effectiveness has become a necessity for directing reforms in the field of records and towards transparency.

The purpose of the research was to evaluate primary care based on family medicine in the Republic of Moldova in order to assess its level of development and elucidate on the factors that determine its effectiveness.

To achieve the desired goal, the following **objectives** were established:

1. Explore the historical turning points of primary care and the context of the health services' quality dimensions.
2. Nominate the factors, which have potential influence on the development of primary care, identify or develop and apply appropriate tools for evaluating effectiveness.
3. Elucidate on the level of development of primary healthcare and on the stages of establishing family medicine in the Republic of Moldova.
4. Examine the professional satisfaction and work motivation of family doctors and the competence of family medical assistants in order to ensure the effectiveness of health services.
5. Evaluate the opinion of medical care beneficiaries regarding the primary care provided within family medicine.

The research concept stated that the effectiveness of primary care based on family medicine depends on ensuring an advanced level of development, on the competence, professional satisfaction, and work motivation of the medical staff, as well as on the opinion of medical care beneficiaries. The accumulated and analysed data create premises for the scientific argumentation of the development of family medicine as a medical, academic, and practical specialty.

The scientific study was partially carried out within the National Research Project *Effectiveness evaluation and development perspective of family doctors' practice in the Republic of Moldova* (code

19.00208.19087.14), within the postdoctoral program at the Doctoral School of the *Nicolae Testemitanu* State University of Medicine and Pharmacy.

Synthesis of research methodology and justification of applied research methods. A descriptive study was planned and carried out in several stages. To achieve the intended goal, the research objectives were formulated, and then the research methods and the necessary materials were identified. The following research methods were applied in the conducted study: historical method; secondary epidemiologic study; descriptive study (cross-sectional and ecologic); document analysis; observation method; method of evaluation by experts; sociologic method; opinion poll; method of unity between analysis and synthesis; synthesis method.

The historical method, the secondary descriptive study method, the document analysis and the observation methods applied in working with bibliographic references and the legislative framework, which regulated the development of primary medical care based on family medicine in the Republic of Moldova. The method of evaluation by experts, the sociologic method (questionnaire) and the opinion poll (interview) allowed for the collection of data within the original studies, including through the organization and conduct of field visits. The results obtained were subjected to the method of unity between analysis and synthesis, and the application of the final synthesis facilitated the formulation of general conclusions and recommendations.

In accordance with the established objectives, the conclusions and practical recommendations are addressed to the general system, medical and sanitary institutions and family doctor teams, as well as medical education institutions. In addition, proposals were outlined regarding forward-looking research.

Scientific novelty and originality. The research solves the problem of the appropriate instrumentation and the right methodology, necessary for the assessment of the primary healthcare sector (PHC) in one of the countries of the South-Eastern Europe region, taking into account the specifics of the development of the health system and the implementation process of the Family Medicine specialty as a basic specialty for the PHC sector in the Republic of Moldova.

The theoretical significance of the research. Evidence has been demonstrated regarding the influence of certain contextual factors *on the effectiveness of PHC services*: regulatory aspects of primary health care at policy level, professional satisfaction and work motivation of family physicians, as well as the opinion of health care beneficiaries.

New essential scientific results. Through the conducted research, new data were obtained regarding the primary care development level in the Republic of Moldova and the establishment of family medicine as a specialty.

Primary healthcare evaluation from the point of view of a group of national experts, representatives of family doctors and beneficiaries of primary care laid the theoretical foundations for monitoring the evolution of family medicine over time. Exploring the real possibilities for evaluating the effectiveness of primary care based on family medicine confirmed the systemic approach of the transformation process, identified the factors influencing the professional satisfaction and work motivation of family physicians by validating and applying the assessment tools developed in the study, and identified new issues regarding the opinion of medical care beneficiaries on the primary healthcare received. The research results validated the family medicine assessment tools that are proposed for future application. Knowledge of the current situation served as a basis for identifying problems and proposing scientifically backed interventions.

Application value. Through the conducted research, new data were obtained about the level of development of primary medical care (PHC) in the Republic of Moldova in comparison with other countries. AMP assessment tools have been validated, which allows for the planning of monitoring interventions in the health system in the near future. The application of thesis results was achieved through the development of intellectual products, among which: an informative policy note, discussed and accepted at the Family Medicine Department and the *Nicolae Testemitanu* Social Medicine and Health Management Department meeting, and approved by the *Nicolae Testemitanu* SUMP Senate by Decision no. 4/8 of April 21st, 2022, pursuant to the Scientific Council's Decision no. 3/7 of March 23rd, 2022; two certificates of copyright and other related rights; three innovation applications and three implementation documents, obtained during the research.

Publications related to the thesis: 44 scientific publications were issued, including 1 monograph and 20 journal articles, of which 5 were international, and 4 were published in impactful journals. Out of the total number of publications, 13 have a single author, and 6 of them are articles.

Approval of scientific results. The research results were presented and approved at 21 scientific forums - 6 national and 15 international. During the 2017-2021 period, the research results were presented at 14 scientific forums, of which 9 were international events, including the following: VI Annual International Scientific and Practical Conference *Topical Issues of Medicine*, Baku, Azerbaijan, May 10-11, 2017; International scientific-practical conference *Role of the health system in public healthcare,* Moscow, Russia, April 6th, 2017; National conference *Primary care in Ukraine: family medicine best practices,* Kiev, Ukraine, June 7-8, 2017; 4th Congress of family doctors from the Republic of Moldova, Chisinau, Republic of Moldova, May 16-17, 2018; 2nd EURACT Medical Education Conference,

Leuven, Belgium, September 21-22, 2018; XXIX Congress Alass CALASS, Lyon, France, September 6-8, 2018; Scientific-practical conference with international participation *Preventive medicine – realities and perspectives*, Chernivtsi, Ukraine, October 18-19, 2018; 8th Congress of public health and health management specialists with international participation, Chisinau, Republic of Moldova, October 24-25, 2019; Congress dedicated to the 75th anniversary since the founding of the *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova, October 21-23, 2020; The European Conference of Family Doctors, DEGAM Annual Congress, held virtually, December 16-19, 2020; 26th European WONCA Conference, Amsterdam, Netherlands, July 6-10, 2021; EFPC Conference, Bergen, Norway, September 5-7, 2021; *Nicolae Testemitanu* State University of Medicine and Pharmacy annual scientific conference, Chisinau, Republic of Moldova, October 19-23, 2021.

Thesis chapters, in short. The thesis is written in Romanian, it is computer-edited and consists of an introduction, six chapters (including literature review, research materials and methods, three original chapters and discussions), general conclusions and recommendations, bibliography with 296 bibliographic references and other sources. The work was presented on 216 pages (basic text), illustrated with 19 figures and 29 tables.

THESIS CONTENT

1. THE ROLE OF PRIMARY HEALTHCARE AND FAMILY MEDICINE IN HEALTH SYSTEMS AND THE ASSESSMENT OF EFFECTIVENESS AS A DIMENSION OF THE QUALITY OF PRIMARY MEDICAL SERVICES

1.1. Primary care and family medicine: their definition, content, and role in health systems

The term *primary care* has been introduced in 1961, having been adopted by the ILO Committee for future use: "Primary care is the provision of integrated and accessible healthcare services by clinicians, who are responsible for addressing the vast majority of personal healthcare needs, developing a sustained partnership with patients and practicing in the context of family and community." From 1966 to the late 1970s, other variations and subtleties of this concept were discussed. In a classic monograph, Alpert and Charney (1973) described the "three fundamental characteristics of primary medicine (defined as the personal health system of individuals and families, as distinguished from public health): its clinicians (1) provide first-contact care (compared to referral-based), (2) assume responsibility for the patient over time, regardless of the presence or absence of disease, and (3) serve as

an "integrator" (fulfil a coordinating role)". These authors also believed that it is preferable for all family members to be cared for by the same doctor.

In 1978, the ILO published a report titled *A Manpower Policy for Primary Health Care: Report of a Study*. The second chapter, which had been released a year earlier as an interim report, defined the essence of primary care as it could and should be practiced: "accessible, comprehensive, coordinated and continuous care provided by responsible personal health service providers". This definition was later widely quoted and used.

The World Health Organization Conference in Alma-Ata defined primary healthcare as “essential health care [...] made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford” (WHO, 1978, p. 3). Although the primary care definition proposed by WHO is widely accepted, there are differences between its application in different countries.

In his address to WONCA, entitled *Health for all, primary health care and the general practitioners* (1986), H. Vuori provided a list of the fundamental components of primary healthcare, which stated that primary care can be treated as a series of measures, as a level of preventive and curative care provision, as a strategy for organizing health services, but also as a philosophy, on the principles of which the entire health system should be built. The European Commission's expert group formulated an updated concept of primary healthcare, called *primary care*. According to this concept, "[…] universal, integrated, person-centred access and comprehensive health and community services must be provided by a team of professionals capable of meeting the majority of personal health needs".

The Alma-Ata Declaration slogan - "Health for all" - was inextricably linked to the World Organization of Family Doctors (WONCA) motto: "A family doctor for every family". In 2002, WONCA EUROPE published a Statement on *The European Definitions of The Key Features of the Discipline of General Practice, The Role of the General Practitioner, and A description of the Core Competencies of the General Practitioner / Family Physician*.

Following the Declaration, “general practice / family medicine is [defined as] an academic and scientific discipline, with its own educational content, research, evidence base and clinical activity, and a clinical specialty orientated to primary care” (2002).

At the WHO Astana Global Conference (2018), an expert panel defined primary healthcare as follows: “PHC will provide a comprehensive range of services and care, including but not limited to vaccination; screenings; prevention, control and management of non-communicable and communicable diseases; care and services that promote, maintain and improve maternal, new-born, child and adolescent health; and mental health and sexual and reproductive health. PHC will also be accessible, equitable,

safe, of high quality, comprehensive, efficient, acceptable, available and affordable, and will deliver continuous, integrated services that are people-centred and gender-sensitive."

Family medicine is the medical specialty that provides continuous and comprehensive medical care for the individual and the family. It is a broad specialty, integrating biological, clinical and behavioural sciences. The scope of family medicine encompasses all ages, sexes, organ systems and disease entities. As a medical field, general medicine/family medicine is a relatively new area of specialization, having evolved in the years following the 1960s in the UK, Scotland, the Netherlands and the USA as a felt need in personal healthcare. Humanistic approaches to the health of the whole family, in-depth care of the person rather than focus on the disease, and improvement of quality of life are pertinent concerns of the discipline. The family doctor now functions as the core of the healthcare system in many countries to meet the healthcare needs of the population in the 21st century.

Primary healthcare in the Republic of Moldova has a relatively short history. According to the normative acts approved by the Government, family medicine was implemented in the Republic of Moldova starting from 1993, and to ensure the training of medical personnel, in 1997 was created the Department of General Practice and Primary Medical Care, later - the Department of Family Medicine within the *Nicolae Testemitanu* SUMP. The university department established for the implementation of family medicine has developed a residency program specifically for this. The program was reinforced with a two-week introduction to the specialty and rotations in GP centres. Planned improvements and updates to the training program continued. The Society of Family Doctors from Moldova was founded. During the described period, the model Centre of family doctors *Pro San* was created, stocked by the *Carelift.Int* Agency with equipment and a departmental library. Later, the same donor supported the creation of the University Clinic of Primary Care within the *Nicolae Testemitanu* SUMP. To this day, urban and rural GP centres serve the concurrent purposes of teaching, demonstration, and healthcare.

The Republic of Moldova has achieved significant success in reorienting the health system towards primary care, and the primary care system operates entirely based on family medicine. In rural areas, primary care services are provided by health offices, family doctors' offices, family doctors' centres and health centres, and in urban areas, services are provided through family doctors' centres (located in former clinics), those in the Chisinau municipality being joined as territorial medical associations.

1.2. Dimensions of health service quality and opportunities for evaluating the effectiveness of primary healthcare

A strong and sustainable primary care system is arguably the most important component of any health system. Over the years it has been proven that the level of population health is higher in countries with stronger primary care compared to countries with weaker primary care. “There is no longer any doubt of the importance of primary care as the key to an effective and efficient health service. Primary care, defined in terms of the achievement of its four functions, can be measured and its quality assessed.” (*B. Starfield*, 2001) At the same time, there was no uniform definition of quality in general medicine/family medicine and the strength of primary care was not associated with patients' assessments of its quality. Effectiveness refers to the extent to which health services achieve desired results or outcomes at the patient or population level. *Donabedian* (2003; 2016) emphasizes that effectiveness is the extent to which health improvements are actually achieved. *Juran* et al. define effectiveness as follows: “the extent to which processes lead to desired results without errors” (*Juran and Godfrey*, 2000). Effectiveness refers to the degree to which the objectives of a program, care, service, or system are achieved.

The human right to health is meaningless without good quality care, because medical systems cannot improve health without providing the said care. Although health systems look different in various rating systems, all people should be able to count on high-quality care that will improve their health and gain their confidence. However, there is still no universally accepted definition of quality, although a common perception of its basic concepts and defining dimensions persists.

The first chapter describes the author's personal opinion on historical milestones and factors that facilitated the emergence and development of primary health care and general medicine/family medicine with a chronological description of the stages and an emphasis on landmark events. The aspects of the quality of primary health care with the description of its dimensions were explored to explain the importance of the notion and phenomenon of effectiveness of medical services.

Chapter 1 conclusions

1. Since the introduction of the term "primary health care" in the 1960s, various definitions have been developed regarding primary care, general practice, and family medicine. These efforts serve as evidence of the importance the primary care services have in health systems and the dynamic changing role of family medicine.

2. Although there have been many discussions over time, there is still no universal definition of the quality of medical services, just as there is no evidence about the relationship: strong healthcare system – quality of medical

services – satisfaction of beneficiaries. At the same time, poor quality services are characterized by low effectiveness and are an impediment to achieving effective universal health coverage.

3. The quality of primary healthcare is a complex and multilateral concept, which requires the simultaneous design and deployment of combinations of interventions in the following directions: a quality policy and an implementation strategy as part of the national transformation plan; an autonomous national quality policy document; a detailed action agenda. The evaluation of interventions' effectiveness is the key element of the monitoring process and the progress indicator of the development of the field.

4. Primary care services are recognized as being of good quality if they are effective, patient-centred, safe, and timely, and evaluating them is a way to measure and monitor quality. Validated primary care assessment tools do this in a standardized way and allow for dynamic monitoring and cross-country comparison.

2. RESEARCH MATERIALS AND METHODS

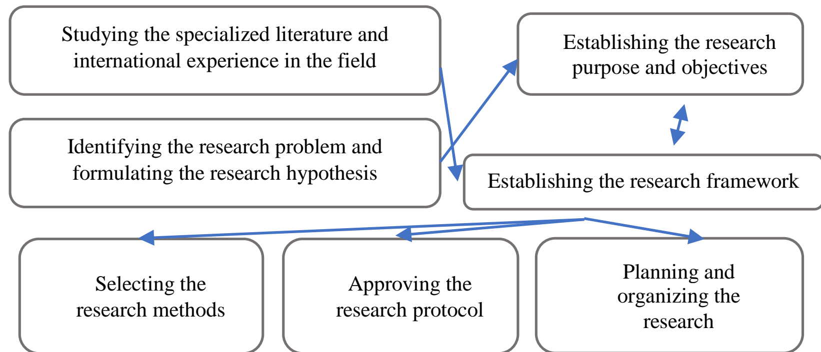
This work represents a complex research, based on the evaluation of the quantitative and qualitative aspects of the subjects studied by conducting descriptive primary and secondary studies. The object of the research was the effectiveness of primary healthcare services - the essential dimension of the quality of medical services, through the evaluation of which it was possible to elucidate the essential aspects for the development of primary healthcare based on family medicine in the Republic of Moldova.

Research topics included: primary care development level in the Republic of Moldova; stages of establishing family medicine as a medical specialty in Moldova from the point of view of health policies; organization and regulation of primary care based on family medicine; notion of quality of primary healthcare and its dimensions; primary care assessment tools; factors with potential influence on the effectiveness of primary care; professional satisfaction and work motivation of family doctors; competence of family medical assistants; primary healthcare in the opinion of the beneficiaries. The scientific research was carried out in five stages and span from 2008 to 2021. The research project development plan is presented in figure 1.

Phase I. ***Research project description and planning, definition of purpose, scientific research objectives and research hypothesis***

At this stage, the specialized scientific literature was studied, with the identification of the little-studied aspects of the research problem, the formulation of research objectives, the identification of the processes subject

to observation and analysis and the formulation of the research hypothesis. The study of bibliographic sources and international experience in primary



Collection of primary material and statistical processing of data

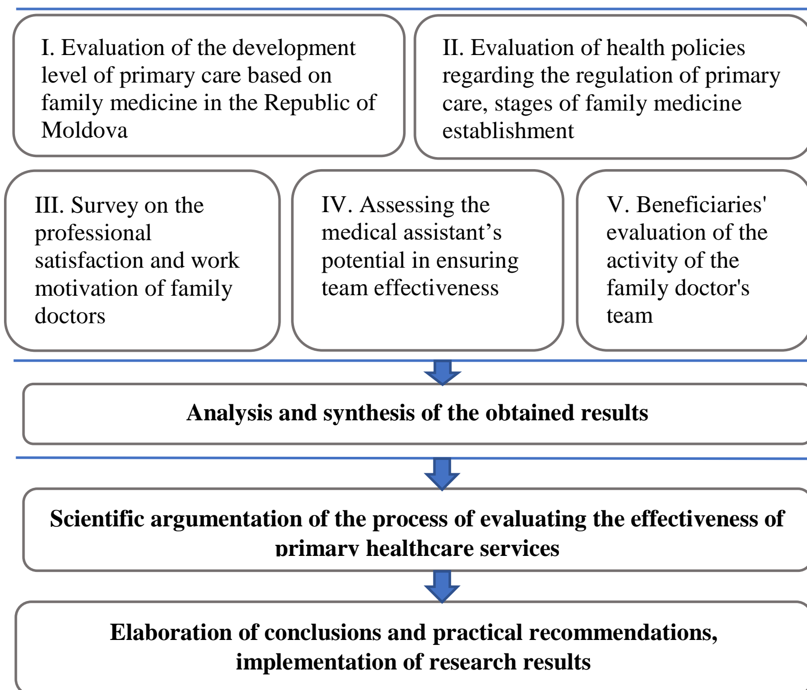


Figure 1. Research project general plan

care organization was carried out by using recognized databases in the field: PubMed, HINARI, Elsevier, the WHO website. In addition, the website archives of the Ministry of Health (Labour and Social Protection) and the Ministry of Justice, as well as the National Health Insurance Agency, were consulted to identify laws, government decisions, orders, regulations, norms regarding the establishment and functionality of family medicine. Materials pertaining to congresses, conferences, courses, webinars, political and training workshops, and other political and scientific events relevant to the addressed issue were also reviewed. Some unpublished materials were also included in the research.

To lay the research project foundation, the mental experiment method was applied, consisting of constructing mental image combinations, which facilitated the highlighting of the staged process of providing primary care in order to clarify the essence of the development phenomenon and the effectiveness of family medicine. To lay the research project foundation, the mental experiment method was applied, consisting of constructing mental image combinations, which facilitated the highlighting of the staged process of providing primary care in order to clarify the essence of the development phenomenon and the effectiveness of family medicine. The research purpose and objectives were formulated, identified after several research objectives were rejected due to the impossibility of being practically achieved, in the absence of a functional information system and of unified data, as well as existing decentralized data.

This was followed by the selection of research methods and the development of the research framework, by research planning and organization, and by the implementation of preparatory activities for the collection of primary material. Thus,
standardized instruments were selected from studies carried out at the international level, thus proving their validity; these were applied for testing and validation, but also for identifying the current situation in family medicine/primary care in the national context. At the same time, the author of the thesis contributed to solving the addressed problem by developing two relevant questionnaires. Research planning and organization was carried out directly by the author. The study protocol included the description of all research instruments and was approved by the Research Ethics Committee within the *Nicolae Testemitanu* SUMP (minutes no. 99 of 18.09.2017 and no. 8 of 04.11.2019).

Phase II. ***Collection of primary material and statistical processing of data***

The study process was divided into steps, respecting the research protocol and the proposed training methodology. The collection of primary

material and the statistical processing of data were carried out both through the use of information technologies, the application of online questionnaires, as well as through visits to medical institutions and face-to-face or written interviews. The primary material was gathered based on the identified, translated, and adjusted questionnaires, as well as on those developed by the author and validated and approved by the Research Ethics Committee of the *Nicolae Testemitanu* SUMP, from statistical databases and annual reports, through investigation methods, face-to-face interviews and surveys.

Data were collected through a variety of methods: paper questionnaire, electronic PDF form, Google Forms online questionnaire. The ODK collect 1.25.0 platform was used to collect data on the beneficiaries' assessment of primary healthcare, which allows for offline data collection on mobile devices, with direct data transfer to Google Sheets.

The collected data were depersonalized, generalized, and systematized in the database. Statistical processing was performed using the R statistical computing environment and the GNU PSPP 1.4.0 statistical program. Data were subjected to quantitative statistical analysis with calculation of frequencies, mean values, standard deviations, identification of medians and interquartile ranges, summary score, Pearson $\chi 2$ coefficient, Student t statistic and analysis of variance (ANOVA). The linear qualitative analysis of the obtained results was carried out by applying the descriptive analytical method. When necessary, the quantitative results were supplemented with the description of the qualitative aspects. To reduce possible errors, the data were additionally checked.

Phase III. ***Analysis and synthesis of the obtained results***

This phase included: (1) studying the opinion of national experts on the development of primary care based on family medicine in the Republic of Moldova; (2) comparing the level of development of primary care in the Republic of Moldova with that of other countries; (3) studying the legislative and normative framework, including issued by the Ministry of Health of the Republic of Moldova regarding the establishment and regulation of family medicine as a form of primary health care. The following were carried out at the level of medical service providers: (1) study of the professional satisfaction and work motivation of family doctors; (2) study of the competence and availability of family medical assistants to cover services in the family doctor's team. The study of the population's opinion on the activity of the primary healthcare team was also carried out.

Phase IV. ***The synthesis of all the data obtained for the description of the establishment aspects of family medicine and the scientific argumentation of the factors with potential influence on the effectiveness of primary care based on family medicine*** allowed for the scientific argumentation of the development level of family medicine/primary care in

the Republic Moldova; for ensuring accordance of the establishment elements of family medicine/primary care to the WHO health systems framework (2007); for deducing the determinants of effectiveness of primary care services and for evaluating the factors with potential to influence the effectiveness of family medicine/primary healthcare in said research.

Phase V**.** ***Elaboration of conclusions and practical recommendations, implementation of research results***

Based on the research results, conclusions and practical recommendations were formulated regarding the process of evaluating the effectiveness of primary care, outlining some research hypotheses about the future development of family medicine in the Republic of Moldova. The experience resulted from the research was proposed for further implementation through dissemination. With the aim of further implementing the applied tools and considering the scientific argumentation, the following were developed and approved: an informative policy note, two scientific works, three innovation patents and three implementation acts.

Research limitations. The evaluation of the development level of family medicine in the Republic of Moldova was carried out using an instrument which originated in a country with a generally high level of health system development, and which has been applied in different countries and proved its validity in various contexts. The structure of the questionnaire continues to reflect the essential components of primary care, so it remains relevant as an assessment tool.

Data collection on primary care regulation and on the stages of family medicine establishment was limited by the number of documents available on the official website of the Ministry of Health, as it was later found that the Ministry publishes these documents selectively. The study was retrospectively observational and did not address the issue of selection bias. The structured analysis process applied in the study highlighted the actual state of affairs regarding the undertaken activity.

The *Survey on professional determinants, professional satisfaction and work motivation of family doctors* is based only on primary data, the total number of questionnaires collected allowing to consider the obtained results as truthful and with extrapolation to the whole community of family doctors.

The study on the assessment of the skills and availability of family medical assistants for effective work in the family doctor's team was a first survey in this direction, which opens perspectives for further research.

The study on the evaluation of the activity of the family doctor's team by the adult beneficiaries of primary care services was envisaged as complex research, the sampling being carried out in stages, which leads to potential errors at each stage. At the same time, scientific principles were respected, and standard instruments were applied. Full compliance with the

methodology and correctness of data collection, compliance with the participants' inclusion and exclusion criteria helped reduce potential errors. Sample justification was possible by assessing theoretical data saturation. Data verification and additional statistical analysis confirmed the study was valid and completed, and its conclusions were taken into consideration.

Chapter 2 contains the description of the framework and research stages carried out, explains the selection of research methods and the analysis of the obtained data. The research methods proposed and the tools applied to the extent of conducting the research proved its relevance and feasibility. Accuracy in the conceptualization and organization of the study, as well as the realization of the research protocol, had the objective of reducing errors that could influence the results obtained.

Chapter 2 conclusions

1. To achieve the research purpose and its proposed objectives, a study plan was developed, which guaranteed the argumentation and analysis of the research problem, the definition of the research fields and methodology, the identification of the research subjects, the calculation of the sample size, as well as the identification or development of tools for primary data collection, results' analysis and synthesis, for formulating conclusions and practical recommendations.

2. The work represents a complex research based on different types of studies, which were carried out in accordance with the specific requirements of the Social Medicine and Health Management specialty. To achieve the proposed objectives, modern tools for evaluating primary care and the effectiveness of the field were applied in the research, using the appropriate statistical processing of the obtained data.

3. Research topics included: development level of primary care in the Republic of Moldova; stages of establishing family medicine as a medical specialty in Moldova from the point of view of health policies; organization and regulation of primary care based on family medicine; the notion of *quality* of primary healthcare and its dimensions; primary care assessment tools; factors with potential influence on the effectiveness of primary healthcare; professional satisfaction and work motivation of family doctors; competence of family medical assistants; primary medical care in the opinion of its beneficiaries - all subjects that are currently insufficiently studied. For this reason, several conceptually related studies were needed for the scientific argumentation of the development process of primary healthcare and for the evaluation of the effectiveness of family medicine in our country.

3. CLARIFICATION OF THE LEVEL OF DEVELOPMENT AND THE ESTABLISHMENT STAGES OF FAMILY MEDICINE IN THE REPUBLIC OF MOLDOVA

3.1. Evaluation of the level of development of family medicine in the Republic of Moldova: comparative study based on the application of the standard evaluation tool

The analysis of the *Health System Development Strategy* shows that the governmental decisions regarding the primary care reform over the years, starting in 1993, were less based on any scientific arguments, apart from those elucidated at the international level. The successes of implementing family medicine at the national level are modest but evident. However, the changing context in terms of demographic factors, health policies, socioeconomic and financing phenomena of the health system call for the presentation of evidence for the strategic development of family medicine in the future. The study generated quantitative evidence on the primary healthcare system, containing indicators on the general orientation of PHC, which is part of the country's health system, on its strengths and weaknesses, related to the specific characteristics of primary care. The results of the study made it possible to compare the situation in Moldova with that of 14 other countries, namely: Austria, Belgium, France, Germany, the USA, Australia, Canada, Japan, Sweden, Denmark, Finland, the Netherlands, Spain, and the UK. Data from the publications, including the results of the conducted study, are presented in table 1.

A summary of the description presented by the interviewees confirms that the primary healthcare system in the Republic of Moldova is based on the practice of family doctors, but doctors from other specialties are increasingly involved in medical assistance in primary care, the total share of family doctors being 13.2%. The system was founded as a social insurance system and contains incentives for the equitable distribution of primary healthcare services. Each family doctor has a personal distribution list of beneficiaries, but does not provide 24-hour care, these requiring small additional payments. At the same time, the establishment and daily activity of the University Department of Family Medicine were as important in training the family doctors as specialists as those of other departments.

According to the experts' opinion, the characteristics of the primary healthcare practice in the Republic of Moldova are the existence of a specific list of provided services (prevention, mental health, minor surgical interventions, and routine obstetric care) and a low level of their provision, and the presence of data transfer only for specific services. The GP's responsibility is centred on the care of the listed family, but in most cases the focus is on the individual episode of illness, with low demand for specialist referral. Clinical data are used to identify priorities, but most practitioners do

not use community data in problem identification and service planning, and therefore primary care does not currently treat patients in their wider social context.

Table 1. Comparative scores of primary healthcare systems in different countries[a]

Country	System score	Practice score	Total score	Total score (average)
Underdeveloped primary healthcare				
France	5.0	0.0	5.0	0.3
Belgium	5.6	0.0	5.6	0.4
Germany	6.0	0.0	6.0	0.4
USA	4.0	1.5	5.5	0.4
Austria[b]	4.0	3.0	7.0	0.5
Average primary healthcare				
Japan	8.5	4.0	12.5	0.8
Sweden	10.0	4.0	14.0	0.9
Australia	10.0	7.0	17.0	1.1
Republic of Moldova[c]	**10.5**	**7.0**	**17.5**	**1.2**
Canada	11.5	6.0	17.5	1.2
Developed primary healthcare				
Spain	12.5	8.0	20.5	1.4
Finland	15.0	7.0	22.0	1.5
Netherlands	13.0	10.0	23.0	1.5
Denmark	16.0	10.0	26.0	1.7

Note. [a] – Primary care scores from 2002; [b] – Primary care scores from 2010 (Florian L. Stigler et al.); [c] – Primary care scores, 2020.

3.2. Development stages of family medicine in the Republic of Moldova based on the analysis of regulatory acts issued by the Ministry of Health

The research objective was to explore the systemic approach to decision-making at the level of health policies and governance during the 1998-2017 period regarding the implementation and functionality of primary medical care based on family medicine in the Republic of Moldova. From the list of orders published on the official website of the Ministry of Health of the Republic of Moldova, 89 orders were identified which, according to the author, reflect the activity of primary care in the 1998-2016 period. By studying the *MoH* orders it was possible to use secondary chronological

description of the steps taken at the policy and governance levels in order to implement family medicine at the national level (table 2).

Table 2. The steps of implementing family medicine in the Republic of Moldova

Period	Intervention
1993	Inclusion of family medicine in the State Register of medical specialties
1998	Elaboration of the Regulation on the doctor's free choice in the primary healthcare sector and the enrolment of the population on the general (family) doctor's own lists, the necessary forms and how to complete them; of the Regulation and Characteristics of the professional qualification of the doctor and general/family medical assistant
1993– 1998– 2003–2007	Initiation of medical personnel training at different levels of medical education
2005	Approval of the List of drugs covered by the mandatory healthcare insurance funds
2007	Legal separation of primary healthcare at district level
2008	Approval of the requirements for the premises of primary healthcare institutions
2008	Approval of the Methodological Norms for the application of the Unified Program for mandatory medical insurance
2008	Initiation of the development of the National Clinical Protocols
2008	Approval of the Regulation on the validation of the professional performance indicators of the work of the medical staff
2008	Receipt of external assistance to the health system
2009	Approval of the primary healthcare institutions' Nomenclature
2009	Support of medical sanitary institutions of primary healthcare through the delegation of resident doctors from the *Nicolae Testemitanu* SUMP
2009–2010	Implementation of the project *Support for health reform by strengthening primary healthcare in Moldova*
2010	Medical services' quality assurance in medical sanitary institutions

2010	Approval of Norms regulating primary care in the Republic of Moldova
2010	Application of primary healthcare system performance audit
2010	Implementation of the *Medex 2* Information System
2011	Approval of the List of quality indicators
2015	Initiation of the implementation of the Automated *Primary Care* Information System
2015	Approval of the Regulation regarding the family doctor activities
2016	Assignment of the coordination and organization function - methodology for all primary healthcare institutions
2016	Centralization of medical statistical records in primary healthcare

At the proposal of the thesis author, after analysing the selected documents, they were conventionally grouped into six categories: A. Political approval of primary care reforms; B. Service provision insurance in collaboration with the NHIA; C. Provision of primary medical services; D. Organization and functionality of primary healthcare facilities; E. Application of the information system and execution of administrative work; F. Building health workforce capacity.

Table 3. The grouping of normative acts regarding the reform of primary care in the Republic of Moldova versus the system elements developed by the WHO

Fundamentals of health systems*	Grouping of normative acts regarding the reform of primary care in the Republic of Moldova**
Provision of medical services	Organization and functionality of primary care facilities
Health workforce	Strengthening health workforce capacities
Health Information Systems	Usage of the information system and completion of administrative work
Access to essential medicine	Provision of primary care services and access to essential medicines
Financing	Ensuring the provision of services in collaboration with the NHIA
Leadership/governance	Political endorsement of primary healthcare reform

Source: * – WHO, 2007; ** – grouping developed by the thesis author.

A health system consists of all the organizations, institutions, resources, and people whose primary goal is to improve health. The search for the answer to the research question involved studying the World Health Organization publications on the establishment or reform of health systems. Table 3 presents the comparison of the fundamental elements of the WHO Framework regarding health systems with the results of the descriptive analysis of the normative acts issued by the Ministry of Health regarding the implementation and functionality of family medicine in the Republic of Moldova.

Chapter 3 is dedicated to the research and description of the level of development of primary medical care based on family medicine in the Republic of Moldova using standardized tools and applying the qualitative approach in describing the establishment of family medicine as a specialty and the results of this process. It is essential to participate in the evaluation of national experts and to connect the data obtained from the exploration of the legislative framework to the provisions of international bodies regarding the development of health systems.

Chapter 3 conclusions

1. The study carried out with the aim of quantitative evaluation of the level of development of family medicine in the Republic of Moldova, by using a standard tool for analysis and comparison with other health systems, provides the first numerical evidence regarding the transformation dynamics of this level.
2. Considering the score accumulated by the Republic of Moldova in comparison with other countries subject to the evaluation, the country was qualified as having "average primary care".
3. The comparative qualitative analysis of the characteristics of the evaluated primary care allowed for the identification of several weak aspects in the development of family medicine in the Republic of Moldova, and these are presented as areas for potential scientifically argued interventions.
4. The analysis of the documents issued by the Ministry of Health regarding the regulation of primary healthcare and the implementation of family medicine in the Republic of Moldova demonstrated a systemic approach in the elaboration of Ministry of Health orders regarding primary care, this being similar to the WHO Framework for health systems, but chronologically being applied with an obvious delay.
5. The lack of a complete database regarding the orders of the Ministry of Health and other normative acts that regulate primary medical care represents an impediment in the activity of employees and managers of primary medical institutions in accordance with the current legislation, especially of new employees.

6. Most of the legislative acts regarding family medicine/primary care were issued by the Ministry of Health jointly with the National Health Insurance Agency, which ensures the continuity of the family doctor's teams' activity, financial protection, and maximum access for the beneficiaries to medical services.

7. The normative acts issued during the researched period determined both the progress and the current gaps in the development and implementation of family medicine in the medical practice of the Republic of Moldova, which denotes the need for a strategic plan for the continuous development of the field, with the determination of clear milestones.

4. THE DEVELOPMENT OF PRIMARY CARE BASED ON FAMILY MEDICINE IN THE REPUBLIC OF MOLDOVA ACCORDING TO THE FACTORS INFLUENCING EFFECTIVENESS

4.1 Professional satisfaction and work motivation of family doctors from the Republic of Moldova for ensuring primary care effectiveness

In the period of June–August 2017, data were collected regarding the satisfaction and professional motivation of family doctors. The objective of the research was to analyse the correlation between work motivation and professional satisfaction and the professional determinants which influence them, by applying the *Survey on professional determinants, professional satisfaction and work motivation of family doctors*, developed by the thesis author. As a result, 611 questionnaires filled in by family doctors were collected and, after verification, 597 questionnaires were validated and included in the study. Internal consistency testing of the sections devoted to professional satisfaction and work motivation of family doctors was carried out by the Alpha (*Cronbach*) statistic, for which the variables and values are presented in table 4.

Therefore, it was concluded that the proposed instrument for the evaluation of professional determinants, satisfaction and professional motivation of family doctors was adequate, and the questions included in the questionnaire correspond to the objectives of the survey.

The analysis of the general characteristics of the interviewed family doctors demonstrated the following: 61.6% of respondents consider themselves urban dwellers, 64 of whom live in the Chisinau and Balti municipalities, and the rest – in district centres and other urban localities of the country. The rest 38.4% (229) of the respondents were rural residents. Women constituted 80.7% (481) of the respondents. They indicated that 73.2% (437) of those interviewed were married, 10.6% (63) –widowed, 7.6%

Table 4. Alpha (*Cronbach*) coefficient values for the *Professional and Career Satisfaction* and *Work Motivation* sections

Sections	Scale of elements	Alpha (Cronbach) Coefficient
Professional satisfaction	Satisfaction with patient care (questions 19-23)	0,733
	Satisfaction with the burden of tasks (questions 24-27)	0,775
	Satisfaction with income and prestige (questions 28-31)	0,759
	Satisfaction with personal rewards (questions 32-35)	0,758
	Satisfaction with professional relationships (questions 36-37)	0,745
	Overall satisfaction (questions 19-38)	0,906
Work motivation	Working and safety conditions (questions 39-44)	0,854
	Financial and non-financial incentives (questions 45-51)	0,784
	Achievements and self-image (questions 52-59)	0,830
	Communication and peer support (questions 60-64)	0,860
	Overall degree of work motivation (questions 39-64)	0,919

(45) – single, 7.3% (44) – divorced, and 1.3% (8) had a separate residence. At the same time, 39% (233) or four out of ten respondents were between 30 and 40 years old, 51% (304) or about half were between 55 and 64 years old. Among the family doctors participating in the study, 11% (66) were of retirement age. The average age of family doctors participating in the study is 51.8±0.5 years, women's average age being 50.9±0.5 years and men's 55.7±0.9 years. Among women, the share of people aged between 35 and 49 was higher. Among men, the share of those aged 50 to 64 was higher.

Most respondents are only family doctors and only 17 people (2.8%) indicated that they also hold a manager or coordinator position in the Health Centre. The average length of respondents' professional experience in medicine is 27.2±0.5 years, men having a longer average experience – 30.7±0.9 years, compared to women – 26.3±0.5 years. The professional experience in family medicine is similar for men and women and was, on average, 15.3±0.3 years. The number of competences accumulated in various

workshops and training courses during the years of practice as a family doctor is presented in figure 2.

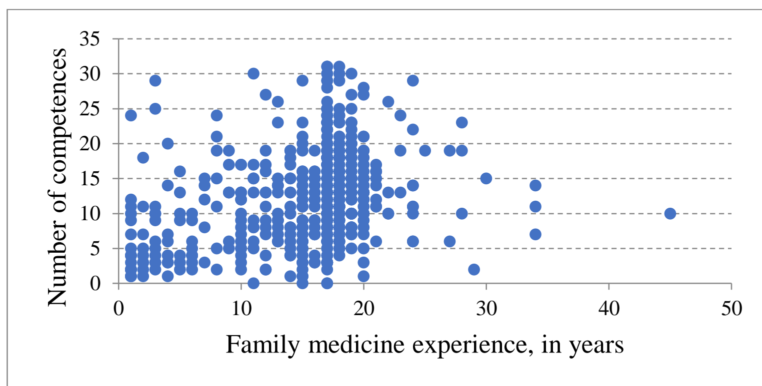


Figure 2. Distribution of family doctors' competences in relation to their length of experience as a family doctor

Of the family doctors who participated in the study, 34.2% (188) work in family doctors' centres in municipalities, 28.1% (154) – in district health centres, 25.1% (138) – in autonomous health centres, and 18.9% (104) – in family doctor's offices. The working day and week of the interviewed family doctors is, on average, 8.5 hours and 45.6 hours, respectively, with no significant differences between men and women. On average, 19.9% of respondents work 7 hours a day, 48.2% – 8-9 hours, and 22.9% work 10 hours or more.

The monthly income of family doctors during the course of the study (2017, NBM's average exchange rate for 1 Euro – 21.1289 MDL, https://www.cursbnm.md) varied from less than 4 thousand lei to more than 10 thousand lei. A monthly income below 4 thousand lei was reported by 7.3% (44) of family doctors, approximately one third of the interviewees indicated a monthly income between 4-5 thousand lei (31.3%, 187 people), and another third - of 5-6 thousand lei (33.0%, 197 people). 170 people (28.5%) reported a monthly income of more than 6 thousand lei, 4.1% (25) of whom had an income exceeding 10 thousand.

According to the assessment tool of professional satisfaction and work motivation of family doctors, 64 questions were analysed, of which the first 18 were of a general nature, questions 19-38 referred to the section on *Professional satisfaction and career*, and questions 39-64 referred to the *Work Motivation* section. All answers were grouped in three categories according to the number of points accumulated: 1-2 points – negative answer,

3 points – neutral answer, 4-5 points – positive answer. The frequency of positive responses in different subsections is shown in table 5.

Table 5. Distribution and ranking of positive responses received from family doctors participating in the study

Sections and subsections	Rate of positive responses, %	Ranking
Overall satisfaction (questions 19-38)	43,2	-
Satisfaction with professional relationships (questions 36-37)	79,4	1
Satisfaction with patient care (questions 19-23)	53,1	2
Satisfaction with personal rewards (questions 32-35)	49,8	3
Satisfaction with income and prestige (questions 28-31)	29, 3	4
Satisfaction with the burden of tasks (questions 24-27)	18,9	5
Overall degree of work motivation (questions 39-64)	63,8	-
Communication and peer support (questions 60-64)	73,0	1
Achievements and self-image (questions 52-59)	71,6	2
Working and safety conditions (questions 39-44)	67,6	3
Financial and non-financial incentives (questions 45-51)	45,0	4
Overall satisfaction and motivation (questions 19-64)	54,7	-

Family doctors indicated the highest level of satisfaction with professional relationships, with one in two physicians satisfied with patient care and personal rewards. Dissatisfaction was expressed in regards to income and prestige, and the lowest rate of positive responses was related to the burden of tasks. Thus, the general degree of satisfaction reached only 43.2% and was lower compared to the degree of work motivation, which reached 63.8%. The analysis of the responses on work motivation demonstrates a positive rate of approximately two-thirds or even higher for achievements and self-image, communication and peer support, and working and safety conditions. Less than half the respondents confirmed that work

motivation is related to financial and non-financial incentives. The overall satisfaction and motivation score demonstrated that the rate of positive answers reached 54.7%, the distribution of opinions denoted a 21.3% frequency of negative answers, and 24% of cases resulted in a neutral answer. By using correlation for statistical data analysis, shown in figure 3, it was proven that there is a linear relationship between the professional satisfaction and work motivation of family doctors. The correlation coefficient was positive, equal to 0.656 ($p<0.000$). At the same time, the correlation coefficient does not allow us to identify a direction of causality, a fact that does not exclude the interdependence between professional satisfaction and work motivation.

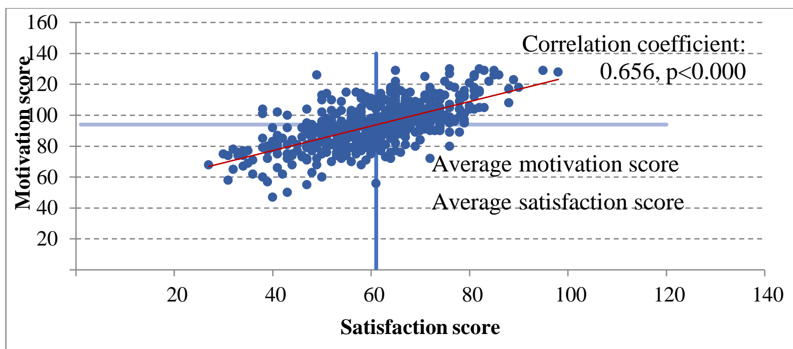


Figure 3. Correlation between professional satisfaction and work motivation of family doctors

Data analysis on the professional satisfaction and work motivation of family doctors registered a difference in their answers depending on the place of origin - urban or rural (urban mean = 149.4 (SD 24.87); rural mean = 160.4 (SD 21.49); F=29.685; p=0.000). This relationship is valid both for professional satisfaction (urban mean = 59.0 (SD 11.53); rural mean = 63.9 (SD 10.40); F=26.738; p=0.000) and for work motivation (urban mean = 91.8 (SD 14.16); rural mean = 97.1 (SD 12.81); F=20.468; p=0.000). The analysis of the components included in sections two and three of the questionnaire demonstrated that only one category in the *Professional Satisfaction* section had positive answers, with no significant difference based on the respondents' place of origin – specifically, satisfaction with professional relationships (urban mean = 7.7 (SD 1.39); rural mean = 7.9 (SD 1.10); F=3.690; p=0.055). In general, the responses of rural doctors are characterized by a higher level of professional satisfaction and motivation.

All respondents were divided into two large groups according to the age criterion: (1) under 50 years of age and (2) 50 years of age and older. A

similar trend to the one described above is also recorded regarding the dependence of answers on age – people under 50 and those 50 years and older gave different answers: mean of the ‘under 50 years’ group = 154.5 (SD 23.32); mean of the ‘50 years and older’ gr. = 153.0 (SD 24.25); F=16.681; p=0.000. The professional satisfaction section of the questionnaire demonstrated the difference in the answers given according to age: mean of the ‘under 50 years’ gr. = 62.8 (SD 10.63); mean of the ‘50 years and older’ gr. = 60.3 (SD 11.41); F=20.451; p=0.000. The same is true for family doctors' work motivation according to their age: mean of the ‘under 50’ gr. = 93.4 (SD 12.51); mean of the ‘50 and older’ gr. = 93.7 (SD 14.09); F=20.091; p=0.000. Satisfaction with professional relationships had close values (mean of the ‘under 50’ gr. = 7.6 (SD 1.15); of the ‘50 and older’ gr. = 7.8 (SD 1.31); F=0.680; p=0.410). Data analysis according to the age criterion demonstrated that people younger than 50 have a higher satisfaction compared to family doctors aged 50 and older. Vice versa, motivation is higher in the elderly compared to GPs younger than 50.

Analysing the extent to which responses of family doctors differ according to gender, we found that they are mostly similar (mean for males = 148.6 (SD 23.52); for females = 157.1 (SD 24.18); F=0.311; p=0.577). However, women's overall job satisfaction is higher: male mean = 58.3 (SD 11.28); female mean = 62.6 (SD 11.18); F=4.245; p=0.040. Different responses from men and women were given to the *Satisfaction with the burden of tasks* subsection (male mean = 10.6 (SD 3.33); female = 9.3 (SD 3.23); F=13.950; p=0.000) and to the *Communication and peer support* subsection (male mean = 18.7 (SD 3.57); female = 19.7 (SD 3.38); F=4.078; p=0.044). The analysed data shows that men bear the burden of professional activities, including administrative ones, more easily, and women are more strongly motivated by communication and peer support.

According to social status, the analysis highlighted a difference in the answers given by family doctors, depending on whether they are only employees, or retirees who continue their professional activity: employees group mean = 151.2 (SD 24.34); retirees group mean = 158.0 (SD 23.19); F=10.024; p=0.002. The general recorded trend is that both satisfaction and motivation are higher, on average, for employed people of retirement age: for satisfaction – employees gr. mean = 59.6 (SD 11.45); retired employees gr. mean = 63.2 (SD 10.96); F=12.436; p=0.000; for motivation - employees gr. mean = 92.4 (SD 14.16); retired employees gr. mean = 96.8 (SD 12.44); F=12.157; p=0.000. However, against the background of a higher general professional satisfaction and motivation of retirees, the results were similar in two sections: satisfaction with professional relationships – employees gr. mean = 7.8 (SD 1.27); retired employees gr. mean = 7.8 (SD 1.31); F=0.049; p=0.825; motivation through financial and non-financial incentives –

employees gr. mean = 22.1 (SD 5.15); retired employees gr. mean = 22.8 (SD 4.63); F=2.415; p=0.121.

Other factors with a possible influence on the degree of satisfaction and motivation of family doctors are: overall time worked in the medical field, overall time worked as a family doctor, average daily and weekly working hours, and annual income. Based on the data analysis, some trends were revealed. A generally higher degree of satisfaction (S) (p=0.000) and motivation (M) (p<0.005) is characteristic of family doctors with more than 25 years of experience in medicine (S – average work experience >25 years = 62.6 (SD 11.22); average work experience <25 years = 58.3 (SD 11.09); M – average work experience >25 years = 95.9 (SD 13.52); average work experience <25 years = 90.9 (SD 13.87); F=17.058; p=0.000); more than 15 years' work experience in family medicine (S – average duration in family medicine >15 years = 61.4 (SD 11.15); M – average duration in family medicine >15 years = 94.8 (SD 13.93); average duration in family medicine <15 years = 91.7 (SD 13.90); F=5.353; p=0.021); less than 8 hours of work per day (S – mean < 8 hours/day = 63.8 (SD 10.67); mean >8 hours/day = 59.5 (SD 11.39); F=18.483; p=0.000; M – mean <8 hours/day = 96.6 (SD 13.94); mean >8 hours/day = 92.6 (SD 13.41); F= 9.280; p=0.002); less than 45 working hours per week (S – mean <45 hours/week = 62.8 (SD 11.14); mean >45 hours/week = 59.2 (SD 11.26); F=14.612; p=0.000; M – mean <45 hours/week = 95.2 (SD 14.38); mean >45 hours/week = 92.8 (SD 13.45); F=4.006; p=0.046); an annual income greater than 100 thousand lei (S – average income >100 thousand/year = 66.4 (SD 10.21); average income <100 thousand/year = 60.2 (SD 11.13); F=17.522; p=0.000; M – average income >100 thousand/year = 99.8 (SD 12.13); average income <100 thousand/year = 92.9 (SD 13.64); F=14.405; p=0.000).

The only subsection where similar responses were recorded, regardless of the studied variable, was the *Satisfaction with professional relationships* (p>0.005). Satisfaction with the burden of tasks does not depend on the length of experience in family medicine or on annual income. Years of experience in family medicine did not influence satisfaction with income and prestige, with personal rewards, or motivation related to working and safety conditions, and to achievements and self-image. Motivation of family doctors regarding financial and non-financial incentives, achievements and self-image, communication and peer support is not dependent on the number of hours worked per week (p>0.005).

Factors which influence the level of professional satisfaction and of work motivation of family doctors in the Republic of Moldova

Multivariate linear regression describes the relationship between a dependent variable and two or more independent random variables. This statistical method was applied in the data analysis stage and it revealed five

independent variables: 1) gender, 2) age, 3) daily working hours, 4) annual income and 5) primary healthcare institution, i.e. place of work, which are directly related to the degree of professional satisfaction and work motivation of family doctors.

The results obtained confirm that people aged 50 and over have a level of satisfaction 3.57 points higher than family doctors younger than 50. It should be noted that the degree of satisfaction does not depend on gender. Family doctors who work less than 8 hours a day have a satisfaction level 5.15 points higher compared to people who work more than 8 hours a day. Also, doctors who have an annual income greater than 100 thousand lei feel 6.15 points more satisfied than colleagues who obtain a lower annual income.

The analysis of the total score showed that people over the age of 50 have an overall degree of professional satisfaction and work motivation 7.68 points higher than younger GPs. Family doctors who work less than 8 hours a day have a general degree of professional satisfaction and work motivation 8.41 points higher compared to doctors with extended working hours. Family doctors who have an annual income greater than 100 thousand lei express satisfaction and motivation 12.69 points more compared to their colleagues with a lower annual income. The overall satisfaction, with a negative score of 10.021 and, correspondingly, 12.758 points was characteristic of the employees of the District Health Centres and Municipal Family Doctors' Centres, respectively. At the same time, the general satisfaction and work motivation of the employees of Family Doctors' Offices are similar to those expressed by family physicians employed by Autonomous Health Centres. Therefore, the described factors explain 18.3% of the total score variability.

Some specific relationships have been highlighted between the degree of professional satisfaction and that of work motivation. People over the age of 50 reported a 5.07 points higher work motivation; the degree of professional satisfaction was lower, at 3.57 points, even if it was higher compared to that of younger doctors. Vice versa, family doctors who stated that they work less than 8 hours per day had 5.15 points higher job satisfaction compared to those who work more than 8 hours. The same people reported lower work motivation compared to job satisfaction, which was 3.73 points higher than that of GPs working more than 8 hours a day.

In conclusion, we note that being older than 50 increases professional satisfaction by 3.57 points, working less than 8 hours daily – by 5.15 points, and having an annual income >100 thousand lei – by 6.15 points. As regards work motivation, daily work of less than 8 hours adds 3.73 points, being aged over 50 – 5.07 points, and earning an annual income >100 thousand lei – 5.19 points. Respectively, an annual income greater than 100 thousand lei is a factor with a greater influence on both professional satisfaction and work motivation of family doctors.

4.2. Competence of the family medical assistant in ensuring the effectiveness of the family doctor's team

Essential components of a family doctor's practical experience were included in the questionnaire given to medical assistants and in the one given to beneficiaries of primary healthcare services. The analysis of the results obtained from medical assistants revealed varied, sometimes contradictory answers, but following an analysis of the qualitative aspects, a general trend of uncertainty among the medical assistants is visible, including regarding their competences for providing routine services or their occupational profile. The obtained results indicate the need to continue and deepen the research.

Chapter 4 describes the characteristics of the members of the family medicine team in the context of the effectiveness of primary health care and the contribution to the achievement of population health care goals. Knowing the level of professional satisfaction and work motivation, as well as the preparation to take over the functions and roles of the medical team by medical assistants are essential in view of the exodus of medical professionals and the existing shortage of human resources.

Chapter 4 conclusions

1. The Survey on professional determinants, professional satisfaction, and work motivation of family doctors, developed by the thesis author, piloted and validated, proved the questions have a high consistency in measuring the dimensions included in the questionnaire and the survey can be proposed for repeated use in evaluating professional satisfaction and work motivation of family doctors.
2. The overall degree of work motivation of family doctors turned out to be, on average, positive (63.8%), while the general degree of professional satisfaction is below average (43.2%). According to the obtained data, there is a proven correlation of medium strength between professional satisfaction and work motivation, the correlation coefficient being equal to 0.656 (p=0.000).
3. Based on the study results, the factors influencing professional satisfaction and work motivation were identified. An age over 50, less than 8 hours of work per day, annual income greater than 100 thousand lei, and employment in medical sanitary institutions in rural localities contributed to an increased professional satisfaction and work motivation of family doctors. Female GPs reported higher work motivation compared to male GPs.
4. The results of the analysis of the factors influencing professional satisfaction and work motivation of family doctors represent a model that can be applied both for planning interventions in the health system and for forecasting family doctors' professional satisfaction and work motivation.

5. An active involvement of the family medical assistant in the provision of the full range of services in primary care was discovered, a fact that could increase the effectiveness of family medicine. At the same time, during the research, medical assistants with training in the field of family medicine expressed a high degree of general uncertainty (65%), especially regarding the possession of sufficient skills and abilities to ensure patient first contact, sustainable medical care, provision of complex and coordinated medical services, family-centred and community-oriented care.

6. The conducted study demonstrated that we cannot expect to increase the effectiveness of primary healthcare in the near future based on the activity of family medical assistants, who need to increase their skills and performance not only by creating conditions for medical education and good clinical practice, but also by creating an organizational culture within medical institutions, with the appropriate division of tasks and roles.

7. According to the research results, family doctors have the opportunity to obtain higher incomes with the accumulation of years of experience and advancement in their medical field. Based on the data it was observed that, during the years of activity, medical assistants do not benefit from a significant increase in annual income, a fact that must be considered by those responsible for the optimal management of all health system resources, including human resources.

5. EVALUATING PRIMARY CARE BASED ON FAMILY MEDICINE IN THE REPUBLIC OF MOLDOVA THROUGH THE PRISM OF BENEFICIARIES' OPINION

5.1. General characteristics of the research group and analysis of the general summary assessment score of primary care based on family medicine

Most study participants - 590 (96.9%) - were residents of the Republic of Moldova. Of the people interviewed, 327 (53.7%) were residents of urban localities, municipalities and district centres, a figure that does not differ significantly from the number of people from rural localities - 282 (46.3%, $p>0.05$), thus it was possible to compare the subgroups of respondents. According to the information provided, almost every second respondent, i.e. 288 people (47.2%), had a higher education, 227 (37.3%) had a secondary education - vocational school/college, 43 (7.1%) were high school graduates, and 51 (8.5%) – general school graduates, and 42 (6.9%) respondents were continuing their studies at the time of the research. 367 (60.2%) people were employed, 94 (15.4%) were retired and 107 (17.0%) declared themselves unemployed. Only 52 (8.5%) respondents reported the lack of mandatory medical insurance in the last 12 months, 9 (1.6%) had insurance, but not

during the entire calendar year. The vast majority – 548 (90.0%) – confirmed that they were insured.

About a third of the respondents (217 ppl., 35.6%) reported a monthly income per family member of less than 2.2 thousand lei; about half of the respondents (333 ppl., 54.7%) reported an average level between 2.2 and 6.9 thousand lei, and only one in ten (59 ppl., 9.7%) mentioned incomes greater than 7.0 thousand lei.

Most respondents (599 ppl., 98.3%) confirmed that primary healthcare institutions work daily. At the same time, it was found that this schedule is different for the family doctor him/herself, s/he working daily only in the opinion of 550 (90.3%) respondents. 38 (6.3%) and 18 (3.0%) respondents declared limited access to the family doctor – of 3-4 or 1-2 days per week or less, respectively. The choice of a family doctor was made freely by 72 (11.9%) of those interviewed or by their family members. The vast majority – 537 (88.2%) – were assigned to their family doctor by the administration of the primary healthcare institution.

More than half of the interviewed beneficiaries – 341 (55.9%) – boast of good, very good or even excellent health (21 ppl., 3.4% for the latter). Health status was rated as satisfactory or poor by 207 (34.0%) and 40 (6.6%) respondents, respectively. These statements are supported by every second person, who declared that they have a chronic health problem (302 ppl., 49.6%).

During the interview with the beneficiaries, the exposure to payments related to medical services in the last 12 or 24 months was studied. Thus, in the last 12 or 24 months, 461 (75.7%) and 419 (68.7%) respondents, respectively, visited specialized medical services for various reasons. Every second participant incurred some payment for medical services in the last 12/24 months – 310 (50.9%) and 279 (45.7%) people, respectively. In the last 12/24 months, 38/29 (6.2%/4.8%) beneficiaries paid for medical consultations; 42/42 (6.9%) people, respectively, paid for diagnostic referrals (laboratory services, radiology, ultrasonography, etc.); payment for diagnostic examinations took place in 218/179 (35.8%/29.4 %) cases. 5/2 people paid for a specialist referral, and 3/2 people for a referral to a hospital, which is less than 1% of observations. 197/163 (32.4%/26.8%) beneficiaries paid specifically for the specialist's consultation. Co-payment for medicines was charged to 82/69 (13.5%/11.3%) people, while 312/279 (51.2%/45.8%) respondents paid in full for some medication. 89/78 (14.6%/12.8%) people acknowledged the family doctor for medical services, and 21/19 (3.5%/3.1%) respondents – the medical assistant.

For an optimal data analysis, respondents were divided into two research groups, according to the age criterion: 18-44 age group - young adults, 45-65 age group - mature adults. Among the beneficiaries included in

the study, 321 (52.7%) people were from the 45-65 age group, the subgroups divided by age being comparable to each other (p>0.05).

Based on the completed questionnaires, it was demonstrated that 484 (79.5%) respondents were women, which indicates an uneven distribution according to the gender criterion and a statistically significant difference (χ^2: 9.2, gl: 1, p=0.002). The thesis author considered that the different male and female population ratios in the adult 18-65 age group is natural and reflects the existing national level ratio. At the same time, this disproportionate division can influence the interpretation of the obtained results and calls for data standardization. The summary scores of the questionnaire sections according to the respondents' age and gender reflected in Table 6.

Table 6. Summary of responses to the questionnaire sections by sex, age, and in total

Summary score by section		Sex		Age		Total N=609
		Masculine	Feminine	18-44 years	45-65 years	
		n=297	n=313	n=375	n=234	
A	Mean	29,8	30,4	30,0	30,4	30,1
	SD	5,5	5,8	5,7	5,6	5,6
	Median	30	31	30	31	30
	IQR	26-34	27-34	26-34	27-34	26-34
B	Mean	10,4	11,0	10,4	11,2	10,7
	SD	2,8	2,0	2,7	1,9	2,4
	Median	12	12	12	12	12
	IQR	9-12	11-12	9-12	12-12	10-12
C	Mean	65,2	65,5	64,2	67,2	65,3
	SD	9,1	9,3	9,6	8,2	9,2
	Median	66	67	66	69	67
	IQR	59-72	59-73	57-72	62-73	59-73
D	Mean	23,7	23,5	22,0	26,1	23,6
	SD	7,9	7,1	7,8	6,2	7,5
	Median	25	24	23	27	25
	IQR	20-32	20-29	18-28	22-32	20-30
E	Mean	32,7	39,0	35,3	36,9	35,9
	SD	10,8	10,2	11,3	10,4	11,0

	Median	30	37	33	35	33
	IQR	27-36	32-44	28-40	29-43	28-40
F	Mean	20,7	23,9	20,8	24,8	22,4
	SD	5,6	6,6	6,2	5,6	6,3
	Median	20	23	20	24	21
	IQR	17-23	19-28	17-23	21-28	18-25
G	Mean	5,1	5,4	5,1	5,6	5,3
	SD	2,3	2,3	2,2	2,3	2,3
	Median	5	5	5	6	5
	IQR	3-8	4-8	3-8	4-8	3-8
H	Mean	9,0	9,9	9,3	9,8	9,5
	SD	4,7	4,4	4,7	4,2	4,5
	Median	8	10	8	10	9
	IQR	6-12	7-12	6-12	7-12	6-12
I	Mean	9,4	9,3	9,2	9,6	9,4
	SD	3,1	3,3	3,4	3,0	3,2
	Median	11	12	11	12	12
	IQR	8-12	8-12	7-12	8-12	8-12

For the early identification of data patterns, the clear and concise reporting of results and for the purpose of data analysis, the boxplots (boxes) and outliers (extreme values) method was proposed, which consists of small useful graphs that contain a lot of information in a very limited space. Several sections of the questionnaire were presented and analysed graphically (*see thesis*). The graphic analysis of the full questionnaire allowed for the comparative analysis of its sections (figure 4).

An approximately symmetrical data distribution can be observed only in section A. *Accessibility of the first contact*. Negative asymmetry is found in the sections: E. *Comprehensiveness - available services*, F. *Comprehensiveness - received services* and H. C*ommunity focus*, a fact confirmed by the predominance of "never" and "sometimes" answers. At the same time, a pronounced positive asymmetry is found in the sections: B. *First contact-use*, G. *Family focus* and I. *Cultural competence*, all containing a small number of questions (3, 2 and 3, respectively). Sections C. *Continuous care* and D. *Service coordination* also present a positive asymmetry, with "often" and "always" answers predominating.

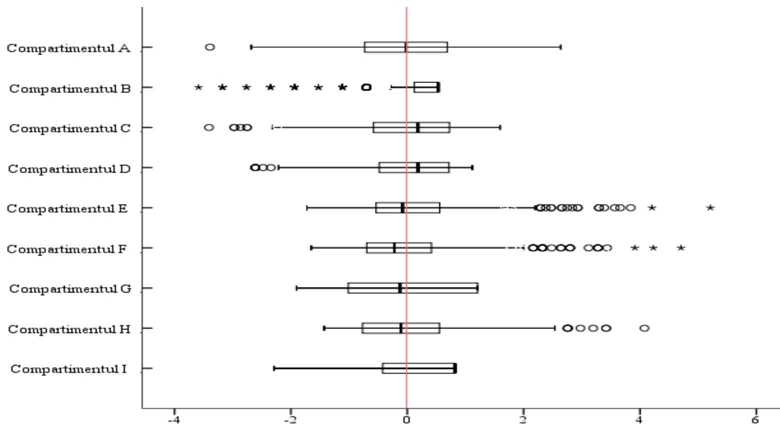


Figure 4. Comparative presentation of the questionnaire section summaries based on the 0 score

5.2. Analysis of primary healthcare assessment outcomes – assessment done by beneficiaries of services provided by the family doctor's team, by age and sex

Statistical analysis using the Likert scale. Ordinary data were reformatted into summary scores by section, and the newly obtained parameters, presenting another type of data – continuous, with minimum and maximum values –, allowed for the analysis of average values and the application of ANOVA statistics. Men (M), compared to women (W), rated higher the frequency of using first contact with the family doctor's team (M – 10.4, SD 2.0; W – 11.0, SD 2.8), available services (M – 32.7, SD 10.8; W – 39.0, SD 10.2), received services (M – 20.7, SD 5.6; W – 23.9, SD 6.6), and the community focus of the family doctor's team (M – 9.0, SD 4.7; W – 9.9, SD 4.4). Therefore, the comparison of mean values according to gender revealed the existence of a statistically significant difference in the answers given by men and women to the sections: B. *First contact-use* (F= 8.7, p= 0.003), E. *Comprehensiveness – available services* (F= 54.3, p= 0.000), F. *Comprehensiveness – received services* (F= 41.4, p= 0.000) and H. C*ommunity focus* (F= 6.3; p= 0.013), by using the ANOVA method.

According to the interview data analysis, mature adults (MA – 45-65 years old), compared to young adults (YA – 18-44 years old), gave a higher appreciation to the use of first contact with the GP team. Using the ANOVA statistical method, mean value comparison according to the age of the respondents demonstrated that there is a statistically significant difference between the answers given by mature and by young adults to the sections: B.

First contact-use (F= 17.0, p= 0.000), C. *Continuous care* (F= 15.5, p= 0.000), D. *Service coordination* (F= 45.3, p= 0.000), F. *Comprehensiveness – received services* (F= 63.6, p= 0.000) and G. *Family focus* (F= 7.5, p= 0.006).

The next stage of the analysis studied the responses given by men and women of different age groups, as well as the responses of adults of different age groups according to gender (male/female). The data analysis revealed that in both age groups, young adults and mature adults, responses with statistically significant differences by gender were recorded in a number of study sections. In the case of young women, these sections are: B. *First contact-use* (YA M – 10.0, SD 3.1; YA W – 10.8*, SD 2.2); E. *Comprehensiveness – available services* (YA M – 32.1, SD 11.4; YA W – 38.5*, SD 10.1), and F. *Comprehensiveness – received services* (YA M – 19.8, SD 6.3; YA W – 21.9*, SD 5.9). In the case of women in the 45-65 age group, the answers were different from those given by men to components E. *Comprehensiveness – available services* (MA M – 33.7, SD 9.6; MA W – 39.6*, SD 10,4); F. *Comprehensiveness – received services* (MA M – 22.4, SD 3.3; MA W – 26.9*, SD 6.3) and H. *Community focus* (MA M – 9.0, SD 3.9; MA W – 10.5*, SD 4.4) (* – $p<0.05$). Therefore, women provided a higher summary score compared to men in all the analysed sections.

The division of the examined respondents into groups of women and men of different ages demonstrated that both men and women over the age of 45 have different opinions than the group of young adults (under the age of 45) in the same sections. Statistical calculations were performed similarly. Also, in older men, a statistically significant difference is found in the summary of section G. *Family focus* (YA M – 4.9, SD 2.2; MA M – 5.5, SD 2.3, $p <0.05$).

The comparative qualitative analysis of the study answers given by the groups of men and women demonstrated that women have a positive attitude towards the GP team's performance. The responses "sometimes" and "never" with a negative connotation were recorded more frequently from men. Available and received medical services (sections E and F) obtained a positive summary assessment from women compared to men, regardless of age group (statistically significant difference, p=0.000). Young women expressed a positive opinion about the use of first contact, which can be explained by the fact that this population group needed and benefited from a wider spectrum of medical services. At the same time, women aged 45-65 were more optimistic in appreciating the community focus of the medical team, being the beneficiaries of a spectrum of services provided at home (section H).

Comparing the age groups – young adults (18-44 years) and mature adults (45-65 years) – revealed a positive attitude of mature adults towards

the family doctor's team, compared to young people. A statistically significant difference is proven regarding the use of the first contact (section B) and received medical services (section F), as in the group of women. At the same time, mature adults rated continuous care (section C), service coordination (section D) and family focus (section G) with a higher overall score.

5.3. Characteristics of the beneficiaries and analysis of the summary assessment score of primary care based on family medicine according to the type and location of the medical institution (municipality, district centre, rural locality)

The analysis principle according to which the summary scores were calculated for all the components of the questionnaire according to age and gender was applied to calculate the summary scores for all these components according to the type of primary healthcare institution where the interviews with the beneficiaries took place. A statistically significant difference in responses was attested to sections B. *First contact-use* (F= 5.9, p= 0.003), D. *Service coordination* (F= 10.6, p= 0.000), E. *Available services* (F= 4.3, p= 0.014), F. *Received services* (F= 10.0, p= 0.000), H. *Community focus* (F= 3.6; p= 0.028) and I. *Cultural competence* (F= 6.0; p= 0.003).

Full payment for medicines is seen as a considerable burden, which was borne in the last 12 months by almost 60% of beneficiaries in cities and villages. In district centres, this indicator was twice as low – 31.3%. The statements regarding the co-payment of compensated medications, which in the last 12 months was carried out by 12.1% of respondents from municipalities, 20.3% from rural towns and only 4.9% from district centres, are worrying. Data provided by beneficiaries of district centres, who have the lowest expenses for medication in general (59 ppl., 36.2%), compared to beneficiaries from municipalities (151 ppl., 70.2%) and rural localities (183 ppl., 78.9%), require further examination.

A good part of the municipality beneficiaries of primary medical services mentioned informal payments, such as thanking the doctor and/or the medical assistant for the services provided. These cases are more frequent in municipalities and predominantly with reference to doctors, rather than assistants. More specifically, 20-40% of payments were granted for the diagnostic exam and specialist consultation. In the 12 months preceding the interview, 58 (40.0%) of the municipal beneficiaries and 85 (36.6%) of the rural beneficiaries paid for various diagnostic examinations. Specialist consultations were paid for by 71 (33.0%) beneficiaries from municipalities and 92 (39.7%) from villages. Among the district centre beneficiaries, these indicators registered a lower frequency: 47 (28.8%) respondents paid for diagnostic examinations and 34 (20.7%) for specialist consultations.

5.4. Analysis of the summary assessment score of primary care based on family medicine according to the place of residence of the beneficiaries participating in the research (urban, rural)

The obtained data confirm that for most of the components of the questionnaire there was no statistically significant difference between the responses of people from urban areas (RUA) and those from rural areas (RRA) ($p>0.05$). The exception is section H. *Community focus*, for which rural respondents gave a higher score (RUA – 8.9, SD 4.8; RRA – 10.1, SD 4.2; $F=6.3$; $p=0.013$). Some questions were supplemented with the qualitative component, which aims to evaluate the causes or the context of some quantitative components and which demonstrated similarities and differences in the response of the population from urban and rural areas.

Chapter 5 contains the stratified analysis of the opinion of primary health care beneficiaries according to age, sex, place of residence, location of the primary care institution. Adequate data analysis methods were applied, which allowed the presentation of new aspects about the population's relationship with primary healthcare based on family physician teams.

Chapter 5 conclusions

1. The tool of primary healthcare assessment through the lens of the beneficiaries' opinion, being adapted to the national context and validated, is recommended for repeated planned application, respecting the careful selection of the study sample.
2. The undertaken study is representative and based on a complex sampling method, and the random inclusion of participants provides the opportunity to consider the collected data, to extrapolate the results to the whole population and to validate the conclusions.
3. The study confirmed that there are no essential differences between the general opinion of the urban and rural populations regarding primary care, some local particularities being noted depending on the studied aspect.
4. The result of the study shows that the opinion of adult beneficiaries about primary care differs depending on the age and gender of the person and knowing this facilitates the implementation of age- and gender-sensitive (male/female) interventions.
5. Low income per family member reported by one in three study participants is simultaneously associated with frequent payments (50%) for medical services (diagnostic examination and specialist consultation) and a low rate of respondents' co-payments (10%) for insured drugs, medical insurance being at 90%.
6. The study showed that the rural population proved to be more vulnerable in terms of the primary healthcare they received, as well as

according to their education, employment and income, which increases the need for integrated socio-medical services.

7. The study method and the statistical analysis applied, respectively, may influence the conclusions of the study. The application of the "Likert scale" statistical method in comparison with the "Likert-type scale" statistical method ensured the numerical increase of the variables and the broadening of the spectrum of conclusions.

DISCUSSION OF RESEARCH RESULTS

In the early 1990s, the primary care reform was declared a priority and family medicine became the basis for the provision of medical services at this healthcare system level in the Republic of Moldova. However, the lack of medium- and long-term strategies did not allow for the achievement of a high level of development. During implementation, the normative and regulatory framework of primary care, undergoing multiple strategic changes, made it impossible to consolidate resources to achieve a maximum result. However, the support of international partners, especially at the beginning of the reforms, facilitated the implementation of family doctors' practices on a large scale and ensured population's access to a minimum package of free medical services.

Considering the accumulated score, the Republic of Moldova is qualified as a country with "average primary care", in need of continuous development of family medicine as a specialty and of raising the level of primary medical care. The strengths of the system are the presence of lists of patients affiliated with medical institutions and the authority of the academic departments responsible for medical education. The weak point is the access to primary medical services 24 hours a day, 7 days a week, which is compensated by the developed network of emergency medical services.

It seems that, after the initial effort to implement family medicine, the healthcare system in the Republic of Moldova has entered a phase of stagnation and some proposals to reorganize primary healthcare in the absence of legal preconditions and financing conditions may lead to an imbalance and regression in the health status of the population. The healthcare system in the country continues to be oriented towards specialized and hospital services, with frequent changes in the concept and directions of primary healthcare reform.

By 2000, the implementation of family medicine occurred nationwide and soon became the core practice in primary care. The establishment of family medicine has considerably increased population's access to medical services, but the burden of medication treatment has not yet been solved. The introduction of compulsory healthcare insurance was designed for the financial protection of the population, especially for treatment costs, by

developing a list of drugs compensated from the NHIC funds. In the following period, this list was continuously expanded.

Throughout this period, primary healthcare institutions at the district level were part of district hospitals with joint funding. Towards 2007, it became obvious that the resources allocated to the district health system are predominantly directed towards hospital care, and primary care is financed according to the outstanding principle.

The provision of medical personnel and the availability of finances are components that influence universal access to medical services. The author in issued scientific publications analysed in detail the human resources of the national primary healthcare system. The conclusions of the study denote a discrepancy between the number of family doctors and the population served, a shortage of more than 25% of family doctors (with the maximum rate of 79%) being found in 18 districts of the country. Only 5% of primary care workers were residency graduates, indicating a risk of a growing staff shortage in the near future, as every second family physician was over 50 years old. One in five family doctors did not receive any training in national professional development projects. The expectations of doctors in 2009 slightly differed from the needs at the time and included: provision of quality medical equipment and furniture, connection to mobile telephony and the Internet, provision of the technical-material base, increase in the level of work remuneration.

The staff shortage at the district level was indirectly confirmed in the Ministry of Health Order no. 383 of 08.11.2009, *On granting support to primary healthcare institutions*, in which the support of the *Nicolae Testemitanu* SUMP for the provision of primary medical services was officially declared and requested. The Government of the Republic of Moldova has developed and proposed measures for the provision of medical personnel, especially in rural areas. However, these measures were not enough to remedy the situation and the shortage of family doctors progressed over time, becoming a persistent phenomenon.

The data confirm that in most countries, especially in low- and middle-income ones, quality of healthcare is suboptimal, as shown in the following examples: analysis of service delivery indicators in seven low- and middle-income countries showed significant variations in quality regarding: lack of a provider (14.3-44.3%), daily productivity (5.2-17.4 patients), diagnostic accuracy (34.0-72.2%) and adherence to clinical guidelines (22.0-43.8%). Starting with 2010, the Complex program for ensuring the quality of medical services in medical sanitary institutions, including through the development of National clinical protocols, began its implementation in the Republic of Moldova.

The identification of primary healthcare performance indicators was a dynamic process that evolved over time and led to a shift from purely process indicators to process and outcome indicators. However, since the establishment of the first list, the new list contained indicators of antenatal care, care of children, people with tuberculosis, diabetes, hypertension, cervical screening programs, antenatal screening. International studies support performance indicators as tools for quality improvement but consider that they should not be treated as a tool for determining payment for performance (P4P), as is the case in the Republic of Moldova.

The legal delimitation of primary care carried out in 2007 also led to the decentralization of primary care institutions at district level. The number of Autonomous Rural Health Centres has increased over time: in 2007 – 4, 2008 – 9, 2009 – 23, 2011 – 31, 2012 – 58, 2013 – 66, etc., reaching more than 200 Autonomous Health Centres, Individual offices, and Private family doctors' centres in 2020. However, legal, financial, and managerial autonomy led to the separation of primary healthcare providers and to the impossibility of instructional-methodical coordination at national and local levels. The collection of medical statistical data has suffered in small health centres, where there is no provision for hiring a statistician.

The steps taken to implement family medicine in the Republic of Moldova (1998-2017) at the level of health policies confirm the complexity and continuity of this process. The results of the study provide evidence regarding the delayed trend of a systemic approach and the elaboration of normative acts by the Ministry of Health on all six components of the WHO Framework for health systems (2007). At the same time, the analysis of the normative acts issued in chronological order demonstrates that during the 2005-2011 period, the annually issued *MoH* orders partially covered the fields of intervention. Only the years 2012-2015 are characterized by a comprehensive approach to all the fundamental elements, recommended by the WHO Framework.

One of the fundamental components of health systems are competent human resources. The questionnaire for evaluating professional satisfaction and work motivation of family doctors, developed, piloted, and validated in the research, proved the questions have a high consistency in measuring the dimensions included in the questionnaire. Thus, new data were obtained regarding the factors that can contribute to increasing the professional satisfaction and work motivation of family doctors.

The degree of professional satisfaction and work motivation of family doctors is of 54.7%. The degree of overall work motivation proved to be positive (63.8%) and 20% higher than the overall degree of professional satisfaction (43.2%). At the same time, there is a proven correlation of

medium strength between professional satisfaction and work motivation, the correlation coefficient being 0.656 (p=0.000).

The influence of a series of system and personal factors was established because of the quantitative and qualitative analysis of the results obtained from the assessment of professional determinants, professional satisfaction, and work motivation of family doctors. Among these factors are an age over 50, less than 8 hours of work per day, annual income greater than 100 thousand lei, and employment in medical sanitary institutions in rural localities, all of which contributed to a high professional satisfaction and an increased work motivation of family doctors.

High job satisfaction is related to professional relationships, and the lowest job satisfaction is conditioned by the burden of tasks. The high degree of work motivation is related to communication, peer support and achievements and self-image. Financial and non-financial incentives, according to the opinion expressed by family doctors, have the lowest contribution to work motivation, which contradicts the fact that annual income greater than 100 thousand lei is the factor that contributes the most to a high degree of professional satisfaction and work motivation. The results of the analysis of influencing factors represent a model that can be applied for planning interventions in the health system, but also for forecasting the evolution of these factors.

The objective of the study on the medical assistant's role in ensuring the effectiveness of the practice of family medicine in the Republic of Moldova was to identify the availability and competence of primary care medical workers with secondary education to actively participate in all activities assigned to the family doctor's team and to take on important tasks in the absence of the family doctor or in collaboration with him/her. This research section does not provide strong scientific evidence, nor does it give a clear answer regarding the hypothesis proposed for the specialized study; however, the materials, being published and presented in academic forums, were considered of scientific value, because they suggest ideas for perspective research.

During the research, we were interested in obtaining an answer to the question regarding the population's attitude towards primary healthcare depending on the place of residence (urban/rural). Analysis of the distribution of responses to sectional questions revealed four major trends. The first trend: more than half the respondents answered firmly "never", this phenomenon being attested for sections E and F. The second trend: more than half of the answers are firmly positive, i.e. "always", a characteristic phenomenon for sections A, B, C, D and I. The third tendency: the homogeneous distribution of the answers without a predominance, this being observed in section G. The fourth tendency, conditional on offering the additional response variation

"don't know", demonstrates a rate of respondents' uncertainty higher than 15% in the interview at section H.

A more detailed analysis allowed to clarify the phenomena specific to certain regions, and the attitude of the urban and rural population varies in different sections of the *Primary Healthcare Assessment Tool*, even if data generalization did not find statistically significant differences between urban and rural respondents. Exception is section H. *Community focus*, according to which the attitude of the rural population is more positive. For five of the seven questions in section H, respondents could not choose any of the standard answers provided: "never", "sometimes", "often", "always", therefore "don't know" was chosen as the most appropriate for the situation. The step-by-step examination of the questions included in section H. *Community focus* suggests poor interaction of the GP team with the community prescribed for care. The medical staff is not familiar with the tools of communication and collaboration with the community. Following the study, we can make an important conclusion: in-depth research ensures the identification of some local peculiarities in the population's attitude towards primary healthcare, which requires further qualitative analysis.

GENERAL CONCLUSIONS

1. *Direcția științifică nouă* inițiată de cercetarea efectuată vizează obținerea argumentelor științifice care să permită cuantificarea nivelului de dezvoltare a asistenței medicale primare bazate pe medicina de familie în Republica Moldova și identificarea factorilor ce asigură eficacitatea acestui domeniu. Lucrarea rezolvă problema instrumentarului adecvat și a metodologiei potrivite, necesare evaluării sectorului de asistență medicală primară într-o țară din regiunea de sud-est a Europei, ținându-se cont de specificul dezvoltării sistemului de sănătate și al procesului de implementare a specialității *Medicină de familie* în calitate de specialitate de bază pentru sectorul de asistență medicală primară.
2. *Eficacitatea* asistenței medicale primare este recunoscută ca dimensiune a calității, iar menținerea sau reducerea eficacității este dependentă de mai mulți factori studiați în prezenta cercetare. Date științifice principial noi privind eficacitatea medicinei de familie din punctul de vedere al abordării sistemice au fost colectate în cadrul studiului etapelor de instituire a medicinei de familie ca specialitate la nivel de politici, precum și prin examinarea factorilor ce determină contribuția echipei medicului de familie și prin explorarea opiniei beneficiarilor de îngrijiri medicale despre asistența medicală primară.
3. În baza descrierii în studiu a *etapelor de instituire* a medicinei de familie în Republica Moldova, au fost posibile identificarea similitudinii cu elementele cadrului Organizației Mondiale a Sănătății (2007) pentru

sistemele de sănătate și aplicarea acestora în context local. De asemenea, studiul realizat a stabilit că atât conceptul, cât și strategia de dezvoltare durabilă a asistenței medicale primare bazate pe medicina de familie în Republica Moldova sunt cunoscute unui cerc limitat de persoane.

4. În cadrul cercetării s-a constatat atingerea nivelului *intermediar* de dezvoltare a asistenței medicale primare bazate pe medicina de familie în Republica Moldova și au fost elucidate componentele infrastructurii și procesele la nivel de sistem și la nivel de practică medicală de familie, care au asigurat obținerea realizării numite. De notat că cercetările în cauză prezintă *primul studiu de evaluare a asistenței medicale primare bazate pe medicina de familie în Republica Moldova la scară națională*, cu prezentare cantitativă și descriere calitativă a nivelului de dezvoltare și cu determinarea factorilor de influență asupra eficacității domeniului.

5. Aplicarea *instrumentelor recunoscute internațional* și adaptate la contextul național, precum și elaborate cu contribuția nemijlocită a autorului, pentru evaluarea componentelor eficacității asistenței medicale primare bazate pe medicina de familie a permis obținerea rezultatelor veridice și comparabile cu alte țări, a facilitat argumentarea științifică a aspectelor de evaluare a asistenței medicale primare și a contribuit la identificarea și recomandarea unor intervenții relevante.

6. Dezvoltarea medicinei de familie se bazează pe activitatea echipei medicului de familie și este strâns legată de *satisfacția profesională* și *motivația de muncă* a membrilor acesteia. Studiul realizat a demonstrat existența factorilor ce pot determina gradul de satisfacție profesională și motivația de muncă a medicilor de familie, printre care: vârsta medicilor mai mare de 50 de ani; mai puțin de 8 ore de lucru pe zi; venitul anual mai mare de 100 mii lei; activitatea în instituțiile medico-sanitare din localitățile rurale. Satisfacția profesională a medicilor de familie la un nivel mai jos de mediu (43%) determină exodul cadrelor medicale din medicina de familie.

7. Cunoașterea *opiniei beneficiarilor* despre asistența medicală primară primită poate aduce o contribuție concretă la îmbunătățirea calității îngrijirii oferite. Opinia generală a beneficiarilor asistenței medicale primare privind activitatea echipei medicului de familie a fost pozitivă și variază în funcție de vârstă, sex și locul deservirii medicale. Rezultatele studiului denotă o diferență în eficacitatea serviciilor prestate populației rurale versus populația urbană sau totală a țării și această problemă rămâne spre soluționare.

8. Cercetarea realizată a sugerat: necesitatea desfășurării unor studii ulterioare privind dezvoltarea medicinei de familie ca specialitate, planificarea strategică a intervențiilor în sistemul de sănătate, managementul calității interne și cultura organizațională vizând resursele umane, cu o cercetare aprofundată pentru stabilirea gamei și a volumului de competențe

ale membrilor echipei medicului de familie, subliniind importanța opiniei populației pentru îmbunătățirea îngrijirilor de sănătate.

PRACTICAL RECOMMENDATIONS

System level.

1. The results of the study on the development of primary health care based on family medicine scientifically substantiated are truthful and relevant for decision-making and strategic planning of interventions, and the tools for evaluating the effectiveness of primary health care, applied and validated in this study, can serve for evaluations organized in the future.

2. The imbalance regarding human resources in primary healthcare must be viewed not only from the point of view of attracting young specialists, but also from the perspective of creating the conditions for keeping family doctors aged 50 and over, who have demonstrated higher work motivation, in the system.

3. The systematic organization of beneficiary opinion surveys at the national level is recommended for the interpretation of the results regarding the development of family medicine and the planning of interventions.

Medical institution level.

4. The managers of primary medical institutions, as well as the structures responsible for the assessment and accreditation of primary care institutions, are responsible for revising the standards of accreditation and operation of these institutions, and everyone in their position is responsible not only for ensuring the process of providing the medical document, but also of its result for the beneficiaries.

5. The identification of the health profile at the community level and the adjustment of the National Health Insurance Agency contract for the provision of primary healthcare services to this profile can be proposed to increase the effectiveness of primary care.

Family doctor team level.

6. The family doctor's team, in order to increase the effectiveness of the medical services provided, needs to initiate the communication process with the beneficiaries in order to respond objectively to the expectations and health needs at the community level, which will result in increased professional satisfaction.

7. The creation in the medical institution of an appropriate environment, comfortable from the physical, mental and social aspects, collegial, assertive and friendly, both for the medical staff and for the beneficiaries, is recommended to the family doctor's team.

8. The responsibility of each member of the family doctor's team is to meet the requirements of the position held and his continuous professional development regarding the performance of the process and the achievement

of the result of the activity. The periodic attestation of medical personnel must become the premise for professional development and growth, excluding the formal attitude through differentiated work remuneration, with the perspective of regulated growth of financial income and non-financial remuneration based on the skills and results of medical practice.

Medical education institution level.

9. Shifting the emphasis from continuing medical education to continuing professional development from clinical and managerial aspects is the need of the hour and contributes to the integration of new good practices into old training programs.

10. Medical education institutions responsible for the training and continuing medical education of family doctors and medical assistants specializing in family medicine require the review of the professional profile and standard and the strengthening of the qualification standard to ensure the continuity and complexity of medical care in a team according to the needs of population health, including at the community level.

PROSPECTIVE RESEARCH SUGGESTIONS

The results of the presented studies make it possible to deepen the examination of the factors influencing the development of primary medical care, especially the social aspects. For the correct prioritization of health needs, it will be appropriate to continuously study the role and opinion of primary healthcare beneficiaries, using the questionnaire and data collection method developed and recommended for implementation. At the same time, we consider it necessary to conduct more detailed and dynamic research on the topic of the "team of primary care based on the practice of the family doctor in the Republic of Moldova", with the clarification of the role and professional skills of all its members.

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ADNOTARE

Natalia Zarbailov

DEZVOLTAREA ASISTENȚEI MEDICALE PRIMARE BAZATE PE MEDICINA DE FAMILIE ÎN REPUBLICA MOLDOVA ȘI DETERMINANȚII EFICACITĂȚII

Teza de doctor habilitat în științe medicale, Chișinău, 2022

Structura tezei: introducere, 5 capitole, inclusiv revizuirea literaturii, materiale și metode, 3 capitole originale, discuții, concluzii generale și recomandări, bibliografie din 296 de titluri, 10 anexe, 216 pagini de text de bază, 19 figuri, 29 de tabele. Rezultatele obţinute sunt publicate în 44 de lucrări ştiinţifice**.**

Cuvinte-cheie: asistență medicală primară, medicină de familie, dezvoltare, calitate, eficacitate, evaluare

Scopul cercetării a constat în evaluarea asistenței medicale primare bazate pe medicina de familie în Republica Moldova pentru aprecierea nivelului de dezvoltare a domeniului și elucidarea factorilor care determină eficacitatea acestuia. Au fost stabilite următoarele **obiective**: 1. Explorarea punctelor de reper istoric ale asistenței medicale primare și a contextului dimensiunilor calității serviciilor de sănătate. 2. Nominalizarea factorilor cu potențial de influență asupra dezvoltării asistenței medicale primare, identificarea sau elaborarea și aplicarea instrumentelor adecvate de evaluare a eficacității. 3. Elucidarea nivelului de dezvoltare a asistenței medicale primare şi a etapelor de instituire a medicinei de familie în Republica Moldova. 4. Examinarea satisfacției profesionale și a motivației de muncă a medicilor de familie și a competenței asistenților medicali de familie pentru asigurarea eficacității serviciilor de sănătate. 5. Evaluarea opiniei beneficiarilor îngrijirilor medicale primare privind asistența medicală primară oferită în cadrul medicinei de familie.

Noutatea şi originalitatea ştiinţifică. Cercetarea rezolvă problema instrumentarului adecvat și metodologiei potrivite, necesare evaluării sectorului de asistență medical primară (AMP) în una dintre țările regiunii de Sud-Est a Europei, ținându-se cont de specificul dezvoltării sistemului de sănătate și procesului de implementare a specialității Medicină de familie în calitate de specialitate de bază pentru sectorul de AMP în Republica Moldova.

Rezultatele principial noi pentru știință și practică. Explorarea posibilităților reale pentru evaluarea eficacității asistenței medicale primare bazate pe medicina de familie a confirmat abordarea sistemică a procesului de transformare, a identificat factorii de influență asupra satisfacției profesionale și motivației de muncă a medicilor de familie prin validarea și aplicarea instrumentelor de evaluare elaborate în cadrul studiului, prin

identificarea aspectelor noi privind opinia beneficiarilor îngrijirilor medicale despre asistența medicală primară primită.

Semnificaţia teoretică a cercetării. Au fost demonstrate evidențe privind influența anumitor factori contextuali asupra eficacității serviciilor de AMP: aspecte de reglementare a asistenței medicale primare la nivel de politici, satisfacția profesională și motivația de muncă a medicilor de familie, precum și opinia beneficiarilor îngrijirilor de sănătate.

Valoarea aplicativă. Prin cercetarea realizată au fost obținute date principial noi despre nivelul de dezvoltare a asistenței medicale primare din Republica Moldova în comparare cu alte țări. Au fost validate instrumentele de evaluare a AMP ce permite planificarea intervențiilor de monitorizare în sistemul de sănătate în viitorul apropiat.

Implementarea rezultatelor ştiinţifice. Rezultatele studiului au fost raportate la 6 foruri naționale și 15 internaționale. Pe marginea cercetării au fost validate: o notă informativă de politici, 2 certificate de autor, 3 certificate de inovație și 3 acte de implementare.

АННОТАЦИЯ

Наталья Зарбаилова

РАЗВИТИЕ ПЕРВИЧНОЙ МЕДИЦИНСКОЙ ПОМОЩИ НА ОСНОВЕ СЕМЕЙНОЙ МЕДИЦИНЫ В РЕСПУБЛИКЕ МОЛДОВА И ДЕТЕРМИНАНТЫ ЭФФЕКТИВНОСТИ

Диссертация доктора хабилитат медицинских наук.

Кишинев, 2022 г.

Структура диссертации: введение, 5 глав, включая обзор литературы, материал и методы, 3 оригинальные главы, обсуждение полученных результатов, общие выводы и рекомендации, библиография из 296 наименований, 10 приложений, 216 страниц основного текста, 19 рисунков, 29 таблиц. Полученные результаты опубликованы в 44-х научных публикациях.

Ключевые слова: первичная медико-санитарная помощь, семейная медицина, развитие, качество, эффективность, оценка.

Цель и задачи исследования. Цель исследования заключалась в оценке первичной медико-санитарной помощи на основе семейной медицины в Республике Молдова с целью определения уровня развития этой области и выявления факторов, определяющих ее эффективность. Были поставлены следующие **задачи**: 1. Изучение исторических ориентиров первичной медико-санитарной помощи и контекста аспектов качества медицинских услуг. 2. Номинация факторов с потенциальным влиянием на развитие первичной медико-санитарной

помощи, выявление или разработка и применение соответствующих инструментов для оценки эффективности. 3. Выяснение уровня развития первичной медико-санитарной помощи и этапов становления семейной медицины в Республике Молдова. 4. Изучение профессиональной удовлетворенности и трудовой мотивации семейных врачей и компетентности семейных медицинских сестер для обеспечения эффективности медицинских услуг. 5. Оценка мнения получателей относительно первичной медико-санитарной помощи, оказываемой в рамках семейной медицины.

Новизна и научная оригинальность. Исследование решает проблему соответствующего инструментария и правильной методологии, необходимых для оценки сектора первичной медико-санитарной помощи (ПМСП) в одной из стран региона Юго-Восточной Европы с учетом специфики развития системы здравоохранения и процесса внедрения специальности «Семейная медицина» в качестве базовой специальности для сектора ПМСП в Республике Молдова.

Принципиально новые результаты для науки и практики. Изучение реальных возможностей оценки эффективности первичной медико-санитарной помощи на базе семейной медицины подтвердило системный подход процесса трансформации, выявило факторы, влияющие на профессиональную удовлетворенность и трудовую мотивацию семейных врачей путем валидации и применения инструментов оценки, разработанных в исследовании, путем выявления новых аспектов, касающихся мнения получателей медицинской помощи о предоставленной первичной медико-санитарной помощи.

Теоретическая значимость исследования. Были продемонстрированы доказательства влияния некоторых контекстуальных факторов на эффективность услуг ПМСП: регуляторные аспекты первичной медико-санитарной помощи на уровне политики, профессиональная удовлетворенность и трудовая мотивация семейных врачей, а также мнение получателей медицинской помощи.

Прикладное значение. Благодаря проведенному исследованию были получены новые данные об уровне развития первичной медико-санитарной помощи в Республике Молдова по сравнению с другими странами. Инструменты оценки ПМСП прошли валидацию, что позволяет планировать мониторинговые мероприятия в системе здравоохранения в ближайшем будущем.

Внедрение научных результатов. Результаты исследования представлены на 6-ти национальных и 15-ти международных форумах. В рамках работы подтверждены: информационное письмо, 2 авторских сертификата, 3 сертификата инноваций и 3 акта внедрения.

ABSTRACT

Natalia Zarbailov

DEVELOPMENT OF FAMILY MEDICINE-BASED PRIMARY CARE IN THE REPUBLIC OF MOLDOVA AND EFFECTIVENESS DETERMINANTS

Thesis of doctor habilitat in medical sciences

Chisinau, 2022

Thesis structure: introduction, 5 chapters, including literature review, material and methods, 3 original chapters, discussions, general conclusions and recommendations, bibliography of 296 titles, 10 annexes, 216 pages of basic text, 19 figures, 29 tables. The obtained results are published in 44 scientific papers.

Keywords: primary care, family medicine, development, quality, effectiveness, evaluation

Purpose and objectives of the research: The purpose of the research consisted in the evaluation of primary medical care based on family medicine in the Republic of Moldova in order to assess the level of development of the field and elucidate the factors that determine its effectiveness. The following objectives have been established: 1. Exploring the historical landmarks of primary care and the context of the dimensions of the quality of health services. 2. Nomination of factors with potential influence on the development of primary care, identification or development and application of appropriate tools for evaluating effectiveness. 3. Elucidation of the level of development of primary health care and the stages of establishing family medicine in the Republic of Moldova. 4. Examining the professional satisfaction and work motivation of family doctors and the competence of family nurses to ensure the effectiveness of health services. 5. Evaluating the opinion of the beneficiaries of primary health care regarding the primary health care provided within the family medicine.

Novelty and scientific originality. The research solves the problem of the appropriate instrumentation and the right methodology, necessary for the assessment of the primary healthcare sector (PHC) in one of the countries of the South-Eastern Europe region, taking into account the specifics of the development of the health system and the implementation process of the Family Medicine specialty as a basic specialty for the PHC sector in the Republic of Moldova.

The fundamentally new results for science and practice. The exploration of the real possibilities for the evaluation of the effectiveness of primary medical care based on family medicine confirmed the systemic approach of the transformation process, identified the influencing factors on the professional satisfaction and work motivation of family doctors by

validating and applying the assessment tools developed in the study , by identifying new aspects regarding the opinion of medical care beneficiaries about the primary medical assistance received.

The theoretical significance of the research. Evidence has been demonstrated regarding the influence of certain contextual factors on the effectiveness of PHC services: regulatory aspects of primary health care at the policy level, professional satisfaction and work motivation of family doctors, as well as the opinion of health care beneficiaries

Application value. Through the conducted research, new data were obtained about the level of development of primary medical care in the Republic of Moldova in comparison with other countries. PHC assessment tools have been validated, which allows for the planning of monitoring interventions in the health system in the near future.

Implementation of scientific results. The results of the study were reported at 6 national and 15 international forums. The following were validated on the research: the Policy Information Note, 2 Author Certificates, 3 Innovation Certificates, and 3 Implementation Acts.

ABBREVIATIONS

CCMEMPPSE	Centre for Continuing Medical Education of Medical and Pharmaceutical Personnel with Secondary Education
CHI	compulsory health insurance
CHIF	compulsory health insurance funds
DR	development region
FDC	family doctors' centre
FDO	family doctor's office
GD	Governmental decision
HC	health centre
ILO	International Labour Organization
IOM	Institute of Medicine, USA
MA	mature adults
MA M	mature adults, men
MA W	mature adults, women
MDG	Millennium Development Goals
MHLSP	Ministry of Health, Labour, and Social Protection
MHSP	Ministry of Health and Social Protection
MoH	Ministry of Health
NBS	National Bureau of Statistics
NHIA	National Health Insurance Agency
NPHA	National Public Health Agency
OECD	Organisation for Economic Co-operation and Development
PC	primary care
PCAT	Primary Care Assessment Tool
PHC	primary healthcare
PMSI	public medical sanitary institution
RM	Republic of Moldova
RRA	respondents from rural areas
RUA	respondents from urban areas
SD	standard deviation
SDC	Swiss Cooperation Office
SDG	Sustainable Development Goals
SUMP	State University of Medicine and Pharmacy
UHC	Universal Health Coverage
UNFPA	United Nations Population Fund
USA	United States of America
WB	World Bank
WHO	World Health Organization
YA	young adults
YA M	young adults, men
YA W	young adults, women

ZARBAILOV NATALIA

DEVELOPMENT OF PRIMARY CARE BASED ON FAMILY MEDICINE IN THE REPUBLIC OF MOLDOVA AND DETERMINANTS OF EFFECTIVENESS

331.03 – SOCIAL MEDICINE AND MANAGEMENT

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