ECRONICON OPEN ACCESS

EC NURSING AND HEALTHCARE
Review Article

Procedure for Evaluating the Performance of Public Health Networks: Process of its Elaboration

Milton Sbárbaro Romero*

Bachelor of Nursing. DrC. Master in Health Services Management. Professor of the Administration Chair of the Faculty of Nursing, University of the Republic, Uruguay

***Corresponding Author:** Milton Sbárbaro Romero, Bachelor of Nursing. DrC. Master in Health Services Management. Professor of the Administration Chair of the Faculty of Nursing, University of the Republic, Uruguay.

Received: September 30, 2020; **Published:** February 20, 2021

Abstract

The models of care are based on the strategy of integrated networks of health services, conform complex systems to overcome the fragmentation and segmentation of health services, and improve your performance. The attributes defined by OPS as essential for the proper functioning of the health model care has a concrete representation in the National Integrated System of Health in Uruguay, however, they have not been systematized in scientific publications neither have developed procedures that allow evaluation in the national context. The objectives and principles of SNIS make it necessary to design the procedures for examining the care model with a systemic approach, to be able to take the actions aimed at solving the deficiencies found, stimulate initiatives and propose higher goals to achieve. The objective of this article is to show the scientific-technical work developed by the author for the design of a "Procedure to evaluate the performance of the integrated networks of public health services", through the use of a tracer disease, with a quality assurance approach. To this end, research was carried out on the development of health services in a network of public effectors in Uruguay, in the period from 2012 - 2015. It is concluded that the main difficulty identified in the Uruguayan health system, which refers to the lack of procedures valid for assessing the performance of integrated health networks, delimited by this research, which is exposed the process of elaboration and validation of the procedure itself.

Keywords: *Network Integrated Health Services; Integrated National Health System; Health Services Evaluation; Quality Assurance Health Care; Uruguay*

Introduction

In the region of the Americas, the conceptualization of networking to improve health services in terms of accessibility, equity, and efficiency has become widespread; Thus, several countries have incorporated into their health system the strategy of primary health care (PHC) and integrated health service networks (RISS), "a strategy assumed by the Uruguayan health administration to organize a model of care in the context of a new reform of the sector" [1]. Most researchers recognize the need for performance evaluations of health systems that allow timely decision-making with reliable information. In Uruguay, the new health model, based on RISS, lacks evaluations due, among other factors, to the absence of scientific procedures to measure its performance. To help resolve this gap, the author of this study developed a technology (Procedure) that facilitates consistent performance evaluations of integrated health service networks.

Objective of the Study

Present the scientific-technical work developed for the design of a "Procedure to evaluate the performance of integrated networks of public health services", through the use of a tracer disease, with a quality assurance approach.

Methods

Development research in health services was carried out in a network of public providers in Uruguay, in the period between 2012 - 2015.

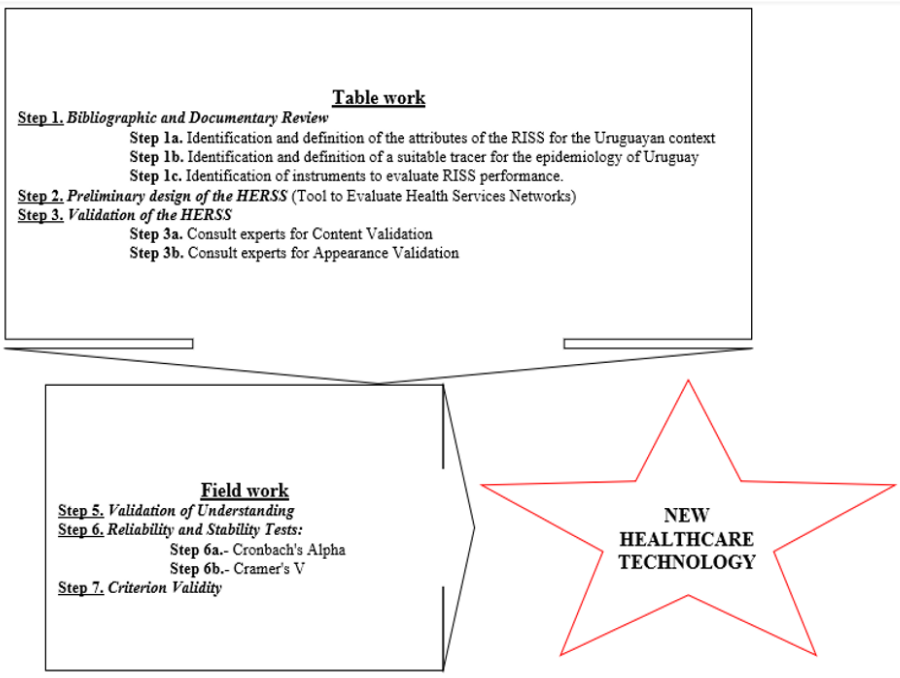
Ethical aspects

In this research, the ethical guidelines of the "Code of Ethics of the International Nursing Council" [2] were observed, referring to research for Nursing professionals, regarding respect for human rights, values, customs and spiritual beliefs of people and families and the community; as well as by providing sufficient information to obtain the informed consent of the people participating in the research. In addition, it was governed from the ethical point of view, through Decree No. 379/008 prepared by the Bioethics and Quality Commission.

Department of Attention, dependent on the General Directorate of Health of the Ministry of Public Health, was especially zealous in "having the free and informed consent of the research subjects" [3]. Authorization was requested from the management of the First Level Attention Network of the State Health Services Administration (RAP-ASSE) and the protocol was put to study and approved for application by the Research Ethics Committee of the Faculty of Nursing of the University of the Republic.

Techniques and procedures

The research was developed in two distinct moments, one that involved a "table work" that included four steps, and a second moment, starting from the results of that work, called "field work", which included three more steps, oriented to validation tests. The work process followed is shown in the following diagram.



Step 1: Bibliographic and documentary review

A bibliographic review was carried out, through the Virtual Library in Nursing Health (bvsenf.org.uy), in the database of Latin American literature in Health Sciences (LILACS) and the database of international literature in Sciences Health (MEDLINE). For this, the RISS descriptors, networks, health services networks, national health systems, performance, health services evaluation, health care quality assurance, program evaluation and research instruments were used. This study was complemented with a review of laws, norms and official documents regarding the National Integrated Health System (SNIS) and the First Level Attention Network of the State Health Services Administration (RAP-ASSE); The bibliography on type 2 diabetes mellitus (T2DM) focused on first level care programs (PNA), with positions agreed upon at the regional level in documents of the Latin American Diabetes Association (ALAD), and a review was made on the national regulations on the subject.

Step 1a: Identification and definition of the attributes of the RISS for the Uruguayan context

The search carried out allowed the author of this work to identify the basic attributes that systems based on the strategy of RISS suggested by PAHO should possess. as a conceptual and operational framework to understand these systems. The construct assumed for the elaboration of the Procedure was validated by different investigations and studies, in which it is stated that an integrated network of health services requires certain essential attributes for its proper functioning. PAHO grouped them according to the scope of their approach, a consensus initiative that required "an extensive bibliographic review and various consultations carried out as part of the initiative" [4]. In this understanding, this research takes as valid the RISS construct by the concepts developed in its definition by PAHO; components and attributes that are also those defined by the Uruguayan health authorities for their new care model. These components are explained below, which were subdivided into simple variables to design the appropriate tool for the Uruguayan context.

Assistance model: This first component has to do with the structure that the health system presents to cover the health needs of populations about their establishments, services provided, coordination of those services and socio-cultural aspects to have into account for such coverage. This component has six attributes and 19 dimensions, namely:

- Population and territory in charge and defined, which implies knowing the territorial and geographical base of coverage of the effector, and a clear knowledge of the health needs of the population of said area. This attribute was subdivided into the following dimensions: population to attend; knowledge of the needs of users (T2DM carriers); and geographic area.
- Network of health facilities for the provision of health services, which implies having network effectors that can solve promotion, prevention, diagnosis, treatment, rehabilitation and palliative care services to the population adhered to the network. This attribute was subdivided into the dimensions of health programs in care for users with T2DM; reference in the 2nd. Level of attention; referral at the first level of care; population/professionals' relationship; and quality standards.
- First level of care, defined as the gateway to the health system, in which most of the health needs of the reference population must be resolved, in addition to coordinating care over time. This attribute was subdivided into the dimensions of the gateway to the system; multidisciplinary team for the care of patients with T2DM; and coordination with the rest of the healthcare levels.
- Provision of specialized services in the most appropriate place, refers to the fact that the care provided must be based on the best scientific data available according to the needs of the users and an organization of prioritized services according to criteria of equity and efficiency. This attribute will be addressed in a single dimension, the organization of network resources for the care of users with DMT2.
- Assistance coordination mechanisms throughout the system. This attribute refers to the existence of coordinated forms that allow the best or equal treatment to all users in any network effector that they need and at any time. It is subdivided into three dimensions: clinical practice guidelines and/or care protocols for users with T2DM; interdisciplinary working groups; and referral and counter referral mechanisms.

- Attention centered on the person, the family and the community, defined as the holistic care approach of the individual that incorporates interculturality, centered on the knowledge of the rights and duties by the user; and with a strong family and community component. It addresses the care of the individual in their social and cultural context, in the circumstances in which people live, study and work. This attribute is subdivided into the dimensions of personnel trained in the proposal of the new care model; staff trained on the rights of care of users in general and T2DM carriers in particular; I work with a holistic approach; and work with a family and community focus.

Governance and strategy

Component mainly related to the control, structure, composition and operation of the network; with the process of creating a vision and mission of the organization, in addition to defining the goals and objectives that must be met to achieve the vision and mission. Governance includes the articulation of the organization and its owners with the policies that derive from these values; policies about the choices its members must make to achieve the desired results. It also includes the implementation of the management necessary to achieve these results and the performance evaluation of the managers and the organization. This component has three attributes (single governance system; broad social participation; and intersectoral action) and six dimensions to respond to them.

Unique system of government

Implies the degree of centralization of the government of the network, in addition to defining and carrying out the mission and vision of the institution. Vázquez and Vargas state that "the government's responsibilities include formulating the organization's goals, that is, the network's mission, vision, and strategic objectives; coordinate the different governing bodies of the entities that make up the network; ensure that the mission, vision and strategies are consistent throughout the network; ensure that the network achieves an optimal level of performance through monitoring and evaluation of the results and processes of the network" [5]. This attribute is subdivided into the dimensions governing body; unique mission, vision and goals of the network; strategic planning; and mechanisms for monitoring and evaluating the performance level of the network.

Broad social participation: This attribute is related to the degree of development that the communities present, and what the systems offer them to carry out performance evaluations of the network and become true rulers of the health system. It could be defined as the involvement and/or empowerment of users in the governance and management of the network. This attribute will be studied through the dimension Involvement and/or empowerment of the users of the program in the government and management of the network.

Intersectoral action: Refers to the existence of inter-institutional coordination that allows addressing the health conditions of the population in general, more specifically to address the risk factors of T2DM. For the study of this attribute, a single dimension called inter-institutional coordination was proposed to address the risk factors for T2DM.

Organization and management: This component is linked to the internal procedures of the network for the management of support systems for the care of populations. It has to do with the clinical, administrative and logistical support systems, the human resources and the information systems used in the network. Four attributes are presented in this component:

1. Integrated management of the clinical, administrative and logistical support system, an attribute understood as a management model based on the delegation of decision-making power and organizational coordination, with systems focused on continuous quality improvement, which promotes global efficiency. of the network. For its study, the management dimensions of clinical support systems were defined; management of administrative support systems; and management of logistical support systems.
2. Sufficient, competent, committed and valued human resources by the network, was defined as the adequate quality and quantity of workers to meet the needs of the reference population. For its study, the following dimensions were taken: quantity of human resources; and quality of human resources.

3. Integrated information system that links all members of the network, an attribute understood as a unified system that allows the provision of data that satisfies the need for information of all members of the network. It will be measured through a single dimension called the network's integrated information system.
4. Results-based management, an attribute understood as the strategy or approach given by the organization. It also incorporates operational research to ensure that its processes and services contribute to the achievement of clearly defined results and promotes the monitoring and evaluation of such progress. This will be studied through a single dimension, called a strategy to ensure the achievement of the objectives.

Allocation and incentive: Component that is understood as the way to obtain financial resources to achieve the objectives set by the system, is accountable to the network, seeks to promote the integration of all in the resolution of health problems to contribute to the overall efficiency of the same. This component has a single attribute, adequate financing and financial incentives aligned with the goals of the network, defined as a system of incentives and accountability that promote the integration of the network as a whole; In it, each operating unit is responsible for the costs of care; with a budget for global objectives that bets on the flexibility and mobility of resources within the network. For its study, two dimensions of worker financial incentive systems were used; and financial incentive systems for service.

Step 1b: Identification and definition of a suitable tracer for the epidemiology of Uruguay

The documentary search showed relevant aspects in the Uruguayan health model that orient it towards a network-based system that stimulates care for non-communicable diseases (NCDs), "working through priority programs based on the primary care strategy of health, within which clinical recommendations, standards or protocols are an unavoidable tool" [6]. If we take as a frame of reference the criteria proposed by Kessner D. for a tracer disease, it is seen that T2DM in Uruguay has a potential impact on health conditions according to the provision of the health services of the system, in this sense the WHO proposes that there were, in 2014, 422 million people with DM in the world, marking that "the global prevalence of diabetes has grown from 4.7% in 1980 to 8.5% in 2014" [7], estimating that for by 2030 they will become 720 million. For PAHO-WHO, "one in 12 people (62 million) live with diabetes in the Americas" [8], estimating that by 2040 these will reach more than 100 million. In Uruguay, on the other hand, "the prevalence is around 9% for the population aged 15 to 64 years and affects approximately 1 in 10 people between 25 and 64 years of age" [9], according to data from the 2nd. A national survey of risk factors for chronic non-communicable diseases (ENFRECNT), carried out by the Ministry of Public Health (MSP) in 2013. In Uruguay, according to the National Resources Fund (FNR), diabetes is the leading cause of blindness in adults is the leading cause of end-stage kidney disease and non-traumatic lower-limb amputations" [10]. On the other hand, Kessner argues that the tracer must be a well-defined and easily diagnosed disease, with clear and standardized techniques for stages of prevention, diagnosis, treatment and rehabilitation, in this sense, there are clinical guidelines in Uruguay for the work of NCDs, and in particular for T2DM, in the NAP, prepared in 2010 by the health administration (ASSE). As another criterion, it is proposed that reliable data must be obtained in a limited population, at this point it is highlighted that the prevalence of T2DM is high enough to reliably obtain data, "this type represents 90% of world cases" [11], which is why in Uruguay it affects 9 out of 10 people with diabetes mellitus. The fourth criterion defined by Kessner for tracer diseases refers to the fact that the disease process varies with the use of medical care, which in the case of T2DM, clinical guidelines are focused on health care that prevents complications, promote healthy habits and towards rehabilitation, to improve the quality of life, prevent complications and reducing mortality. Finally, its analysis in terms of care, treatment and impact, allows to visualizing the performance of the health network. These reasons make it possible to define T2DM as a tracer to evaluate the performance of the PNA public health network in the Uruguayan context.

Step 1c: Identification of instruments to evaluate RISS performance

On the other hand, a bibliographic review was carried out in search of similar instruments that evaluate the performance of an integrated network of health services in the PNA, through a tracer disease, that could serve in the investigation. Three instruments were found in the region and none in Uruguay. One of them was developed in Bogotá, as a way of carrying out a rapid evaluation of the health network,

where they applied "four types of instruments, aimed at obtaining the diverse perspectives of the actors on the attributes of PHC" [12]. Although it was concluded that the instruments were effective for quickly evaluating the performance of the network, their weakness is that they were limited to evaluating the care model, without studying the other components, as or more important in performance as this. Another study developed in Cuba concluded in a "Methodological procedure to measure the integration of a network of services" [13], "which allow to identify attributes of integration with weaknesses in the network" [14] from the perspective of managers and providers, with the weakness that incorporates the user only from the evaluation of their satisfaction. Said procedure is based on general aspects that health networks must contain, it does not include elements of emerging epidemiology in the countries of the Latin American region, such as non-communicable diseases, in addition to being circumscribed to the uniqueness of the Cuban health system. Along the same line of research, it is stated that "the issue of integrated health service networks is highly complex and requires successive approaches both in conceptual terms and in the development of instruments for its measurement" [15]. This review visualizes the need to develop a procedure for evaluating the performance of health networks with an RISS approach, appropriate to the context of Uruguay, taking into account all the actors in the system and that considers aspects of regional and national epidemiology.

Step 2: Preliminary design of the Health Services Network Assessment Tool (HERSS)

With the data obtained from the bibliographic and documentary review, a table work was carried out for the design of a tool that would measure the performance of health networks with a quality approach and appropriate to the Uruguayan context. This tool is translated into a questionnaire that incorporates the goals of the ASSE guide to care for users with T2DM and the objectives of the Uruguayan health system that propose, among others, to advance universal health coverage with equity and quality. guaranteeing health as a right of all. After defining the content of the questionnaire and after adapting of meanings to the context of Uruguay by the author of this work, a preliminary tool (HERSS) was developed, consisting of three sections, the first one aimed at measuring the performance of the network through the knowledge and experience of the users with T2DM, another section measures the performance through the knowledge of the workers of the care level with direct responsibility in the care of the user with T2DM, belonging to the health services of the network and the third section provides information from the perspective of those responsible for defining and implementing the network's health policies, members of its management. Said sections in turn have four Components (Assistance Model; Governance and Strategy; Organization and Management; and Assignment and Incentives) and 14 attributes each, which will be measured by a total of 101 dimensions through 276 items.

Step 3: Validation of the HERSS

After having defined the components of each section of the HERSS, the validity tests were carried out, which is "the degree to which an instrument actually measures the variable it seeks to measure" [16], this concept suggests that It can have different types of evidence, one related to the content, another related to the criterion, and a third related to the construct.

Step 3a: Consult experts for content validation

To validate the content of the preliminary tool, it was put to the consideration of experts in the area of diabetes; program management, especially related to work in the PNA, and experts in the RISS area. For their selection, at least two years of experience in management and/or advisory positions in the health system was taken into account, and especially in health networks; in addition to specific training on the subject. With these profiles, six experts participated, two with training as PhD in Health Sciences, research teachers from the National School of Public Health of Cuba (ENSAP); a Bachelor of Nursing, advisor to the ASSE board of directors; a Bachelor of Nursing, director of a sub region of the RAP-ASSE; and a fifth expert, a Bachelor of Nursing, a reference from one of the 22 polyclinics of the Montevideo Municipal Administration (IMM). In addition, it was counted to validate the content on diabetes with a professional with training postgraduate in the area of knowledge (diabetologist and endocrinologist), academic coordinator of the postgraduate program in diabetology at the Catholic University of Uruguay (UCUDAL) and has work and research experience in the area, in addition to having

been president of the Diabetology Society and Nutrition of Uruguay. Once the team of experts was formed, they were given a package with different documentation, in paper and electronic format, which contained information on the objectives and characteristics of the investigation, they were also shown interest in their critical assessment and observations on the instrument in question, for which they were asked to participate completely voluntarily at this stage of the study. Along with this, they were given a copy of the preliminary HERSS, accompanied by a matrix for their qualification, according to the criteria established by Moriyama (understandable; sensitive to variations in the phenomenon; if it has justifiable and intuitively reasonable basic assumptions; clearly defined components; and if it derives from data that can be obtained). For the rating, an ordinal scale from 0 to 3 (0 = Nothing; 0 > = 1 = Little; 1 > = 2 = Moderately; and 2 > = 3 = Much) was used to evaluate the criteria by the experts, defined in advance that those items that obtain an average score of Much (2 > = 3) by a percentage equal to or greater than 70% of the experts will be approved. Those items that obtain a rating of Much (2 > = 3), by less than 70% of the experts, and those that obtain a rating of Moderate (1 > = 2) by at least 50% of the experts, will be analyzed., corrected and sent again to the opinion of the experts until being evaluated of Much (2 > = 3) by 70% or more of them. In addition, it was decided not to take into account the items that were evaluated with a score of ≤ 1 by a single expert in the criterion of "reasonable and justifiable"; It is understood that if an expert considers that there is no clear justification for the presence of said item in the instrument, that it is not reasonable or justifiable that it is part of the tool, that single assessment is disqualifying from considering its study. For the calculations of the validity measures, the Open Office statistical analysis package was used. Org Calc, obtaining the following results:

a) The section of the tool that evaluates the performance of the network from the perspective of managers, was preliminarily composed of four components, 14 attributes, 34 dimensions and 92 items, which were sent to the experts to validate their content; of them, using the pre-established criteria, two items were eliminated, although the global score of each of them was 2.53 and 2.8 points respectively.

b) Regarding the section corresponding to the Health Team, it was configured with four components, 14 attributes, 33 dimensions, and 102 items were submitted to the experts for consideration. In this case there was no item that the experts considered that it was not justified to be in the tool, so it was made up of the 102 items referred to.

c) Regarding the User sector, we can say that it is made up of the same four components as the previous sections, and that 14 attributes and 34 dimensions were validated by the experts with a total of 82 items, of which they were deleted. four dimensions and 11 items, due to the fact that some of the experts considered that their incorporation into the tool was not justified, apart from that all the mentioned items obtained global scores of Much (2 ≥ 3), according to the scale used for their measurement. The four dimensions eliminated by the experts' criteria were "Mission, vision, unique objectives of the network" and "Strategic planning" that belong to the attribute Unique system of governance, of the Governance and Strategy component; and the dimensions "Service financial incentive systems" and "Worker financial incentive systems", belonging to the attribute Adequate financing and financial incentives aligned with the goals of the network, of the Allocation and Incentive component. In general, it can be said that the content of the HERSS was validated in its three sections by experts in the topic addressed, with levels of Much in all the proposed items. On the other hand, it should be said that, of the 34 dimensions and 276 items, a total of three dimensions and 13 items were suppressed, as they were considered by the experts as unjustifiable and not reasonable to include in the tool. In turn, there were four items that were repeated and that contributed to measuring different variables, so they were left in the tool but not duplicated. And to the contrary, experts agreed that there were two items that should be divided to better obtain the data. With the validation of the content by the experts, the preliminary tool was perfected, which was made up of three sections (Users, Health Team, and Managers), which contain 4 components, 98 dimensions and 263 items in general.

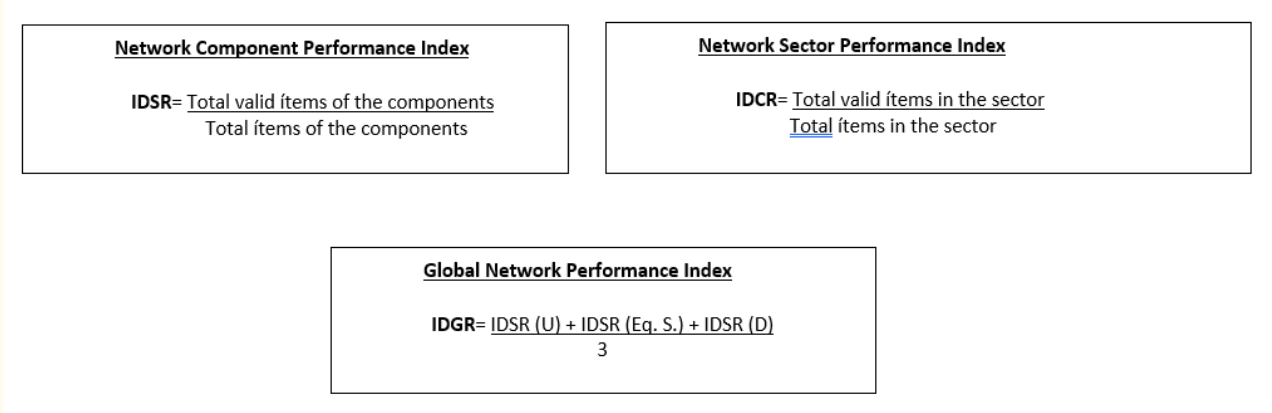
Step 3b: Consult experts for appearance validation

An appearance validation was also carried out to verify if the questions are well constructed, which makes it possible to avoid inducing the answers. For which it was submitted to the consideration of an expert in the area, outside the research, a professor who is a member of the Research Ethics Committee of the Faculty of Nursing, from which the recommendations made were taken and the corresponding

adjustments were made. Also, during the process of consulting experts to perform content validation, suggestions made by them regarding the clarity of the questions posed in the instrument were taken into account. Silva Ayçaguer defines very accurately the importance of appearance validity and assigns a very important weight to the wording of the questions, not only because its poor formulation leads to erroneous results, but the result of this strongly impacts the costs of the investigations. In accordance with these aspects, special care was taken in the structure of the questionnaire when placing different types of questions. For example, test questions that are intended to determine the consistency or veracity of the subject's responses, are they elaborated different questions on the same topic and, in addition, the way in which they were asked was varied, and they were distributed throughout the tool. Filter questions were also placed that determine whether or not other questions of the questionnaire are answered, it was taken into account in their elaboration that they referred to a single element, even if they arise from a single parent question. Based on these criteria, a total of 249 questions were constructed, of which 54 are questions that include some type of verification in the same instrument, 47 questions generate a filter, according to their answers, for other questions in the questionnaire (identified graphically in the tool) and 12 have a nested form in their writing, since they refer to the same element.

Step 4: Construction of RISS performance indexes and scale

As an essential part of the Procedure, it was necessary to define a series of indices and scales to evaluate the performance of the network. These indices can generate with their systematization a system of periodic monitoring and evaluation to establish comparative moments of the performance of the network. Conventionally, it has been established that the reference value must take into account the average of the overall performance of the network, so that most of the deficiencies are classified as weaknesses to be overcome. The scale proposed by López Puig to "measure the levels of integration exhibited by a particular network" [17] was taken as the basis for designing these new indices, due to the fact that the contents presented in it are adjusted to the contents defined in the Procedure for measure the performance of health networks with a RISS approach. The Procedure was designed with such flexibility that it allows evaluating the performance of the network in a global way, from a particular component, or from the perspective of a single actor in the network (managers, health team or users). they made three indices that allow such an evaluation from these global or particular perspectives. In this way, it is possible to calculate the Global Performance Index and the performance indices by sector and components of the health network with a RISS approach that is explored, thus adjusting to the characteristics and needs of the network. The score of each index was calculated as a percentage of "Yes" responses in the questionnaire. This score is assigned to each component and/or sector of the HERSS, which makes up the Network Component Performance Index (IDCR) and the Network Sector Performance Index (IDSR). The latter is finally used to calculate the Global Network Performance Index. These indices can take values ranging between 0 and 1, where 1 is the highest performance value they can achieve.



Figure

To classify the performance of the evaluated network or its component, a colorimetric scale diagrammed in three levels was developed, with criteria of High, Partially High and Low, a scale that is specified below.

Scale	Category operationalization	Value
High	The service network has achieved acceptable quality levels in the explored component, in its structure, processes and/or results, to fully satisfy the needs of the users.	> 80
Partially high	The service network has achieved acceptable quality levels in the explored component, in its structure, processes and/or results, to partly satisfy the needs of the users.	0,5 - 0,8
Low	The service network has not achieved acceptable quality levels in the explored component, in its structure, processes and/or results, to fully satisfy the needs of the users.	< 0,5

Field work

Universe

To carry out the field tests, we worked with a universe defined by people over 20 years old with DMT2 with public health coverage, who consulted one of the 33 effectors belonging to the integrated public health network; which was obtained with a review of the clinical records defined as "active" by the researcher, which are those belonging to users with T2DM and who consulted at least once in the effector, in the period between June 2014 and September 2015. With this criterion, a population of 846 users was obtained. Another part of the universe is made up of workers at the healthcare level with direct responsibility for caring for users with T2DM, who are members of the effectors of said healthcare network. In total, the network has 77 workers with these characteristics. The study population is finished conforming with the members of the management of the network composed of 7 members. In sum, the universe was made up of a total of 930 people (managers, workers and users).

Samples

For the validation tests the following samples were taken:

- **Comprehension validation:** A convenience sample of 10 users with T2DM was taken, defined by their advanced age, since the study universe had an average of 76 years, and by their schooling, where users with primary education were chosen and secondary, in order to capture the difficulties of understanding the questionnaire and make the corresponding changes. Understanding that, if the tool did not present comprehension difficulties in this population, it should not exist in the rest of the study population, which had higher education and lower age. At the level of the health team to carry out this validation, the preliminary HERSS was applied to a sample of 10 workers, defined by having the characteristic of considering the professional level and the auxiliary and/or technical level, in order to capture the differences in the same existing concepts in the study population; in addition to taking into account the geo reference of the effector. This selection also made it possible to capture the existing differences due to the contextual conditions of the Health Zones.
- **Validity and reliability tests:** We worked with a convenience sample defined by the following characteristics:
- The directors were registered, for which the entire universe was taken.
- The members of the health team were taken two for each health area of the network, except in area A in which four members of the health teams were selected for having the largest number of workers, so this sample It was made up of 14 sampling units.
- The users were selected 20 of them in a single effector, which presented the highest number of users with DMT2 because it was the only polyclinic that offered consultation in the specialty of endocrinology. The technique used for its selection in the effector was by simple random sampling, "in which all the elements of the population have the same possibility of being chosen and are obtained

by defining the characteristics of the population and the size of the sample, and by means of a random or mechanical selection of the units of analysis" [18]. In summary, for this phase of the field work, the sample was made up of 41 cases, between managers, workers and users.

- **Criterion validity:** Network managers were surveyed to perform this validity test.

Step 5: Validation of understanding

To execute this validation, a field test was carried out in which the preliminary HERSS was applied to the previously defined sample. In general, the questions of the tool followed the basic recommendations regarding not bothering the research subjects and taking care of their clarity and understanding, for which the sociocultural levels of the participants were taken into account. was corroborated in the field test carried out in which no comprehension barriers were found in any of the components of the universe, which showed a highly understandable tool for the study populations.

Step 6: Reliability and stability tests

To work on the HERSS validation process, where Capote Mir states that it "consists of evaluating the test by applying it to a reduced number of subjects" [19], we worked with the already defined sample of users, managers and workers. The application of this test was carried out through personal interviews by the researcher, in which all the participants answered the questionnaires anonymously, to which they were offered the possibility of withdrawing from the research at any time they wished. always maintained the criterion of previously signing informed consent. For the calculations of the reliability measures, the GNU PSPP version 0.7.9 statistical analysis package was used.

Step 6a: Cronbach's alpha coefficient

The reliability tests were carried out on the three sections of the tool separately, as appropriate, since the construct used correlates the essential attributes of the RISS within each component and with the set of components in general in the section, but not correlates these attributes depending on which actors they will be applied to (read managers, workers and users). In addition, the three sections have variability in the items proposed to obtain the data, because in their construction the obvious differences between the three actors of the system were considered. The reliability of the tool (HERSS) was measured through Cronbach's alpha coefficient. This coefficient assumes that the items measure the same dimension and are highly related to each other, so it "can be conceived as the extent to which some measured construct, concept or factor is present in each item. Generally, a group of items that explores a common factor shows a high value of Cronbach's alpha" [20]. The closer it is to the value 1, the greater the internal consistency of the analyzed items, and therefore the greater the reliability of the analyzed tool. The following reliability classification is accepted as valid for this study, depending on the value assumed by Cronbach's Alpha: "Very Good > 0.90/Good 0.80 - 0.90/Acceptable 0.70 > 0.80/Unacceptable < 0.70" [21]. It can be said that, in general, the HERSS in the Directors section has a very strong internal reliability, with a Cronbach's Alpha of 0.92, which qualifies it as a "Very Good" tool to measure network performance through the Directors. In component three (Organization and Management), three questions were withdrawn, which allowed raising its reliability, although an acceptable level could not be achieved ($\alpha = 0.55$). Despite this, it was necessary to keep the rest of the questions for two reasons; Firstly, it has to do with the fact that Cronbach's Alpha did not rise substantially if more items were withdrawn, and secondly, that the questions that remained allow us to obtain important data to understand the performance of that component, data which cannot be access in another way, also contributing to the global reliability of the tool in this section. The component referring to Assignment and Incentives obtained a reliability level of "Acceptable" in the retest, with a Cronbach's Alpha of 0.73. It is highlighted that, in this component, an item is also removed, to give it greater reliability, and it was seen that it had a positive impact on the global reliability of the HERSS. Component one and component two referred to the Healthcare Model, and Governance and Strategy, obtained a reliability level of "Good", with a Cronbach's Alpha of 0.78 and 0.79 respectively, without the need to remove any item. In the section referring to the Health Team, a Cronbach's Alpha of 0.89 was obtained in the retest, which shows

a high reliability to evaluate the performance of the network through the vision of its workers, which places the tool in this section with a rating of "Good". The disaggregated study shows that of the four components, two of them did not reach "Acceptable" levels in the retest, they are the Organization and Management components and the Assignment and Incentives components, but their items contribute to the overall reliability of this section. Component three gave a low reliability value in the field application of the retest ($\alpha = 0.52$), a value much lower than that obtained in the first application of the field test ($\alpha = 0.71$), it was not achieved in this component a level of "Acceptable", even when removing an item from it. On the other hand, component four, even eliminating an item, maintains a Cronbach's alpha value of 0.5, much lower than that obtained in the same component in the first application of the test ($\alpha = 0.75$). It is important to bear in mind that this component has only three items, which could influence the Cronbach's Alpha values. For this same reason, it was decided not to remove any more items from the tool, since the remaining two are important in order to have a reference to this component. Although this component did not achieve acceptable reliability, it contributes to the global reliability of the tool in the health team section, in addition to that it slightly raised the global Cronbach's Alpha. On the other hand, the Healthcare Model, and Governance and Strategy components resulted with values of "Acceptable" and "Good" in the retest of the field test, with Cronbach's Alpha values of 0.73 and 0.8 respectively. The global reliability of the section referring to Users, showed a high value in the application of the retest of the field test, with a level of "Good" given by a Cronbach's Alpha of 0.85. The disaggregated analysis of the components reveals that two of them do not reach acceptable values, those of Governance and Strategy, and of Organization and Management, which yielded Cronbach's Alpha values of 0.52 and 0.66 in the field test, which Although they were superior in the retest, they do not reach the values required for their particular validation, but they do contribute to the overall reliability of the section. It should be noted that the reliability analysis showed that there are no items that could raise Cronbach's Alpha to levels of "Acceptable", so all items are maintained and it is taken into consideration that at the global level this section shows a level from "Good" to measure network performance. Furthermore, the component referring to the Healthcare Model shows a level of "Good" with a Cronbach's Alpha of 0.8; both in the test and in the retest of the field test. This gives the tool a high reliability value to measure the performance of the Healthcare Model component in particular.

At a general level, the HERSS is reliable to measure the performance of the network from the individual perspective of its actors, through its application by section (managers, workers and/or users). Likewise, the reliability test showed that the tool is reliable to measure separately the Model of care, Governance and strategy components and the Financing and incentives component, from the perspective of the network actors. For its part, the Organization and management component showed unreliability values in field tests. The low value of Cronbach's Alpha may be given by being a very heterogeneous component, it is recalled that in the construct defined by PAHO and assumed by the author of this thesis, this macro variable is made up of very dissimilar dimensions such as Integrated Systems Management clinical, administrative and logistical support; Sufficient, competent human resources committed and valued by the network; Integrated information systems linking all members of the network; and Results-based management. Taking this composition into account, the reliability study by dimension was carried out, also giving low values, inferring that the dimensions are also heterogeneous inside. For example, the results-based management dimension is made up of the variables of performance monitoring and evaluation mechanisms; worker compensation mechanisms; and health investigations. For this reason, a factor analysis was carried out on this component in order to analyze whether within it, as currently proposed, there are unobservable "sub components" that explain the current heterogeneity of said component and that allow defining new dimensions in cases corresponds. Factor analysis showed that two factors explain approximately 75% of the total variability. The two resulting factors group items of the different macro variables, for which acceptable Cronbach's alpha values are obtained. The two components group variables of dimensions two, three and four, with Cronbach's alpha values of 0.70 and 0.78. As an example, the component with the Cronbach's Alpha value of 0.78, groups the variables of permanent training programs for workers (HR dimension), unified information system on the demand and use of services in the network (dimension Information systems integrated that links all members of the network), and existence of health research (results-based management dimension). In conclusion, subgroups of variables were found that show internal consistency, but that cannot be assimilated to the existing dimensions, but instead capture other dimensions that are not interpretable for now. For this reason, it will be necessary, in another

study, to deepen the analysis and discuss in particular the Organization and management construct, which today we assume as valid. This would strengthen the reliability of the RISS construct. It should be noted that, although in this component the Cronbach's Alpha value did not reach an acceptable level, this did not affect the result of the global reliability and by sector of the instrument of the instrument designed. In sum, the tool presented Cronbach's Alpha values of 0.92 and 0.85 in the different sections, which shows a very strong internal consistency, qualifying it as a "RELIABLE" tool to measure the overall performance of the network.

Step 6b: Cramer's V statistic

Cronbach's Alpha is an "intra-questionnaire" measure, so in order to analyze the variability of the items "between questionnaires" the instrument was applied to the same population on two occasions in order to study the consistency between the responses of the two surveys. For this, the test/retest technique was used, in which the same instrument was applied on two occasions, to the same sample, with a difference between one application and another of 7 to 10 days. It is important, for the stability analysis, to bear in mind that in this type of test, a learning process occurs consciously or unconsciously in the subjects to whom the test is applied, which can introduce a bias in the retest and that It is visualized in the degree of association between one response and another from the same subject to the same question (Cramer's V value), so it is necessary to assess whether or not this bias affects the stability of the instrument developed over time. Cramer's V coefficient was used to measure the association between test/retest responses, given that they are nominal qualitative variables. This coefficient makes it possible to measure whether there is a relationship between the responses to the same question by the same subject, and the strength or intensity of the same. The value of Cramer's V can range between zero and one ($0 \leq V \geq 1$), a "Cramer's V that is greater than 0.3 is considered in social sciences as a significant correlation" [22]. Other authors state that "although they rarely reach the maximum value. As a practical rule of thumb, it could be said that: 0 - 0.25: little dependency/0.26 - 0.5: medium dependency 0.51 - 0.75: high dependency /> 0.76: very high dependency" [23].

The analysis carried out with Cramer's V statistic for the Executives section shows that 78% of the cases present a significant correlation greater than 0.3; Medium and Very high dependency. Of the total of cases studied, 22.1% show little dependence, which is consistent with a slight change in Cronbach's Alpha, favoring its coefficient. This could be due to the "learning" effect that, in the managers section, has greater force, since the questionnaire exerts a self-training effect on those who have the responsibility of directing the network, which can be seen in the components one and four where Cronbach's alpha had a slight increase that had an impact on the final reliability of this section. In relation to the analysis carried out with the statistician Cramer's V to the Health Team section shows that 77% of the cases present a significant correlation greater than 0.3, this correlation expresses a Medium and Very high dependence. It emerges from the study that 23% show little dependence, but without affecting the general Cronbach's alpha coefficient. This is explained by the increase in the reliability values of components one and two, in which low correlation coefficients of 28.1% and 21.1% are reflected, which would explain a change in Cronbach's Alpha, in this case in a positive way. And on the other hand, components three and four show the opposite effect, the correlation coefficients obtained in them explain a change in the Cronbach's alpha coefficient, its reliability being affected.

Regarding the analysis carried out with the Cramer's V statistic in the Users section, it is observed that 80% of the cases present a significant correlation, of Medium and Very High dependence, higher than the value 0.3. Component two presents a correlation with an index lower than 0.3 of 66.7%, which strongly affects the Cronbach's alpha coefficient, but in a positive way, the same occurs with component three. It should be noted that, although the percentage values are high, the absolute frequencies are relatively low, which could explain the little variability of Cronbach's Alpha at the global level. On the other hand, in this section there were 25 items for which Cramer's V statistic could not be calculated (19 in component one, three in component two and three in component three); When analyzing the raw data obtained in the test/retest, it was detected that 22 of the responses were identical in both instances, so they were analyzed in the same way as in the Directors section. On the other hand, the responses of the three remaining items do not bear any relationship between them and no explanation was found other than that the people interviewed simply changed their responses. Although this situation does not explain why Cramer's V coefficient could not be calculated, it did allow us to see that there is no significant correlation between the responses. In

the same way, it can be observed that two of these questions require memory on the part of the participants in the study and as indicated above, they are older adults, which could lead to the situation raised of change of answers. In this sense, the implemented alternative was oriented to carry out a particular training to the interviewers, in order to try to harmonize the interpretation and clarification of the item. In general, it can be said that the analysis of Cramer's V statistic explained the variations in the reliability of the tool (HERSS) obtained through Cronbach's Alpha coefficient and showed the stability of the tool over time.

Step 7: Criterion validity

In the national background review conducted, no tools were found to evaluate the performance of the Uruguayan health network, with the definitions that the Uruguayan health system. He suggested that it should have the same, which are those defined by PAHO for models based on RISS. Of the tools found at the regional level, the one that is closest to the one developed in this study was the one designed by C. López Puig (Cuba), but it only measures fragmentation through managers and effectors, not including managers. users, in addition to not being integrated with a tracer as in the case of this study, which incorporated an epidemiological factor through the inclusion in the procedure of clinical guidelines for noncommunicable diseases. Perhaps the most relevant thing is that the aforementioned author generated a procedure for the peculiar case of the Cuban health system, very different from the rest of the health systems of the region in general and Uruguay in particular. For the aforementioned reasons, a strategy was designed for said validation, through experts in the field and who also fully knew the operation of the network, its components, the resources and the workers and users of the same. Undoubtedly, those who met these characteristics were the managers of the same, so it was with their discernment that the validation of criteria was proposed. For this, a brief questionnaire was carried out that allowed them to evaluate the concordance between the results that emerged from the application of the field test and what they perceived about the performance of the network. In the work meeting with the managers, the performance evaluation method was explained to them, and they were asked to evaluate the performance of the network from the perspective of all the actors, theirs, the workers and the users. To do this, they were asked to use the scale designed for this purpose. These data were then analyzed with those obtained in the field test. The results obtained through the strategy developed to carry out the criterion validation showed that the mean of agreement between what the managers perceived and the data obtained by the HERSS in relation to the performance of the network was of "Much" correspondence. This could presuppose a strength in the criteria used to develop the tool. By disaggregating the tool, a little more, it was seen that it was evaluated in the section of Directors with three in all components and by all evaluators. In the health team section, there was also a correlation of "Much", between the perception of the managers and the data obtained through the HERSS field test, with a mean of 2.57, a maximum of three and a minimum of two. For its part, the user section had a correlation of "Moderately" between what was perceived by managers about the performance of the network, and the performance obtained by the HERSS field application. In this case, the values obtained were two in all the components and by all the evaluators. In general, it can be said that, although the method used for the validation of criteria was not the conventional one, the defined strategy allowed to appreciate a very strong correlation between what was perceived by the network management, with their experiences, experiences and knowledge of the itself, and the results obtained in the application of the HERSS field test (Directors Section [24], Health Equipment Section [25] and Users section [26]).

Conclusion

The fragmentation of the Uruguayan health system and its difficulties in guaranteeing universal access to health services, particularly for the most vulnerable population groups, justify the need for integrated work in health service networks and the design of valid and reliable tools to evaluate their performance. The main difficulty identified in the Uruguayan health system, which referred to the lack of valid procedures to evaluate the performance of comprehensive health networks, was limited in this research, in which the process of elaboration and validation of the Procedure [27] was designed to it. The essential theoretical and methodological foundations were identified that allowed the RISS construct to be considered valid for this study according to the concepts developed in its definition by PAHO, which were taken into account to design a Procedure that evaluates the performance of integrated health networks in the context of Uruguay. It

was possible to design a Procedure that allows evaluating the performance of integrated public health networks of the first level of care through a tracer disease, validated for the socio-sanitary context of Uruguay, under the paradigm of quality assurance.

Bibliography

1. Sbárbaro Romero M. "Construction and validation of a tool to evaluate the performance of Integrated Health Services Networks". *Rev. Urug. Sick* 11.1 (2016): 83-107.
2. International Council of Nurses. CIE Code of Ethics for the Nursing Profession (2014).
3. Uruguay. Executive power. Research in humans (2008).
4. Pan American Health Organization. Integrated Health Services Networks: Concepts, Policy Options, and Roadmap for Implementation in the Americas (2010): 35.
5. Vázquez Navarrete ML and Vargas Lorenzo I. "Integrated health organizations: a case study. Barcelona: Consorci Hospitalari de Catalunya". In: Pan American Health Organization. Integrated Health Services Networks: concepts, policy options, and a roadmap for their implementation in the Americas (2010): 44.
6. Uruguay. Administration of State Health Services. Ministry of Public Health. Clinical practice guidelines for arterial hypertension and type 2 diabetes mellitus for the first level of care: manual of recommendations to implement groups of obese, diabetic and hypertensive patients in the ASSE First Level Care Network. Montevideo: Edition. Prontográfica (2010).
7. World Health Organization. Global report on diabetes (2016): 26.
8. Pan American Health Organization. Health issues: the number of people with diabetes in the Americas has tripled since (1980).
9. Uruguay. Ministry of Public Health. Noncommunicable disease prevention program. Second National Survey of Risk Factors for Chronic Noncommunicable Diseases (2014): 55.
10. National Resource Fund. Treatment of diabetes mellitus with long-acting insulin analogues (2013): 6.
11. Uruguay. Ministry of Public Health. Noncommunicable disease prevention program. Second National Survey of Risk Factors for Chronic Noncommunicable Diseases. Op. Cit 53.
12. Vega Romero R., *et al.* "Rapid evaluation of the performance of the public network of health services in Suba in achieving the attributes of Primary Health Care – PHC". *Rev Management and Health Policies* 8.16 (2009): 165-190.
13. López Puig P., *et al.* "Validation of a methodological procedure to evaluate integration level in a health services network". *Rev. Health Quintana Roo* 26 (2013): 25-34.
14. Ibid.
15. López Puig P., *et al.* "Integrated networks of health services from the Cuban reality". *Revista Cubana de Salud Pública* 35.4 (2009): 34-43.
16. Hernández Sampieri R., *et al.* "Collection of quantitative data". In his: Research Methodology". 6th edition. Mexico: Mc Graw-Hill Interamericana (2016): 196-268.
17. López Puig P. "Methodological procedure to characterize the integration in health service networks of the first level of care (2013): 68.

18. Hernández Sampieri R., *et al.* "Sample selection". In his: Research Methodology. Op. Cit 235-272.

19. Capote Mir R. "Validation of the instrument". In his: Statistical method. Havana; In press (2000): 110-143.

20. Oviedo HC and Campo-Arias A. "Approach to the use of Cronbach's Alpha coefficient". *La Revista Colombiana de Psiquiatría* 34.4 (2005): 572-580.

21. Capote Mir R. "Validation of the instrument. Op. Cit.

22. Mill LM. "Association of nominal and ordinal qualitative variables (2004).

23. De Arce R. "Introduction to econometrics. Contingency tables (Cross-Tab): looking for dependency relationships between categorical variables (2005).

24. Sbárbaro M. "Tool to Evaluate Health Services Networks (HERSS) Directors Section (2017).

25. Sbárbaro M. "Tool to Evaluate Health Services Networks (HERSS) Health Team Section (2017).

26. Sbárbaro M. "Tool to Evaluate Health Service Networks (HERSS) Users Section (2017).

27. Sbárbaro M. "Procedure to evaluate the performance of integrated networks of public health services (2017).

Volume 3 Issue 3 March 2020