






Why don't doctors use early insulinization therapy in patients with diabetes mellitus type 2?: A qualitative approach in a Mexican city

¿Por qué los médicos no utilizan en forma temprana la insulinización en pacientes con diabetes mellitus tipo 2?: Un estudio cualitativo en una ciudad mexicana


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ABSTRACT Early insulinization therapy is regarded as an efficient aid to improve long term control and quality of life in patients with diabetes mellitus type 2 (DM2). Nevertheless, both patients and medical staff confront barriers in using this therapeutic tool. This study employs a qualitative approach to explore the barriers to early insulinization among medical staff from the public sector in the city of Xalapa, Veracruz, México. Between 2015 and 2016, in-depth interviews were conducted with general and specialist physicians offering primary health care to patients with DM2. The transcribed interviews were analyzed to extract and organize categories and subcategories of barriers among medical staff. These barriers were then grouped into three categories and exemplified with interview excerpts: barriers coming from the medical staff itself, barriers emerging from the doctor-patient interaction, and institutional barriers. Uses for the classification obtained are discussed, as are some of the solutions proposed by study participants.

KEY WORDS Diabetes Mellitus Type 2; Hospital Medical Staff; Therapeutics; Mexico.

RESUMEN La terapia de insulinización temprana ha demostrado ser un auxilio eficaz para mejorar el control a largo plazo y la calidad de vida de pacientes con diabetes mellitus tipo 2. Sin embargo, tanto los pacientes como los médicos presentan barreras al uso de esta alternativa terapéutica. El presente estudio utiliza un abordaje cualitativo para explorar las barreras a la insulinización temprana que tiene el personal médico del sector público en la ciudad de Xalapa, Veracruz, México. Entre los años 2015 y 2016, se realizaron entrevistas en profundidad a médicos generales y especialistas que brindaban atención primaria a pacientes con diabetes mellitus tipo 2. Las entrevistas transcritas fueron analizadas para extraer y esquematizar las categorías y subcategorías de las barreras del personal de salud, las cuales se agruparon en tres categorías que fueron ejemplificadas con extractos del discurso de los participantes: barreras propias del personal médico, barreras que surgen en la relación médico-paciente, y obstáculos institucionales. Se discuten los posibles usos del esquema obtenido, así como algunas propuestas de solución generadas por los participantes del estudio.

PALABRAS CLAVES Diabetes Mellitus Tipo 2; Cuerpo Médico de Hospitales; Terapéutica; México.

INTRODUCTION

Diabetes mellitus type 2 (DM2) is a chronic metabolic disorder characterized by high and persistent concentrations of glucose in the blood as a consequence of deficiencies or alterations in the action of insulin in the body.⁽¹⁾ It is a multiorgan and plurimetabolic disease, which is characterized by either a low response of the body tissues to the insulin secreted by the pancreas, or by the inability of the pancreas to secrete the insulin necessary for glucose absorption. Patients suffering from this disease may be placed in a continuum in which either insulin resistance may predominate, with relatively little deficiency in its secretion or, otherwise, secretion deficiency may prevail, with some degree of insulin resistance.⁽²⁾ So far, no effective treatment has been found for this disease, and its prevalence is increasing worldwide. In 2000 there were 171 million cases in the world, and this number has increased to 422 million by 2014.^(3,4)

DM2 is a disease that has multiple causes. Unless adequately treated, it may produce serious health complications such as heart attacks, blindness, renal failure, amputation of the lower limbs and premature death.⁽⁵⁾ The physical, psychological, economic and social consequences produced by this disease are on the increase and its comorbidities include microvascular damage, with its associated complications (diabetic foot, retinopathy, kidney damage, cardiac ischemia and heart attacks).⁽⁶⁾

In Mexico, DM2 has reached alarming proportions, becoming a public health issue. It is currently the leading cause of hospitalization, and the mortality rate from diabetes has increased from 43.3% to 53.2% per 100,000 inhabitants between 1998 and 2002.⁽⁷⁾ According to the 2012 National Health and Nutrition Survey (ENSANUT) [*Encuesta Nacional en Salud y Nutrición*], the proportion of adults with a medical diagnosis of DM2 was 9.2%, which shows a significant increase compared to the 5.8% reported by ENSANUT 2000 and 7% by ENSANUT 2006.⁽⁵⁾ These

increases have resulted in high costs for the health system, losses due to disability, and deterioration of the patients' quality of life.^(6,7,8) Since 1990, DM2 has been included among the leading causes of death in Mexico, and currently it is the leading cause of death in the country.⁽⁹⁾

At a regional level, the state of Veracruz is the third most populated territory in Mexico,⁽¹⁰⁾ and, according to data from ENSANUT 2012, it also ranks third in the prevalence of DM2, with 10.7% of adults having been diagnosed with this disease.⁽⁵⁾ In the state of Veracruz, 27,824 new cases of diabetes were reported in 2012, Xalapa being one of the three districts with the highest number of cases.

Due to the chronic nature of this disease and the absence of a definitive cure, the treatment of diabetes is very complex and multifactorial. Treatment goals are clear and require patients to comply with therapeutic measures based on strict criteria.⁽¹¹⁾ The achievement of these goals requires dietary management supported by exercise, self-monitoring of blood glucose (especially in patients receiving insulin), and the use of oral antidiabetic drugs or insulin.^(11,12,13) The guidelines of the American Diabetes Association (ADA), the European Association for the Study of Diabetes (EASD), the Latin American Diabetes Association (ALAD) [*Asociación Latinoamericana de Diabetes*], and the National Institute for Health and Care Excellence (NICE) recommend that oral antidiabetic drugs should be used when patients exhibit stable clinical conditions, their pancreatic function is preserved and metabolic control can be carried out through immune sensitizers and conservators of the pancreatic function, without the risk of moderate to severe decompensation. The first choice of oral antidiabetic drugs is metformin, and the second choice dipeptidyl peptidase-4 (DPP-4) inhibitors or glitazones in various combinations. When these treatments fail or cannot be tolerated by the patient, insulin therapy should be started.^(11,14,15,16)

In addition to the treatments already mentioned, there has been an agreement in the literature that suggests that the early use

of insulin (before or concurrently with oral antidiabetic drugs) favors long-term control of DM2,^(17,18,19,20) although it is not the therapeutic choice in accordance with modern guidelines, except in specific cases and exceptions.⁽¹⁵⁾ It has been proved that insulin therapy is the most effective treatment to decrease glycosylated hemoglobin levels, and it is considered safe and effective for diabetic patients, as long as the appropriate treatment regimen is followed.^(17,21,22)

Despite this evidence, the use of insulin is usually postponed until 10 to 15 years after the diagnosis of DM2.⁽²³⁾ This is because starting insulin therapy (insulinization) is a very complex issue, and involves multiple factors arising from the patients, physicians, and the health system itself.⁽²⁴⁾ When these factors prove to be an obstacle to the use of insulin therapy and limit the adherence to this type of therapy, they constitute barriers to insulinization.⁽²⁵⁾ There are diverse research studies documenting a large number of obstacles and barriers to insulin use, and most studies, especially in Mexico and Latin America, have focused on patients. The barriers created by patients include situations of rejection and unwillingness to use insulin,^(26,27) anxiety,⁽²⁵⁾ lack of knowledge and negative feelings associated with its use,^(28,29) the attribution of physical symptoms such as weight gain or blindness,⁽³⁰⁾ the use of alternative therapies, or the opinion of their families.^(31,32)

As far as health care providers are concerned, the problem has been less studied. However, it has been documented that, although there are guidelines and treatment models for the diabetic patient, as well as ample scientific evidence of the benefits of early insulin therapy, physicians are reluctant to prescribe it.⁽³³⁾ Physicians' beliefs and attitudes, some of which are similar to those that patients have, delay the initiation of insulin therapy. Some of the barriers to insulinization which have been reported by health care providers are: the perception of the low efficacy of insulin, the fear that patients may develop hypoglycemia, weight gain and associated cardiovascular risks, the therapeutic inertia of health care practitioners, the

fear that the patient may not comply with the treatment, the natural history of the disease, and problems associated with the health system, which may prevent the patient and health care providers from achieving their goals.^(33,34,35)

In the health care model prevailing in Mexico since 2015, the willingness of physicians to use insulin has been crucial, given that in many cases they are the ones who propose its use, or determine whether the patient should use it or not. In Mexico, diabetes therapy is based on the Official Mexican Standards NOM-015-SSA2-2010 for the prevention, control and treatment of diabetes mellitus [*Norma Oficial Mexicana NOM-015-SSA2-2010 para la prevención, el control y el tratamiento de la diabetes mellitus*], and on the Comprehensive Model for Patient Treatment [*Modelo Integral de Atención al Paciente*].^(36,37) Both documents explicitly describe physicians' responsibility for the treatment, prevention and control of diabetes, and when and how to use pharmacological and non-pharmacological strategies, including insulin therapy. However, with the exception of the review by Lerman⁽³³⁾ and the work by Ávalos-García et al.,⁽³⁵⁾ we have not found any studies in Mexico on the barriers that the medical staff may create to early insulinization therapy. This lack of information has serious consequences since, according to the 2012 National Health Survey, only 13% of patients diagnosed with DM2 receive insulin therapy, either alone or in combination with oral hypoglycemic agents.⁽³⁸⁾

Considering the advantages of early insulinization and the central role that physicians play in the treatment and education of the diabetic patient, knowledge of the barriers that health care providers may contribute to insulin therapy may be useful to create strategies to surmount them, and to appropriately support DM2 patients' use of a potentially valuable therapeutic tool. Due to the foregoing and the lack of information on the barriers to early insulinization therapy created by the medical staff in Mexico, including in cities with high prevalence of DM2, we have carried out a qualitative exploratory

study not only to generate knowledge on these barriers, but also in an attempt to provide a classification of these obstacles that may provide a solution to the problems they pose. Additionally, the participating physicians generated ideas and possible solution strategies for some of the barriers found in this study.

METHODOLOGY

This study was qualitative and exploratory in nature. The contents of the in-depth interviews conducted with primary care physicians that had experience with DM2 patients in the city of Xalapa, state of Veracruz, Mexico, were analyzed. In the public sector of the Mexican health system, primary care providers are responsible for providing initial care to patients with conditions that do not require specialized attention, and they are the ones who adopt a preventive approach and initial control of patients suffering from DM2. These types of providers are usually general practitioners or family physicians. The management of patients who are decompensated, with comorbidities or associated complications, corresponds to secondary care physicians, including internists or diabetologists.⁽³⁶⁾

Participants were recruited informally from different health care institutions in the state of Veracruz, through primary or secondary referrals. The recruited physicians provide medical care in the public sector, which is funded by the federal and state governments.

After making the initial contact, the study purpose was explained to the participants and they were provided with an informed consent form. If they agreed to participate, a meeting place with adequate conditions for the recording of the interviews was agreed upon, as well as a convenient time for both researchers and participants. Eighteen recordings were obtained, ten of which corresponded to general practitioners, six to family physicians, and two to internists. All of them had a minimum of three years of experience in the care of diabetic patients and

were active in the care of such patients up to the time of the interview. Three of them combined patient care with an administrative position in the institution where they worked.

In order to obtain comprehensive, detailed, contextualized and useful information for the understanding of the research topic, in-depth interviews were conducted with these participants. A particular effort was made to establish an adequate rapport with them and a climate of trust from the beginning of the interviews. Under these conditions, the interviews made it possible for the participants to express their sincere opinions, and to establish an adequate exchange that would allow their beliefs, attitudes and motivations with respect to the subject matter in question to be explored in depth.⁽³⁹⁾

The interviews sought to obtain a description of the barriers that prevent physicians from considering early insulin therapy for patients with DM2. The interview guide that was used included four questions:

1. Describe briefly your experience in the treatment, management, and follow-up of patients suffering from diabetes mellitus type 2.
2. What are the main challenges and obstacles that a patient with diabetes mellitus type 2 has to face?
3. What are the barriers to insulin therapy created by patients with diabetes mellitus type 2?
4. What are the barriers created by physicians to the use of insulin therapy for patients with diabetes mellitus type 2?

Although no prior classification of these barriers was made, previous studies found in the literature were taken into account in order to propose a relevant scheme of analysis (Figure 1). In order to obtain a picture that was as complete as possible, information was collected beyond the saturation point, in the expectation that new information would be obtained in successive interviews. Saturation was evident after eight interviews, and they varied only in accessory and very specific details regarding the personal

situation of the participants. The sufficiency of the information was established by common agreement among the members of the research group.⁽⁴⁰⁾

The interviews lasted between 30 and 60 minutes. They were transcribed by four members of the research team, and these four versions were integrated into a common version that was used for analysis. The coding of the information was carried out manually by each of the team members and, once completed, meetings were held to agree on

the categories found. The initial categories in which the data was coded were: *barriers specific to medical staff*, *barriers arising from the doctor-patient relationship*, and *institutional barriers*. During the joint analysis and discussion of these categories, subcategories derived from the former emerged.

Finally, when the interviews were analyzed, proposals made by the medical staff themselves were found in order to confront these problems. These proposals will be developed and discussed in a later section.

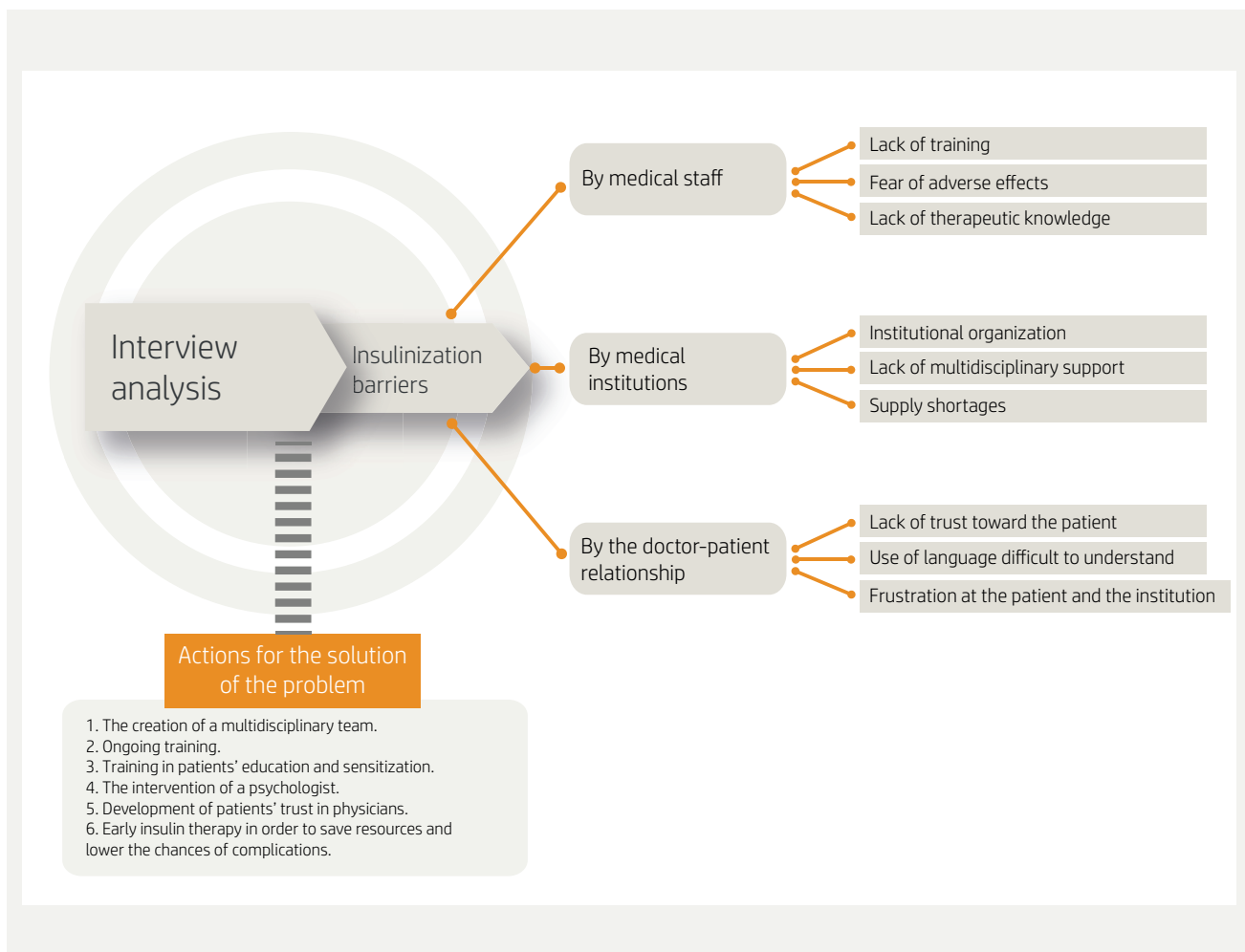


Figure 1. Interview analysis results mind map based on the transcriptions of the interviews with medical staff who treat patients suffering from diabetes mellitus type 2 in the city of Xalapa, state of Veracruz, Mexico. 2015 and 2016.

Source: Own elaboration.

Analysis of the information obtained

The analysis was carried out searching for representative excerpts of the categories that were proposed after the review of the bibliography. Similarly, by means of the constant comparative method, consistent and representative material was searched for in order to propose new categories and subcategories.^(41,42) The categories and subcategories found, along with their relationships, were represented in a schematic fashion to facilitate their analysis and interpretation.

Ethical aspects

The confidentiality of data was safeguarded by restricting access to the recordings to anyone who was not a member of the research team. The names of the participants and anyone else involved in the interviews were omitted from the questions, transcriptions, and any printed records related to this research. The study was approved by the Research and Ethics Committee [Comité de Investigación y Ética] of the Institute of Psychological Research [Instituto de Investigaciones Psicológicas] from Universidad Veracruzana, as stated in a resolution dated September 4th, 2015.

RESULTS

The material obtained through the analysis and transcription of the interviews showed a great convergence. After the third interview, this material began to evidence repetitions and, by the eighth interview, the saturation of all the subcategories had begun to be evident.

The initial scheme that included three categories was complemented, since the initial categories were in turn divided into subcategories with strong common links. The categories will be discussed below, along with their representative subcategories and interview excerpts.

Barriers specific to medical staff

This category includes barriers that are attributable to physicians' own situations, knowledge, and beliefs, regardless of their therapeutic relationship with a particular patient. In this research study we have found: *lack of knowledge regarding the value of early insulinization as a therapeutic option, lack of training in patient care, and fear of possible adverse effects for the patient.*

Lack of knowledge regarding the value of early insulinization as a therapeutic option

Some physicians, especially non-specialists, consider that they do not have the necessary knowledge to use early insulinization with patients:

...Personally, I don't know all these insulins, but I know that at a given time it is appropriate to make a certain combination ... (General practitioner, woman)

...Many doctors are not familiar with insulin, you see? There are even some who fail to calculate insulin doses, their combinations; that's why they prefer patients to be seen by other doctors ... (General practitioner, man)

In general, family physicians and internists considered that they knew how to handle early insulin regimes, but they stated that lack of knowledge about these regimes was a major obstacle for other colleagues to prescribe insulin to their patients.

...Doctors, especially doctors who have been working for a long time, are no longer so eager to continue receiving training, or to keep on reading about the subject, and they continue to use treatments and therapeutic methods that they were taught when they were at university. So, all of this delays the start of insulin therapy... (Internist, woman)

This barrier has been reported by other authors, and in those research studies, non-specialist physicians acknowledge the fact that they doubt their ability to manage an early insulinization regimen, and many of them prefer to refer the patient to secondary care attention. On the other hand, specialized physicians consider that they can use an early insulin regimen which can be beneficial for their patients.^(33,35,43) This barrier constitutes in itself an impediment for patients to receive this therapeutic option, since in many communities there are no secondary care specialists, so patients will not be referred to these services.

Lack of training in patient care

Early insulinization requires the patient to learn everything related to the management, care, and dosage of insulin administration and to overcome foreseeable barriers that they may encounter in this type of therapy. Medical staff should be trained to educate the patient and help them overcome their barriers to insulinization. However, general practitioners and more than half of the specialists consider that they have never learned to do this, and that the training that they have received outside their formal studies is not adequate:

...The doctor is definitely not qualified to... explain to a patient, to teach him. We are accustomed to or we are... [he hesitates when choosing his words] taught that we should cure them, and not prevent them. This is one of our biggest mistakes... (General practitioner, man)

...I must admit that I personally don't know how to treat a patient who tells me he's afraid of pricks. I can inform them that they aren't going to go blind, or that they can learn to handle doses so as not to have low blood glucose, but I can't fight their fears... um... abstract fears, I would say... (Internist, woman)

An important aspect is that lack of training in the comprehensive management of diabetic patients has not been adequately addressed in the literature when it comes to the barriers to insulinization created by medical staff. The systemic family approach and the comprehensive care model include the support of the patient's family and the rest of the health care staff in the treatment and management of the diabetic patient. However, the documents consulted do not indicate clearly what strategies physicians can use to receive training in those aspects of patient management that they do not handle. This aspect concerning patients' education is so important that it requires further study.

Fear of possible adverse effects for the patient

Almost all participants mentioned this fear as a deterrent to starting insulinization with their patients, either at an early stage or not. In general, the main fears reported include the occurrence of episodes of hypoglycemia, heart conditions and, in the case of some general practitioners, weight gain:

...With insulin you can cause hypoglycemia at any time or, if the dosage isn't going well, this will produce a constant state of hyperglycemia in the patient, and many of them do not get accustomed ... (General practitioner, man)

...We also have the risk of the patient gaining weight and being prone to decompensate more quickly, or having heart problems... (General practitioner, woman)

These fears have been documented in various papers,^(33,34,44,45) and they seem to prevail despite the existence of guidelines and consensus on the use of insulin, and the way to prevent complications in the treatment. It is remarkable that specialized physicians, especially family physicians, emphasized that hypoglycemia, despite being the most

dangerous and best documented adverse effect in the bibliography, can be either avoided or reduced if physicians take enough time to educate patients:

...The risk of hypoglycaemia exists as a complication of insulin use. That's why, when we start an insulinization therapy, we must anticipate that we will be seeing that patient more frequently, even weekly, until we find the right dosage. Also... it is explained to them that this is when nutrition has a lot to do, because to use insulin... well, they need to have an adequate diet, to know that they have to have their snacks, and the moment when they are going to apply their insulin... (Internist, woman)

Barriers arising from the physician-patient relationship

Another group of barriers arise specifically from the physician's relationship with the patient. These types of barriers seem to depend greatly on the way in which both perceive and communicate with each other. In this category, the following subcategories have been included: *distrust toward the patient, the use of language that the patient cannot understand, and the frustration that is generated during their relationship.*

Distrust towards the patient

There seems to be a consensus among physicians that the patient will not understand or implement their recommendations, and may even deliberately mislead the physician about how he or she is handling insulin therapy:

...It has happened to me several times that patients seem to have already understood, so I ask them to repeat the

indications and they just can't. I already assume that I won't be understood, and that I'll have to explain the treatment many times to my new patients. (General practitioner, woman)

...I've found patients who swear they are carrying out their treatment until one day, when they have a diabetic coma or we check their glycosylated hemoglobin levels, we discover that they haven't been following their treatment for months... (Internist, man)

According to what has been found in the field literature, one of the possible consequences of this mistrust is that it generates a negative predisposition in the doctor towards the patient, which translates into constant criticism and scolding, and creates a hierarchical relationship in which the physician is right and the patient must follow their indications without questioning them.⁽³⁵⁾ This creates a paradoxical situation: on the one hand, the bibliography emphasizes the need for the physician to make the patient take responsibility for the control of their illness and for the adherence to the physician's indications.^(35,44) On the other hand, with their attitude, physicians create an asymmetrical situation, rendering the patient a passive recipient of their indications. Moreover, and above all, doctors criticize patients for this:

Institutions, doctors and even patients must know more about the... the disease, don't they? The fact is that they themselves don't demand this explanation from doctors. They are satisfied with what they are told, with the fact that paracetamol is going to take away their pain, insulin is going to lower their sugar, but they don't ask any more questions. So that also minimizes the importance that doctors give to their patients. (General practitioner, man)

The use of a language that patients cannot understand

A large number of general practitioners, and even some specialists, highlighted the fact that sometimes it was difficult for them to make themselves understood by patients, to use a language in which patients could understand their indications:

...You never learn to lower the level of what you are saying... um... for another type of population to understand...
(General practitioner, man)

...This is a matter of communication. It's something that has also been emphasized in recent years when it comes to the doctor-patient relationship and proper communication, both verbally, what I may be saying with words, and also what I can be expressing with my movements, my gestures, with my tone of voice. Because I told you from the beginning, let's reach an agreement...
(Family physician, woman)

Naturally, it is possible to consider that this barrier is yet another aspect evidencing physicians' lack of training and, therefore, a problem attributable to them. However, several specialists said that even if their training allowed them to have the tools or the appropriate language to communicate with the majority of the patients, they would not be exempt from having problems communicating with some of them.

...After 18 years of practice, it's no longer so frequent, but I do encounter patients who don't understand verbal communication. I have to look for analogies, ways of saying things... change the order of words... And even in doing so, I'm not always sure that I've been understood...
(Internist, woman)

This issue is particularly important, since when there is no effective communication, physicians cannot guarantee that the patient

will understand and follow their indications as necessary. It is common for physicians to use terminology and language that is not accessible to the patient, thus making it difficult for the latter to understand their indications. Communication seems to be altered when the physician tries to give certain indications in a language that is not very understandable for the patient, and this does not allow the physician-patient relationship to be jointly constructed in order for the treatment to be carried out. This aspect concerning communication has been widely documented in other situations and in relation to other diseases,⁽⁴⁵⁾ but to a lesser extent in the context of insulin therapy.⁽³⁵⁾ Therefore, given the potential risk of hypoglycemic events, this issue should be addressed in depth when investigating the context of insulinization therapies.

Frustration

More than a half of the participants mentioned the frustration originating in the physician-patient relationship as a barrier to insulin therapy, whether administered at an earlier or later stage. Patients' apparent lack of comprehension may be a factor that prevents physicians from considering the use of insulin therapy:

Definitely, you need to have tolerance to high frustration, and bear in mind that not all the patients are doctors, and not everyone will understand from the beginning what they have to do. Often, they won't learn what they have to do even when you've explained it to them five times. So, you have to repeat the same at every consultation, and ask them if they have understood at every consultation, even in the case of patients that have been on insulin for many years. (General practitioner, woman)

Apart from the work of Ávalos-García et al.,⁽³⁵⁾ we have not found any precedents of this feeling of frustration and its connection with patients' care in the literature consulted.

However, there are precedents related to the physician's attitude toward the patient that seem to refer to emotions and situations that produce frustration, although this topic is not overtly mentioned. For instance, it has been said that physicians tend to scold and criticize their patients, and to create a hierarchical relationship, in which the physician is right and the patient must follow indications without questioning them. However, these same physicians are the ones that complain about their patients' lack of involvement in the management of their disease.⁽³⁵⁾ On the other hand, there are physicians that refer to insulin therapy as a punishment or as a last resort to be used in the case the patient does not abide by their indications.^(22,33,44)

The distrust that physicians manifest towards their patients, and the communication problems existing in their relationship are an issue that, according to Barsky's perspective⁽⁴⁶⁾, corresponds to what the author calls "the paradox of health". This paradox consists of the fact that, in the health care models in the modern world, there are situations that minimize the importance of the physician-patient relationship in the practice of medicine. It can be considered that this phenomenon increases even more the deterioration in the health and well-being perceived by the population, in spite of the evident scientific progress made in the medical field. Moreover, it is possible that physicians may feel less satisfied with their work, which would cause or increase their feeling of frustration. All these factors may influence one another, given the fact that physicians' frustration may increase their resentment and distrust toward their patients, and this, in turn, may block the channels of communication between them. As a consequence, some therapeutic alternatives, such as early insulin therapy, may not be discussed or may not be even considered by physicians. This is a complex matter, which makes it worthwhile to unravel the implicit logic behind the physician-patient communication in order to portray it as a social construct, that is, with strong associations between the social arrangements and the living conditions of both social actors.⁽⁴⁷⁾

The physician-patient relationship determines the initiation and acceptance of a treatment in the case of people suffering from chronic degenerative diseases such as DM2.⁽⁴⁸⁾ Diabetic patients prefer a type of relationship in which their physicians listen to them, feel empathy for their situation, understand the problems that the therapy may entail for them, encourage them, and adapt their recommendations to their individual life circumstances and emotions.⁽⁴⁹⁾ Accordingly, the results of this study underline the need to conduct further research regarding the physician-patient relationship, in order to improve the understanding of the role that human behavior plays in the health-disease process and in the improvement of medical practice.⁽⁵⁰⁾

Institutional barriers

The staff interviewed unanimously stated that there are several obstacles at an institutional level to carry out an insulin therapy. For example, the excessive number of consultations, the little time assigned to see each patient, and the difficulties to find adequate facilities are some of the obstacles that have already been reported by another research study carried out in Mexico.⁽³⁵⁾ Particularly in the state of Veracruz, and while this study was being concluded, there were shortages, not only of insulin, but also of oral antidiabetic drugs and the basic supplies necessary for the treatment and diagnosis of diabetes. These situations make it difficult to provide adequate care or to educate the diabetic patient, especially in complex insulin therapy schedules.

Within this category, there are three important groups of barriers related to one another: *institutional organization*, *supply shortage*, and *lack of multidisciplinary support*.

Institutional organization

Professionals report that there are obstacles in the functioning of institutions that hinder

the insulinization of diabetic patients. More precisely, there are institutional policies that prioritize the use of other types of therapies over insulin therapy. The great number of patients that physicians have to see and the hierarchical structure of the health system prevent physicians from proposing early insulinization as well as the relevant dosage adjustments as an option:

...Though I have to admit that the first therapy that should be given to a patient is insulin, institutions prefer to administer insulin only when the other two therapies have failed... (General practitioner, man)

When it comes to institutions, sometimes it's a little bit difficult. We have three thousand diabetic patients in the unit and patients continue to be diagnosed every day. There are about 30 or more new diagnoses per week, and this is an understatement. We work two shifts plus weekends, which amounts to many new diabetes diagnoses. So, that will make a total of more than six thousand diabetic patients in the unit at the beginning of this year. Therefore, using this therapy for all of them is a little bit complex, due to the number of employees we have. (Family physician, woman)

The excessive number of consultations, the little time assigned to see each patient, and the difficulties to find adequate facilities have already been reported by at least another study carried out in Mexico.⁽³⁵⁾

Lack of multidisciplinary support

Regardless of their level of specialization, physicians think that there are situations involving patients which they cannot handle by themselves, and that they would benefit substantially from the intervention of specialists from other disciplines in the comprehensive patient management. However, multidisciplinary support is not usually available at

their workplace and, if available, it is only for a limited number of patients:

...in the Secretariat of Health, there are two systems: the UNEME and the UVISA, the Unit for a Healthy Life, aimed at patients having no complications whatsoever [...] a very low percentage of the patients could join this program because there were too many requirements to meet. To begin with, a patient's diagnosis had to be recent, with a maximum of five years, without having had any complications whatsoever during that period. In other words, if the patient had been diagnosed with diabetes a year before, but they had already been diagnosed with nephropathy, they were out of the program... (General practitioner, man)

The absence of multidisciplinary teams is considered a barrier that does not receive enough institutional support.⁽³⁵⁾ There are groups within institutions, such as the Diabetic Patient Care Program DiabetIMSS [*Programa de Atención al Paciente Diabético*], the Unit of Medical Specializations (UNEME) [*Unidad de Especialidades Médicas*], and the Unit for a Healthy Life (UVISA) [*Unidad de Vida Saludable*], which provide multidisciplinary support for diabetic patients. But this support is clearly insufficient considering the existing demand. On the other hand, in many cases, multidisciplinary teams are not complete and some important elements are missing, such as psychologists, which may be indispensable to overcome some of the barriers that patients encounter regarding insulin therapy.⁽²⁵⁾ Although the people interviewed do not explicitly state that this is a barrier that prevents them from recommending insulin therapy, they are aware that patients' education could continue outside the physician's office through the intervention of multidisciplinary teams; and with their support, it would be possible to teach more patients how to use insulin properly, so that it can be regarded as an early therapeutic option.

Shortage of basic supplies for insulin therapy

This sensitive issue is generalized throughout Mexico, as shown by the research studies consulted.^(33,35) However, as mentioned above, the financial situation of both the state of Veracruz and Mexico, as a country, has led to supply shortages that aggravated during the period in which this study was being concluded. That caused serious difficulties to maintain insulin therapies given the fact that, if institutions were unable to provide the necessary supplies, many patients were not in the economic position to meet such costs:

...I didn't even think about switching patients to insulin because we didn't have a fridge for it. We had to move from community to community, and it was impossible for me to carry the insulin for the patients. So, this made it complicated for me to switch from one therapy to another, didn't it? ... (General practitioner, man)

...as regards institutions, a lot of medication formerly provided by state insurance has now become unavailable to us, not only antidiabetic drugs and insulin. So that limits our course of action. If I only have at my disposal NPH, then I can only prescribe NPH. I can't do more than that. And yes, that definitely has a great impact. It may not have an impact on our choice, but rather the adequate control of patients. Because if I convince my patients of using NPH, and they require other types of insulin, but they are not available, I will have no alternative, will I? (Family physician, woman)

Finally, the obstacles encountered may be schematized through the graphic shown in Figure 2. The proposed scheme, showing the organization of the barriers, may be regarded as a contribution of this study, not so much as a classifying or explanatory scheme, but rather due to the heuristic value it may

have to guide interventions, given the fact that the characterization of these obstacles may contribute to develop a solution or mitigate the problem. Specific barriers (in dotted-line boxes) were grouped in accordance with their origin. Barriers may be divided into those originating from the personal situation of physicians, barriers due to institutional organization, and barriers arising from the physician-patient relationship (middle boxes). All these issues are particular aspects derived from a more general construct, barriers to insulin therapy.

The barriers specific to the medical staff may be overcome by promoting physician-centered educational programs and therapeutic interventions. Conversely, the institutional obstacles require funding, a reorganization of institutions or the creation of multidisciplinary teams. Barriers arising from the physician-patient relationship ask for an educational approach for both parties. In the case of physicians, this approach should be aimed at providing them with strategies that enable them to use a language comprehensible to the patient, to develop empathy or communicative skills; and, in the case of patients, workshops should be designed to help them adopt strategies to comprehend the disease, the therapy, or the physician's indications.

Possible solutions suggested by the medical staff

An unexpected but important result was that, during the course of the interviews, almost half of the physicians mentioned possible solutions for some of these barriers. Particularly, the proposed solutions were the following: 1) the creation of multidisciplinary teams to treat patients, 2) ongoing training for the staff, including training in the education and sensitization of the patient, 3) the presence of a psychologist in the team, 4) the development of patients' trust in their physicians, and 5) the use of early insulin therapy as a therapeutic alternative for patients.

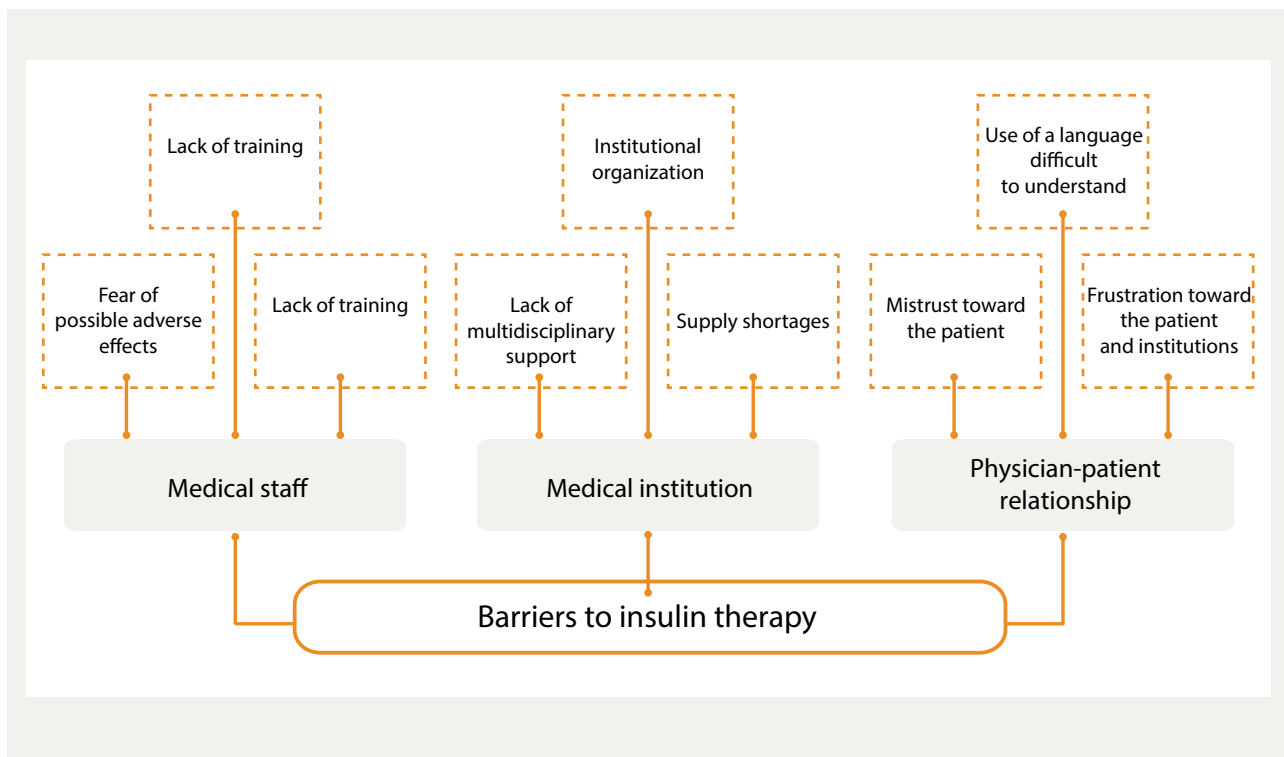


Figure 2. Descriptive scheme of the barriers to insulin therapy, as reported by the study participants. City of Xalapa, Veracruz, Mexico, 2015 and 2016.

Source: Own elaboration.

Building multidisciplinary teams to treat patients

Physicians' experience or the literature that they have consulted enable them to assert that the creation of multidisciplinary teams will help patients and health care providers overcome these barriers, as well as optimize institutional resources and improve institutional organization. Thus, time per consultation would be reduced, given the fact that physicians would not have to duplicate functions that could be carried out by other members of the health care team.

...I had the chance to interact with a diabetes multidisciplinary team when the diabetIMSS pilot test was carried out. In this case, the family physician held a consultation with the patients only after, in the same waiting room, a psychologist,

a nutritionist and a social worker had done their share by discussing some issue with the patients, and after a nurse had weighed them, measured them, and answered some basic questions, and that was it. When it was finally time for the physician to see the patients, he or she would only have to adjust the therapy or clear up some extra doubts. This multidisciplinary system was assessed for 18 months. Patients considerably lowered their hemoglobin levels. It was proved that the multidisciplinary approach was, therefore, excellent for them. And as regards the multidisciplinary approach, what stood out for me the most, the star of the multidisciplinary approach, was the psychological aspect. The empowerment that the patients had gained after overcoming the barriers of denial and all that... (General practitioner, man)

The positive experience shared by the physicians that interacted with multidisciplinary teams is counterbalanced by the need for the members of the team to respect their areas of expertise, their knowledge, and the common goal of the team for the benefit of the patients.

Ongoing training of medical staff

The participants highlighted the need for ongoing training in order to be always up to date with new treatments and trends (such as early insulin therapy), and to acquire the skills and competence that they could not acquire at university, especially when it comes to communicating with patients:

...you complete a postgraduate program, for example, but it does not finish there. You need to be constantly updated. That's why there are regular training workshops, symposiums, congresses, subscriptions to journals. You have to keep your finger on the pulse. [...] You have to prepare yourself. The institute offers this type of courses. It gives them the chance to do teaching training courses, take specialized courses for the management of the physician-patient relationship, refresher courses on diabetes, insulin management courses for all the doctors that are working at the institute and are willing to take this course. So, possibilities do exist... (Family physician, woman)

The inclusion of psychologists in the team

It is interesting to note that several specialists and general practitioners, who had had the opportunity to interact with multidisciplinary teams, highlighted the need for a psychologist in the team, particularly with respect to the management of conflicts and barriers, the frustration of the medical staff, and the

patients' empowerment and responsibility for their disease.

...the fields of psychology and mental health have to be definitely included. For what reason? I believe that in Latin America we think that mental health staff is only for people that are mentally ill, but they can really act on a wide range of different areas, don't they? Really wide. I think that would be the first step to take in order for a patient to take care of their disease. They need to accept their disease and then we can talk about insulinization, about the acceptance of all those situations... (General practitioner, man)

...I believe that sometimes we, as doctors, need it, right? There are so many situations, so much pressure, and so many difficulties... The famous burnout syndrome. We need techniques to relieve stress, to communicate with our patients, and not to feel so frustrated. Those are things that a psychologist knows, and we don't... (Family physician, woman)

The development of patients' trust toward their physicians

Certain physicians interviewed clearly understand that the relationship between patient and physician may contribute to overcoming barriers, the achievement of therapeutic goals and the empowerment of patients, as long as there is mutual respect and physicians have the skills to communicate efficiently.

...when patients see you is because they're confident that you're going to help them, and that's already a victory. Patients think that you're able to help them, so you have to take advantage of that to offer, to explain, so that they understand and accept, and then, make that change that's necessary for them to feel better. It's the patient's responsibility

to take care of themselves, and to understand and carry out the process. (Family physician, woman)

Early insulin therapy as a therapeutic alternative

Finally, physicians consider that the early initiation of insulin therapy on selected patients would not only enhance their quality of life, but also save significant amounts of money in the medium and long term, both for institutions and the health system.

...insulin, of course, has a relatively high cost. However, if we think of a future situation in which the patient is controlled, that would save us a lot of other expenses. For example, those expenses related to hospitalization, hospital beds, surgery, complications, wound healing, and all those elements that an uncontrolled patient entails. Therefore, if we're far-sighted in this regard, we'll see that insulin prescription isn't more expensive, because it helps maintain an adequate control and, in doing so, it prevents further damage. (Internist, woman)

DISCUSSION

Possible interactions among the barriers found

The analysis of the interview excerpts presented here shows that these obstacles do not act in isolation. The following are possible interactions among the barriers that could be addressed in future research studies.

It seems obvious that institutional barriers exert significant influence over both physicians and the physician-patient relationship. The short time allotted to each consultation not only intensifies physicians' feelings of frustration, but it may also affect the clarity of the language used to address the patients and the education that they should provide

them with (both aspects of the physician-patient relationship). Considering that insulin regimes are complex and require careful patient training, well-trained physicians with vast medical experience may easily find the right words to establish an effective communication whereas, as it has already been shown, general practitioners with less experience have difficulty achieving that. Other institutional aspects, such as the lack of multidisciplinary support, may have similar effects. For example, as shown by the interview excerpts presented here, the intervention of multidisciplinary teams may shorten consultation time (institutional barriers), provide information that physicians cannot give due to their lack of training (barriers derived from the medical staff), and contribute to enhance the physician-patient communication, thus helping resolve doubts and providing additional training regarding therapy management.

The very same lack of knowledge that physicians have may prevent them from considering the use of insulin as an option. However, when this situation is combined with other institutional obstacles, it may prevent the patient from receiving this type of therapy, even in cases where, in accordance with current treatment guidelines, this therapy would be indispensable for the adequate control of the disease. This would happen, for example, when physicians that are aware of their lack of knowledge need to refer a patient to secondary care, but this level does not exist in the clinic covered by the patient's insurance, and the patient cannot afford going to hospitals where this type of care is available. The shortage of the supplies needed for this therapy may have similar effects, and patients may eventually perceive that their ailments increase and that they are not receiving adequate therapy.

The problem regarding therapy adherence

Therapy adherence is a possible point of interaction among the barriers found that deserves to be treated separately. This term

encompasses both the compliance with therapeutic indications, and the persistence in carrying them out from the beginning until the end of the prescribed therapy.⁽⁵¹⁾ In a systematic review, Asche et al. found out that adherence to DM2 therapy improves the control of glucose levels, prevents complications, reduces the use of health care services (such as hospitalization and emergency room visits) and the need to switch to more intensive treatment regimes. Moreover, there is some evidence suggesting that therapy adherence may influence patients' quality of life and reduce their health care expenses.⁽⁵¹⁾

Some of the aspects mentioned in this study are among the factors contributing to patients' non-adherence. In particular, the following should be highlighted: communication problems, physicians' lack of understanding regarding their patients' problems to cope with the therapy, and their inability to find solutions that could help patients to continue with their therapy.⁽⁵²⁾ It seems possible that physicians' lack of training, the lack of multidisciplinary support, and the use of inadequate language may have a significant impact on the development of these problems. Untrained physicians may be unaware of the existence of these problems, or if they are aware, they may not know how to solve them. Moreover, if there are not professionals from other disciplines that can provide the support needed, these situations will remain unsolved and this could affect patients' therapy adherence.

The same may occur regarding physician-related factors which have proven to promote therapy adherence. The following factors are among the most effective: active listening, emotional support, the development of patients' trust in their physician, clear and sufficient information, the allotment of enough time for each patient to be treated accurately, the identification of patients' barriers and concerns regarding the therapy, the encouragement of patients to collaborate with therapeutic decisions, the use of strategies that may improve communication between physicians and patients, and the assistance for low-income patients so that they

can find alternatives to meet the costs of the therapy.^(52,53,54,55,56) It seems evident that institutional barriers may prevent physicians from giving their patients the time they need, and similarly they may prevent patients from receiving their medication and the support that physicians are unable to provide them with. Physicians' active listening skills, and the support and empathy that they can provide patients with are elements that depend on their adequate training, on their use of effective, non-ambiguous language to communicate, and on the absence of mistrust and frustration as obstacles in these processes.

In summary, the study of therapy adherence in the case of DM2 seems to be an adequate field to confirm the influence of the barriers found in this study and assess their interaction.

CONCLUSIONS

The scheme proposed clearly shows that the different barriers created by the medical staff to early insulin therapy stem from various sources and situations: 1) barriers specific to the medical staff arising from their education, training, knowledge about early insulin therapy, and their fear of the possible adverse effects of the therapy; 2) barriers arising from the physician-patient relationship, which manifest themselves in the physicians' distrust and frustration with their patients, as well as the use of a language difficult to understand; and 3) institutional barriers, such as the shortage of the supplies needed, the adverse institutional organization, and the lack of multidisciplinary support.

We consider that this scheme has heuristic value as a research proposal, and most importantly, as a management and control scheme, and as a tool to propose solutions. One way of using it would be to take the scheme as the basis for the analysis of this issue in a given institution, in order to detect the barriers that may be encountered there, along with their interactions and possible solution strategies.

The findings of this study could lay the foundations for the creation of diverse intervention strategies for professionals and medicine students, in order to reflect on the ways in which, through the practice of medicine, they could foster a relationship with their patients focused on their individual social, cultural and psychological needs and characteristics. Accordingly, a key point would be to consider the importance of making a difference between diseases regarded as clinical manifestations from diseases understood as subjective experiences.⁽⁵⁷⁾

The barriers specific to the medical staff may be approached through training or sub-specialization courses. However, the barriers arising from the physician-patient relationship may require the intervention of other members of the health care staff. Situations of supply shortages and institutional reorganizations are beyond the control of the medical staff, and require the intervention of authorities and administrators, as well as a medium

and long term approach in order to find solutions that, despite being expensive in the short term, would amount to significant savings for the health system in the future.

Some findings of this study are similar to the ones reported globally by the bibliography consulted. However, it is evident that the economic, administrative and idiosyncratic difficulties exclusive to Mexican patients and medical staff highlight the importance of training courses, the existence of institutional obstacles and the education deficiencies of the patients and medical staff.

Finally, although the scheme proposed is not meant to be exhaustive, we consider that it may act as a starting point for further research studies in other regions or countries. Different qualitative, quantitative and mixed approaches will help establish a realistic and useful panorama that, by modifying or reinforcing the scheme proposed, would enable people to understand and overcome the barriers to early insulin therapy in the case under study.

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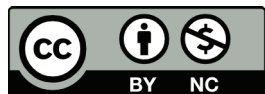
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