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Myths and beliefs about diabetic foot: A cultural study in outpatients with type 2 diabetes at the Hospital Regional de Lambayeque

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Mitos y creencias sobre el pie diabético: Un estudio cultural en pacientes ambulatorios con diabetes tipo 2 del Hospital Regional de Lambayeque

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ETCL: conceptualized the study, collected the data, and wrote the first draft. **BKLE:** conceptualized the study, designed the methodology, collected the data, and wrote the first draft.

FELJ: conceptualized the study, designed the methodology. All authors reviewed and approved the final version.

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SUMMARY

Objective: To analyze and explore beliefs, myths, and fears about the care of diabetic foot (DF) in a hospital in northern Peru. **Methods:** A qualitative and analytic study was carried out using semi-structural interviews applied to patients recruited through a convenient sample limited by thematic saturation among individuals attending the Diabetic Foot Unit of Hospital Regional Lambayeque. The results were registered, transcribed, coded, and categorized manually with thematic analysis. **Results:** Ten individuals were interviewed. Three categories were obtained: a. myths and beliefs about the genesis of DF; *unknown and spontaneous origin, the religion imposes the belief that DF are the results of divine punishment, magico-religious causes (witchcraft), or inadvertent lesions.* B. myths and beliefs around management: *avoid food that exacerbates DF, use of anti-inflammatory herbs, and request for a sorcerer consultation or auto prescription.* C. living with fears and anxiety: *amputation and limitations.* **Conclusion:** Myths and beliefs were identified that need to be taken into account by healthcare professionals to improve the management of DF.

KEYWORDS: Diabetic foot, culture, fear, patient education, interview, traditional medicine.

RESUMEN

Objetivo: Analizar y explorar las creencias, mitos y miedos sobre el cuidado del pie en pacientes con pie diabético (PD) en un hospital del norte del Perú. **Material y métodos:** Estudio cualitativo, con paradigma interpretativo y tipo análisis temático, mediante entrevistas semiestructuradas a personas de la Unidad de Pie diabético del Hospital Regional Lambayeque, reclutados mediante muestreo por conveniencia y delimitado por saturación temática. Los resultados fueron registrados, transcritos, codificados y categorizados manualmente con análisis temático. **Resultados:** Se entrevistaron diez personas con Diabetes tipo 2; se obtuvieron tres categorías: a. Mitos y creencias sobre la aparición de úlceras de pie diabético (UPD): *origen desconocido y generación espontánea, la religión impone la creencia de que las UPD son castigos divinos, causas mágico-religiosas (brujería) y lesiones inadvertidas*; b. Mitos y creencias en torno al tratamiento: *evitar alimentos que empeoren las heridas, uso de hierbas antiinflamatorias, recurrir a prácticas de brujería y automedicación*; c. Vivir con miedos e inquietudes: amputación y limitaciones. **Conclusión:** Se identifican mitos, creencias y miedos que podrían impactar en la salud de los pacientes y que el personal de salud debe tener en cuenta para favorecer aquellas creencias positivas que complementan los tratamientos con eficacia comprobada.

PALABRAS CLAVE: Pie diabético, cultura, miedo, educación del paciente, entrevista, medicina tradicional.

INTRODUCTION

Diabetic foot ulcers (DFU) occur in 6,3% of patients with diabetes worldwide ⁽¹⁾, with the lifetime probability of developing at least one ulcer in 17-34% ⁽²⁾. DFU is associated with non-traumatic amputation with increased mortality. ⁽³⁾

The etiology of DFU has two major aspects: vascular insufficiency and diabetic neuropathy; the absence of metabolic control will determine the appearance of ulcer infections, necrosis, osteomyelitis, sepsis and potentially amputations and death. Prevention depends on standardized diabetes education for the reality of the patient and the development of self-care. ⁽⁴⁾

The number of amputations has not decreased in recent years. Social determinants of health play a fundamental role: unemployment, access to insurance and educational level, to name a few ⁽⁵⁾. Zhang et al. ⁽⁶⁾, in a systematic review (SR) of 67 studies, found that increases in age, male gender, longer disease time, and lifestyle increase the risk of DFU.

One intervention that has been shown to be useful in the prevention and treatment of DFU is structured education, in relation to self-care and acquisition of patient and family competencies ⁽⁷⁾. However, in a 2014 SR of 5 studies that evaluated the effect of structured

education on knowledge and the incidence of DFU, no beneficial effect was found ⁽⁸⁾. Another 2019 SR of 13 studies, which evaluated the usefulness of education on self-efficacy, behavior and knowledge of self-care in people with diabetes regarding their feet, found that the evidence was inconclusive and that a qualitative approach was needed. ⁽⁹⁾

On the other hand, Oni D. et al. ⁽¹⁰⁾, in a SR of 9 qualitative studies in 2020, found that patients with DFU had different perspectives on prevention and care, unrelated to those proposed in guidelines of standard education. No studies of Latin American patients were included.

Improvement in knowledge does not ensure changes in behavior. The former is internalized in the person through teaching, which should not only provide information, but also incorporate what is learned, so that it can be integrated into their lives to improve health. ⁽¹¹⁾

In some cultures, illness could be explained by factors and classified as related to the individual, nature, social relationships and/or the supernatural sphere ⁽¹²⁾. The cultural aspects and the representations that patients with Type 2 Diabetes give to their disease affect adherence and efficacy of educational programs. In Burma, Wha et al. ⁽¹³⁾, found that Bamars, had some

misconceptions about causes and management of their disease that are influenced by their cultural beliefs and practices. Weiler et.al. ⁽¹⁴⁾, in the United States, found several sociocultural conceptions that impact diabetes self-management practices for the Latino migrant with Type 2 Diabetes. In Uganda, Hjlem et.al. ⁽¹⁵⁾, found that most respondents mentioned supernatural factors and part of 'God's plan'.

Qualitative research in this field has demonstrated that it is vital to consider perceptions, beliefs, attitudes and myths as Coffey L et al. ⁽¹⁶⁾, found in 2019 in a qualitative ethnographic meta-synthesis of 42 studies on DF.

In the Hospital Regional de Lambayeque, there is evidence that patients with DFU who go for consultation and emergency care have a high frequency of amputations, mortality and unfavorable evolution in follow-up. ⁽¹⁷⁾

It is necessary to look at the problem from the worldview of the patient and family caregiver and take into account myths, beliefs and fears. Lambayeque has a rich history of mythical-religious system of beliefs and practices of pre-Hispanic origin ⁽¹⁸⁾, so people could have a different worldview of the problem. Therefore, the objective of the study was to explore the beliefs, myths and fears about foot care in patients with DF in a hospital in northern Peru.

METHODS

For the report of methods and results, the following format was used: *Standards for Reporting Qualitative Research: A Synthesis of Recommendations*, of the Academic Medicine in 2014. ⁽¹⁹⁾

Design: Study with a qualitative approach, interpretative paradigm, thematic analysis type, developed in three stages: description, reduction and interpretation. The researcher responsible for the in-depth interviews, and the data treatment process, was a licensed graduate in nursing, qualitative researcher, university lecturer (BKLE), that did not work in the care of these patients and with no relationship with them, either. The researcher responsible for taking notes and recording the interviews was a student who was in the last year of human medicine (ETCL) who had no relationship with the patients and was trained by the above-mentioned researcher.

Setting: Outpatient clinic of the Unidad de Pie Diabético del Hospital Regional Lambayeque,

managed by the Ministerio de Salud del Perú, Level III health centre; it is a highly complex referral hospital in northern Peru. Data collection was conducted between January-March 2020.

Population: Patients with DFU of any stage treated and followed in the unit. Inclusion criteria: Age over 18 years, with more than 10 years with type 2 diabetes, with or without previous amputation. Exclusion criteria: use of a language other than Spanish, cognitive impairment, and acute disease at the time of the interview.

Sample and sampling: Sampling was made by convenience from the list of patients seen in consultation, who agreed to participate in the study. The sample size was up to reaching thematic saturation of the information.

Data collection techniques and instruments:

A semi-structured interview guide prepared by an internist and a qualitative researcher and a sociodemographic data sheet were used for data collection; the interviews were conducted in an outpatient setting of the hospital reserved for the study, with a duration of 45 minutes. For the interviews, patients were assigned a code: Capital P followed by a correlative Arabic number. The interviews were recorded on a smartphone and field notes were also collected by ECL. The audio recording was carried out by BLE, with expertise in this process.

The data treatment process was manual, following the phases of Thematic Analysis proposed by Braun and Clarke. This process identifies, analyses and reports patterns (themes) within the data collected; it organizes details and allows the interpretation of the data to find repeated patterns of meaning ⁽²⁰⁾. The methodology was: transcription, text reduction and discovery phase; study "themes" were obtained, then classified into categories according to their common content. Finally, the coding phase consisted in the following: relevant fragments were associated with a theme category through a code (number). While the analysis was being carried out, the coding and categories were redefined to fit the data. Finally, participants reviewed the texts obtained and agreed with the analysis and the results (credibility criterion).

The definitions of myth and belief considered for the study are shown below.

Myth: According with Taype ⁽²¹⁾, a social construction of different individuals that is propagated by society, lacks an author and tries to explain a phenomenon, even though it has no scientific basis; it is part of a culture, which tends to consider them as true; it is an opposition to truth and reality that tries to explain something outside rationality.

Belief: According with Diez ⁽²²⁾, a reflexive idea assumed by society and which the subject considers true and adopts as an interpretation of his or her reality; furthermore, the subject has objective reasons for considering it so.

Ethical aspects:

An Informed Consent form was used, which explained the objective of the study, the confidentiality of the information and the voluntary nature of their participation. At the end of the interviews, an informative diptych on foot care was handed out. The project was approved by the Comité de Ética en Investigación of the Hospital Regional Lambayeque, through Resolution No. 0811-111-19 CEI.

RESULTS

Ten patients with Type 2 Diabetes, aged 41-83 years, 10-30 years of disease time and with 3-24 months with

DFU were interviewed; the rest of the characteristics are shown in table 1.

In the thematic analysis, three categories (numbers), 11 subcategories (letters) and 16 units of meaning were obtained. The categories were: 1. Myths and beliefs around the onset of DFU, 2. Myths and beliefs around the treatment of DF wounds and 3. Living with concern and fears: table 2

Table 1. General characteristics of all participants.

General data	n
Age (years) (X ± SD)	57 ± 14
Years with diabetes (X ± SD)	17.1 ± 6.5
Years with DFU (X ± SD)	7.6 ± 6.3
Gender	
Male	4
Female	6
Use of NPH Insulin	7
Previous amputation	4

X= mean; SD= standard deviation; DF: Diabetic foot; NPH: neutral protamine of Hagedorn Insuline; DF= diabetic foot

Table 2. Categories, subcategories and units of meaning from the discourse analysis.

Categories	Subcategories	Units of meaning
1. Onset of DFU	a. Unknown origin	Tight shoe
	b. Divine punishment	Wounded by God's punishment
	c. Product of sorcery	"Harmful beliefs" / sorcerers / superstitions
	d. Product of inadvertent injury	
2. Treatment of DFU	a. Restriction of fish intake	Use of natural products
	b. Use of anti-inflammatory herbs	Use of herbs
	c. Healing sorcery practices	Animal healing beliefs
	d. Self-medication	Myths and beliefs regarding wounds
		Limitation of foods
		Wound "festering"
		Self-medication by pharmacists
		Deficient foot care
		Postponement of self-care due to work
3. Living with fears and concerns	a. Infection of wounds	Fear of amputation
	b. Concern of amputation	Fear of regrowth-infection of the wound
	c. Concern of limitation of movement	Amputation-limitations of diary activities
		Concern of staying in a wheelchair

1. Myths and beliefs around the onset of DFU:

1.a Some participants stated that DFU are of unknown origin and of almost spontaneous generation:

"My wound originated without knowing why; I got a blister "out of the blue". I did not think it was because of my diabetes. I did not treat it..., and the next day my fingers were black, but they did not hurt. When I went to the orthopedist, he told me that my foot had to be amputated..." (P5).

"My wound originated without knowing why. One day I just woke up with a wound, a blister" (P5).

1.b In other people, religiosity imposes the belief that DFU are a divine punishment, making people who have them deserving of suffering them:

"I believe that there are no situations that favor having diabetic foot, because they are punishments from God, for the mistakes we have made" (P10).

1.c Another myth shared by the interviewees are the magical-religious causes such as sorcery:

"At first I did not believe ... because sometimes God punishes the actions we commit, and when I got my foot wound ..., that is when I suspected the neighbor who gave me the shoes. So, I went to a witch doctor who told me that I had hurt myself and did some cleansing" (P8).

"...Yes, there are situations that favor having a diabetic foot because my children took me to private doctors, ... with negative tests for some disease; I went to a witchdoctor, and he told me that someone wanted to kill me" (P9).

1.d Another belief for the genesis of DFU is inadvertent injuries:

"...I worked as a shoemaker, I fixed some sneakers that belonged to my son and I adapted them to my feet, then that sneaker squeezed me and the wounds on my feet started from there" (P3).

"...I was walking with sandals, and a nail was inserted in it, I did not notice it, after several days when I felt numbness in my big toe, affecting the other toes of the same foot, with a putrid smell, only

the bone was noticeable, maybe it was due to an infection" (P2).

"My wound originated from a toenail on my left foot; I cut it, but it got infected ..." (P8).

"...I cut my nails wrong. I got a small pimple and burst it; the next day my toe felt cold and on the third day I noticed it was black. I did not use anything "I continued living in a regular manner". After some time, I went to the hospital where they cut my finger" (P6).

2. Myths and beliefs around the treatment of DFU

2.a Eliminating red meat, fish and pork from the diet is a belief that is referred to in order to prevent the progression of the injury:

"Actions that I can improve in having diabetic foot are: not eating fish (mackerel and jack mackerel) because they "fester" the wounds" (P4).

"I take care of my feet daily, avoiding sweets, pork, beef, fish because they can "fester" the wound" (P2).

"Actions that can improve having diabetic foot are avoid eating red meat because it "fester" my wounds" (P6).

When patients were cross-examined, they reported that "festering" was equivalent to "infecting the wound".

2.b The use of anti-inflammatory herbs, in drinks or by direct application to ulcers, constitute alternative treatments that are the product of the cultural beliefs of the participants:

"...An empirical person treated me and prescribed me: anti-inflammatory herbs, followed by pills. Also, my cousin from the highlands told me that diabetes can be cured with jungle grass (he does not remember the name)" (P2).

"When I realized I had a wound on my foot, I started to use ointments and plantain" (P1).

"Actions that I can improve for having diabetic foot are drinking water to control glucose (like time water)" (P4).

"I take care of my feet on a daily basis, with mango leaf, useful for not increasing sugar" (P7).

2.c Going to non-medical personnel is also a practice found in the participants:

"I think that there are situations that are favorable when having diabetic feet, I went to have my feet cleaned with guinea pig, and they told me that all the bad was expelled" (P3).

2.d Some people reported self-medication.

"When I realized I had a wound on my foot, I started using ampoules and products from the pharmacy" (P1).

"When I realized I had a wound, I used crushed pills because it was oozing, and I continued like that for 2 or 3 days, but I did not see any improvement" (P10).

"... I got a small dry blister, I only felt pain, but I continued to work for about 1 month, then I had chills, fever and swelling in my leg..." (P3).

3. Concern and fears related to their evolution:

3.a /3.b. Fear of being amputated and re-infections were found

"My big fear is that the wound gets infected" (P1).

"My big fear is that the disease will emerge again because they amputated my finger" (P2).

3.c The fear of amputation is partly due to the limitations it would generate in their functional capacity:

"My big fear is that they will amputate my foot because I work, and I would have many limitations. That is why I take my precautions" (P4).

"My big fear is to have my foot amputated, because I would stop taking care of my young children, I would feel useless" (P9).

3.d Other patients were afraid about limitations in movement and in diary activities.

"If my feet are ever amputated, I would have to use a wheelchair because I would not have stability in my feet" (P2).

"I have had a toe amputated on my right foot, affecting my daily life; for example: not washing myself, cleaning the house, cooking, washing" (P2).

"Having both wounds on my two feet, it makes it impossible for me to walk, so I have to use a wheelchair" (P3).

DISCUSSION

Given the reality that the frequency of amputations does not seem to decrease and the presence of concepts specific to people from northern Peru, the study was carried out due to the need to understand how is the perspective of people with DFU in a hospital of northern Peru, to make an intervention efficient and sustainable such as the presence of a team of professionals who address this problem in a multidisciplinary manner.

The effectiveness of interventions in educational programmes for prevention/treatment in DF is limited by the fact that health personnel are not able to enter the worldview of the patient/family. It is necessary to know deeply what the patient/family member thinks, feels, wants, fears and expects. Adherence to treatment will be subject to these conditioning factors.⁽¹⁶⁾

Lack of knowledge about the emergence of injuries due to diabetes complications is a previously reported finding: injuries of sudden and unknown onset, as described by Angella et al.⁽²³⁾ in England. This study supports the findings of our study. However, far from diminishing the importance of education on diabetes, it considers the worldview of the patient and family. Differences in educational and cultural level may explain these findings. Bonner et al.⁽²⁴⁾ in Africa, found that patients were unaware that deficient diabetes control could lead to DFU and injury complications. On the other hand, Sayampanathan et al.⁽²⁵⁾, in Singapore, found that beliefs around the onset of injuries and the treatment given were more important than knowledge of their disease and its complications.

In addition, magical-religious myths were found; some mentioned that DFU is a consequence of a punishment/test from God, a finding similar to the reports by Salehi et al.⁽²⁶⁾ in Iran in patients of Muslim religion, Hjelm et al.⁽²⁷⁾ in 13 patients with DFU, also Muslim, Olowo et al.⁽²⁸⁾ in Uganda in patients of Christian religion and by the SR of 27 studies by Álvarez-Najar⁽²⁹⁾. In Lambayeque, the city of the study, there are conceptions of this type, with an impact on the health of people. It is worth mentioning that health in pre-Columbian cultures had a very strong magical-religious component⁽²⁴⁾ and this way of thinking could have these conceptions as a background. We have not found any Peruvian study that evaluates

these aspects in DFU, and this is an opportunity for social-anthropological research. It is pertinent to take these conceptions into account in diabetes education in non-communicable disease programmes in our country.

One belief that has been found is that of diet-related worsening of DFU, especially with red meat. There is strong evidence that frequent consumption of red and processed meats increases the risk of cardiovascular disease, diabetes, progression of target organ damage and total mortality⁽³¹⁾. Thus, patients with DF and DFU could potentially develop worse glycemic control. However, the risk/benefit should be assessed in each patient. In relation to fish consumption, it may be beneficial, given its docosahexaenoic acid content.⁽³¹⁾

The term “*inconar*” was another finding in the vocabulary of patients. When this term was consulted in the dictionary of the Real Academia Española (RAE), the term “*enconar*”, was found, meaning: “*To inflame, to worsen a sore or injured part of the body*”, derived from the Latin *inquināre*⁽³²⁾. In this regard, in a qualitative study to learn about myths and customs in the care of wounds, in inhabitants of settlements in the district of Monsefú, in Lambayeque-Peru in 2016, the following texts were found in three people: “*Salted fish festers (encona) the wound because it oozes, it does not help it to heal...*”, “*...salted fish, especially mackerel, ceviche (...) because they are festering (enconando) for the wound...*”, “*... here what is said is that fish has a lot of bones and is festering (enconando) so it must not be eaten...*”⁽³³⁾. No other studies have been found in this regard.

Some patients also reported the use of ointments. Taheri et al.⁽³⁴⁾, in a narrative review, found that applications of ointments made from olive oil may have benefits in DFU. There is evidence of the anti-inflammatory effect of topically applied milk on various types of injuries⁽³⁵⁾. However, we do not know which products were used by the participants of our study.

Likewise, the use of plantain (*plantago major*) was mentioned by the patients. The literature search found two clinical trials in which the efficacy of this medicinal plant in the clinical improvement of DFU was demonstrated^(36,37). This plant is listed in the National Intercultural Health Centre (CENSI) of the National Institute of Health in the floristic catalogue of Peruvian medicinal plants and recommended for use as a “poultice”⁽³⁸⁾. Since there is evidence of its

usefulness, an inquiry into its use by patients could be an alternative to communicable disease programmes. This is another research possibility. Considering the habits of people with this health problem may improve adherence to interventions.

“Pasar el cuy” (“Cleansing with guinea pig”) is a deeply rooted custom in our country and was mentioned by the participants. According to this conception, the animal absorbs the disease that afflicts the patient. No references to this type of custom were found for chronic non-communicable diseases.⁽³⁹⁾

Self-medication was also found. In this regard, no local studies were found in relation to self-medication in people with diabetes. Likewise, we are unaware of the type of medication used and the length of time it has been used. In Lambayeque, in 2016, a study with patients with headache in a level II hospital managed by the Social Insurance System found that the frequency of self-medication was 73.5%⁽⁴⁰⁾. In relation to the use of parenteral medicines (“ampoules”), patients with diabetes have deficient self-care measures and make use of medicines that could put their health at risk, as found by Mogre et al in a systematic review of 27 studies on adherence to self-care measures⁽⁴¹⁾. It is important that interventions target these aspects.

Psychological perception is also important; our study showed that most of the participants had fears in relation to their evolution, living with the fear of causing amputations and of being physically and psychologically limited in their daily lives. This is like what was found in studies from other countries, where the greatest fear (even more than death itself) was amputations and being wheelchair-bound.^(15, 42)

On the other hand, patients reported some limitations in their daily life, due to their dependence on their family, classifying themselves as a “burden” for their family and as generators of further economic and psychological problems. As Lewis states, the loss of a limb limits daily activity and often leads to early retirement and loss of income. In addition, “friends” often abandon a person with a disability⁽⁴³⁾. It is therefore very important that these patients have family support and close assessment of their mental health.⁽²⁴⁾

We should note that this reality in DF units has most likely worsened with the pandemic due to SARS-cov2, due to the neglect that has existed because of the redirection of human, logistical and financial resources

to meet the demand of the pandemic, especially in low- and middle-income countries, as noted by the World Health Organization.⁽⁴⁴⁾

We have not found Peruvian studies that explore aspects of this health problem on a qualitative basis, and we believe that research should be increased, depending on the context and considering the pandemic. The SR conducted by Coffey⁽¹⁶⁾ only included 2 qualitative studies from Brazil and Oni D.⁽¹⁰⁾, there was none. We believe that the reality of patients is particular to Latin American countries.

We should also mention the opportunities that can be taken advantage of in working with nurses. His experience in aspects of care and self-care and his closeness to the patient are a strength. In this regard, Varej et al.⁽⁴⁵⁾, in Iran, found that successful implementation of evidence-based nursing interventions requires the reconfiguration of the administrative structure in a hospital and manage empowerment in this human resource.

Subrata et al.⁽⁴⁶⁾, by the systematic use of Walker and Avant's method⁽⁴⁷⁾ of concept analysis, found that implementation of the concept of DFU care into clinical nursing practice may improve patient outcomes and prevent the complexities of diabetic foot.

In a 2019 integrative review, this same author found that the implementation of an algorithm for intervening diabetic foot ulcer management, with the name of ADIE (Assessment, Diagnosis, Interventions, and Evaluation), could be successful in the control of complications. A multidisciplinary diabetes team is necessary, and some of the interventions that could be applied by nurses were wound cleansing, advanced modern wound dressing, topical therapy, offloading and intensive diabetes education.⁽⁴⁸⁾

Including cultural aspects of patients in educational programs, managing a multidisciplinary team of professionals (nurse, psychologist, physical therapist, social assistance) and strengthening diabetic foot units, are alternatives that emerge from this study and whose implementation should be assessed operational and qualitative research.

One of the limitations of the study was that we had few data on the damage and severity of target organ damage in patients. Moreover, we did not obtain data on insulin therapy, which would have been interesting

to collect. Likewise, the interpretation of the data was done by a single researcher. A potential bias is having included only patients from a highly complex hospital with the possibility of excluding cultural aspects of people with Type 2 Diabetes with fewer chronic complications. Despite being a qualitative study and having saturated the sample, it would have been interesting to categorize according to the presence of major amputation and its absence. The socio-educational level data was not taken either.

One of the strengths of the study was that this is the first study in our region that addresses this problem with a qualitative approach, which is useful for decision-making.

In conclusion, we identified myths, beliefs, traditions and fears that could impact on patients' adherence to recommendations, self-care and foot care skills, for which health personnel must keep in mind to favor those positive beliefs that complement DF treatments with proven efficacy. It is essential for non-communicable disease programs and health personnel to take into account the cultural, religious and psychological aspects of patients.

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