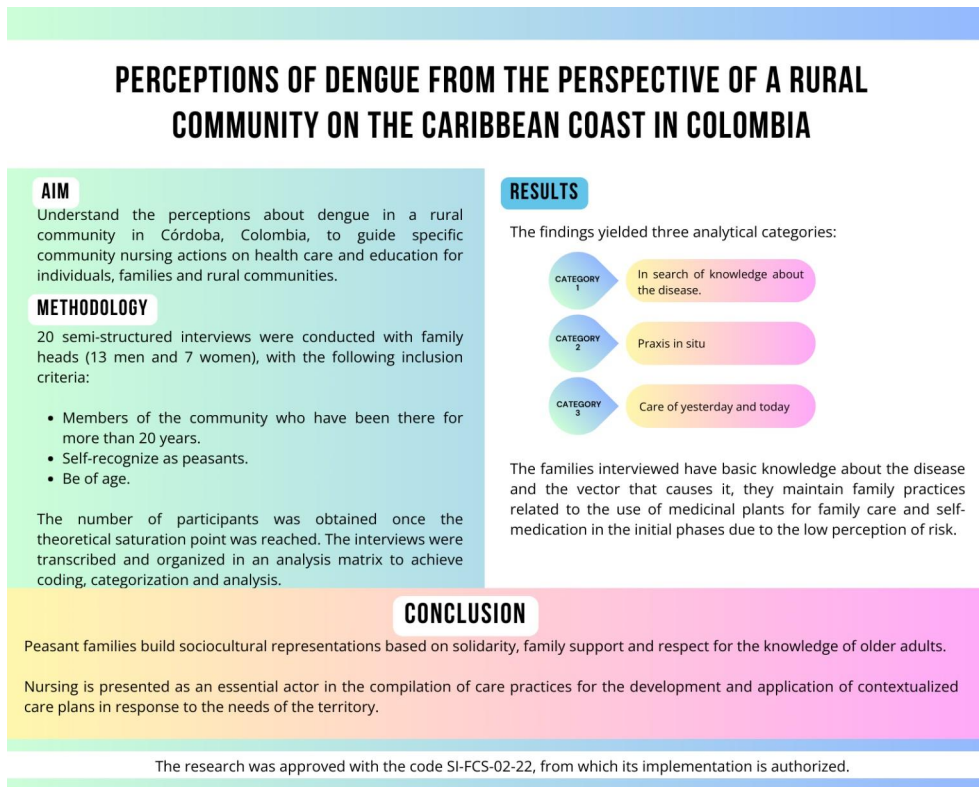


Perceptions of dengue fever from the perspective of a rural community on the Caribbean coast in Colombia

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Graphic Abstract



Abstract

The study sought to understand perceptions about dengue fever in a rural community in Córdoba, Colombia, with the aim of guiding specific community nursing actions aimed at health care and education for people, families and rural communities. 20 semi-structured interviews were carried out with heads of families (13 men and 7 women), selected based on the criteria of being members of the community for more than 20 years, self-identifying as peasants and being at least 18 years of age. The number of participants was determined after reaching theoretical saturation. The interviews were transcribed and organized into an analysis matrix for coding, categorization and data analysis. The findings revealed three analytical categories: search for knowledge about the disease, *in situ* practices and past and present care. The families interviewed have basic knowledge about the disease and the causative vector, maintaining family practices related to the use of medicinal plants for family care and self-medication in the early stages, due to low risk perception. Peasant families build sociocultural representations based on solidarity, family support and respect for the knowledge of the elderly. Nursing is presented as an essential actor in the collection of care practices for the elaboration and application of care plans contextualized according to the needs of the territory. The research was approved with code SI-FCS-02-22, authorizing its implementation.

Keywords: Dengue Fever. Communicable Disease Control. Culture. Social Perception. Rurality.

INTRODUCTION

Background

Dengue fever is a neglected tropical disease that has become one of the main threats to public health in Latin America and the Caribbean, due to sociodemographic, economic and environmental changes in recent decades. The World Health Organization (WHO) and the Pan American Health Organization (PAHO) highlight population growth, migration, political instability, climate change, low economic status, inequalities in access to public services, especially water, as the main risk factors, drinking and garbage collection, which facilitate the incidence and prevalence of dengue fever cases, with all the implications associated with this^{1,2,3,4}.

Currently, there is an excessive demand for health and public infrastructure due to the increase in reported cases of dengue fever in much of the Americas. Often, local responses are not prepared to deal with these health emergencies, leading to the collapse of not only the capacity for care, hospitalization and care, but also questioning the leadership and governance of Latin American and Caribbean governments⁵. Furthermore, dengue fever has significant economic repercussions due to the high annual cost invested in its treatment. According to Laserna *et al.*, the average annual cost reaches around USD 3 billion, with direct costs for hospitalized patients being the most representative (70%); however, outpatient medical costs, although low, contribute significantly to up to 80% of indirect costs⁶. This places an economic burden on healthcare budgets, highlighting the importance of continuing efforts to reduce cases⁷.

In this context, the sociocultural, economic and geographic conditions of Colombia are key elements that favor the incidence and prevalence of dengue fever. Social disparities represent one of the greatest challenges for public health policies, since, although dengue fever does not discriminate

by gender, social class or age, it is known that socially disadvantaged populations suffer more impact^{8,9,10,11,12}. The rural population has high levels of social vulnerability in Colombia, reflected in homes with chronic poverty, precarious or non-existent public services and little access to health services. Although dengue prevention and control efforts are concentrated in urban areas, it is argued that it is essential to expand the coverage of these programs to include rural areas, considering the environmental characteristics, movement dynamics and exposure histories of these populations¹³⁻¹⁵.

The department of Córdoba, located on the Caribbean coast of Colombia, is considered endemic for dengue fever, with 4,191 cases reported in 2023, of which 49.4% were classified as dengue fever with warning signs¹⁶. Furthermore, it has a significant number of vulnerable homes in rural areas, where difficult living conditions compromise the health and integral human development of its inhabitants¹³. Although dengue fever has been studied in the region for several years, there is a gap in knowledge regarding the rural population, whose perceptions and practices can contribute to strengthening disease prevention and control strategies developed by community nursing.

On the other hand, the rural population's ways of thinking, acting and coexisting bring significant insights on dengue fever, reflecting aspects of everyday life and home care practices that can enrich public health strategies.

Current situation

Regarding the current situation of dengue in the Americas in 2023, a total of 4,565,911 cases were reported, of which 7,653 were serious and 2,340 resulted in death (fatality rate of 0.051%)²¹. PAHO and WHO issued an epidemiological alert due to the highest historical record of dengue cases, with high transmissibility maintained in 2024, totaling

approximately 673,276 cases and a fatality rate of 0.015%²². In Colombia, up to the 18th epidemiological week of 2024, 128,881 cases and 48 deaths from dengue were recorded, indicating a latent problem that requires immediate intervention and attention from health authorities²³. In Montería, in epidemiological week 12 of 2024, the incidence was 46.0 cases per 100,000 inhabitants²³, highlighting the relevance of the problem and the need for intervention on the part of nursing, which seeks to understand not only the individual, but also the community of holistic way to achieve effective results in public health.

The rural community studied faces significant barriers to accessing health services, such as a lack of qualified personnel, infrastructure and transportation. This leads to greater adherence to popular knowledge and practices when dengue fever is suspected, with people seeking medical assistance only when strictly necessary. Studying rural populations is challenging due to limitations such as difficult access to the study site, distrust

when sharing care experiences and risky behaviors such as self-medication. Furthermore, the lack of access to updated epidemiological data may impede an effective response from care programs in the study area.

Given this scenario, community nursing emerges as an opportunity to promote self-care and develop family capabilities that allow awareness, participation and management of processes to maintain family health. Nursing staff are essential interlocutors to visualize the experiences of the rural population in home care with dengue fever, creating opportunities for dialogue between knowledge, reconciling popular traditional practices with modern approaches, without undermining family and community knowledge.

Based on the above, this study was carried out with the objective of understanding perceptions about dengue fever in a rural community in Córdoba, Colombia, in order to guide specific community nursing actions aimed at the care and health education of individuals, families and rural communities.

METHODOLOGY

All families interviewed lived in a rural community in the municipality of Montería, Córdoba, Colombia. According to estimated data provided by the Communal Action Board, the total population is made up of 1,331 people and occupies an area of 0.4726 km². Respondents live less than 100 meters from the Sinú River, which exposes them during the rainy seasons to floods, humidity and the constant presence of mosquitoes. As for the climate, the temperature is similar to that prevailing in the city of Montería, with an average of around 28 °C, reaching peaks close to 40 °C.

The research was carried out with a qualitative approach using semi-structured interviews. In this way, central information was collected about the perceptions, experiences

and living conditions of peasant families in relation to dengue. A total of 20 families were selected, for convenience, with the support of community leaders, who guided the selection based on greater or lesser exposure to the risk of dengue infection. In addition, inclusion criteria such as self-recognition as peasants, residence in the community for more than 20 years and willingness to participate in the study were considered. Exclusion criteria included families who did not reside permanently in the community and people with biopsychosocial limitations to respond to the questionnaire.

The interviews were carried out with a single family member (13 men and 7 women) who identified himself as the head of the family. They were audio recorded and faithfully

transcribed according to the answers obtained. After reaching theoretical saturation, that is, when respondents began to repeat concepts or ideas about the same category, the number of participants was established. Subsequently, the answers were shared with the participants to verify the validity of the informant and the communicative validity, through a recheck of the questions and answers.

The semi-structured interviews were designed in accordance with the objective of the study and subjected to review by a panel of experts, who issued their judgments to clarify the questions, resulting in a clearer and more objective instrument. The interviewers remained neutral, empathetic and created an active listening environment. Before the interviews began, time was dedicated to establishing a relationship of trust with participants, explaining the purpose of the research and encouraging them to express themselves freely, without fear of judgment or repercussions.

Furthermore, a comfortable and private environment was created to carry out the interviews, where participants felt safe and free to share their opinions and experiences, ensuring that there were no external interruptions that could distract or bother them. Finally, participants were assured of the anonymity and confidentiality of their responses, allowing them to feel more comfortable sharing sensitive or personal information. It was assured that the data collected would be used exclusively for research purposes and that their identity would never be revealed in any resulting report or publication.

RESULTS

The age range of participants varied between 45 and 80 years, with a greater concentration in the 45-50 and 50-55 age ranges. The predominant occupations among heads of families were diverse jobs, followed by employees and housewives. The construction materials for the houses included cement, adobe, wood, straw and mud. Most families have access to public services such as drinking water and energy, al-

The information was collected through semi-structured interviews lasting approximately 45 minutes, organized into three sections: sociodemographic, family and cultural characteristics of peasant families in Montería; knowledge about dengue fever prevention; and care practices for dengue fever management at home.

The transcription followed Jefferson's²⁴ transcription guidelines. The information was organized, coded and analyzed to obtain categories and subcategories, established according to the proposed objectives (knowledge and practices) in the research, using Bardin's perspective²⁵. The criteria were: a) identification of the most frequent categories and subcategories in the data collected; b) highlight those that were repeated regularly, indicating important or recurring themes within the data set; and c) free citations allowed coding and categorization.

The ethical and legal aspects of the research were conducted as described in Resolution 8430 of October 4, 1993, which establishes scientific, technical and administrative standards for health research in Colombia. During the research process, possible ethical conflicts were addressed, such as participant confidentiality and the treatment of sensitive information, using strategies to control these aspects.

The research was submitted to the Universidad de Córdoba Research Committee, a collegiate body responsible for compliance with ethical standards, which granted approval to carry it out under the code SI-FCS-02-22.

though there are challenges with garbage collection in some areas.

The majority of families interviewed have income below the current legal minimum wage, coming from informal work in agriculture and other trades. Family members have varying levels of formal education, predominantly incomplete secondary or incomplete primary education, with only one member of the 20 families

interviewed having a university education. The most common family configuration is the complete nuclear family.

Regarding families' knowledge and practices, three main categories were identified: search for knowledge about the disease, *in situ* practice and past and current care. These categories

are divided into six subcategories: community knowledge, recognition of the vector, perception of symptoms, preventive family practices, actions in the face of suspicion and use of traditional medicine (Figure 1).

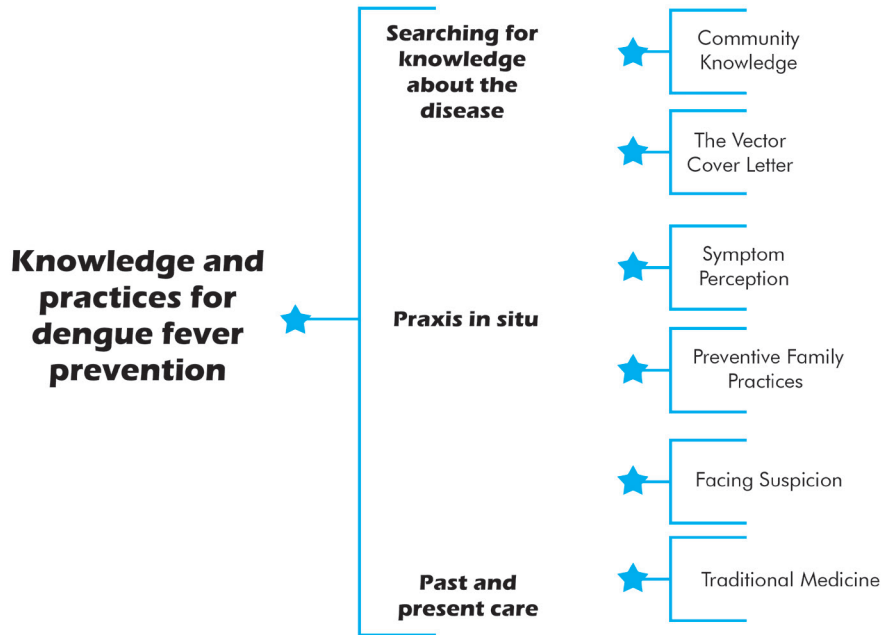


Figure 1 - Categorical System of Knowledge and Practices for Dengue Prevention.

Community knowledge

The majority of the rural population is familiar with dengue fever through personal, family or community experiences. Respondents are clear about the main form of transmission of the disease and recognize the main breeding sites, as observed in their narratives:

"Dengue is a disease transmitted by a mosquito, which transmits it in this way, I don't know if there is another way of transmission, there must be; So, basically this is what I know, which occurs mainly when water accumulates for a long time..." E1 R- 5 - 7

"Well, it is a disease that is transmitted through a mosquito, but I don't know if there is another way to contract dengue. I've heard that there are two types of dengue, hemorrhagic and classic..." E17 R- 1513-1514

A point to be highlighted is that those interviewed recognize that dengue is a disease transmitted by mosquitoes and that it is linked to water storage. Furthermore, they describe in their statements that there are two types of dengue fever, which, from their perspective, is the result of the education provided in several health campaigns in recent years. However,

during the conversations, it was possible to note uncertainty regarding other transmission routes, which, as we know, are not widely disseminated in health education programs.

The vector cover letter

The peasants interviewed have limited knowledge about the characteristics of the vector and the family to which it belongs. Most of the representations about the anatomy of the *Aedes aegypti* vector follow sociocultural constructions that mention some characteristics such as the color of the legs and size:

"Isn't it that that big one, a big one like that, with big legs." E7 R-590

"... the mosquito is always big, with little white dots." E8 R-658

"A big one with black stripes, big, ugly." E19 R-1627

"... I imagine a big mosquito, with big legs and big wings like this..." E13 R-1183

The statements obtained agree in the recognition of some aspects of the vector's anatomy, but do not record answers about its habitat, feeding, reproduction or life cycle. This lack of data is related to the generalities addressed in different educational environments, which prevents comprehensive learning about the vectors that could contribute to better management of dengue care.

Symptom perception

When interacting with the interviewed population, they agreed in the perception of some symptoms that, from their point of view, are normal at an initial stage, but which generate a state of alert in the face of the persistence of these symptoms. Furthermore, among the main symptoms, participants recognized fever and headache. However, the responses revealed that there are people with gaps or little clarity about their symptoms, as they tend to associate them with other diseases or a minor "bug", which is why they do not receive adequate attention:

"The symptoms are like this, it starts with a little headache, fever..." E7 R-596

"It's fever, headache, diarrhea and that's what happens." E10- R-870-871

"Well, fever, headache, that's what I imagine..." E3 R-284

A basic level of knowledge about dengue symptoms is evident among people in the rural community interviewed, when its inhabitants can identify only two of the symptoms associated with the disease, but have limitations in recognizing other signs that indicate the presence of the disease. This limits opportunities for early identification of other symptoms that could prevent complications and health risks.

Preventive family practices

The peasants interviewed develop several preventive practices to avoid the proliferation of vectors. These homemade methods were learned from their ancestors and passed down from generation to generation. Furthermore, they recognize that the little radial information received allowed them to learn new techniques to prevent and control the vector, realizing its efficiency. Next, their narratives point to fumigation practices and hygiene in the domestic environment as the main preventive representations:

"This one, Katori, the one they say." E8 R-677

"...there are people who still burn eggshells, the boxes where eggs come from or use fly swatters..." E1 R-74-75

"Fumigating, not having dirty water stored like that, right? As you can see, the patio is clean, there is no water." E1 R-289-290

"Some here buy poison and fumigate at home..." E9 R-768

Those interviewed stated that burning the boxes where the eggs come from helps prevent bites because the smoke "scares away mosquitoes". However, they are aware that, although they generally fumigate their homes, this practice is not frequent and is associated with the high proliferation of mosquitoes during rainy seasons. On the other hand, they prefer to wash water storage tanks periodically, although they consider fumigation to be more effective. Thus, the peasant family finds ways to protect themselves from the disease by carrying out practices that minimize the presence of the vector in the home, but which can generate other health problems resulting

from the use of smoke and poison.

Facing suspicion

The families interviewed agree that, faced with symptoms that raise suspicions of dengue, they opt for self-medication, with the most frequent use of paracetamol. Considering this, it was investigated whether they knew what this medicine was for and the majority responded that it works to treat certain symptoms such as pain and fever. Furthermore, they stated that, due to the effectiveness of the medicine for other people, they decide to administer it to their family members when they become ill; that is, the preference is originated by own experiences and experiences of the community.

"Mainly paracetamol, if there was pain..." E4 R-358

"... give paracetamol every 6 hours..." E7 R-620

"Well, immediately go to a health center, that's the quickest way, because you can take care of yourself at home and if you don't know that, you have no experience with it. Well no, in this case, it's the pill that they always tell you, that I have a headache, I have a fever, take two paracetamol and that will help you." E3 R-301-305

This reflects family management of dengue fever at home, but it is important to clarify that if symptoms worsen, they immediately go to the nearest health center.

Traditional medicine

Traditional medicine to cure illnesses is a common practice among peasant families,

especially the use of medicinal plants to alleviate symptoms or repel mosquitoes. The interviewees highlighted that caring for the sick at home, consulting the elderly and using the knowledge of their ancestors are the main tools for them, given that they do not have permanent health services in the community, and due to the effectiveness of plants:

"...like mango leaf, which they cook with cinnamon and take with a pill, or they can use at least eucalyptus, lemongrass, which is also widely used, and lemon as well..." E14 R- 1331-1333

"Sometimes they would bathe in matarratón, with orange, guava and other plants said to be from the culebra, such as balsamina." E9 R-798-799

The exchange of medicinal plants, knowledge and care practices are essential attributes of the peasant population. They highlight solidarity, support and common forms of resistance to the difficulties of living in areas where health services are not as effective. Much of the cultural richness of these communities lies precisely in these survival strategies in the face of complex phenomena such as dengue fever.

An important aspect to mention is that rural communities use different plants to treat the symptoms of diseases, including dengue fever. For example, "verde-bichecita" mango leaves are widely recognized in the region as they are used to make powerful infusions that relieve colds, fevers and headaches. Likewise, lemongrass is a plant used to treat respiratory diseases, but it is also associated with the ability to combat the spread of vectors; and balsamine is known for its properties against fever.

DISCUSSION

The interviewed peasants have basic knowledge about the arthropod that transmits the disease, showing similarities with other studies^{8,17,18,26}, but differ from the results of Kumaran *et al.*²⁷ and Elsinga *et al.*²⁸, who found a higher level of knowledge among those interviewed. All interviewees know

how dengue fever is transmitted, although in some cases there is uncertainty about the existence of other routes of transmission of the disease, highlighting a certain fragility in understanding the concepts related to the disease, which is consistent with the results of Khot *et al.*²⁹, who highlighted deficits in

understanding the timing of mosquito bites and the identification of breeding sites.

On the other hand, the respondents perceive certain anatomical aspects of the mosquito as distinctive characteristics of the vector that causes the disease, without necessarily having in-depth knowledge about the insect's entomological aspects (habitat, diet, life cycle). Their narratives frequently highlight sociocultural representations of the mosquito that transmits the DENV, referring to the color and size of the legs, which coincides with findings by Guevara *et al.*³⁰ and Pérez *et al.*³¹.

Among all the symptoms of dengue fever, those interviewed specifically recognized fever and headache as the main ones. These responses are in line with results from Marrufo *et al.*²², Valencia *et al.*¹² e Valencia *et al.*¹¹, although they partially differ from Pérez *et al.*³¹, which predominantly highlight headache and joint pain.

The practice of fumigation, including the use of anti-mosquito coils, is the most common among participants in this study, which coincides with the results from Sănu *et al.*³², which indicate that the rural population prefers the use of these spirals to repel mosquitoes. It is important to mention that, although the practice of fumigation is not frequent among participants, it was possible to observe the occasional use of spirals with little or no knowledge about their effects on health. According to Palacios *et al.*²³, when these insecticides are burned, they produce smoke with tiny particles that can cause lung problems, convulsions and vomiting.

On the other hand, some peasants practice burning egg cartons or using incense from regional plants such as matarratón and balsamina, also used by indigenous groups^{17,18} and Afro-descendants²⁰ in Córdoba, as well as studies of the Chachis community in Brazil, which highlight lemongrass as a potent natural repellent³³.

In the care that the peasant population offers to a patient with dengue fever at home, medicines, traditional medicine and occasional both are used. Home observation made

it possible to highlight the connection between care and medicinal plants. Furthermore, in the interviewees' narratives there were notable expressions of solidarity, support between neighbors and respect for the accumulated knowledge of the elderly as central aspects of their daily lives. Similar findings were identified by Valencia *et al.*¹³ in peasant populations, which suggests that these attributes related to health care are characteristic of families in this region.

Traditionally acquired knowledge about dengue indicates that it is considered an urban disease transmitted by vectors. This perception limits adequate attention to the rural population, despite evidence showing that DENV transmission in rural areas is occurring at similar rates to urban areas³⁴ due to greater mobility and current commerce. Rural groups play a fundamental role in the transmission dynamics of the virus^{35,36}, which makes exploring this phenomenon in rural environments a challenge for academia, nursing and public health policies, especially considering the different subjectivities and ways of life¹⁸. It is important to highlight that dengue surveillance in rural areas optimizes public health activities³⁷.

Consequently, the need to train nursing professionals who are aligned with these sociocultural realities is increasingly urgent^{38,39}. Health is a transcultural issue that permeates all spheres of people, families and communities, highlighting the importance of understanding the representations of diseases from the perspective of individuals cared for, as well as the responses developed to combat them⁴⁰. Each social group has particularities according to their views and understanding of the world, and peasant families are no exception; on the contrary, they hold rich knowledge, strengths and resistances that deserve to be explored to offer adequate care through nursing¹⁸.

From a nursing perspective, these findings have significant implications for the development of public health programs targeted at rural communities. The need to develop specific educational strategies that address

perceptions about dengue fever as an exclusively urban disease stands out. It is crucial to provide accurate and relevant information about virus transmission^{33,34} in rural environments and to emphasize the fundamental role that rural communities play in virus transmission dynamics¹⁵, as housing conditions and heavy rainfall in some rural environments increases dengue fever cases, making it necessary to implement surveillance and control programs.

Nurse practitioners can play a key role in implementing these educational interventions by leveraging their proximity to rural communities and their ability to provide culturally sensitive care. According to Bravo

and Nava⁴¹, the incorporation of participatory approaches that value and take advantage of local knowledge and traditional health care practices, such as the use of medicinal plants, is fundamental to the success of these initiatives.

The results of this study highlight the importance of adapting dengue prevention and control interventions to the sociocultural and contextual realities of rural communities. Nursing professionals have the unique opportunity to lead these efforts, collaborating closely with communities to develop effective strategies that improve the health and well-being of those living in rural areas¹⁸.

CONCLUSION

The rural population's perceptions about dengue are based on basic knowledge about the vector that transmits the disease, its symptoms and care in the home environment. The information that peasants have generally comes from radio programs and some health training sessions, highlighting their own knowledge about symptom management by older people or people with extensive experience in the locality. A gradual replacement of natural preventive practices by the incorporation of insecticides was observed, often without the necessary care required for their use.

As for care practices, the population relies on traditional medicine and the use of medicines, with families using only one of these approaches, while the majority mobilizes care practices based on knowledge transmitted from generation to generation (use of plants and in-

fusions). It is important to mention that these plants are found locally, as many grow them on the side of the road or in their backyards. Other participants opt for medication, with paracetamol being the most common to treat the most common symptoms, such as headache and fever, going to the nearest health center if symptoms persist.

In short, the sociocultural characteristics of rural families, their knowledge and specific ways of understanding health and illness, exposure to risk and deficiencies in the provision of health services are challenges for nursing, which needs to recognize the complexity underlying these characteristics. Furthermore, nursing activities must respond to the complexity of the factors involved and promote interactions between health agents to enhance cross-cultural care processes in people, families and communities.

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