

Pesticides and illness: rural women's view

RESUMO | Objetivo: Compreender como mulheres que vivem e trabalham na agricultura familiar entendem a associação entre uso de agrotóxicos e adoecimento. Metodologia: estudo qualitativo descritivo, realizado com 29 mulheres, em município do sul do Brasil, com dados coletados de janeiro a junho de 2018, através de questionário socioeconômico e entrevista aberta, tratados por meio da análise temática. Resultados: emergiram três unidades temáticas: faz mal, mas não conseguem explicar; causa doenças segundo vivências ou informações advindas de familiares e comunidade; afeta a saúde da população em geral e não só dos trabalhadores rurais. Considerações finais: A diversidade nos entendimentos indica que há oportunidades locais para a discussão do tema por meio da educação em saúde, como estratégia para a promoção da saúde da população rural, a partir de uma perspectiva de gênero. Nesse sentido, deve ser considerada a importância da literacia para a promoção da saúde.

Descritores: Agrotóxicos; Processo saúde-doença; Educação em Saúde; Saúde da população rural; Mulheres.

ABSTRACT | Objective: To understand how women who live and work in family farming understand the association between pesticide use and illness. Methodology: a descriptive qualitative study, conducted with 29 women in a municipality in southern Brazil, with data collected from January to June 2018, through a socioeconomic questionnaire and an open interview, treated through thematic analysis. Results: three thematic units emerged: it is bad, but they cannot explain it; it causes diseases according to experiences or information from family members and the community; it affects the health of the population in general and not only of rural workers. Final considerations: The diversity of understandings indicates that there are local opportunities to discuss the topic through health education, as a strategy for promoting the health of the rural population, from a gender perspective. In this sense, the importance of literacy for health promotion should be considered.

Keywords: Agrotoxics; Health-disease process; Health education; Rural population health; Women.

RESUMEN | Objetivo: Comprender cómo las mujeres que viven y trabajan en la agricultura familiar entienden la asociación entre el uso de plaguicidas y la enfermedad. Metodología: estudio cualitativo descriptivo, realizado con 29 mujeres, en un municipio del sur de Brasil, con datos recogidos de enero a junio de 2018, a través de un cuestionario socioeconómico y entrevista abierta, tratados a través de análisis temático. Resultados: surgieron tres unidades temáticas: es malo, pero no saben explicarlo; causa enfermedades según experiencias o informaciones de familiares y de la comunidad; afecta la salud de la población en general y no sólo de los trabajadores rurales. Consideraciones finales: La diversidad de comprensiones indica que existen oportunidades locales para discutir el tema a través de la educación en salud, como estrategia de promoción de la salud de la población rural, desde una perspectiva de género. En este sentido, se debe considerar la importancia de la alfabetización para la promoción de la salud.

Palabras claves: Agrotóxicos; Proceso salud-enfermedad; Educación para la salud; Salud de la población rural; Mujeres.

Leda Aparecida Vanelli Nabuco de Gouvêa

Nurse. Doctor. Professor at the State University of Oeste do Paraná, Cascavel/PR Campus.
ORCID: 0000-0001-6641-7114

Claudia Ross

Nurse. Doctorate. Teacher at the Universidade Estadual do Oeste do Paraná, Cascavel/PR Campus
ORCID:0000-0003-0540-1455

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Sebastião Caldeira

Nurse. Doctor. Teacher at the State University of Oeste do Paraná, Cascavel/PR Campus.
ORCID: 0000-0003-2827-1833

Elizabeth Aparecida de Souza

Nurse. Master. Teacher at the Universidade Estadual do Oeste do Paraná, Campus Cascavel/PR.
ORCID: 0000-0002-0839-680X

INTRODUCTION

Pesticides are chemical substances made with different active principles and their compositions aim at pest-ticidal, fungicidal and herbicide action, among other objectives, in agricultural production. To guarantee the harvest, they are used by both large and small rural producers. Due to its potential for human and animal illness and environmental contamination, its intensive and indiscriminate use is considered a public health problem.

The direct exposure of people to these

Nelsi Salete Tonini

Nurse. Doctorate. Teacher at the State University of Oeste do Paraná, Cascavel/PR Campus.
ORCID: 0000-0003-4704-7634

Lili Marlene Hofstätter

Nurse. Master's degree. Teacher at the State University of Oeste do Paraná, Cascavel/PR Campus.
ORCID: 0000-0002-9852-1300

Maristela Salete Maraschin

Nurse. Master. Teacher at the State University of Oeste do Paraná, Cascavel/PR Campus.
ORCID: 0000-0003-2184-5056

Gicelle Galvan Machineski

Nurse. Doctorate. Teacher at the State University of Oeste do Paraná, Cascavel/PR Campus.
ORCID: 0000-0002-8084-921X

chemical agents in agricultural production is verified in several stages that include storage, preparation and application, as well as in circumstances of accidents and environmental contamination. ⁽¹⁾ However, indirect exposure is a present condition for those who live and work in rural areas, which, among other problems, can lead to exogenous, acute or chronic intoxication. The acute ones are those that can produce signs and symptoms and, depending on the intensity, trigger the search for health care in health units, urgent or emergency care. The chronicles, in turn, are those that develop health problems over the years. Because they are obligatory to report, exogenous intoxications produce health information that indicates the seriousness of the problem, making it possible to identify specific regions of the country where they occur more frequently. However, there is underreporting, with around 20% of cases not reported due to low demand or difficulty in accessing health care by the population, failure in diagnosis and non-notification by health professionals. ⁽²⁾

The search for evidence of an association between exposure to pesticides and human illness has been an important topic in national and international research. ^(1,3-5) Although the picture of exogenous intoxications is predominant in men, as shown in several studies as a result of the tasks they perform on rural properties, women can also take on activities and be more exposed to the risk of poisoning, one of the reasons being that they do not have adequate technical safety information. ⁽⁶⁻¹⁰⁾ An epidemiological study that disaggregated the cases of intoxication notified by sex in the southern region from 2013 to 2017, identified that it was lower for females. ⁽¹¹⁾ Regarding accumulated exposure and illness, a study carried out in Tanzania concluded that women are at greater risk when working in the application of pesticides or exposure during harvesting, planting and soil preparation, associated with the long hours of work from an early age and the multiple exposures they suffered at work and in domestic activities. ⁽⁵⁾



Based on the above, it is considered that the issue of rural women's health in Brazil is conditioned by social determinants in which the work they perform is central.



There is a need for investigations that adopt a gender perspective in order to explore how they live and work in economic, cultural, social and even geographic, so diversified in the country, and, above all, how they access, understand and

apply information on how to be healthy in their daily lives. It is considered that health literacy, understood as individual skills to convert information about health into attitudes and behaviors, can be developed through health education, as a strategy in health promotion, which contributes to women's empowerment and social participation. ⁽¹²⁾ Furthermore, it can be important to add discernment and relative strength to decisions taken within the family, so harmed by the patriarchal culture that is still reproduced in Brazil.

It is understood that Primary Health Care is a care model that integrates the Unified Health System (SUS), and in it, through health units, there is potential for health professionals to provide access to information relevant to illness associated with the use of pesticides. The heterogeneity of individuals, families and population groups in their areas of activity and particularities regarding the assimilation and application of information need to be considered. It is assumed that access to health information is paramount for the development of health literacy, therefore, health professionals need to have skills and competencies to develop accessible and interactive communication with individuals and the population under their care. ⁽¹³⁾ Thus, the guiding question of this work is: how do women in the rural context understand or interpret the relationship between pesticides and illness?

Given the above, the objective of this study is to understand how women who live and work in family farming understand the association between the use of pesticides and illness.

METHOD

This is a qualitative, descriptive study, carried out with women from family farming in a municipality in the west of the State of Paraná. The municipality of the present study had 285,000 inhabitants in 2010, the year of the last demographic census in Brazil, and 6% of this total, that is, approximately 16 thousand

inhabitants, lived in households in rural areas. This rural population at the time was made up of around 7,200 females and 9,000 males, distributed in eight administrative districts in which the economy is strongly marked by agribusiness with grain production (soy, corn, wheat, oats), cattle, swine and poultry farming, among other activities. The sample was intentional, formed by 29 women, delineated by the principle of data saturation. ⁽¹⁴⁾ The data collected were from January to June 2018, by the researchers themselves, who had no links with the health units or other spaces frequented by the participants, the following techniques were adopted:

a) questionnaire with sociodemographic characterization, with questions about activities carried out at home and on the property, as well as about the use of pesticides and the person responsible for managing them, applied by the researchers;]

b) open interview guided by the following question: what do you know about pesticides and illness?

Participating women were invited to collaborate with the research in the following spaces: health units in rural districts, urban fairs and rural homes. The interviews were carried out individually, after scheduling and in an environment that preserved privacy, with authorization for audio recording (digital media), with an average duration of 25 minutes and only after signing the Free and Informed Consent Form (TCLE). Inclusion criteria were: being over 18 years old, residing in rural areas and attending rural health units. In the records made, from the recording to the transcription of the speeches, these were identified by codes (M1 to M29) and any identifying element was deleted using the resource “[...]”.

The speeches were transcribed and read according to the thematic analysis procedure ⁽¹⁴⁾, in which researchers pay attention to words or phrases that are repeated in several statements by

different informants. The construction of thematic units occurred through the recurrence of information that was analyzed in dialogue with the literature on the subject. In the texture of the speech of women living their daily lives, it was possible to extract three thematic units: it's bad, but they can't explain it; it causes diseases according to experiences or information from family members and the community; affects the health of the general population and not just rural workers. This study is part of a larger research that aimed to apprehend the perception of rural women workers about the health-disease process and its relationship with work in family farming, according to Universal Call MCTI/CNPq N° 01/2016. It was approved by the Research Ethics Committee under opinion number 2.356.516/2017 and CAAE 78560217.0.0000.0107. It complied with all the ethical precepts of Resolutions n° 466/2012 and n° 510/2016. There are no conflicts of interest.

RESULTS

The age group of the 29 interviewees ranged from 21 to 69 years, 86.2% being married or in a stable relationship, 82.7% had children, most with up to three children. Regarding schooling: 10.34% sign their name; 51.72% from four to seven years of study; 20.7% in high school and 17.24% with higher education. All live on properties ranging in size from two to eight bushels (approximately four to 19 hectares). The size of the property and the degree of use of the land are related to the monthly income, which is generated by the combination of different activities inside and outside the property: day laborers, employed on the farm; sale of the property's production (milk, grains, vegetables, legumes and roots) in markets and fairs and; baking. Main monthly income equivalent to the minimum wage: 3.4% under one; 27.6% up to one; 6.9% from one to two; 44.8% with two to three; 13.8% with three and 3.4% with more than four.



Most of the women interviewed (75.9%) perform, in addition to domestic activities, rural activities and the sale of products in markets, fairs and delivery to municipal school lunch programs.



Regarding the use and process of preparation and application of pesticides on the rural property, 37.9% reported that they do not currently use these products; 3.4% prepare and apply the product with machinery; among the others who reported using it, 34.5% declared that the husband or partner handles it (13.8% indicated the father, son-in-law or son) and 6.9%, although they do not use it in agricultural production on the property, they have contact with the product when working with the farm or aviary.

The reasons given by the women for not using pesticides on some properties were: high cost; the type of activity on the land that does not require the use of pesticides and, if they do, it is usually in the garden for some plants and intended for personal consumption; they used it a lot in the past, but because they leased the

land, they no longer manage the product; in the case of two women who produce vegetables and roots for sale, they do not use them, as the method used in cultivation is based on agroecology.

With regard to the understanding of the relationship between the use of pesticides and illness, the first thematic unit was that it is harmful, but they cannot explain what this means. There were no clear definitions of harmfulness, as can be seen in the following statements:

It's bad, right? If you eat the poisoned vegetable, it is bad for your health. (M1)
We see for ourselves, since we use it, that it is very dangerous, right? (M9)
Not a good thing! Because I plant there, I have the grapes there, when the pesticide is applied, everything rolls up, everything becomes ugly. (M29).
We already associate the two, right!?
Because pesticides, the excessive use of pesticides, cause diseases. (M22).
A gente já associa os dois né! Porque o agrotóxico, o uso excessivo de agrotóxico, causa doença. (M22).

An important finding is that two interviewees mentioned that they are not interested in knowing about the subject, as they understand that it is part of their husband's or partner's job:

We don't have much knowledge, we know it's bad, but I don't have much knowledge about it. My husband has it, but I don't have much knowledge. (M12)



We don't know that, we don't deal with it. (M27)



In the second unit, delimited by the statements that pesticides cause disease, according to experiences or information from family members and the community, that is, from the social universe they live with, these were recurrent, as can be identified when they mention the illnesses associated with the use of pesticides. In this regard, it was decided to present the data using the terms used for illness or injury captured in fragments of different speeches: intoxication (M5, M11, M15, M24, M26, M28); cancer (M3, M4, M14, M15, M18, M21, M24, M28); liver problem (M25, M28); lung problem (M4, M10); heart problem (M4); kidney problem (M28); infertility (M21); depression (M21); suicide (M19); accident with death (M10). Some expressive speeches of this thematic unit were:

It's a problem, my husband has blood poisoning. (M5)

My son-in-law, he had hepatitis, he can't even think about poison, he can't use anything anymore. (M25)

It causes cancer, depression, and the problem of women not having children. (M21)

It is a very strong product, this one causes disease. These days, one of them took it to kill himself, he stayed there for two months, then everything started to melt, there was no way. That one died. (M19)

There was one who ate cake with a hand covered in poison, so, like, it's dangerous, the person dies! (M10)

In the third unit that added information stating that pesticides affect the health of the population in general and not just rural workers, some participants consider that there are economic, political and social aspects involved in the use of pesticides. The following statement emphasizes the need to use pesticides properly, otherwise toxic products can be taken to fairs or markets and thus affect the health of consumers.

If I put the poison on my cabbage, I have to respect the need, you know? I cannot apply the product today and harvest tomorrow. You have to use it the right way. (M17)

Another aspect that emerged, even in this thematic unit, is that neighboring properties can and are affected when large areas are sprayed with pesticides, which affects production on the small rural property. The identification that someone is applying these products to the plantation is narrated by the presence of a characteristic odor that spreads in the air and later the occurrence of damage when reaching the vegetables planted for consumption or sale:

We are in the middle there, on the other side there is soy, on this side it is also, we are in the middle, when they pass the poison we feel that stench and it damages the vegetables a lot, right? We feel harmed, it has already been claimed, but they don't care. (M16)

The expansion of pesticides in nature during and after their application, by affecting adjacent territories, was the motto of the speech of three other women interviewed, that is, this is part of everyday life in rural areas. The situation was described as follows:

What we know, we take care of, and we don't use it, but it's no use in the place, if one doesn't use it, the other uses it. (M7)

The biggest problem is not the owner of the garden, it's the neighbor who spreads the poison. Last year there was a guy who passed the [...], he ended up with us, because he killed our entire rural area, killed tomatoes, killed cucumbers, we started from scratch again, a complaint was made and what was done? Gave him a ticket and he continued. It should be banned. (M17)

At the time of this research, the technical drift of spraying and cases of intoxication of children in a rural school close to the home of one of the women interviewed, characterized a situation that was very widespread in the region. It was, in this case, the result of the drift process and M21 recalled what happened and the progress in legislation on the use of aerial application, as well

as the creation of barriers to the drift of pesticides in the municipality:

Today there is research, we had several lectures and even a law that was approved for us in the municipality, which is about the issue of barriers, not to use pesticides near schools and rural villages; it was, mainly, also, an agenda raised by us. The school in the countryside settlement is on the border with the farm. The farmer, sometimes, at three o'clock in the afternoon, would use poison and poison all the children. (M21)

The view that those who produce food and cultivate the land must be careful with their health and that of people in society in general was present in some of these women's statements:

If we thought about the other, because most only think about them. When people apply pesticides and desiccate beans in a field, how many people do they harm, who get sick... they don't think about that. (M7)

So, today, for us, planting without poison is, as I said, taking care of our health and also that of others. The investment for the farmer has decreased, so, today, for you to plant, it is no longer mandatory to sell organic products in the markets and everything else. So, what the government wants is to decrease the population more and more? Hospitals and cancer centers are increasing, but not increasing our main medicine, which is our healthy diet. If we eat healthy food, without poison, we would have much better health. (M21)

DISCUSSION

The socioeconomic profile of the women interviewed, such as the size and shape of the land, is insufficient for income generation. This condition is characterized as an aspect that drives these women to play a leading role in supplementing the family income.⁽¹⁵⁾ Even considered as a separate job, it is also linked to family care work. In this regard, this

aspect is corroborated by studies that also identified that non-agricultural activities such as baking, making jams and handicrafts have become an important resource for supplementing income and promoting the autonomy of women in rural areas.⁽¹⁶⁾

Regarding the use of pesticides, even if they are not directly manipulated, except in some situations such as home gardens and gardens; in these cases, with the use of improvised spray bottles, and manipulated without any protection on the hands or face, they are vulnerable. The understanding that products are harmful to health in a generic way comes from terms used like poison, that it is dangerous and that excessive use causes harm. This understanding can produce habits and behaviors that do not link non-direct exposure to toxic agents as factors that generate illness. Exposure to such products can occur in different ways, such as in storage areas or when collaborating in some of the phases of the agricultural work process.⁽¹⁶⁾ An important form of exposure is through handling the clothes and boots that were used in the preparation and spraying process, which, according to Regulatory Standard 31 (NR 31), is considered a direct contact action.⁽¹⁷⁾ With the possibility of pregnancy and the fact that they are often accompanied by children, exogenous intoxication in women becomes even more problematic.⁽⁷⁾ In a study on issues related to the environment and illness, women reported greater concern with the potential for illness related to pesticides, although they did not use protection when accessing the products at home, when washing clothes and utensils used and when walking around the plantation at the time of application or shortly after.⁽¹⁸⁾



In view of these observations that were identified in the information collected, it is emphasized that the adoption of a gender perspective in studies on illness and the use of pesticides is a public health need.



The division of tasks on the rural property may be one of the explanations for the notion that knowing about pesticides is a task for men, since women, in general, do not handle the products. In the context of epidemiological studies, exogenous intoxications arising from rural areas have shown that males predominate in occurrences, but females also constitute a significant population.⁽³⁾ Most of the evidence on the harmful effects of pesticides on the health of adults comes from studies with occupationally exposed men; and in this sense, non-occupational routes, in regions of great agricultural production, are not sufficiently studied.⁽¹⁹⁾ Explanations for this have been restricted to two aspects: first, that the population of women in rural areas is smaller than that of men; and the second, which may be related to the type of work performed, according to the division of labor between men and women, with the former being

responsible for the process of preparing and applying chemicals on the plantation. ^(1,4-5)

The understanding that pesticides cause diseases, according to experiences, has in the speeches as a recurring example the intoxications linked to an understanding that results from the careless use of the producer. Exogenous intoxication by these products is an important health problem in the region studied. ^(2,17) The reference to cancer was also expressive, however, none of the responses indicated that it could result from a process of chronic intoxication. Contact with pesticides is being associated with the development of prostate cancer, non-Hodgkin's lymphoma, leukemia, multiple myeloma, bladder and colon cancer. ⁽²⁰⁾ In two municipalities in Paraná, an average of 40% of respondents with a reported history of exposure to pesticides during planting, harvesting, weeding and application activities, developed some form of cancer, with prevalence of skin, prostate and breast cancer. ⁽¹⁷⁾ The development of mental states such as depression and suicide attempts or consumption was present in the interviewees' speeches, findings that are corroborated by the increase in mental health problems in rural areas in the country. ⁽¹⁷⁾

Thus, it is in the interest of public health that women understand the relationship between the use of pesticides and illness in a broader way, extrapolating the knowledge that circulates in their daily lives that it is only direct contact that can cause a health problem. Practical or empirical knowledge is predominant, given the immediate relationships that can be established between the cause and the consequence of the use of chemical products in farming. It is considered that it is necessary to invest in health education strategies beyond the guidelines for the proper use of Personal Protective Equipment and other instructions related to the use of pesticides, which are notably important, but

which are restricted to the work process.

Disseminating the discussion of forms of illness that are being evidenced as a result of chronic intoxication by pesticides, such as cancer and mental disorders, is a way of adding knowledge to the knowledge of women in rural areas. Provide tools for them to realize that illness is not only associated with direct contact, by accidental or voluntary exposure, but also the way of conducting agricultural production. Even the reported local situations relevant to the technical drift of products in the application that reach public spaces, such as rural schools, are themes that need to be considered as a social problem, which concerns the population that lives and works in rural areas.

A problematic issue of the use of pesticides present in the literature is their abusive and inappropriate use, whose cause is related to the low education of farmers, which makes it difficult to understand product labels, including aspects such as font size, failure to understand the harmfulness of the product, among others. ⁽²¹⁾ Such elements, associated with the lack of use of Personal Protective Equipment and the non-observance of care with the storage of products on the property, are also mentioned as the primary cause of the harmfulness of pesticides to the health of rural workers. ⁽³⁾

In the unit that aggregates the lines that converge in stating that pesticides can cause illness in the general population and not just rural workers, it was possible to identify that the concern and responsibility in the use of pesticides in production should be generalized among producers. These are statements that can be identified as close to an understanding of the social determinants of the health and disease process in which macrosocial causes are involved.



Some of the women interviewed refer to concern for the collective, from consumers who may be exposed to toxic agents when consuming agricultural products.



Also, for the participants, not using pesticides on the land where they cultivate does not mean that they are not exposed, or that in this way they would be able to preserve their own health and that of their family, as there are many products that they need to buy and that cannot be controlled in production. In this sense, they are exposed and vulnerable, running risks: when directly or indirectly exposed in their daily work with toxic products or because they are on the property during their environmental dissemination; as consumers who need to buy foodstuffs to complement what they do not produce on earth.

They also consider that the State has the responsibility to supervise the use of toxic products in agriculture and how they are applied. One of the important

events in the region was the creation of municipal legislation on the prohibition of aerial spraying, which resulted from the union of producers and the political protagonism with local councilors. However, it is worth mentioning that political pressures from economically representative groups can defend the facilitation of the use of pesticides and with permissive laws produce the chronicity of this problem in public health.⁽²¹⁾



In small rural properties, the incapacity for work of the family members who work the land can increase social vulnerability and contribute to emotional exhaustion, which can trigger mental disorders and, as in one of the statements in the previous unit, lead to the intentional ingestion of toxic products.



In this set of understandings of women presented here, some evocations are evident that, despite understanding that the problem of the use of pesticides is not exclusive to the individual scope, through the personal behavior of farmers or rural workers, they understand that a change in production processes is possible. Therefore, identifying alternatives for healthy and safe food production for rural workers is an essential task for health promotion. It is necessary to develop in agriculture a model that promotes life and values community life.⁽²²⁾

Health education as a strategy for health promotion also involves developing precautionary and protective measures against the effects of pesticides on human health in the family⁽²³⁾ and collective environment. Therefore, promoting knowledge for women in the development of production techniques and incentives for groups that cultivate the land without using pesticides is an important action in health services.⁽²³⁻²⁴⁾

Identifying how population groups apprehend and explain the effects of using pesticides on health is one of the assumptions for defining personalized educational strategies, carried out in Primary Health Care and can contribute to preventing diseases and promoting the health of women, their families and the community in which they live.

In this study, it was possible to identify, through the apprehension of understandings on the proposed theme, that it is of paramount importance to include women in technical training carried out in rural communities; help in understanding that they need to acquire knowledge about what is used in the land in order to develop ways to prevent acute or chronic poisoning due to direct or indirect exposure; socialize knowledge arising from scientific studies through accessible language; increasing the perception of risk among other significant themes to promote health by improving the literacy of rural women. It is emphasized that health education strategies

that use participatory methodological approaches and sharing among women themselves in small rural communities, promoted and mediated by health professionals are of social relevance and validate knowledge already applied in everyday life in the form of healthy habits and behaviors.

The limit of this study is the contingent of participants, who, although they were in different contexts and have helped in the diversification of the profile of rural women, do not cover the different productive modalities carried out in family agriculture in the region. However, the study made it possible to identify that research is still necessary in order to reveal how educational approaches with themes that involve women's work in family farming can be more fruitful if it also involves a discussion based on a gender perspective. Regarding this aspect, it is considered that male and female rural workers are in non-homogeneous contexts, whether in terms of social, productive and cultural formations, and it is pertinent to recognize these specificities regarding the conditions of these women's ways of life.⁽²⁵⁾

CONCLUSION

With this study, it was understood that women who live and work in family farming perceive the association between the use of pesticides and illness through three levels. Some of them present a deepening in relation to knowledge, either elaborating examples of diseases or problematizing in relation to the social and economic conditions that determine the use of toxic products in farming. However, there is still a need for them to develop a better understanding of the problem as an issue that goes beyond the work carried out in direct contact with the products. Primary Health Care, in rural health units, for example, can be a potential space for educational approaches with themes that are anchored in everyday life, but that are captured and developed through sharing in groups of women, or rural worke-

rs in different social spaces, and discussed in a dialogical way. It is emphasized that health workers and managers can contribute to in-

tensify the knowledge of the population, in its cultural specificities, and, therefore, contribute to the formation of an ecosystem of

healthy knowledge about what it means to be healthy and what can promote illness in the context of rural work. 🌿

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