

SMOKER THAT DOES NO SMOKE: A REFLECTION UNDER AN ECOLOGICAL PERSPECTIVE

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ABSTRACT

The tobacco farming is an agricultural activity designed to tobacco cultivation. Workers involved in this activity are exposed to various occupational hazards that this type of culture represents to their health and the environment. This is an article of theoretical reflection aimed to investigate the relationship between the worker who maintains contact with tobacco in the workplace and the reflection of this life/health interaction with nicotine absorption leading to the Green Tobacco Sickness, based on the Laustsen and Frontier ecological perspective. Tobacco farming workers are exposed to nicotine through skin contact with tobacco, especially during the harvest, and through inhalation of nicotine in barns where the handling of the product occurs. Nicotine is biotransformed into cotinine in the body. Increased levels of cotinine in the urine of exposed workers configure the presence of the Green Tobacco Sickness (GTS). Thus, it is important to highlight this issue in order to enable health professionals to propose preventive actions and the development of awareness strategies by tobacco farmers in the use of personal protective equipment.

Keywords: Nursing. Tobacco. Nicotine. Health of rural workers. Ecology.

INTRODUCTION

Tobacco cultivation is among the agricultural practices performed by rural workers. In Brazil, tobacco stands out as one of the main export products, being the second largest tobacco producer and the largest exporter in the world after China⁽¹⁾. In the Southern region of the country, tobacco is the third largest export product⁽¹⁾.

The tobacco production process leads workers to acquire particular characteristics such as a multiplicity of tasks, excessive physical effort, exposure to bad weather, and inadequate posture⁽²⁾, in addition to exposure to occupational hazards and health problems.

The working day in the tobacco culture is arduous, there is no time to start or stop because the culture is divided into stages over time, and presents more and less intense periods of work⁽³⁾.

Tobacco is responsible for compromising the health of people, especially rural tobacco farmers, in different ways during the tobacco

handling and production stages such as exposure to pesticides, musculoskeletal injuries, respiratory diseases, typical accidents, risk of skin cancer because the leaf harvesting occurs in the months of the highest peak of solar radiation intensity, and the Green Tobacco Sickness (GTS).

The GTS is an acute intoxication caused by the absorption of nicotine through the skin from direct contact with tobacco leaves, mainly during the cultivation and harvesting of leaves⁽⁴⁾ and through the inhalation of nicotine⁽⁵⁾. Therefore, tobacco farmers develop their tasks in an environment with the presence of nicotine and this can be harmful to their health.

The relationship between organisms and the environment is defined as ecology. "The human being and all living things are ecological entities that relate to other organisms and the environment"^(6: 1). Thus, the relation between individual and environment is characterized by actions, reactions, and constraints between them⁽⁶⁾. The environment is defined as a condition, a circumstance, a factor or variables

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that affect the individual, family, or community, and the ecosystem encompasses the circularity of influence and causality creating relationships between the environment and everything that inhabits it⁽¹⁾.

In this scenario, the nurse professional can act as a mediator and facilitator in the disease prevention process, proposing health education activities to the tobacco growers, focusing on the importance of the use of personal protective equipment to avoid intoxication by contact. These professionals, with specific knowledge, can act on the conditions that endanger the health of workers in the workplace, who are able to intervene in the health/disease process not only when the disease is installed⁽⁷⁾.

The objective of this reflection is to investigate, based on the ecological perspective of Laustsen and Frontier, the relationship between the working individual who maintains contact with tobacco in his work environment and the reflection of this interaction on his life/health through the absorption of nicotine, leading to the Green Tobacco Sickness.

METHODOLOGY

This is a theoretical reflection that covers an ecological perspective derived from the student performance at the Nursing/health Course work and socio-environmental context, at the Nursing Ph. D. Graduate Program in Nursing/Health of the Federal University of Rio Grande - FURG/RS. Among the various readings proposed in the course, the studies of Laustsen⁽⁶⁾ and Frontier⁽⁸⁾, discussed in an integrated way with other literature material, and in this context, with the intention to make an analogy about the concepts and definitions of the ecosystem proposed by the authors^(6,8) with the production of knowledge through another aspect, that is, individual/workers who are in contact with tobacco and their work environment.

Thus, the literature enabled the examination of concepts capable of sustaining a possible analogy with the ecosystem approach. The ecosystem approach in health enables the understanding of the relationships between individuals and the environment and the reflection of this interaction in people's

life/health.

The motivation for the theme is in line with what the Laboratory for the Study of Socio-Environmental Processes and Collective Health Production (LAMSA) has focused considering the health of the worker in that context.

RESULTS AND DISCUSSION

For a better understanding of the subject and the achievement of the proposed objective, two categories will be presented: "tobacco growing and tobacco contact", followed by "the Green Tobacco Sickness and the working environment of tobacco farmers"..

Tobacco farming and tobacco contact

Tobacco farming is very demanding in terms of workforce and time; the productive cycle lasts an average of 10 months and is divided into phases: seedling production, soil preparation, seedling transplantation, field treatments (application of pesticides, chemical ground treatment, and manual soil preparation), harvesting, processing, storing, classification (by tobacco leaf size and color), and baling⁽²⁾.

The Burley-type tobacco has a color ranging from light to dark brown, the entire plant is harvested and hung in rods and/or wires in sheds, and thus, the curing and/or drying processes occur at room temperature⁽⁹⁾. The curing process takes an average of 30 days. This type of tobacco requires fewer workforces, being less intense, and leads the farmer to have less exposure with the tobacco leaf.

The Virginia-type tobacco is called "live tobacco" due to its golden-yellow color, it is harvested leaf by leaf and, unlike the Burley, is cured by forced heat in wood-burning stoves for the drying process of leaves; this curing process takes about five days⁽⁹⁾. The harvesting and curing stages require a greater use of manpower and, besides being an exhaustive work⁽⁹⁾, it still requires the temperature control of the greenhouse during the day and at night. In addition, there is concern about what this type of production generates to the environment in view of the use of wood in the drying process, in several cases, leading to the suppression of native forests⁽¹⁰⁾.

Thus, one of the health problems affecting tobacco farmers is the Green Tobacco Sickness (GTS). The GTS is an acute intoxication characterized by signs and symptoms of nausea, vomiting, weakness, dizziness, headache, abdominal cramps, increased salivation, chills, and fluctuation in blood pressure and heart rate^(11,12).

The diagnosis is based on the triad consisting of the history of exposure to tobacco cultivation, clinical analysis (signs and symptoms), and measurement of nicotine levels in the body⁽¹²⁾. This measurement is performed by dosing the amount of cotinine in urine, blood, or saliva. Cotinine is a biomarker of exposure to evidence how much nicotine has been absorbed by the body⁽⁵⁾.

This disease was first identified in the 1970s⁽¹¹⁾. Since then, research on GTS has been conducted in several countries around the world. GTS had not yet been reported in Brazil, despite being the second largest tobacco producer in the world. In 2007, the first epidemiological investigation in Arapiraca, in the State of Alagoas, confirmed the disease for the first time⁽¹³⁾ through clinical information (presence of vomiting, nausea, headache, and dizziness) and laboratory tests (nicotine test), and in Candelária⁽¹⁴⁾ in Rio Grande do Sul in 2008, through case-control studies. The first prevalence study on GTS was developed in 2011 in the municipality of São Lourenço do Sul in the state of Rio Grande do Sul, during the period of the Virginia-type tobacco harvest⁽¹²⁾.

The GTS is globally known as an acute occupational disease due to the absorption of nicotine by skin contact during the harvesting of tobacco leaves, especially when the leaves are wet in the early hours of the morning; body sweating facilitates its absorption⁽¹⁵⁾. The lack of experience in working with tobacco is a factor associated with GTS; other factors are also positively associated with GTS among males: age, being non-smokers, hanging rods of tobacco in the barn, and physical effort. Among women: hand tying tobacco, carrying bales, contact with pesticides, and physical effort⁽¹²⁾.

In addition to the absorption of nicotine through skin contact, studies^(5,16) have shown

that absorption also occurs through the respiratory system. High concentrations of nicotine were found in the workplaces of tobacco farmers and in all processes related to tobacco cultivation, including the harvesting and curing of tobacco leaves (barns)⁽⁵⁾.

Because nicotine is a cumulative substance in the body, it can lead to the onset of other diseases such as cancers, cardiovascular diseases, respiratory diseases, and abortion-related to the crop if not discovered before reaching acute stages⁽¹³⁾.

These intoxications do not indicate a simple relationship between the product (tobacco), the exposed person, and the working environment with nicotine but the association of several factors that participate in its determination. These, in turn, may exert some negative influence on the health and well-being of human beings.

Therefore, the Holistic Nursing recognizes that the well-being of the planet's ecosystem is a determinant of human well-being⁽⁶⁾. The ecosystem is formed by the physical environment and its association with species, that is, it is a system of interactions between populations of different species living on the same site, and between these populations and the physical environment⁽⁸⁾.

Holistic Nursing comprises a theoretical perspective relevant to the construction of an ecological nursing theory. The ecological nursing theory is capable of promoting a reconceptualization of the environmental domain and support for the extended ecosystem concept because it has used concepts of interaction and relationship between man and the environment to define the environment⁽⁶⁾.

This interaction between environment and man, where one acts on the other, is present along with the principle of interactive dependence where the elements are functional units in the system, and their structures and dynamics depend on each other. None of them is isolable, and furthermore, we cannot act on them without repercussions on others⁽⁸⁾.

Besides these, we have two other principles that exemplify an ecological view of the facts experienced in our daily life. The principle of the emergence of a new global entity in relation to the elements that interact with the

environment where it is stressed that a system is never isolated or closed in itself, however, once delimited, it manifests an interactive dependence on external elements that compose their environment. The principle of a return effect of the whole on its parts, where the whole acts on the parts in the sense that an element does not exhibit the same behavior, the same dynamics, or the same evolution if it is isolated or if it is integrated into a system⁽⁸⁾.

Given this, we can observe that interactions are present in the ecosystem and are able to explain the organization of societies and groups and how they interact with each other, and how these interactions influence the way of life in communities, as in the case of the GTS in which because the tobacco culture that is necessary for the subsistence of local families, they end up developing diseases associated with this crop and becoming smokers even when not smoking.

The Green Tobacco Sickness and the environment of tobacco farmers

The GTS does not only result from leaf contact with skin, but also from the workplace where other stages of the tobacco production process occur and where nicotine is also present. A study⁽¹⁵⁾ showed that, in the tobacco leaf drying process in the barns, the nicotine concentration was 400 times the normal limit. Thus, leading to the inhalation of nicotine through the air, which makes the environment polluted for the worker⁽⁵⁾.

Nicotine interferes with the functions of the ecosystem as a whole, producing consequences for the environment and health because interactions occur between populations of different species living on the same site, and between these populations and the physical environment, which are represented by interactions occurring in two directions⁽⁸⁾. An environment is considered polluted when the concentrations of a given element are at levels that affect the biotic components of the ecosystem, compromising its functionality and sustainability⁽¹⁷⁾.

Thus, the worker interaction with the physical environment favors the appearance of signs and symptoms of the GTS. The

ecosystem, community, and habitat are united by action and reaction, reciprocal effects of the physical environment on the organism and of the organism on the physical environment⁽⁶⁾, and thus, the environment can affect the worker.

The health of the worker depends on the dynamic balance of all the constituent elements of the ecosystem because the elements that constitute a given space/environment interdepend, interrelate, exert interactions, and influence each other, being able to transform it through the various possibilities that arise from this dynamic⁽¹⁸⁾.

It is important to emphasize that the natural systems are recognized as complex, which have four principles, namely: Principle of organization, with a view to a collective function and with the necessary diversity, where a poorly organized system ceases to exist rapidly. Principle of hierarchical organization. Principle of adaptive strategies, which evokes freedom of choice, focusing on the fluctuations of the system itself and an objective, for example, of survival of a species. Principle of evolution, by which it is brought that a complex system is evolutionary and unpredictable⁽⁸⁾.

Environmental problems have been reflected in recent years because the environment poses serious threats to the health of humans⁽¹⁸⁾ and the ecosystem. Thus, the nursing plays an important role in sensitizing these workers and on the influence of environmental problems on their health and well-being, positioning them as co-responsible in the protection, conservation, and recovery of their health.

It is important to guide about methods that minimize the absorption of nicotine by means of protective measures (with the proper use of Personal Protective Equipment) such as gloves, waterproof clothing, and waterproof covers. In addition, the guidance of avoiding direct contact with plants during harvesting when leaves are wet or early in the morning (morning dew and during rains) and changing clothes when wet, consist of protective measures that would reduce the amount of nicotine absorbed from contact^(11, 12).

It is necessary for health professionals to be able to identify the GTS, whose symptoms

are very similar to those of pesticide intoxication. It is also important that these professionals can act in the prevention, early recognition of intoxications, health promotion, and epidemiological surveillance in order to improve the quality of life of tobacco farmers.

Nurses need to expand their nursing worldview and understanding about ecological relationships related to the activities of this profession. Nursing activities produce effects on local and global ecosystems such as components, environments, and ecosystems that interact with human populations⁽⁶⁾.

Nursing actions should include all dimensions of the human being, including the environment and ecological, making these actions possible in this context as they integrate man and nature from the nursing consultation to educational activities in health and environmental actions developed in the community, enabling workers to learn about signs and symptoms of the GTS.

Therefore, it is possible to promote nursing care for this population, sowing ecological knowledge in the work environment and in the community, which should occur in an articulated and integrated manner with a multi-professional health team.

FINAL CONSIDERATIONS

The worker who handles tobacco is exposed in the work environment to nicotine, and thus, it is concluded that he is a smoker who does not smoke, absorbing nicotine through the skin and exposure in the workplace. The nurses' performance in the ecosystem perspective of

health allows the individual to have a critical and reflexive awareness about the coherent choices for the health of the ecosystem because environmental problems are potential health problems. Therefore, the integration of man with nature and health with the environment is necessary.

Nurses should take a proactive role in the research of health needs presented by the rural community in order to systematize mechanisms to be implemented with a view to minimizing or even eliminating diseases due to the work process, especially in relation to the GTS.

Thus, based on the scientific knowledge about the relationship between the rural environment and the health of the rural worker, the improvement of the nurses' knowledge about the characteristics of this population becomes singular. It is necessary to know and understand how workers live to develop targeted actions that understand the environmental, life, work, and health conditions of these farmers.

In view of this scenario, the inter-sectoral action of agencies linked to agriculture, health, and other sectors of public power is necessary to discuss, develop integrated actions, and think of collective strategies that include rural workers and their families as well as actions and practices of protection and promotion of health and in the planning and implementation of viable forms/sustainable activities alternatives in tobacco production through the diversification in areas cultivated with tobacco in order to search for productive and income-generating alternatives in tobacco farming.

FUMANTE QUE NÃO FUMA: REFLEXÃO SOB UMA PERSPECTIVA ECOLÓGICA

RESUMO

Artigo de reflexão teórica que objetivou buscar, numa perspectiva ecológica de Laustsen e Frontier, a relação do indivíduo trabalhador que mantém contato com o tabaco no seu ambiente de trabalho e o reflexo desta interação na vida/saúde por meio da absorção da nicotina, ocasionando a doença da folha verde do tabaco. Os trabalhadores da fumicultura estão expostos à nicotina, pelo contato da pele com o tabaco, principalmente na colheita, e pela inalação da nicotina nos celeiros onde ocorre a manipulação do mesmo. No organismo, a nicotina é biotransformada em cotinina. Os níveis aumentados de cotinina na urina de trabalhadores expostos configura a doença da folha verde do tabaco (DFVT). Dessa forma, é importante destacar esta temática a fim de instrumentalizar os profissionais de saúde na proposta de ações de prevenção e elaboração de estratégias de sensibilização dos fumicultores ao uso de equipamentos de proteção individual.

Palavras-chave: Enfermagem. Tabaco. Nicotina. Saúde do trabalhador rural. Ecologia.

FUMADOR QUE NO FUMA: REFLEXIÓN BAJO UNA PERSPECTIVA ECOLÓGICA

RESUMEN

La *fumicultura* es la actividad agrícola destinada al cultivo de tabaco. Los trabajadores involucrados en este tipo de cultivo están expuestos a varios riesgos ocupacionales que este tipo de cultura representa a la salud y al medio ambiente. Artículo de reflexión teórica que tuvo el objetivo de buscar, en una perspectiva ecológica de Laustsen y Frontier, la relación del individuo trabajador que mantiene contacto con el tabaco en su ambiente de trabajo y la consecuencia de esta interacción en la vida/salud por medio de la absorción de nicotina, ocasionando la enfermedad del tabaco verde. Los trabajadores de la fumicultura están expuestos a la nicotina, por el contacto de la piel con el tabaco, principalmente en la cosecha, y por la inhalación de la nicotina en los graneros donde ocurre su manejo. En el organismo, la nicotina es biotransformada en cotinina. Los niveles aumentados de cotinina en la orina de trabajadores expuestos configura la enfermedad del tabaco verde (ETV). De esta forma, es importante señalar esta temática a fin de instrumentalizar a los profesionales de salud en la propuesta de acciones de prevención y elaboración de estrategias de sensibilización de los productores de tabaco al uso de equipos de protección individual.

Palabras clave: Enfermería. Tabaco. Nicotina. Salud de los trabajadores rurales. Ecología.

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