

A narrative review associating health vulnerability and environmental factors among rural workers

Uma revisão narrativa associando a vulnerabilidade à saúde e os fatores ambientais de trabalhadores rurais

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ABSTRACT | Background: Rural Brazil is known for its history of poor working and living conditions; in some regions the population becomes vulnerable to health and work problems. **Objective:** To investigate the association between health vulnerability and environmental factors among rural workers. **Method:** Descriptive study which consisted in a narrative review of literature published from 2012 to 2017. The literature search was conducted in databases Scientific Electronic Library Online (SciELO) and Latin American and Caribbean Health Sciences Literature (LILACS) using Health Sciences Descriptors (DeCS) “health,” “vulnerability,” “rural population” and “rural worker health.” **Results:** Six studies were retrieved which mainly associated health vulnerability to inadequate or no use of specifically required personal protective equipment, in addition to pointing out actions essential for health promotion, such as adequate diet and leisure time, physical activity, dignified working conditions, and social contacts. **Conclusion:** Rural work environmental factors are directly related with health vulnerability. Prevention of exposure to risk of disease and health promotion actions are essential to minimize health problems, especially the ones associated with exposure to agrochemicals.

Keywords | health vulnerability; rural population; workers; health.

RESUMO | Introdução: O Brasil rural é conhecido historicamente pelas condições de trabalho e de vida precárias; em algumas regiões, essa população torna-se vulnerável às condições de saúde e trabalho. **Objetivo:** Descrever a associação entre a vulnerabilidade à saúde e os fatores ambientais em trabalhadores rurais. **Método:** Estudo de caráter descritivo caracterizado como revisão narrativa de literatura, no período de 2012 a 2017. Foram utilizadas as bases de dados Scientific Electronic Library Online (SciELO) e Literatura Latino-Americana e do Caribe em Ciências de Saúde (LILACS) e os Descritores em Ciências da Saúde (DECS) “saúde”, “vulnerabilidade”, “população rural” e “saúde do trabalhador rural”. **Resultados:** A pesquisa resultou em seis artigos que evidenciaram, principalmente, a vulnerabilidade à saúde relacionada com a utilização inadequada dos equipamentos de proteção individual específicos ao trabalho, ou a sua não utilização; além de apontar ações essenciais para a saúde, como manter uma alimentação adequada, ter momentos de lazer, praticar atividade física, ter condições dignas de trabalho e contato com grupos sociais. **Conclusão:** Conclui-se que os fatores ambientais no trabalho rural estão diretamente interligados com a vulnerabilidade à saúde, em que práticas de prevenção na exposição ao risco de doenças e de promoção à saúde são essenciais para minimizar os agravos à saúde, principalmente quanto à exposição de agrotóxicos em trabalhadores rurais.

Palavras-chave | vulnerabilidade em saúde; população rural; trabalhadores; saúde.

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DOI: 10.5327/Z1679443520180250

INTRODUCTION

Rural Brazil is known for its history of precarious working and living conditions. In some regions modernity and technology are far removed from the rural workers' reality, which might make them vulnerable within the world of work. Among such workers, the health–disease process is directly or indirectly influenced by the working conditions, lifestyle, diet and nature of social relationships¹.

Brazil became a major consumer of agrochemicals in recent years, with further negative impact on the health of rural workers, which are continuously vulnerable to disease. In addition, rural production is characterized by considerable exposure to physical, chemical, biological, mechanical and psychosocial factors and agents, as a result of the environment–instrument relationship in the workplace². While in urban settings employers are responsible for the health of employees, rural workers receive no assistance at all, as they usually have businesses of their own, and tend not to be aware of the biological limits of exposure to hazards^{3,4}.

Development of rural production depends on economic forces, which have strong influence on health issues, especially on human development and individual and collective well-being vis-à-vis the vulnerability and risk factors inherent to rural work. Lifestyle and living conditions which determine the quality of rural worker health are increasingly considered in studies^{5,6}. However, there is scarce information on the use of personal protective equipment (PPE), lifestyle, and doubts on health topics among this population of workers⁷.

As a function of the aforementioned considerations, the aim of the present study was to investigate the relationship between health vulnerability and environmental factors among rural workers.

METHOD

The present descriptive study consisted of a narrative literature review. Studies were searched in databases Scientific Electronic Library Online (SciELO) and Latin American and Caribbean Health Sciences Literature (Literatura Latino-Americana e do Caribe em Ciências de Saúde — LILACS).

Only original articles published from 2012 through 2017 were selected for review. Search terms were the following Health Sciences Descriptors (Descritores em Ciências da Saúde — DeCS): health,” “vulnerability,” “rural population” and “rural worker health.”

The inclusion criteria were: original articles with full-text available, targeting adult rural workers of both sexes, vulnerability and work-related environmental problems. The exclusion criteria were: publications in foreign languages, and exclusive focus on rural workers without consideration of environmental aspects of rural work. Article selection followed PRISMA recommendations⁸, and was independently performed by two investigators, who also extracted the data and evaluated the methodological quality of studies based on parameters sample size, measurements, and presentation of results.

The initial search located 61 studies, 35 in LILACS and 26 in SCiELO. The inclusion and exclusion criteria were applied for analysis and understanding of the content of studies. In a second stage 55 studies which met the exclusion criteria were excluded. Therefore, the final sample included six studies (Figure 1).

RESULTS AND DISCUSSION

The results of the present narrative review point to some vulnerability factors to which rural workers are directly or indirectly exposed in their work routine⁶. The main findings indicate that illness among rural workers derives from vulnerabilities within the work environment and is directly associated with psychosocial⁹, biological^{10,11} and chemical¹²⁻¹⁴ factors, as shown in Chart 1.

As a rule, rural workers are continuously exposed to hazards, including agricultural equipment, agrochemicals and poisonous animals¹⁵. According to some authors¹², rural workers might damage their own health as a function of everyday common factors, especially when different settings — work and home — are considered. For instance, in a rural community factors such as diet, exposure to agrochemicals without adequate use of PPE, work overload, and use of legal and illegal drugs were directly related to the socioenvironmental vulnerability of rural workers. And once they become exposed, such workers might develop health problems, in addition to damaging the environment.

Porto and Soares¹⁵ observe that the complexity intrinsic to problems related to agrochemicals should be promptly acknowledged, and that social fragility and environmental and human exposure to agrochemicals should receive the due attention. Approaches which take the relevance of such factors into account are necessary, including policies and actions specifically targeting farmer health and education. As an example, the common idea that agrochemicals are indispensable should be dismissed by the government and society at large and be replaced by the agroecological view, which gives its due value to economic feasibility, social equity and environmental protection.

Preza and Augusto¹³ call the attention to the fact that rural workers who use agrochemicals are continuously exposed to such substances. Such exposure can be characterized as a public health concern, because it might result in acute or chronic health problems. Rural workers do not have sufficient knowledge about their risk of exposure to agrochemicals, and few health promotion and preventive actions are implemented, which makes this population even more vulnerable to health problems. Such lack of knowledge is due to low educational levels and poor information provided by technical support agencies and healthcare services. According to Almeida et al.¹⁶, actions involving several healthcare professionals are indispensable

to convey information on prevention of health problems, and more particularly on the use of agrochemicals, among tobacco growers.

In addition to exposure to agrochemicals, rural workers might be vulnerable to diet-related factors, such as poor diet or improper eating facilities — in the case of the analyzed population, eating at the workplace. Also labor relations have impact on the health of rural workers, as many of them do not work under dignified working conditions¹⁰. Gregolis et al.¹⁷ observe that improvement is needed in the orientation on and instructions for use of PPE and agrochemicals, as well as on labor rights.

Rocha and Oliveira¹⁴ report that high amounts of agrochemicals are applied to food crops, based on the argument that they contribute to longer preservation and prevention against pests, insects and weeds. However, handling agrochemicals might pose a risk to the health of rural workers and the environment, especially because such workers are aware of and understand the danger derived from exposure. Although they understand agronomy prescriptions, read package labels, and acknowledge the need for proper use of PPE — when to wear it and when to remove it, the desired level of care has not yet been attained. Thus Ribeiro¹⁸ observes that educational actions — such as orientation and activities on subjects related to risks to workers' health — which

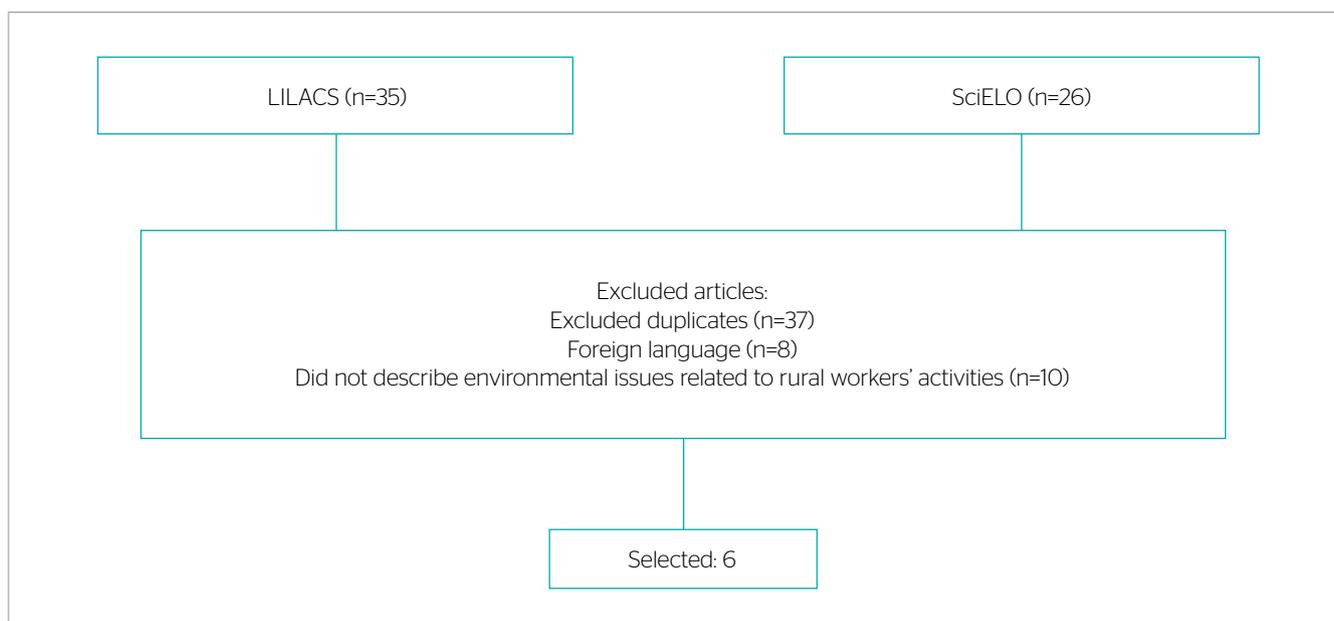


Figure 1. Selected articles, Santa Cruz do Sul, 2018.

focus on improper handling of agrochemicals are relevant to raise the awareness of farmers on the care needed in the workplace.

In the aforementioned study, Rocha and Oliveira¹⁴ found that men were most exposed to agrochemicals, and thus the frequency of exposure-related diseases was higher among them. These findings corroborate data collected by the National System of Toxic-Pharmacological Information (Sistema Nacional de Informações Tóxico-Farmacológicas — SINITOX). According to such data, 649 cases of agrochemical poisoning occurred in 2011 in the Brazilian Southern region, 465 corresponding to men and 184 to women¹⁹.

A study reported evidence for the influence of education on the vulnerability of workers, with a high rate of

workers who had not completed elementary education¹⁴. According to Abreu and Alonzo²⁰, low educational levels among tobacco growers is one of the factors that contribute to increase the risk of agrochemical poisoning, as a difficulty to read interferes with the interpretation of package labels, as well as with the awareness of the risk associated with these substances.

Araújo et al.⁹ observe that rural workers are conditioned by the occupational and psychosocial context of illness, which is characterized by mental disorders associated with other occupational diseases, as e.g., the ones caused by exposure to agrochemicals or the poor conditions intrinsic to rural work. The main subject these authors discussed was “nerve disease,” i.e. the psychological

Chart 1. Main characteristics of the reviewed studies, Santa Cruz do Sul, 2018.

Author	Aim	Setting and sample	Study type	Main findings
Araújo et al. ⁹	To discuss an experience of medical and psychological care provided to rural workers at Occupational Health Specialized Service, Clinical Hospital, Federal University of Minas Gerais	Minas Gerais, Brazil 5 participants	Multidisciplinary intervention study	Some cases of mental disorders or chronic fatigue syndrome were associated with jobs in unhealthy environments and contact with agrochemicals
Carneiro et al. ¹²	To perform an academic activity with undergraduate students to establish a participatory diagnosis of living conditions, environment and work to support future Family Health Strategy staff health promotion actions among the target population	Federal District, Brazil 28 properties	Participatory diagnosis	Diet culture, improper use of agrochemicals and PPE, aerial spraying, lack of leisure, lack of transport and use of legal and illegal drugs were associated with poor state of health
Pessoa and Rigotto ¹⁰	To discuss how new health needs arose, as well as the impacts of the expansion of agribusiness on the lifestyle of rural workers in Northeastern Brazil	Quixere/Ceará, Brazil 14 participants	Action research	Precarious working conditions – such as exposure to agrochemicals and lack of proper eating facilities – interfered with quality of life and state of health
Preza and Augusto ¹³	To investigate socioeconomic and health characteristics and use of agrochemicals among workers involved in traditional vegetable growing	Conceição do Jacuípe/Bahia, Brazil 29 participants	Cross-sectional study	High exposure to agrochemicals used in vegetable growing, inadequate product storage, and inadequate use of PPE led to agrochemical poisoning
Rigotto et al. ¹¹	To compare indicators of morbidity and mortality by chronic diseases related to agrochemicals in several counties	Ceará, Brazil 14 counties	Ecological quantitative study	Exposure to agrochemicals, lack of proper eating facilities, and precarious worksites had negative impact on state of health
Rocha and Oliveira ¹⁴	To survey use of agrochemicals by banana growers in Ipangaçu, Rio Grande do Norte, to investigate how	Ipangaçu/Rio Grande do Norte, Brazil 21 properties	Case study	Despite knowledge on use of agrochemicals and PPE, there were mistakes in the use of PPE, package disposal and preharvest interval

PPE: personal protective equipment.

feelings of rural workers and the many ways they experience pain or a diffuse ill feeling, as well as several disorders, such as depression and anguish, or the desire to kill themselves. In the study by Siqueira et al.²¹, conducted with a representative sample of rural workers from Pernambuco, reports of depression, anxiety, despair and ill humor were frequent. On these grounds, these authors rated the ongoing healthcare interventions insufficient. In turn, the quality of life was better among the workers who reported not to handle agrochemicals compared to the ones who did.

Other conditions to which rural workers might be vulnerable as a function of their exposure to environmental factors are neoplasms and congenital and fetal malformations, with the consequent influence on fetal deaths and premature births. Environmental factors which determine the vulnerability of rural workers are directly related to the use of agrochemicals, which might impair their health, production, environmental and social activities¹¹. Porto and Soares¹⁵ observe that rural workers exposed to agrochemicals might develop cardiovascular, respiratory, neurologic, gastrointestinal, skin, eye, psychiatric diseases and cancer. These conditions are related to frequent exposure to agrochemicals, which accumulate in the body and thus damage the health of workers^{16,17}.

It is worth noticing that work-related health vulnerability might be reduced through adequate use of the specifically required PPE. Also other aspects are essential to promote

the health of rural workers, such as adequate diet, leisure time, physical activity, dignified working conditions and social contacts²².

In addition to workers, vulnerability has also been studied for other specific rural populations, such as older adults²³, adolescents²⁴ and black women²⁵. Studies on sexuality²⁶, violence^{27,28} and primary care among rural populations are highly relevant for their social development and health promotion²⁹.

CONCLUSION

In their activities and as a function of their working conditions, rural workers are continuously vulnerable to several diseases. The labor-worker relationship is conditioned by environmental factors that might cause health problems, which might be prevented through adequate use of PPE. In addition, we call the attention to the need for a healthy diet based on diversified crops free from agrochemicals, adequate safety in the workplace, healthy leisure activities, work organization, and community relationships to minimize risks and health problems, mainly the ones related to exposure to agrochemicals.

Although preventive actions have already been implemented for various working conditions, effective interventions to decrease the vulnerability of rural workers are still few. We suggest public agencies to implement specific programs to promote integral health among rural workers.

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