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## Perfil socioeconômico de Trabalhadores Rurais portadores de neoplasia

Socioeconomic profile of Rural Workers cancer sufferers

Perfil socioeconómico de los Trabajadores Rurales portadores de neoplasia

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### ABSTRACT

**Objective:** To describe the socioeconomic profile of rural workers with cancer hospitalized at a university hospital. **Methods:** descriptive study with quantitative approach, performed from August 2013 to January 2014, through search in the records and active search for patients that were within the inclusion criteria. Data were analyzed using descriptive statistics. **Results:** we interviewed 59 rural workers, coming from different hinterland municipalities, and worked with different types of crops. A large proportion of respondents reported that they used pesticides, not using PPE. The predominant type of cancer found were the neoplasms of the digestive system. **Conclusions:** the use of pesticides is a reality for the workers investigated, leading to the exposure to occupational hazards. Health workers need to implement healthcare strategies for those workers, in order to assist in minimizing the risks of the occupational exposure to the pesticides.

**Descriptors:** nursing; rural health; pesticides; neoplasms.

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## RESUMO

**Objetivo:** traçar o perfil socioeconômico dos trabalhadores rurais portadores de neoplasia internados em um hospital universitário.

**Método:** estudo do tipo descritivo com abordagem quantitativa, realizado entre agosto de 2013 a janeiro de 2014, através de busca nos prontuários e busca ativa por pacientes internados e que estivessem dentro dos critérios de inclusão. Os dados foram analisados por meio de estatística descritiva.

**Resultados:** foram entrevistados 59 trabalhadores rurais, advindos de diferentes municípios interioranos, que trabalhavam com variados tipos de cultivos agrícolas. Grande parcela dos entrevistados relatou fazer uso de agrotóxicos, não utilizando EPI. O tipo predominante de neoplasia encontrada foram as neoplasias do sistema digestório. **Conclusões:** o uso de agrotóxicos é uma realidade para os trabalhadores investigados, levando à exposição a riscos ocupacionais. Os trabalhadores da saúde necessitam implementar estratégias de atenção à saúde desses trabalhadores, no intuito de auxiliar na minimização dos riscos de exposição ocupacional aos agrotóxicos.

**Descritores:** enfermagem; saúde da população rural; praguicidas; neoplasias.

## RESUMEM

**Objetivo:** describir el perfil socioeconómico de los trabajadores rurales portadores de cáncer internados en un hospital universitario. **Métodos:** estudio descriptivo, con enfoque cuantitativo, realizado desde agosto 2013 hasta enero de 2014, a través de la búsqueda de los registros y la búsqueda activa de pacientes hospitalizados y que se encontraban dentro de los criterios de inclusión. Los datos se analizaron mediante estadística descriptiva. **Resultado:** se entrevistaron a 59 trabajadores rurales, procedentes de diferentes municipios del interior, que trabajaban en diferentes tipos de cultivos agrícolas. Un gran número de los encuestados afirma haber usado pesticidas, pero no haciendo el uso de EPI. El tipo predominante de cáncer que se encuentra fuera de las neoplasias del sistema digestivo. **Conclusión:** el uso de pesticidas es una realidad para los trabajadores investigados, lo que lleva a la exposición a riesgos laborales. Los trabajadores de salud necesitan implementar estrategias de atención a la salud de estos trabajadores con el fin de ayudar a minimizar el riesgo de exposición ocupacional a pesticidas.

**Descriptores:** enfermería; salud rural; plaguicidas; neoplasias.

## INTRODUCTION

The use of pesticides is an issue that is increasing in attention for their impact on human and environmental health caused by their abuse and sometimes their inappropriate use. In Brazil, the use of pesticides has increased due to improper land use and the application of outdated production methods, aiming to prevent/eliminate pests that damage productivity.<sup>1</sup>

Thus, Brazil is currently the greatest agrochemical consumer in the world, because of the current agro-export model of economic development that is increasingly conditioned to the use of pesticides and chemical fertilizers.<sup>2</sup> It is also understood that the impacts to public health arising from this scenario are large, especially for rural workers who have direct contact with pesticides.<sup>2</sup>

Pesticides have had their use strongly encouraged since the 1970s, and from that time, the granting of agricultural credit was included for its acquisition. There was a commercial offer that displayed their properties to reduce working with pests and to benefit food, population, and workers. Thus, they began to be present in the daily lives of rural workers, who were more exposed to occupational risks along with their families. Also, the pesticides have become present in the diet of the population, both in the field and the cities through the food consumed.<sup>3</sup>

It is known that the exposure to such products may result in damage to the health of both workers and consumers. Although some of the active ingredients of pesticides can be classified as slightly toxic, it should not be disregarded the chronic effects that may occur on exposure to these agents, such as cancers, birth defects, endocrine, neurological and mental disorders.<sup>2</sup> Also, pesticide poisoning can cause decreased immune defenses, anemia, impotence, headache, insomnia, blood pressure changes, dysrhythmias and behavioral disorders.<sup>3</sup>

The work-related cancers have been poorly sized by the lack of research in the country. When compared to other risk factors, their occupation is not problematized even when the risk is well known and documented, as in the case of asbestos, benzene cancers, derived from coal, ionizing radiation, high pressure, among others.<sup>4</sup>

Malignant neoplasms are classified as a multifactorial disease, that is; its determination depends on biological and psycho-socio-environmental conditions. The correlation between pesticides and cancer is complex, mainly due to the difficulties of study models that are mostly experimental, clinical and epidemiological.<sup>5</sup>

In this context, the evaluation of possible adverse effects on human health (acute and especially chronic) and the environment is of fundamental importance because, even though the agronomic efficacy of pesticides can be easily proven, the damage to human health and the environment, in most cases, is not considered.<sup>6</sup>

Thus, studies linking the use of pesticides to the disease process are needed. Moreover, the introduction of containment measures to such exposure is also necessary. The order of the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) 84/967, Chapter 6 provides the ban on risk situations that are not amenable to prevention or remediation, which includes the registration of pesticides ban that has mutagenic, teratogenic and carcinogenic characteristics.<sup>5</sup>

In this perspective, it is known that the cancer problem in Brazil is gaining importance for the epidemiological profile that this disease presents, implying a challenge for professionals and health services. Then, it is necessary to know about the state of the disease and its risk factors to set priorities and allocate resources as directed for positive change in this Brazilian population scenario.<sup>8</sup>

In this sense, some population groups may be more exposed to certain types of risk factors. For workers, exposure to occupational risks should not be overlooked. Among the determinants of worker's health, there are social, economic, technological and organizational conditions responsible for the living conditions and the occupational risk factors - physical, chemical, biological, mechanical and those arising from work organization - present in work processes.<sup>9</sup>

Given the above, it is believed that the development of investigations that problematize the relationship between rural workers and exposure to pesticide use is useful to obtain input on the subject. Given these considerations, this study has research question: what is the socioeconomic profile of rural workers with cancer hospitalized in a university hospital? Therefore, this study aimed to trace the socioeconomic profile of rural workers with neoplasia admitted to a university hospital in Rio Grande do Sul.

## METHODS

Descriptive study with a quantitative approach carried out with rural workers with neoplasia. Four inpatient units of a teaching hospital located in the state of Rio Grande do Sul were the study scene, where users were hospitalized: Clinical Obstetrics and Gynecology, Surgery, Internal Medicine I and Clinical Medicine II.

Data was collected during six months, from August 2013 to January 2014. For the selection of participants, the following inclusion criteria were used: to be a patient with cancer, to be a rural worker, to be older than 18 years old, to be in physical and mental conditions to participate and to be aware of the diagnosis of cancer. All those that fitted the inclusion criteria and wanted to participate in the study, within the data collection period of six months, were participants, totaling the number of 59 subjects.

An active search was performed for data collection, by patients who were within the inclusion criteria, in inpatient units, three times a week on alternate days, aiming the detection of patients with cancer who were hospitalized. From this, it was performed the search in the records and contact with the nurse responsible for the unit, to not only provide information on the study, but information on the health status of the patient and his conditions to participate as well. At the end of each month, the interviews were delivered to the responsible researcher who performed the data entry into spreadsheets for analysis.

Data collection technique was made using direct interviews, guided by a mixed form, completed by the researcher. The form had closed questions that provided the data collection as participant's gender; date of birth; origin; education; and type of cancer; and other information regarding the crop and the use of pesticides. Data collection was carried out by four academic nurses, previously trained for this purpose.

Data was organized in spreadsheets in Microsoft Office Excel 2007 program, which was analyzed and will be presented in tables, using simple statistical analysis. The research project was approved by the Research Ethics Committee of the institution under CAAE 26425513.7.0000.5346. It is noteworthy also that the study followed all the recommendations of Resolution 466/2012 of the National Health Council.<sup>10</sup>

## RESULTS

Through data analysis, it is possible to show that among the 59 participants, 69.5% (n = 41) were male and 30.5% (n = 18) were female, and among them, 67.8% (n = 40) were married, 13.5% (n = 8) widowed, 10.2% (n = 6) singles, 5.1% (n = 3) divorced and 3.4% (n = 2) had stable unions. The age groups showed variety and are shown in Table 1.

**Table 1:** workers Age, Santa Maria - RS, 2014.

Age group - Complete age	N	%
31 - 40 years old	1	1.7
41 - 50	5	8.5
51 - 60	16	27.1
61 - 70	19	32.2
71 - 80	18	30.5
<b>Total</b>	<b>59</b>	<b>100</b>

As noted in Table 1, the average age of respondents varied between 34 and 79 years old, with a mean age of 63.45 years old. The largest share of hospitalized workers belonged to the age group of 61-70 years old, corresponding to 32.2% (n = 19), followed by the age group between 71 and 80 years old, 30.5% (n = 18) and following the age group between 51 to 60 years old with 27.1% (n = 16). The workers were also questioned about their level of education. Table 2 shows the results for this item.

**Table 2:** the education level of respondents in years of study, Santa Maria, 2014.

Level of Education	N	%
0	5	8.5%
1 - 4	29	49.1%
5 - 8	22	37.3%
9 or +	3	5.1%
<b>Total</b>	<b>59</b>	<b>100</b>

According to Table 2, the level of education of up to four full years was the most frequent, with the percentage of 49.1% (n = 29), followed by 37.3% (n = 22) corresponding to eight full years of study. Respondents who declared themselves illiterate corresponded to 8.5% (n = 5).

By this study having a research place of a University Hospital, which is a macro-regional reference in the treatment

of cancer, the results regarding the origin of the municipality varied. Thus, respondents belong to 27 different cities in Rio Grande do Sul (RS). The highest number of respondents came from the municipalities of São Sepé and Santiago, each with 10.2% (n = 6), followed by Formigueiro with 8.5% (n = 5). The municipalities of Santa Maria, Nova Palma, and São Gabriel presented a representative of 6.8% (n = 4). This wide variety of places reflected in the variety of types of cultures performed. This data is shown in Chart 1, below:

**Chart 1:** type of crop carried out by respondents, Santa Maria, 2014.

Type of crop (12)	N	%
Corn	49	84%
Beans	37	64%
Cassava	23	40%
Rice	22	38%
Soy	21	36%
Tobacco	18	30%
Onions, potatoes, vegetables, sugar cane, watermelon, pumpkin.	<5	<1%

According to the data presented in Chart 1, it is observed that the respondents cultivate more than one type of crop, and only two respondents reported to the cultivation of only one type. The most prevalent were the corn with 84%, followed by beans plantation with 64%, cassava 40%, rice 38%, soy 36% and tobacco 30%.

It is known that several types of crops require different care, which proved to be present in this study when it came to the use of pesticides on crops. When asked about the use of pesticides, 84.75% (n = 50) of respondents said they used them, while 15.25% (n = 9) said they did not use them. Among the total number of farmers referring to the use of these substances, 54% (n = 27) reported not using Personal Protective Equipment (PPE), and 46% (n = 23) reported the use of PPE. Among them, 39.1% (n = 9) wear full PPE, while 60.9% (n = 14) use incomplete PPE, using only gloves and masks.

Concerning the total of workers using pesticides, it is clear that the herbicides were the most used, with 72% (n = 36) followed by insecticides with a percentage of 34% (n = 17), and formicide with equivalent to 12% (n = 6). It is noteworthy that 42% n = (21) of respondents used more than one type of pesticide on their crops. Also, 14% (n = 7) said they did not remember the type of pesticide used.

Workers investigated were diagnosed with cancer, which had different locations, as shown in Table 3.

**Table 3:** Location of Neoplasms in the study population, Santa Maria, 2014.

Location of the neoplasms	N	%
<b>Digestive system</b>	37	62.7%
Gut	29	
Liver	3	
Stomach	4	
Pharynx	1	
<b>Urinary system</b>	6	10.2%
Kidney	1	
Ureter	1	
Bladder	4	
<b>Genital system</b>	9	15.2%
Prostate	5	
Uterus	4	
Penis	1	
<b>Respiratory system</b>	5	8.5%
Lungs	5	
Breast	5	8.5%
Acute Myeloid Leukemia	2	3.4%
Non-Hodgkin's lymphoma	1	1.7%
Skin	1	1.7%

According to the data shown in Table 3, prevalent malignancies was the Digestive System representing with 62.7% (n = 37) of neoplasms. Neoplasms of Male and Female Genital Systems occupy the second place with a percentage of 15.2% (n = 9), followed by cancer of the Urinary System (10.2%), respiratory and breast cancer, both as a percentage 8.5% (n = 5) each. Among the total respondents, 27.1% (n = 16) had metastasis.

Also, regarding the use of pesticides, the predominant form of spraying was manual, with a percentage of 58% workers (n = 29), 22% of workers (n = 11) make use of tractors and concomitant manual spraying, 18% (n = 9) use the tractor, and 2% (n = 1) use aircrafts.

Regarding the final destination of agrochemical packaging, the results show that 58% (n = 29) of workers claim to return it to the supplier. However, 26% (n = 13) reported burning the packaging, 20% (n = 10) bury them, 8% (n = 4) put them in the trash, 6% (n = 3) stocking in the shed and 4% (n = 2) put them in the river, among them, 16% (n = 8) had more than one of these activities. Of this total, 92% (n = 46) reported not re-using the packaging, and other 8% (n = 6) reported reuse for storage of seeds and or to water the cattle.

## DISCUSSION

Data from this study showed that, among the workers, most are male and over sixty years old. In a similar study, the use of pesticides was identified as one of the factors of morbidity among the elderly, considering the increase in the elderly population in the countryside and the possibility of exposure to pesticides, both past, and present.<sup>11</sup>

Most respondents attended up to four full years of education. In a similar study with rural workers in Rio Branco, the sample showed that most had not completed primary education (30 individuals) and only four reported to be illiterate.<sup>12</sup>

The workers interviewed were from 27 different cities in Rio Grande do Sul. This variety in physical area transposes the variety of cultivated crops, still composing the various types of pesticides used for each type of crop, whereas the use of pesticides is a reality in the routine of respondents, as 84.7% of the population reported their use.

The prevalent cancers of the study participants were the Digestive System (62.7%), Male and Female Genital Systems (15.2%), Urinary System (10.2%), Respiratory and Breast cancer (8.5% each). The Australian Institute of Health and Well-Being (AIHW)<sup>13</sup> reports that cancer is responsible for the largest burden of disease in Australia, with over 108,000 new cases and more than 39,000 cancer deaths in 2007. About a third of people affected by cancer live in regional and rural areas.<sup>13</sup> In Brazil, the estimate for 2014 is 576,000 new cases and it should be repeated in 2015.<sup>14</sup> Among the types of incidents, there are: non-melanoma skin cancer, followed by prostate tumors, female breast, colon and rectum, lung, stomach and cervix.<sup>14</sup>

In the present study, it was found that spraying takes place manually in most properties (58%), and only 18% are sprayed with a tractor because most workers deal with small farmers. In another study with the similar theme,<sup>15</sup> the authors reported that 75% of the spraying was carried out with tractors, and 31.3% of them are called cabin tractors. Based on these, it is observed that according to the results of this survey, more than half of the workers perform the manual application of pesticides and still, 40% of respondents claim to use more than one type of pesticide on their crops.

Thus, it is evident that the rural worker is exposed to different pesticides simultaneously. Given that, the form of application of pesticides has direct relation with the use or not of PPE and is constituted as a potential factor to the risk of contamination, since 54% of farmers reported not using PPE, value higher than in the study cited above,<sup>14</sup> in which the authors reported that 29% of farmers did not use any PPE when handling pesticides. The value found in this study even surpasses the findings of the study conducted in the Brazilian Northeast region, where 27, 6% of farmers did not use PPE.<sup>16</sup>

Thus, this farmer's exposure takes place over many years and by different routes (dermal absorption, inhalation, ingestion), both in the field, through the preparation and application of pesticides, and at home, through improper storage and handling of clothes used in the spraying process.<sup>16</sup>

PPE that protects workers against occupational risks is partially used or overlooked by workers, setting the presence of risk to illness. As for the perception of risk by the worker, it is not always in line with the real consequences that exposure to this risk can bring.<sup>17</sup>

A study showed that only 1.4% of rural workers wear full PPE. However, pesticides have dermal, oral and respiratory penetration. Therefore, the use of all equipment is necessary (cap, gloves, boots, mask, overalls and glasses) to block the pesticide entering the body.<sup>15</sup> Thus, chronic effects occur because there are three main pesticide absorption pathways, thus increasing the biological area of exposure to these chemical agents.<sup>18</sup>

Thus, it is expected that the use of PPE minimizes the occurrence of episodes of intoxication, but the extensive chronic damage that pesticides bring to the environment, biodiversity and the man must be worked through a paradigm shift in agriculture, reducing these chemicals and even one day excludes their use. Thus, the use of PPE should not be the sole focus of a policy guidance to farmers aimed at reducing the risk of contamination.<sup>19</sup>

Examples of non-operating exposures include those of the families of farmers exposed to pesticides stored in the house, contaminated clothing and household dust containing pesticides or exposures between residents of farming communities exposed to contamination of groundwater and surface water, contaminated soil, or Aerial spraying of pesticide exposure.<sup>20</sup>

It was found that the herbicide is the type of pesticide used by most workers. As for the final disposal of pesticide containers used, the value found for the returns to suppliers is lower (58%) to that found in another study,<sup>16</sup> in which the values for packaging returns was 62%.

If the package has not been properly sent back, an alternative destination is performed. Among this destination, burning pesticide containers appeared first, with the value of 26%, exceeding the study findings previously mentioned again. In this way, the researchers found the value of 24% for burning packages.<sup>16</sup> Also, as another alternative destination, this study found 8% of the packages going to the trash, outperforming the study cited above, which was 3.5% for the end destination of packaging in the trash.<sup>14</sup> In a similar study,<sup>21</sup> the percentage relating to the burning of pesticide packaging corresponded to 19.7%. Moreover, the alternative destination for the disposal of packaging corresponded to 28.8%.<sup>21</sup>

The final destination for pesticide containers is provided in Law 7802 and 9974, in which producers and traders of pesticides are responsible for the final destination.<sup>22</sup> However, the responsibility towards this issue is shared, as companies must earmark the packages properly, the farmer should have the responsibility to return the packaging in buying local, or in special places or collection centers.<sup>23</sup>

## CONCLUSION

The socioeconomic characteristics of the population of rural workers diagnosed with cancer deserve greater attention from health professionals about the disease and may contribute to the quality of health care for this population.

In this research, cancer of the digestive system was the most prevalent in the study participants. In the second place, Male and Female Genital System neoplasms appeared.

The results of this study show that the highest percentage is composed of men with low socioeconomic status and education. It is also noted a high percentage of rural workers over 60 years old with some cancer. Therefore, it is necessary to expand the health care of this population that is often far from health services.

Given the risks of farm workers, we can identify with this study the use of pesticides and improper use or non-personal protective equipment use. By being present in everyday work of most rural workers with cancer, the use of pesticides may be related to the disease.

Also, the final destination of pesticide containers that have been used is a concern from an environmental point of view as the human health. This is because, many times such containers have an incorrect order, such as common garbage or burning them. Thus, rural workers must take their responsibility to the disposal of packaging, returning them to the place of purchase or collection stations.

The results of this research can assist in obtaining grants on this subject, encouraging discussions, even among health workers. The implementation of the health of rural workers cares strategies is an important action to be undertaken in the health area to make them aware of the risks of exposure to the use of pesticides, especially those related to the health-disease process.

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