

Gestante agricultora: agravos e riscos ocupacionais

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ABSTRACT: The gestational process requires prenatal follow-up, and the aspects related to the working environment of pregnant women must be considered. This study aimed to present the occupational harms and risks in the labor processes of pregnant rural workers. The qualitative research was conducted in six units of the Family Health Strategy that cover the rural area of a city in the West of Santa Catarina. Seven pregnant rural workers, four physicians, and four nurses participated in this study. For data collection, we conducted semi-structured interviews and observations of the working environments of the pregnant women. The results indicate that in the labor activity of the pregnant women there are several exposures to chemical, physical, biological, accidental, and ergonomic risks, potentially exacerbated because the non-use of personal protective equipment. Facing this reality, we highlight the importance of new studies that seek to identify risks and means to mitigate the occupational problems of pregnant rural workers.

KEYWORDS: Rural workers; Occupational risks; Pregnant women; Primary health care; Women working.

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RESUMO: O processo gestacional requer acompanhamento pré-natal e os aspectos relacionados ao ambiente de trabalho da gestante devem ser considerados. Este estudo objetivou apresentar os agravos e riscos ocupacionais nos processos laborais de gestantes trabalhadoras rurais. A pesquisa de abordagem qualitativa foi realizada em seis unidades de Estratégia Saúde da Família que abrangem a área rural de um município do Oeste catarinense. Participaram do estudo sete gestantes trabalhadoras rurais, quatro médicos e quatro enfermeiros. Para a coleta de dados realizou-se entrevistas semiestruturadas e observações dos ambientes de trabalho das gestantes. Os resultados apontam que na atividade laboral das gestantes há diversas exposições a riscos químicos, físicos, biológicos, de acidentes e ergonômicos, potencialmente agravados frente ao não uso dos equipamentos de proteção individual. Frente a essa realidade, evidencia-se a importância de novos estudos que busquem identificar riscos e meios para mitigar os problemas ocupacionais da gestante trabalhadora rural.

DESCRIPTORIOS: Trabalhadores rurais; Riscos ocupacionais; Gestantes; Atenção primária à saúde; Trabalho feminino.

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INTRODUCTION

In this study, we will discuss the labor process of pregnant rural workers, which, for its specificities, exposes them to various risk factors of physical, chemical, biological, mechanical, and ergonomic nature¹.

The rural worker is exposed to solar radiation; noise and vibration; accidents with venomous animals; infectious and parasitological agents; particles of stored grains; mites; pollen; animal waste; accidents with tools, machinery, and agricultural implements; fertilizers and pesticides².

In this context, we expect that the occupational risks of pregnant rural workers can be (re)cognized and considered in prenatal health care. Studies relate pesticides with adverse effects on the gestational period and show that the newborns of women living in the countryside are most likely to have low birth weight and malformations, as mothers of newborns with birth defects were more exposed to pesticides than mothers who had healthy children³.

The primary health care unit must receive and assist the pregnant women integrally in the prenatal care, observing the risk situations to which they are exposed, to ensure the pregnancy development, the newborns' health, and mother welfare⁴.

Since the rural work can make the pregnant worker susceptible to illness because of the long workday and the presence of specific environmental risks of the field labor activities⁵, the aim of this study is to present the occupational harms and risks in the labor processes of pregnant rural workers in the view of these workers, of health professionals who work in rural areas, and by on-the-spot observations of the work environments and processes of these pregnant women.

Family farming is the social and economic basis of the West region of the state of Santa Catarina, Brazil. This sector, socio-productive, cultivates subsistence products and differentiated products to industrial units, such as mate herb business and agribusiness. According to the latest Agricultural Census, conducted in 2006, 87% of the agricultural institutions were of family farming⁶.

According to epidemiological data from the Department of Informatics of SUS (Brazilian Unified Health System) (DATASUS)⁷, from the year of 2014, the prevalence of low weight newborns among pregnant women of the urban region in the West of Santa Catarina was 11.2%, and, of mothers in rural region, 14.1%. Data of

gestational complications and congenital malformation in the countryside are nonexistent in the health information systems of SUS, highlighting the importance of studies/research on this topic.

METHODOLOGICAL PROCEDURES

This is a qualitative study developed in 2013 and 2014 in six Primary Health Care Units of Family Health Strategy (FHS) from the rural area of a city in the West of the state of Santa Catarina, Brazil, considered an economic and industrial pole.

This study had the participation of four physicians (P), four nurses (N), and seven pregnant rural workers (PW) that fitted the research inclusion criteria, namely: being over 18 years old; being a rural worker, formal or informal (helping the spouse or family); being in the third trimester of pregnancy during the period of data collection; and carrying out prenatal care on the FHS. The number of four physicians and four nurses is due to the fact that these professionals work in more than one Rural unit, dividing their workload in 20 hours for each FHS, which means that in some days of the week they are in one unit and absent in another, highlighting the weakness/lack of health care for the rural population in this region.

The information collection occurred in three moments. In the first, we conducted an interview with FHS professionals, and, in the second, we interviewed the pregnant women. In the third moment, we observed the occupational environment of the pregnant women, following a semi-structured script, prepared by the researchers according to the Regulatory Standards of the Ministry of Labor and Employment (MET) NR-9 (Program of environmental risk prevention) and NR-31 (Occupational safety and health in agriculture, livestock, forestry, logging, and aquaculture). We highlight that the observation script was evaluated by a physiotherapist, professor and researcher in the area of rural worker of a Community University in the region.

The observations in the working environment of the pregnant women had varied duration, depending on the distance from the house to the workplace (aviary, stable, styes), because the path was also observed. In general, they lasted between 90 and 120 minutes for each occupational environment, totaling about 735 hours of collection. There was no need for more than one visit, because the time of each observation was enough to register the risks and harms there.

The semi-structured interviews were scheduled in advance considering the availability of the participants,

which were interviewed individually in their workspaces and/or houses. Health professionals – physicians and nurses – had the same script of questions, which aimed to identify the opinion of these professionals about the occupational risks to which pregnant rural workers are exposed. The pregnant women, in addition to issues related to the work process, were also asked about sociodemographic data, such as: marital status, age, time of housing in rural areas, education, and type of labor activity they develop. All interviews were recorded on audio and transcribed in full. The data from the observation script were transcribed by the researchers to a table created in the Microsoft Word 2010, in which the sources of risk observed were grouped with the occupational risk factors. The photographic images from the working environment of the pregnant women were filed in virtual folder.

The understanding and interpretation of data took place by the Thematic Content Analysis, following the steps of pre-analysis, exploration of material, and treatment and interpretation of results⁸.

This study had the consent of the local Municipal Secretariat of Health and was submitted to the Research Ethics Committee of the Community University of the Chapecó Region, having been approved under the no. 038/2013, in July 2013. We ensured to participants the preservation of identity, voice, and image according to the guidelines of research involving humans.

RESULTS

The pregnant women were between 18 and 38 years old, most had high school and were on a stable union. The time of residence in the rural area oscillated between five months and 11 years. Their labor activities were concentrated in poultry (collection and preparation for the incubation of eggs), dairy farming (manual and mechanical milking), feeding the animals, cleaning the barn (for cattle feed and guard of animals), and subsistence agriculture (planting, maintenance of kitchen garden/flower bed, and harvesting). They work on average 7 hours a day, but the working time varies according to the function exercised, and may reach 10 hours a day on dairy farming. Three participants are salaried, and the remaining ones work helping the spouse or family.

Occupational harms and risks

The analysis of the interviews and observations of the occupational environment showed a number of risks, which will be presented according to the NR9.

The sources that expose the pregnant rural workers to **chemical risk** were: presence of pesticide from the spraying in plantations located on the ground next to the working environment of the pregnant women; presence of chemicals used to make the cleaning of barns, used for milking and feeding cows, poultry, as well as for the disinfection of the eggshell to be incubated; in addition, the manual washing of the working uniform used by their spouses during handling and spraying pesticides, without using personal protective equipment (PPE). About the handled chemicals, health professionals have reported that:

“The rural workers are in contact with substances, sometimes with formaldehyde, others use some pesticides” (P1).

“An example of risk would be exposure to pesticide” (P3).

However, the report of pregnant women shows they are indirectly exposed to pesticides:

“My husband spreads the poison. I wash his clothes separately from the others” (PW5).

“My neighbor spreads poison in the garden, but I’m not used to lock the house when he does it” (PW1).

Other chemical used in the occupational activity of the pregnant women, sodium hypochlorite, was not mentioned by the professionals, but referred to by the pregnant women:

“I use formaldehyde and [sodium] hypochlorite at work” (PW1).

“The formaldehyde that they [other workers] put in the nest, sometimes they have to turn off the fan, but still with the wind it goes in our eyes” (PW3).

During the observations, we perceived the strong odor of pesticide, felt during the way to the home of a pregnant woman, which triggered headache in the researchers and in the community health agent that followed them.

Regarding the sources that expose the pregnant rural worker to **physical risk**, we found: cold, heat, moisture, and non-ionizing radiation, because the labor activities are performed on discovered and/or semi-

covered areas, without the use of proper hat, clothing, and footwear. In the reports of health professionals, the solar radiation and heat stood out:

“Sun exposure is also a risk” (P2).

“When it’s hot, the sun is very strong and they [rural workers] don’t have that thing of I’m going to start working after 4 P.M., at 1 o’clock there’s already people in the sun” (N1).

Regarding the **biological risk**, we observed that the pregnant women are in contact with the excreta of cattle and rodents during the cleaning of the barns used for feeding and guarding animals (livestock and poultry). They also consume unpasteurized milk, handle the soil in the agricultural activity without the use of PPE, and aspire organic dust in the following activities: sweeping the barn; transportation of silage, used to feed dairy cattle; handling food waste contained in the troughs in which the animals feed, and handling wood piles used for the wood stove and trash without using mask. Besides, there is the presence of inappropriate dirt/garbage on the ground.

Health professionals highlight that the biological risk is present in the contact of the pregnant women with animals:

“Especially zoonoses, such as: toxo [toxoplasmosis], brucellosis, and other zoonoses acquired at the work with animals” (P4).

“They [workers] work with feces that may be contaminated” (N1).

Regarding the **accidental risk**, we highlight the handling of trash without using PPE, which exposes the workers to the risk of accidents with venomous animals, as well as the handling of stacked firewood and of lockers, located in the middle of the pasture, leaky and full of objects; handling of hoe and knife; contact and large animal handling for their guard and release and at the time of milking; use of motorcycle on the path between work and residence. We stress that the road is dirt and uneven, with rocks, holes, and when it rains it is smooth; there is obstacles (stones, land relief, and ladder) on the way to work and in the workplace. In the following reports, we present examples of occupational accidents to which pregnant women are exposed:

“The worker can be kicked by a cow, or fall from a tree if cutting mate herb” (P1).

“Thinking about the rural worker, I always worry more when they milk the cow, because she can be kicked” (N1).

“Falling, when the ox is chasing us, it happens” (PW4).

“Cuts. It’s cuts that people have more” (PW7).

We observed that the risk of falling is also present on the staircase, without handrail, of the residence of the worker; on the stairs of the milking room that has a moat; on the slope of the ground on the path taken between the residence and the workplace, especially on rainy days. Using finger slippers and the presence of rocks that cover the soil in the path to work aggravate the situation.

Regarding the sources that contribute to the **ergonomic risk**, we identified: physical effort performed on dealing with the cow, in the milking room and during the guard and release of the animal; in the withdrawal of silage, made with the use of rake and shovel, and the time that the worker is on foot during the workday, which often is extended; and poor posture adopted during the activity of planting, weeding, harvesting, gathering eggs, milking and handling the animals, as is evidenced in the following reports:

“There are many pregnant women who work in the fields and do heavy work” (PW3).

“The work [rural activity] itself is to carry weight, weed” (PW4).

“The workers of the harvest of herbs stay there [at work] all day. Some have reported that they have no time to stop and eat” (P2).

“How can I explain! There [in the activity performed] we only gather eggs, we stay more crouching” (PW3).

As observed and evidenced in the testimonies, not all pregnant women use all the personal protective equipment (PPE recommended in the NR-6:),

“There [formal job: collection of eggs] yes, the damper, gloves, boots, and pants. On the farm [informal work:

agriculture and hand milking], I use boots, pants, gloves, and hat” (PW1).

“I use to wear [in the milking] apron, coat, boots, pants, and long sleeve shirt” (PW6).

“I don’t use” (P5) [the employee works in agriculture, in animal feeding and barn cleaning].

Box 1 presents the synthesis of the factors of exposure to occupational risks of the pregnant women in the rural work.

Box 1 – Factors of exposure to occupational risks in rural work in the view of pregnant rural workers, of health professionals, and of the researches, of a city in the West of Santa Catarina, Brazil, in 2014

Risks according to NR 9	Factors of exposure in the view of researchers	Factors of exposure in the view of health professionals	Factors of exposure in the view of pregnant women
Chemical	1. Mist; 2. Chemicals in general.	1. Chemicals in general.	1. Chemicals in general.
Physical	1. Cold; 2. Non-ionizing solar radiation; 3. Heat; 4. Moisture.	1. Non-ionizing solar radiation; 2. Heat.	1. Cold.
Biological	1. Virus; 2. Bacteria; 3. Protozoan; 4. Fungi; 5. Parasites; 6. Bacilli.	1. Bacteria; 2. Protozoan;	—
Accidental	1. Poisonous animals; 2. Use of tools; 3. Handling with large animal; 4. Work/home path and vice versa; 5. Physical obstacle; 6. Lack of use of PPE.	1. Use of machinery and tools; 2. Handling with large animal; 3. Work/home path and vice versa; 4. Height; 5. Lack of use of PPE.	1. Use of machinery and tools; 2. Handling with large animal; 3. Physical obstacle.
Ergonomic	1. Physical effort; 2. Poor posture; 3. Extended working hours; 4. Boredom and repetitiveness.	1. Physical effort; 2. Poor posture; 3. Extended working hours.	1. Physical effort; 2. Poor posture.

Source: developed by the authors

DISCUSSION

The contact with pesticides in pregnancy and during lactation may cause harms to the binomial mother-child health, because the human body absorb and accumulate these substances, causing abortion, birth defects, and leukemia in nursing mothers⁹. We highlight that there may be risk of intoxication during handling and washing of contaminated clothing, as well as by the drift of pesticide that dissipates with the wind^{9,10}.

The use of formaldehyde and sodium hypochlorite by poultry workers can also cause harms to health, such as dermatitis, allergic reactions, carcinogenesis, and teratogenicity¹¹.

Concerning the physical risks, the rural work exercised by pregnant women in the open and under adverse weather conditions, such as cold and moisture, heat and direct sunlight, can turn the labor activity more distressing. In some cases they cause fatigue, dizziness, and fainting, in addition to intensifying the problem of

musculoskeletal pain present in the daily lives of rural workers¹². Besides, the solar radiation is a risk factor for skin diseases and melasma in pregnant women¹³.

Another risk that deserves attention is the exposure to zoonoses, such as leptospirosis, hantavirus, and brucellosis, harms that, according to the Epidemiological Surveillance Board of Santa Catarina (DIVE/SC), already have records in the studied region^{14,15}.

Regarding the occurrence of zoonoses during pregnancy, a study carried out from July 2003 to September 2010, with 79 women, showed that brucellosis increases the incidence of premature birth and low birth weight, and is also a cause of spontaneous abortion¹⁶. In the case of leptospirosis, when it affects pregnant women, it can create changes in the fetal development and maternal-fetal mortality¹⁹.

We point out that only health professionals have identified this risk, with non mention of it by pregnant rural workers. On this aspect, Rocha recalls that the pathogen biological agent, mostly, is visible only with the aid of a microscope, which contributes to the risk situation not being evident, because the sense organs are unable to detect such risk²⁰.

Regarding the accidental risk, we considered the use of tools as important factor of exposure, since the handling of hoe and a knife, objects very used in agriculture, while cleaning and pruning plants, is usually the cause of skin cuts and finger amputation^{5,16}.

Also, the handling with large animal, whether during milking or in guarding or releasing the cows, is considered a risk situation to pregnant women. This is because, if the animal management fails or if it is subjected to a stress situation, it can attack the worker¹⁹.

In the same way, we noted, on the spot, the use of the motorcycle as a means of transportation for pregnant women who need to move from their residence to the workplace. This means of transportation is considered a risk, because it is a motor vehicle of two wheels, with one or two seats²⁰. We highlight that this vehicle does not have safety devices to the body, only to the head, and may, in the case of accident/crash, cause harm to mother and baby. In this case, the maintenance and repair of precarious rural roads is needed to minimize the risk of accidents.

Regarding the ergonomic risks, most rural workers use physical effort, adopting poor posture because of the anti-ergonomic working environment and develop risk activities, such as harvesting and cutting plants, weeding and raking the soil, cleaning up gardens, carrying weight, and milking the cows, being exposed to the ergonomic problems^{12,19}.

Rural activities are stressful because they require the worker to stand, use tools, carry weight, and adopt anti-ergonomic postures on harvesting¹². Besides, the physical and biomechanical changes that take place during the gestational process complicate the performance of movements that the occupational activity in agriculture requires, and make them even more tiring. On this aspect, it is necessary to adapt the activities of rural workers to their pregnancy, as well as establish more prolonged breaks/rest.

We observed that not all workers use PPE, and the ones that use it, usually do it at the formal work. However, family farming predominates in the studied region, set as self-employment.

We highlight that women/expectant mothers generally are responsible for production of eggs and, therefore, are exposed to formaldehyde. The United States Department of Labor warns that the contact with this substance requires the use of gloves, mask, goggles, and clothing to protect the skin, because this product is irritating and carcinogenic²¹. Considering the costs of PPE acquisition and the low profitability of some farming families, such equipment could be subsidized by the rural unions and cooperatives. In the case of pregnant women, they could be supplied by the Municipal Secretariat of Health, since it is a means to prevent harms and promote health.

The characteristics of rural labor, unveiled in the testimonials of pregnant women and health professionals and on the observations of work environments, show the exposure to factors of harms to health, because of the poor conditions of the environments, exacerbated by the non-use of PPE and the long periods of workload. It is worth mentioning that the non-use of PPE by pregnant women occurs by two main factors, namely: non-availability of the equipment in the workplace; and the fact that pregnant women present organic changes, such as edema, which makes the boots and gloves that they used before too small for them in the pregnancy.

We identified, during the home visits and observations of working environments: a population with low socioeconomic status, poor housing condition, scarcity of basic sanitation (especially sewage collection and treatment and urban cleaning), social isolation because of the distance between communities, public dirt roads, lack of lighting, transportation, public safety, recreation.

This scenario shows that rural workers are socially vulnerable, a situation that comes from the Brazilian economic, political, and cultural history of exploitation and marginalization of women and peasants (family

farmers, fixed or camped rural workers). It is necessary to (re)cognize the iniquities in the field, so that strategies and actions come, in fact, to meet the health needs and demands of the rural population. Below, we present, to promote reflection, proposals to minimize occupational risks in the work of pregnant rural workers.

Minimization of occupational risks

To minimize the problems detected in the working environment of this pregnant women, we recommend the approach of occupational risks during prenatal consultation, for being a moment of interaction and dialogue of the health professional with the pregnant woman, so that the professional can know the work processes and, from this information, seek to perform a care focused on the reality of life and work of the pregnant women⁴.

The effective prenatal care requires the conduction of educational practices, individually and collectively. We expect that the actions of health education will provide the exchange of knowledge and transform the reality⁴. Health education contributes to expand the capacity of the individuals to guide their own health promotion actions with autonomy²².

On this aspect, we propose that, in the prenatal consultation or in the group of pregnant women, the health professional talk with the women about the health care related to occupational harms and risks at work.

Considering the risks to the health of pregnant women in the rural work, it is indispensable that professionals guide and encourage the pregnant women to use face shield for protection against the impact of flying particles and ultraviolet radiation; goggles for eye protection against ultraviolet radiation and flying particles; clothing for body protection against risks of meteorological origin; gloves for hand protection against biological and excoriating agents; pants for leg protection against excoriating agents; footwear for feet protection against piercing, cutting, excoriating, and biological agents; and filtering semifacial piece for respiratory protection against dusts and mists, when exposed to dust and pesticides, and sunscreen against UV radiation. For the mechanical milking activity, the Normative Instruction no. 62 guides that the worker use cap, overalls or coat, pants, and white boots²³.

We suggest that the FHS professionals, who work in rural areas, (re)cognize their territory and the living conditions of the population by frequent incursions in the region to identify the risks, vulnerabilities, and health

demands of the place, as well as the potential to solve the diagnosed problems along with the people that are involved in the situation²⁴. The health weaknesses and needs observed should be shared with the FHS team, to build a dialogue between diverse knowledge to (re) produce health actions and guidelines collectively.

Considering that the FHS is a facilitator of intersectoral activities and that the National Policy of Primary Health Care²⁴ assigns to FHS professionals the development of intersectoral actions that bring positive impacts to the conditions and determinants of population health, we propose the planning and development of health promotion and prevention in rural work to be carried out with the support of the Family Health Support from public and private sectors, and of employers and rural workers.

We also recommend that health care professionals be trained to deal with the occupational harms and risks by permanent education in the service. On this aspect, Davini²⁵ points out an integrated strategy for educational action that uses the questioning of employment practices as the axis of identification of problems, the expansion of knowledge, the development of specific skills, and the search for solutions. Since, in the occupational practice, people produce knowledge and expand the possibilities to innovate and prepare the developed work actions, to adopt research-action in everyday life, to reflect individually and collectively about the actions performed and produced, is a means of practicing permanent education²⁶.

Without wishing to exhaust the possibilities of confrontation, we suggest to FHS health care professionals the participatory research described by Thiollent²⁷, which aims to identify the reasons that trigger the harms to health and find actions to solve them. We also suggest debates on the topic involving FHS health professionals, agriculture, livestock, job security, rural workers, and their employers, to unveil the health problems in rural work and build the solutions.

CONCLUSIONS

We identified that pregnant rural workers are subjected to various harms to health, because of the several chemical, physical, biological, accidental, and ergonomic risk factors in their work environments.

However, in the interviews, the pregnant women do not mention the risks of exposure to pesticides and biological materials, even developing activities that generate contact with factors of exposure to these risks. In this case, we believe that the invisibility of the pesticides particles and pathogens can be the reason for the lack of

awareness by the pregnant women. The same occurs with the health professionals, since they also did not mention all the risks that were identified by the researchers during the observations of the work environment. This fact leads us to believe that professionals need to know more and better the environments and work processes present in the territories in which they operate.

Although health professionals mention that the non-use of PPE by the rural worker occurs because of lack of awareness, we believe that this reality is also related to other reasons, such as: lack of awareness of the risks of the occupational activity and of the harms from the labor risks; lack of awareness of the harms that the occupational risks can cause to the fetus or newborn; lack of awareness of the mandatory use of PPE in unhealthy and risk activities; non-provision of the PPE by the employer; lack of awareness of the specific PPE for the labor activity; invisibility of the risks; and low socioeconomic condition for purchase. Thus, we highlight the need of health professionals going beyond education actions for the use of PPE, and also encouraging and mobilizing the

community participation in search of better conditions of work with governmental and non-governmental entities.

Finally, we emphasize the importance of observation as a data collection technique. Since this is a research universe still “distanced” from the academic reality in the health area, a description, even if it was really detailed about the participants of the study, would not be enough to reveal the work reality of these pregnant women. It was necessary to use the senses of sight, hearing, smelling, and touching to learn more about the work process in rural areas. And, by this experience, we could observe the precariousness and the unhealthiness of the working conditions of the pregnant rural workers.

It is necessary to implement measures of safety and prevention of harms to the pregnant rural worker health in the prenatal care and primary health care. To this end, rural workers, professionals and health managers, educational institutions, and other organizations related to this study, need to dialogue and engage in actions to mitigate the impacts of the health risks that the pregnant rural worker is exposed to.

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