Profile of clinical information in medical records of tobacco farmers in Alagoas, Brazil

Perfil dos registros clínicos em prontuários de fumicultores em Alagoas

Ana Caroline Melo dos Santos[1], Imaculada Pereira Soares[2], Josino Costa Moreira[3], Maria Betânia Monteiro de Farias[4], Renise Bastos Farias Dias[4], Karol Fireman de Farias[4]

ABSTRACT | Background: The study of the profile of medical records of tobacco growers contributes to discussions on the establishment of diagnosis and its causal correlation with work. **Objective:** To investigate the profile of clinical information in medical records of tobacco growers. **Methods:** The present was a descriptive field and documentary study, with quantitative approach, of 149 medical records of farmers who visited basic health units in rural communities in the municipality of Arapiraca, Alagoas, Brazil, from 2008 to 2013. **Results:** About 66% of the investigated population was female, with average age 58.6 years old (standard deviation ±16.4). The most significant clinical complaint found in the records was headache (16.71%), followed by low back pain (10.20%), dysuria or other urinary problems (8.90%) and stomachache (8.30%). Medical diagnoses included gastritis (15.1%), depression (7.1%), anxiety (7.1%), myalgia (7.1%) and arthritis/arthralgia (5.3%). Correlation between clinical complaints and work performed by tobacco growers was registered on one single medical record. **Conclusion:** The clinical profile of tobacco growers described in the medical records might be associated with their social and working conditions and related to pesticide and nicotine poisoning. However, the scarcity of information on the environmental and occupational risk context limits the establishment of a causal link. As a function of the relevance of the occupational-clinical conditions of this population of workers, improving medical records is necessary, as the temporal relationship between exposure and outcomes might account for the occurrence of the reported symptoms.
Keywords | pesticides; occupational health; public health surveillance; medical records.

RESUMO | Introdução: O estudo do perfil dos registros clínicos em prontuários de fumicultores favorece a discussão do estabelecimento do diagnóstico e do nexo causal com o trabalho. **Objetivo:** Identificar o perfil dos registros clínicos em prontuários de fumicultores. **Método:** Trata-se de um estudo descritivo de campo e documental com abordagem quantitativa dos registros em 149 prontuários de fumicultores que frequentaram Unidades Básicas de Saúde da Família de comunidades rurais do município de Arapiraca, Alagoas, no período de 2008 a 2013. **Resultados:** Foi identificado que 66% dos usuários são do sexo feminino, com média de idade de 58,6 anos (desvio padrão — DP±16,4). As queixas clínicas mais expressivas registradas nos prontuários estavam relacionadas à cefaleia (16,71%), seguida por dor lombar (10,20%), disúria ou outros problemas urinários (8,90%) e epigastralgia (8,30%). Quanto aos diagnósticos médicos, destacaram-se gastrite/epigastralgia (15,1%), depressão (7,1%), ansiedade (7,1%), mialgia (7,1%) e artrite/artralgia (5,3%). A correlação das queixas clínicas como trabalho desenvolvido pelos fumicultores foi registrada em apenas um prontuário. **Conclusão:** O perfil clínico dos fumicultores apresentado nos prontuários poderia estar associado às condições sociais e de trabalho e inter-relacionado com a intoxicação por agrotóxicos e nicotina. Porém, a escassez de registros contextualizando o ambiente e os riscos ocupacionais torna limitante o nexo causal. Pela relevância do quadro clínico-ocupacional desses trabalhadores, faz-se necessária a melhoria dos registros, o que poderia justificar os sintomas apresentados levando em consideração as relações temporais entre a exposição e o desfecho.
Palavras-chave | praguicidas; saúde do trabalhador; vigilância em saúde pública; registros médicos

INTRODUCTION

Cultivation of tobacco is traditional in the Brazilian Northeastern region[1]. In Alagoas, this activity is concentrated around Arapiraca, where as a function of the historical context and commercialization of tobacco it became the main source of income. Thus tobacco represents one of the main crops in this state[2]. The condition known as "green tobacco sickness" is well known; it is due to transdermal absorption of nicotine as a function of the contact of rural workers with tobacco leaves[3]. The usual symptoms of disease include: nervousness, dizziness, muscle weakness, paleness, torpor and skin rash[4]. These effects are more frequent among workers who do not use protective equipment[5] and are also associated with use of pesticides[4]. In a study conducted in the region known as Agreste Alagoano, where the first Brazilian case of green tobacco sickness was diagnosed, the symptoms found were dizziness, weakness, vomiting, nausea and headache[6].

As a result of intensive tobacco production and use of pesticides the rate of poisoning recorded by health care institutions increased. Consequently, rural workers became a focus of attention for health care providers, demanding efficacious descriptions in medical records to ground intervention actions, follow up the progression of disease, provide statistical data to health care services, and even contribute to improve the multi-professional work process[7,8]. Medical records were analyzed in studies to detect evidence of the need for actions relative to the health care routinely provided to workers[9,10].

Facing this scenario, our interest was awakened toward the information registered in medical records of tobacco growers. Therefore, the aims of the present study were to establish the clinical profile of tobacco growers from the municipality of Arapiraca, Alagoas, and characterize the information registered by health care providers on the medical records of the investigated population of workers.

METHODS

In the present retrospective study we analyzed the information registered in medical records of tobacco growers cared at Family Health Basic Units (FHBU) of the Unified Health System (Sistema Único de Saúde — SUS) that cover four rural communities predominantly devoted to cultivation of tobacco in Arapiraca, Alagoas. The criterion for selection was based on a survey of the number of tobacco growers in the area performed by the FHBUs in 2012. The FHBUs only provided access to medical records of workers over 40 years old.

The rural population of Arapiraca comprises about 32,525 inhabitants, who are largely engaged in the cultivation of tobacco[11]. The communities analyzed in the present study are located on the periphery of the county and include Pau D'arco, which tends to 1,467 families, to a total of 5,077 individuals; Batingas, which tends to 2,1615 families, to a total of 8,308 individuals; Capim, which tends to 1,212 families, to a total of 3,603 individuals; and Canaã, which tends to 1,290 families, to a total of 4,193 individuals[12]. Figure 1 is a cartographic representation of the areas targeted in the present study.

The local tobacco growers are mostly family farmers, who produce burley tobacco — about 4,560 tons of tobacco are harvested per year from 3,800 sown hectares, yielding BRL 5,472.00. Also fruits and vegetables are grown in the area[11]. The main pesticides used for tobacco growing in 2012 were:
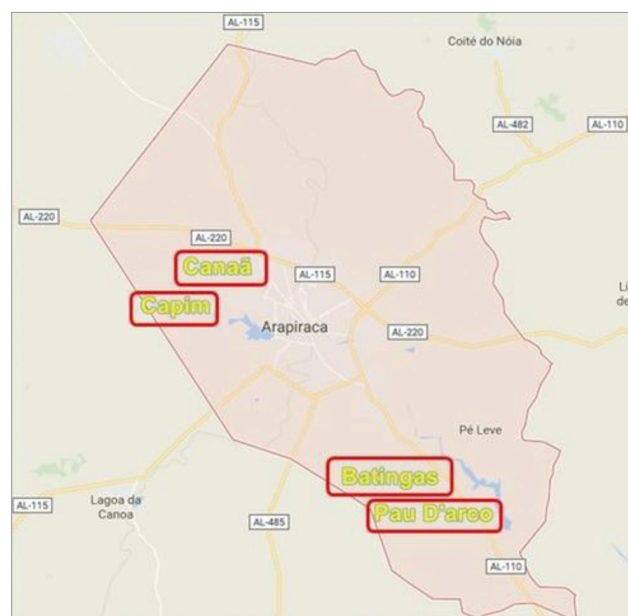
Source: GEOARAPIRACA. Arapiraca Municipal Government. Available at: <https://geo.arapiraca.al.gov.br/geoarapirca/index.php/downloads/>.

Figure 1. Geographical location of the analyzed communities. Arapiraca, Alagoas, 2017.

deltamethrin (Decis®), imidacloprid (Confidor®), lambda-cyhalothrin (Karate®), metamidophos (Tamaron®) and azoxystrobin (Amistar®)[13].

The sample of the present study was provided by the staffs of Health Community Agents Program (HCAP) and Family Health Program (FHP) which have 100% coverage of the municipal rural area. Access was provided to the medical records of all the tobacco growers included in the last local survey. As a result we could review 149 medical records with information on visits made from 2008 through 2013.

The information registered by health care providers in specific forms appended to the medical records was transcribed into an *ad hoc* data collection instrument. Based on these transcriptions we analyzed, categorized and classified the records. On analysis we considered identification data, characteristics of records and descriptions of clinical progression. Once classified, the data were subjected to descriptive statistical analysis using software Statistical Package for the Social Sciences (SPSS) version 20.0. The study was approved by the research ethics committee of University of Alagoas (Comitê de Ética em Pesquisa da Universidade Federal de Alagoas – CEP/UFAL) ruling no. 468,827/2013.

RESULTS

We analyzed 149 medical records and found the following results relative to the variables described in Table 1: most of the analyzed individuals were female and old, with age over 60 years old (50.5%; n=75), and effectively worked in cultivation of tobacco. Age range 40 to 49 years old corresponded to 34.8% (n=52) of the sample and 30.8% (n=49) were 80 to 89 years old. The average age of the sample was 58.6 years old (standard deviation — SD±16.4), minimum 41 and maximum 89 years old. Most of the sample had brown skin (56.0%; n=79) followed by blacks (28.3%; n=41) and whites (13.9%; n=20). Information on ethnicity missed in 1.8% (n=9) of the medical records. Some data, such as educational level and height, were not registered in the medical records.

In regard to the geographical distribution, we analyzed medical records of tobacco growers from four communities located on the periphery of the Arapiraca municipality; Pau

D arco, corresponding to 53.4% (n=85) of the total number of medical records; Capim, 34.5% (n=46); Batingas, 8.6% (n=11); and Canaã, 3.5% (n=7).

As concerns the entries made by health care providers on the tobacco growers' medical records, 25.% were made by nurses (n=37), 40.6% (n=61) by physician, and 34.4% (n=51) by other professionals. A total of 846 consultations with health care providers (physicians, nurses, psychologists and nursing technicians) were recorded for the period from 2008 to 2013. Most entries were made on April (n=71), May (n=76), July (n=89), August (n=89), September (n=70), November (n=81) and December (n=68) and most consultations were performed in 2013.

In 81.2% (n=121) of the records, information was objective, and in cases written with pen. Records of

Table 1. Demographic data registered in medical records of tobacco growers. Arapiraca, Alagoas, Brazil, 2017.

Category	n (% frequency)
Sex	
Male	51 (34.0)
Female	98 (66.0)
Age range (years)	
40 to 49	52 (56.9)
50 to 59	22 (43.1)
60 to 69	9 (9.4)
70 to 79	20 (25.0)
80 to 89	46 (45.3)
Standard deviation	±16.4
Minimum	41
Maximum	89
Ethnicity	
Brown skin	79 (56.0)
White	20 (13.9)
Black	41 (28.3)
Missing	9 (1,8)
Rural area	
Pau D'arco community	85 (53.4)
Capim community	46 (34.5)
Batingas community	11 (8.6)
Canaã community	7 (3.4)

clinical progression had the health care providers' signature in 86.6% (n=129) of the cases and stamps in 100% (n=149). Handwriting was legible in 35.5% (n=53) of the records.

In all records (100%; n=149) physical examination basically focused on the patients' complaints, rather than following a head-to-toes systematic order. Physical examination mainly consisted of visual inspection (42.00%; n=63), followed by auscultation (35.60%; n=53), palpation (20.54%; n=31) and percussion (1.86%; n=3). Records of level of consciousness, respiratory pattern, cardiovascular pattern, abdominal tension and mucocutaneous integrity stood out.

Relative to the vital signs, 51.8% (n=76) of the records included information on blood pressure, the mean value of which was 120/80 mmHg — only 24 individuals were found to have hypertension. Only 14.8% (n=22) of the records had information on height. Body weight was registered in 39.0% (n=58) of the records. The least frequent entries corresponded to the emotional state, 23.4% (n=35). Information was entered about diet or nutrition (29.5%; n=44), practice of physical activity (26.9%; n=40) and physiological excretions, sleep and rest (24.8%; n=37). Previous history of occupational diseases was registered in 40.9% (n=61) of the records.

A total of 264 complaints reported by tobacco growers were registered in the analyzed medical records. The most frequent symptom was headache (16.7%; n=44), followed by low back pain (10.2%; n=27), dysuria and/or other urinary problems (8.3%; n=21) and stomachache (8.9%; n=22) as shown by Table 2. In only one record a health care provider registered association of work as tobacco grower with the reported complaints ("He says he worked in the plantation"). This patient was seen by a nurse and complained of shoulder pain and difficulty to perform routine tasks. He was oriented to rest and improve his quality of life.

Relative to the records made by physicians (40.6%; n=61) medical diagnoses were registered in only 39.8% (n=59). Table 3 lists 56 medical diagnoses found in the medical records, among which gastritis/epigastralgia (15.1%), depression (7.1%), anxiety (7.1%), myalgia (7.1%), and arthritis/arthralgia (5.3%) stand out. These diseases might be compatible with the social and working conditions of tobacco growers.

Two nursing diagnoses were located among the analyzed medical records, to wit, "ineffective management of therapeutic regimen" and "obesity and sedentary lifestyle". No confirmed diagnosis of green tobacco sickness or pesticide poisoning was located. Relative to medical interventions, all the records included therapeutic measures, including: drug prescriptions and

Table 2. Distribution of complaints reported by tobacco growers exposed to environment with pesticides. Arapiraca, Alagoas, Brazil, 2017.

Complaints	n	%
Abdominal pain	9	3.5
Asthenia	3	1.1
Bellyache	3	1.1
Bone pain	5	1.8
Cough	11	4.1
Dizziness	15	5.6
Diarrhea	5	1.8
Dysuria and other urinary problems	21	8.9
Earache	5	1.8
Eye pain	2	0.8
Fever	15	5.6
Heartburn	9	3.5
Headache	44	16.7
Joint pain	6	2.2
Knee pain	5	1.8
Lower abdominal pain	7	2.6
Low back pain	27	10.2
Muscle pain	18	6.8
Nasal discharge	4	1.5
Palpitations	6	2.2
Shoulder pain	6	2.2
Skin spots	4	1.5
Stomachache	22	8.3
Vomiting	5	1.8
Weakness	4	1.5
Weight loss	3	1.1
Total	264	100.0

Note: patients might have reported more than one complaint on consultations

Table 3. Distribution of medical diagnoses among tobacco growers. Arapiraca, Alagoas, Brazil, 2017.

Diagnosis	Males (n)	Females (n)	Total (n)	%
Gastritis/epigastralgia	2	6	8	15.1
Depression	1	3	4	7.1
Anxiety	0	4	4	7.1
Myalgia	3	1	4	7.1
Arthritis/arthralgia	0	3	3	5.3
Tonsillitis/pharyngitis	0	3	3	5.3
Pityriasis	2	0	2	3.5
Allergic rhinitis	0	2	2	3.5
Vaginitis	0	2	2	3.5
Vulvar candidiasis/moniliasis	0	2	2	3.5
Sinusitis	2	0	2	3.5
Otitis	0	1	1	1.7
Bursitis	0	1	1	1.7
Dyspepsia	0	1	1	1.7
Chronic bronchitis	1	0	1	1.7
Low back pain	1	0	1	1.7
Contact dermatitis	0	1	1	1.7
Lactose intolerance	1	0	1	1.7
Leukopenia of unknown origin	1	0	1	1.7
Recurrent shoulder dislocation	1	0	1	1.7
Flu	0	1	0	1.7
Liver steatosis	1	0	1	1.7
Glaucoma	0	1	1	1.7
Type 2 diabetes mellitus	1	0	1	1.7
Menopause	0	1	1	1.7
Hyperlordosis	0	1	1	1.7
Erosive esophagitis	0	1	1	1.7
Achilles tendonitis	0	1	1	1.7
Trichomonas	0	1	1	1.7
Azithromycin-sensitive *S. aureus*	0	1	1	1.7
Gallstones	0	1	1	1.7
Total	17	39	56	100.0

transcriptions, requests of laboratory tests and referrals to specialists, mainly in mental health (65.5%; n=95). Nursing interventions were registered in 0.67% (n=1) of the records, and included issues related with diet, practice of physical activity, orientation on correct use of medication and requests of laboratory tests.

DISCUSSION

According to the results of the present study, the largest number of consultations registered in the analyzed medical records occurred in the months of sowing, planting and harvesting tobacco[14]. In the Brazilian Northeastern region, tobacco is sown around May, planted on June and harvested in August and September. Once seedlings are planted, the step of pest and disease control begins, which involves intensive use of pesticides[13]. Therefore, health care providers should pay more attention to possible symptoms of poisoning due to simultaneous exposure to pesticides and nicotine at the time of pruning and trimming.

In the present study we found that most patients were female, which agrees with the results of studies showing that, as a rule, Brazilian women visit doctors more often than men[15,16]. In addition, we found high prevalence of consultations for patients over 40 years old; the reason might be that tobacco growing is a full-time activity, and thus younger individuals seek health care less often. Relative to ethnicity, and reminding that the area is under strong influence of miscegenation, most records were of individuals with brown skin or blacks, which finding agrees with the results of studies reporting that about half the population of tobacco growers describes itself as with brown skin or black[8,13].

In regard to the clinical profile and based on clinical interviews and physical examination, the latter were found to focus on the main complaints of patients. The information provided in clinical interviews, by stimulating patients to remind events related to their state of health, is more genuine the more it is provided by the patients themselves. In turn, physical examination should follow a systematic order, preferably from head to toes, as is common for judicious examinations of all the body parts[17].

We found that the clinical outcome of most of the complaints recorded by the health care providers might be

compatible with the social and working conditions of tobacco growers, including the factors that favor thermal stress[18]. Therefore, these data should be included in medical records, since symptoms also occur in other diseases, including pesticide or nicotine poisoning. A previous study conducted in the Agreste Alagoano found the same profile of symptoms[6,8,19], which reinforces the need for health care providers to consider working conditions and occupational exposures in their assessment of tobacco growers. One further factor to take into account is the old age of many of such workers and that some diseases and symptoms are more frequent among older patients.

The symptoms of acute human poisonings are not well known, which hinders the determination of diagnosis and treatment. Nevertheless, workers are simultaneously exposed to multiple substances along many years and through different routes — transdermal absorption, inhalation and ingestion — both in the field and at home[20]. In regard to mental health, depression was recorded in the medical records. Some studies suggested that cumulative exposure to pesticides might contribute to the development of depression[21], while cohort studies are needed to detect a possible causal relationship.

We found the records insufficient in regard to information focused on workers' health. However, we should stress that the more committed Family Health staffs are with health surveillance actions[22], the better the monitoring, detection, follow up and prevention of health problems among tobacco growers and of environmental harm[23]. Thus efforts are made to contribute to the understanding that work-related diseases should be included among the priority conditions for occupational follow up[22].

Yet, one should consider the results of the present study versus its small sample size, especially as concerns the categorization of the variables extracted from the medical records. Missing data in the descriptions of clinical assessments did not allow for a holistic view of patients, which impaired the appraisal of the care provided.

Continuing education of Family Health Strategy staffs that tend to rural patients — with special consideration for the high turnover of their members — is an essential approach for the purpose of recognizing and managing cases of pesticide poisoning, together with orientation on how to prevent/reduce the effects of exposure to pesticides and nicotine and stimulation of discussions on changes in the model of agricultural production integrated with the multi-professional occupational perspective.

During clinical assessment, physical examination is of paramount importance to detect the consequences of manipulating pesticides and of contact with the nicotine present in harvested tobacco on the workers' health. We suggest that clinical assessment should pay special attention to the nervous system, sensory functions — audiology assessment in particular, muscle strength/tone and movement, sensitivity, motor coordination, palpation of peripheral nerves and reflexes, the abdomen, mood and mental health aspects.

From the laboratory perspective, we suggest an emphasis on routine tests, including: complete blood count, liver function, kidney function, total protein and fractions, total cholesterol, HDL, LDL, triglycerides, blood sugar and TSH. These tests might contribute with relevant information for diagnosis and the measures implemented by the health professionals involved in the care of this population of workers, especially the ones exposed to pesticides.

Finally, medical records, i.e., sources of knowledge on the life history of patients, directly interfere with the care provided to them. Therefore, sensitization of health care providers on the need to make records that faithfully reflect the state of patients and approach aspects of their state of health, are crucial, the turnover of staffs notwithstanding, to reinforce the investigation of a causal relationship with work.

CONCLUSION

The clinical profile of tobacco growers described in the analyzed medical records might be associated with their social and working conditions and related to pesticide and nicotine poisoning. However, the scarcity of records giving the necessary context relative to the environment and occupational hazards restricts the attempts at establishing a causal relationship with work. In regard to this population of workers, medical records must provide more data as a function of the relevance of their occupational clinical condition and the need for exact diagnosis, improvement of notification and therapeutic orientation.

The data described here evidence the need for coherent records for assessment of the health conditions of the rural population, which might come to account for the symptoms reported when the temporal relationship between exposure and outcome is considered. Continuing training of health care staffs in the recording of work activities is needed to improve the effectiveness of interventions targeting tobacco growers. In addition, lines of research aiming at advancing the scientific knowledge on the clinical assessment of this population are needed, including standardization of consultations for tobacco and non-tobacco growers.

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Correspondence address: Ana Caroline Melo dos Santos – Avenida Manoel Severino Barbosa, s/n – Bom Sucesso – CEP: 57309-005 – Arapiraca (AL), Brazil – E-mail: anacaroline12305@gmail.com