

Full Length Research Paper

Socio-demographic profile of individuals who received care from a Brazilian out-patient oncology clinic between 2010 and 2011

Bárbara Luisa Fermino¹, Elaine Ramos¹, Felipe Nathanael Coelho Vaz¹, Maria Vaitsa Loch Haskel¹, Larissa De Lima Faustino¹, João Batista Teixeira Da Rocha² and Juliana Sartori Bonini^{1*}

¹Universidade Estadual do Centro-Oeste, Brazil.

²Universidade Federal Santa Maria (UFSM), Brazil.

Received 22 November, 2016; Accepted 15 March, 2017

Cancer encompasses more than 100 diseases that increase in frequency in older populations. Causal agents include hereditary factors, as well as the exposure to environmental elements. Socio-demographic profile, as a determinant of exposure to different environmental factors, also affects cancer incidence. In Brazil, between 2010 and 2011, 489.270 new cases of cancer were recorded. In face of these facts, the present survey aimed at characterizing the demographic profile as well as the professional activities of patients with a cancer diagnostic who received care from an out-patient clinic in the city of Guarapuava, state of Parana, Brazil. To this end, 460 medical charts were analyzed from the years 2010 and 2011. The most common types of cancer observed were non-melanoma skin cancer (156 cases, 34%), breast (18.3%), prostate (17.5%), colon and rectum (12.7%), cervical (8%), lungs (5%) and stomach (2.3%). In general, the more relevant risk factors were: being white and female, having more than 60 years of age and exposure to pesticides, sun and tobacco. The average age of cancer patients was above 60, highlighting the continued need for early prevention and diagnostic programs in a country with ageing population.

Key words: Neoplasia, risk factor, demographic survey, epidemiology.

INTRODUCTION

Cancer encompasses more than 100 diseases that share, as a common characteristic, the uncontrolled growth of cells, which rapidly divide invading tissues and organs (Brasil, 2009).

Scientific and technological advances in the fields of cellular and molecular biology, genetics and neuroscience improved our understanding and allowed for the

refinement of theories about the origins of cancer (Figueiredo et al., 2009). Prevailing theories suggest that cancer develops in multiple steps involving hereditary factors and environmentally-derived damage to DNA, which ultimately affect cellular control mechanisms leading to the development of tumors (Teixeira, 2007; Duesberg, 2007).

*Corresponding E-mail: barbaralfermino@hotmail.com.

Among potential causes of cancer, some have a more direct link to the disease, including environmental risk factors such as ionizing radiation, UV light, alcohol, and tobacco. Hormonal and endogenous factors also increase the risk of cancer, including obesity and the process of aging, as well as exposure to viruses such as human papilloma virus (HPV), Epstein-Barr virus (EBV), hepatitis B virus (HBV) and the retrovirus (HTLV1) (Brasil, 2009; Otto, 2002). Some forms of the disease have well-established links to predisposing factors. For example, lung cancer has long been associated with the use of tobacco, stomach cancer with poor eating habits and *Helicobacter pylori*, and skin cancer with UV exposure, as well as skin, hair and eye color (Guerra et al., 2005; Campos et al., 2011)

From 2010 to 2011, 489.270 new cases of cancer were reported in Brazil. Among these, 236.240 affected males and 253.030 affected females. Non-melanoma skin cancer represented 114 thousand of these new cases, and has been considered the type of cancer with the highest incidence among Brazilians (Brasil, 2009), followed by prostate cancer (52 thousand), breast (49 thousand), colon and rectum (28 thousand), lungs (28 thousand), stomach (21 thousand) and cervical cancer (18 thousand) (Brasil, 2011).

As the number of patients rise in Brazil, it has become clear that socio-economic status increases the risk of developing certain types of cancer. For example, poor individuals are at greater risk of developing stomach and cervical cancers (Guerra et al., 2005). Thus, a greater knowledge of socio-demographic profiles and associated risk factors might provide the subsidies for better nursing interventions at the community level aimed at protecting and reestablishing the health of individuals.

In face of these facts, the present study aims at characterizing the profile of patients diagnosed with cancer in the city of Guarapuava, PR. This study also sought to identify the risk factors to which these patients were exposed.

METHODOLOGY

A descriptive, exploratory and archive-based study was conducted with a quantitative approach (Silva, 2002). The research took place in the outpatient oncology clinic of the Hospital São Vicente de Paulo, in the municipality of Guarapuava-PR. The clinic is considered a High-complexity Assistance Unit (UNACON, from the original Portuguese). Thus, it fulfills the technical, physical and human-resource requirements to diagnose and treat the most prevalent cancer types.

Patients had daily consultations with an oncologist who, after diagnosing and staging the disease, defined specific treatments, e.g., surgical or hormonal intervention, immunotherapy, or chemotherapy. Cases that required radiotherapy were referred to other units. A majority of the consultations benefitted SUS users (the Brazilian public health system), including an average of 900 cancer diagnostics per year. The outpatient clinic has a multidisciplinary team which composed of medical doctors, nurses, technicians, nursing assistants, psychologists, social assistants, nutritionists and service administrators.

The charts of 460 patients registered at the clinic for cancer treatment were analyzed recording the following information: cancer type, patient race, age, education, work, environmental risks (that is, tobacco, alcohol, exposure to pesticides and UV light, as well as other factors found in the charts). The charts of patients with the most common types of cancer were included in the study according to the National Institute of Cancer (INCA) 2010, including non-melanoma skin cancer, prostate, breast, colon and rectum, lung, stomach and cervical cancers. All patients included in the study started treatment between January 1, 2010 and December 31, 2011.

The collected data sets were individually tabulated in Excel using statistical distribution of events, depending on the study variables. Data were presented in tables for discussion and analyses.

The chi-square test and Fisher exact test were used for statistical correlation. Significance was accepted when P value was <0.05. All analyses were performed using SPSS Statistics 19 for Windows (SPSS Inc.).

This project was approved by the Oncology Center of Hospital São Vicente and by the Research Ethics Committee of the Centro-Oeste State University (Process no. 559/2011). Because archive material was used, informed consent forms were not used.

RESULTS

Table 1 shows that non-melanoma skin cancer was the most common type of cancer affecting 32.0% of females (n= 87) and 36.0% of males (n= 69) included in the survey. Among women, breast cancer represented the greatest portion of cases (31.2%; n= 85), whereas, among men, prostate cancer was more relevant (35.1%; n=66). Most of the individuals affected by cancer were white, including 97.0% of the women (n=264) and 96.8% of the men (n= 182). Most cases affected people at an age of 60 or more, including 72.3% of males (n=136) and 40.4% of females (n=110). The largest percentage of patients only had primary school education (22.8% of females and 27.1% of males). Information on work activity was often missing, but when available, it showed a prevalence of farm workers and retirees among men (11.7 and 23.4%, respectively), and of housewives among women (23.5%). Table 2 lists the environmental factors and combination of factors to which cancer patients had been previously exposed. Among cancer patients who were exposed to at least one of the risks surveyed, 30.35% were smokers (n=61) and 16.42% were exposed to the sun (n=33). A separate subtotal shown in Table 2 includes individuals who had no exposure to the risks surveyed 47.5% (n=123) and whose information was lacking 52.5% (n=136).

Table 3 exposes the risk factor, according to the prevalence of each cancer type, as well the patient race. As can be seen, the greater cervix, colon, breast, lungs and rectum cancer rate was found in Caucasian patients that had smoking relation; as for the stomach cancer, it has an increase when alcohol consumption was added to the smoking habits of the Caucasian patients. With regards to skin cancer, a huge prevalence to smoking and sun and pesticides exposure it was also observed in Caucasian people.

Table 1. Distribution of cancer cases according to sex, race, age, education and work activity (Guarapuava, PR, Brazil, 2012).

Parameter	Women		Men	
	N	%	N	%
	272	59	188	41
Cancer type				
Skin	87	32	69	36.74
Breast	85	31.2	00	0.0
Prostate	00	0.0	66	35.1
Colon	16	5.8	13	6.99
Rectum	14	5.14	14	7.45
Cervix	44	16.17	00	0.0
Stomach	10	3.67	17	0.9
Lung	16	5.88	8	4.25
Race				
White	264	97	182	96.8
Black	02	0.80	02	1.2
Mixed	01	0.20	00	0.0
No information	05	0.2	04	0.2
Age range				
20-29	02	0.8	02	1.1
30-39	23	8.4	04	2.1
40-49	59	21.7	17	09.0
50-59	78	28.7	29	15.5
60 or more	110	40.4	136	72.3
Education				
Illiterate	05	1.85	02	1.07
Primary school	62	22.8	51	27.12
High-school	15	5.5	05	2.06
Undergraduate	05	1.85	01	0.54
No information	185	68	129	68.61
Work activity				
Farm worker	16	5.9	22	11.72
Retired	18	6.6	44	23.40
Housewife	64	23.52	00	0.0
No information	157	57.72	108	52.44
Others	17	6.25	14	7.44

DISCUSSION

A high prevalence of skin cancer was observed among patients of both sexes. Exposure to sunlight represents one of the main risk factors concerning this cancer. Thus,

in Brazil where a large white population is exposed to tropical weather, approximately 50% of the population is at risk of developing such condition (Popim et al., 2008). For example, in the state of São Paulo and in the Southern region of the country, the most important risk

Table 2. Proportion of cancer patients exposed to different environmental risk factors (Guarapuava, PR, Brazil, 2012).

Risk factors	N	%
Smoking	61	30.35
Sunlight	33	16.42
Smoking/Alcohol	32	15.92
Smoking/Sunlight	14	6.97
Sunlight exposure/Pesticides	14	6.97
Alcohol	12	5.97
Smoking/Pesticides/Sunlight	09	4.47
Alcohol/Sunlight	08	3.98
Pesticide/Sunlight/Smoking/Alcohol	07	3.48
Smoking/Alcohol/Sunlight	06	2.98
Alcohol/Sunlight/Pesticide	02	0.99
Pesticide	01	0.50
Alcohol/Pesticide	01	0.50
Others	01	0.50
No information	136	52.5
No exposure	123	47.5

factors include sunlight exposure and white skin color (Ferreira et al., 2011).

In the current research, the second most prevalent type of cancer, among women, was breast cancer, a finding that agrees with data from the INCA indicating this form of the disease as the most prevalent for this group, with 52,680 new cases in 2012 (Brasil, 2011). Cervical cancer appeared as the third most frequent type among women in our work. This cancer has well defined risk factors including HPV infection, elevated number of sexual partners and smoking (Guerra et al., 2005; Bittencourt et al., 2004).

Prostate cancer was the second most frequent form of the disease among men. In Brazil, this type of cancer has greater incidence in the Midwest Region followed by the Southern Region. Risk factors have not been conclusively established although studies point to age, hereditary factors and dark skin as potential players in the development of the disease (Medeiros et al., 2011). Colon and rectum cancers appeared as the third most frequent cancers. According to INCA, genetic predisposition to chronic intestinal disease, high-fat diets, low ingestion of fruits and vegetables, use of alcohol and tobacco, all contribute to the development of colon and rectum cancers (Brasil, 2009).

Stomach cancer represented a relatively small fraction of the total number of cases. Other studies point to a higher frequency of this cancer in the Southern Region of Brazil (Brasil, 2011), representing the second highest cause of mortality among cancer patients (Brasil, 2009). A diet that is rich in fruits and vegetables prevents against

stomach cancer, further lending support to the idea that antioxidants such as vitamins C, E and beta-carotene may effectively hamper the development of tumors (Brasil, 2011). Untreated *H. pylori* infections represent the strongest risk factor for stomach cancer accounting for 63% of the cases (Barros et al., 2011).

In Brazil, 2012, according to INCA, 257.870 new cases of cancer occurred among men and 260.640 among women, suggesting, as in our research, that cancer may affect or may be detected more frequently in female individuals (Barros et al., 2011). In general, women have greater awareness of symptoms and physical signs of disease, as well as a greater knowledge of health issues because of their frequent role as family caregivers (Gomes et al., 2003). In addition, men usually have more difficulty in assimilating and adopting preventive and diagnostic measures (Hora et al., 2003).

As the Brazilian population, increasingly ages, chronic diseases come to represent an ever-increasing demand on the health services. Longer life expectancy directly increases the incidence of chronic diseases, especially cancer (Barros et al., 2011; Basilio et al., 2004). This pattern is in line with our survey, where most patients were over 60 years of age, in spite of the fact that this age group accounts for only 4.32% of the overall population (IBGE, 2010).

Another important factor highlighted by this investigation was the low education level of most patients, which further suggests the need for support material and orientation that can be easily understood by these individuals (Magalhães et al., 2008). Previous work

Table 3. Relation between the cancer types characteristics and risks factors exposure of the studied population.

Risk	Greater cervix		Colon		Stomach		Mamma		Skin		Prostate		Lung		Rectum		P value
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
Pesticides	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	
Pesticides/Sun	0	0.0	2	.4	0	0.0	0	0.0	10	2.2	0	0.0	1	0.2	1	0.2	
Pesticides/Sun/Smoking/Alcohol	0	0.0	0	0.0	2	0.4	0	0.0	2	0.4	1	0.2	2	0.4	0	0.0	
Alcohol	1	0.2	1	0.2	3	0.7	2	0.4	1	0.2	2	0.4	0	0.0	2	0.4	
Alcohol/Pesticides	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	
Alcohol/Sun	0	0.0	1	0.2	0	0.0	1	0.2	3	0.7	3	0.7	0	0.0	0	0.0	
Alcohol/Sun/Pesticides	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	0.4	0	0.0	0	0.0	
Smoking	6	1.3	3	0.7	6	1.3	10	2.2	12	2.6	6	1.3	13	2.8	5	1.1	
Smoking/Pesticides/Sun	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	1	0.2	0	0.0	0	0.0	
Smoking/Alcohol	3	0.7	1	0.2	7	1.5	7	1.5	1	0.2	7	1.5	2	0.4	4	0.9	<0.001
Smoking/Alcohol/Sun	0	0.0	0	0.0	2	0.4	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	
Smoking/Sun	0	0.0	1	0.2	1	0.2	4	0.9	5	1.1	2	0.4	0	0.0	1	0.2	
Smoking/Sun/Pesticides	0	0.0	0	0.0	0	0.0	3	0.7	0	0.0	2	0.4	0	0.0	2	0.4	
Smoking/Sun/Alcohol	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	
Without External Risk Factos	15	3.3	12	2.6	2	0.4	43	9.3	16	3.5	25	5.4	3	0.7	7	1.5	
Wood Dust/Smoking	0	0.0	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	
Sun	1	0.2	0	0.0	1	0.2	3	0.7	20	4.3	6	1.3	1	0.2	1	0.2	
Sun/Alcohol/Smoking	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
Sun/Smoking/Alcohol	0	0.0	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
No information	17	3.7	8	1.7	2	0.4	11	2.4	85	18.5	9	2.0	1	0.2	3	0.7	
Breed																	
Caucasian	43	9.3	27	5.9	27	5.9	85	18.5	153	33.3	61	13.3	23	5.0	27	5.9	
Ebon	0	0.0	1	0.2	0	0.0	1	.2	0	0.0	2	.4	0	0.0	0	0.0	<0.001
Brown	0	0.0	1	0.2	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	
No information	1	0.2	0	0.0	0	0.0	0	0.0	3	0.7	3	0.7	1	0.2	1	.2	

indicates that education is inversely correlated with exposure to risk factors, and positively

correlated with the diagnosis of smaller tumors (Menezes et al., 2002).

A high frequency of smoking patients in our study population was observed. It is estimated that 1/3

of the world's population smokes, in spite of the known risks posed by this habit, which in combination with other factors may increase by eight-fold the risk of cancer and other diseases (Almeida et al., 2006). In fact, if the use of tobacco were completely eliminated, 54% of esophageal cancers would be prevented, as well as 71% of lung and 86% of larynx cancers (Paolo et al., 2014; Barros et al., 2006).

In the present survey, patients were exposed to several risk factors in different combinations. Some studies indicate that 45% of cancer cases among men and 40% among women could be avoided with the reduction or complete elimination of risk factors from daily life (Campos et al., 2011).

The lack of information on interview methods and missing data on patient charts constituted the main limitations faced. However, the set of data included and organized here allows for a deeper understanding of cancer patients in poorer areas of Brazil, including risks factors, and provides a basis for future investigations as well as preventive interventions.

Conclusion

The present survey revealed a high incidence of non-melanoma skin cancer in patients of both sexes, breast and cervical in women, prostate cancer among men among others, such as lung cancer in connection with smoking. The study population was mostly white, older than 60, with low education. It included a high proportion of farm workers exposed to one or more risk factors.

Prevailing cancer types, risk factors, and elderly population being more heavily impacted by the disease were identified. It was concluded to be extremely important to promote preventive measures among the young and adults, including good eating habits, the use of protective equipment among farm workers, reduce use of alcohol and tobacco, periodic exams among women (breast cancer), and men, especially farm workers, who often refuse to perform periodic prostate exams.

The ever-increasing incidence of cancer makes it a matter of public health, requiring incentives and structural support for research, primary prevention and early treatment, which are central to Brazilian health policies.

CONFLICT OF INTEREST

The authors have not declared any conflict of interest.

REFERENCES

- Almeida AF, Mussi FC (2006). Tabagismo: conhecimentos, atitudes hábitos e grau de dependência de jovens fumantes em Salvador. *Rev. Escola Enferm. USP* 40(4):456-463.
- Barros JA, Valladares G, Faria AR, Fugita EM, Ruiz AP, Viana AGD (2006). Early diagnosis of lung cancer: the great challenge. *Epidemiological variables, clinical variables, staging and treatment. J. Br. Pneumol.* 32(3):221-227.
- Barros MBA, Francisco PMSB, Zanchetta LM, César LG (2011). Tendências das desigualdades sociais e demográficas na prevalência de doenças crônicas, no Brasil PNAD: 2003-2008. *Ciê. Saúde Coletiva* 16(9):3755-3768.
- Basilio DV, Mattos IV (2004). Câncer em mulheres idosas na região sul e sudeste do Brasil: Evolução da mortalidade no período de 1980-2005. *Rev. Br. Epidemiol.* 11(2).
- Bittencourt R, Scaletzky A, Boehl JAR (2004). Perfil epidemiológico do câncer na rede pública em Porto Alegre – RS. *Rev. Br. Cancerol.* 50(2):95-101.
- Brasil, Instituto Nacional de Câncer (INCA) (2011). Estimativa 2012: incidência de câncer no Brasil / Instituto Nacional de Câncer José Alencar Gomes da Silva, Coordenação Geral de Ações Estratégicas, Coordenação de Prevenção e Vigilância. – Rio de Janeiro: *Inca*.
- Brasil, Instituto Nacional de Câncer (INCA) (2009). Estimativa 2010: incidência de câncer no Brasil / Instituto Nacional de Câncer. José Alencar Gomes da Silva, Coordenação Geral de Ações Estratégicas, Coordenação de Prevenção e Vigilância. – Rio de Janeiro: *Inca*.
- Campos ECR, Simões JC, Kamei DJ, Santos FMR, Pinheiro EBA, Baldissera RL (2011). Análise do perfil epidemiológico, clínico e patológico de pacientes portadores de câncer de pele não melanoma tratados no Hospital Universitário Evangélico de Curitiba. *Rev. Méd. Resident* 13(4):251-260.
- Duesberg P (2007). Chromosomal chaos and cancer. *Sci. Am.* 296:35-41.
- Ferreira RF, Nascimento LFC, Rotta O (2011). Fatores de risco para câncer da pele não melanoma em Taubaté, SP: um estudo caso controle. *Rev. Assoc. Méd. Br.* 57(4):431-437.
- Figueiredo NM, Leite JL, Machado WCA, Moreira MC, Tonini T (2009). *Enfermagem Oncológica: conceitos e práticas.* São Caetano do Sul, Yendis 2:5-49.
- Gomes R (2003). Sexualidade masculina e saúde do homem: proposta para uma discussão. *Ciê. Saúde coletiva* 8(3):825-829.
- Guerra M, Gallo CVM, Mendonça GAS (2005). Risco de câncer no Brasil: tendências e estudos epidemiológicos mais recentes. *Rev. Br. Cancerol.* 51(32):227-234.
- Hora C, Guimarães PB, Martins S, Batista CVC, Siqueira R (2003). Avaliação do conhecimento quanto a prevenção do câncer da pele e sua relação com a exposição solar em frequentadores de academia de ginástica, em Recife. *Anais Br. Dermatol.* 78(3).
- IBGE (2010). Instituto Brasileiro de Geografia e Estatística. *Infográficos: Evolução Populacional e Pirâmide Etária.* Guarapuava: IBGE, 2010.
- Magalhães LP, Oshima TF, Souza LG, Lima JM, Carvalho L, Forones NM (2008). Variação de peso, grau de escolaridade, saneamento básico, etilismo, tabagismo e hábito alimentar progresso em pacientes com câncer de estômago. *Arquivo Gastroenterol.* 45(2).
- Medeiros AP, Menezes MFB, Napoleão AA (2011). Fatores de risco e medidas de prevenção do câncer de próstata: subsídios para a enfermagem. *Rev. Br. Enferm.* 64(2):385-388.
- Menezes AMH, Horta BL, Oliveira ALB, Kaufmann RA, Duquia R, Diniz A (2002). Attributed risk to smoking for lung cancer, laryngeal cancer and esophageal cancer. *Rev. Saúde Públ.* 36(2):129-340
- Otto SE (2002). Rio de Janeiro: Reichmann e Affonso Editores. *Oncologia* 105-258.
- Paolo V, Christopher PW (2014). Global cancer patterns: causes and prevention. *Lancet* 383:549-570.
- Popim RC, Corrente JE, Marino JAG, Souza CA (2008). Câncer de pele: uso de medidas preventivas perfil demográfico de um grupo de risco na cidade de Botucatu. *Ciê. Saúde coletiva* 13(4):1331-1336.
- Silva EL (2001). Metodologia da pesquisa e elaboração de dissertação. *Revista Atual, Laboratório de Ensino a Distância da UFSC.* 3:121.
- Teixeira M (2007). Explicação diversa para a origem do câncer, com foco nos cromossomos, e não nos genes, ganha corpo no *establishment* científico. *Fund. São Paulo Revista Latino Americana. De Psicopatologia* 10(4):664-676.