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ORIGINAL ARTICLE

SOCIODEMOGRAPHIC AND CLINICAL PROFILE OF WOMEN WITH CANCER IN THE GENITAL TRACT WHO UNDERWENT RADIATION THERAPY

Anizelle Aline Lopes da Silva[1], Luciana Martins da Rosa[2], Soraia Dornelles Schoeller[3], Vera Radünz[4], Maria Manuela Martins[5], Henriqueta Ilda Verganista Martins Fernandes[6], Érica Bernardes Duarte[7]

ABSTRACT

Objective: To characterize the sociodemographic and clinical profile of women with cancer in the genital tract who underwent radiation therapy at the Centro de Pesquisas Oncológicas between 2010 and 2014.
Method: Ecological study of 880 files of the Hospital-based Cancer Registry. Descriptive statistics, with calculation of the prevalence rate was used in the analysis.
Results: The higher incidence, 204 cases (23.18%) occurred in the age group of 40-49 years; with a higher prevalence rate from 60 to 69 years, 165 cases (82.28%) for every 100,000 women. Stage III with 315 cases (35.8%), cervical topography with 695 cases (78.97%) and respective prevalence rates 12.97%, 28.61%. Of the total cases of cervical cancer, 274 (39.77%) were from Grande Florianópolis (Santa Catarina, Brazil) and 99 (14.37%) from the southern macro-region.
Conclusion: The importance of cervical cancer, the need for public policies for disease prevention and early diagnosis of pre-neoplastic and/or cancer lesions are reaffirmed here.

DESCRIPTORS: Cancer of female genital organs; Cervical cancers; Radiotherapy; Health profile; Hospital records.

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[1]Nurse. Universidade Federal de Santa Catarina. Research Laboratory Cuidando & Confortando. Florianópolis, SC, Brazil.
[2]Nurse. PhD in Nursing. Professor, Nursing and Postgraduate Program in Nursing from Universidade Federal de Santa Catarina. Florianópolis, SC, Brazil.
[3]Nurse. PhD in Nursing. Professor, Nursing and Postgraduate Program in Nursing from Universidade Federal de Santa Catarina. Florianópolis, SC, Brazil.
[4]Nurse. PhD in Nursing from Universidade Federal de Santa Catarina. Florianópolis, SC, Brazil.
[5]Nurse. PhD in Nursing. Professor, Núcleo de Investigação de Enfermagem de Família (NIEF). Grupo de Investigação - NursID: Inovação e Desenvolvimento em Enfermagem – CINTESIS - Center for Health Technology and Services Research – FMUP. Porto, Portugal.
[6]Nurse. PhD in Nursing. Professor. MSc in Nursing Science and PhD in Education. Escola Superior de Enfermagem do Porto. Member of CINTESIS. Porto, Portugal.
[7]Nurse. Universidade Federal de Santa Catarina. Florianópolis, SC, Brazil.

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PERFIL SOCIODEMOGRÁFICO E CLÍNICO DE MULHERES COM CÂNCER NO TRATO GENITAL SUBMETIDAS À RADIOTERAPIA

RESUMO

Objetivo: caracterizar o perfil sociodemográfico e clínico de mulheres com câncer no trato genital submetidas à radioterapia no Centro de Pesquisas Oncológicas entre 2010 e 2014.
Método: estudo ecológico realizado em 880 arquivos do Registro Hospitalar de Câncer. A análise ocorreu por estatística descritiva, com cálculo de taxa de prevalência.
Resultados: a maior incidência, 204 casos (23,18%) ocorreu na faixa etária dos 40-49 anos; com maior taxa de prevalência dos 60 a 69 anos, 165 casos (82,28%) para cada 100.000 mulheres. Estádio III com 315 casos (35,8%), topografia colo do útero com 695 casos (78,97%) e respectivas taxas de prevalências 12,97%, 28,61%. Dos casos de câncer do colo do útero, 274 (39,77%) foram procedentes da Grande Florianópolis e 99 (14,37%) da macrorregião Sul.
Conclusão: reafirma-se a magnitude do câncer do colo do útero, a necessidade das políticas públicas para prevenção da doença e do diagnóstico precoce das lesões pré-neoplásicas e/ou neoplásicas.

DESCRITORES: *Neoplasias dos genitais femininos; Neoplasias do colo do útero; Radioterapia; Perfil de saúde; Registros hospitalares.*

PERFIL SOCIAL DEMOGRÁFICO Y CLÍNICO DE MUJERES CON CÁNCER EN EL TRATO GENITAL SOMETIDAS A LA RADIOTERAPIA

RESUMEN

Objetivo: caracterizar el perfil social demográfico y clínico de mujeres con cáncer en el trato genital sometidas a la radioterapia en el Centro de Pesquisas oncológicas entre 2010 y 2014.
Método: estudio ecológico que se realizó por medio de 880 archivos del Registro Hospitalario de Cáncer. El análisis se hizo por estadística descriptiva, con cálculo de taja de prevalencia.
Resultados: la mayor incidencia, 204 casos (23,18%), ocurrió en la franja etaria de los 40-49 años; con mayor taja de prevalencia de los 60 a 69 años, 165 casos (82,28%) para cada 100.000 mujeres. Estadio III con 315 casos (35,8%), topografía de cuello del útero con 695 casos (78,97%) y respectivas tajas de prevalencias 12,97%, 28,61%. De los casos de cáncer del cuello de útero, 274 (39,77%) ocurrieron en la Grande Florianópolis (Santa Catarina, Brasil) y 99 (14,37%) en la macro región Sur.
Conclusión: se reafirman la magnitud del cáncer de cuello del útero, la necesidad de las políticas públicas para prevención de la enfermedad y el diagnóstico precoz de las lesiones pre neoplásicas y/o neoplásicas.

DESCRIPTORES: *Neoplasias de los genitales femeninos; Neoplasias del cuello del útero; Radioterapia; Perfil de salud; Registros hospitalarios.*

Anizelle Aline Lopes da Silva I Luciana Martins da Rosa I Soraia Dornelles Schoeller I Vera Radünz I Maria Manuela Martins I Henriqueta Ilda Verganista Martins Fernandes I Érica Bernardes Duarte

INTRODUCTION

Female genital tract cancers have a high incidence, particularly cervical cancer. These neoplasias impact women's health, as they impair the physical and emotional aspects and femininity and the sexuality of women. In the world and in Brazil, the incidence of the most frequent cancers of the genital tract is, respectively, 569,847 and 16,370 new cases in the cervix; 319,605 and 6,600 new cases in the body of the uterus (corpus uteri), and 238,719 and 6,150 new cases in the ovary[1-2].

Radiation therapy, in the modalities teletherapy and brachytherapy, is commonly used in the treatment of cancers in the genital tract. In teletherapy or external radiotherapy, there is physical distance between the patient and the radioactive source[3]. In brachytherapy, the radioactive source is placed in or on the treatment volume (tumor). This modality has promising results due to its high dose gradient, and it also preserves surrounding normal tissue. In cervical cancer, the most common among women, brachytherapy plays a key role in the local control of the disease[4]. In this study, teletherapy and/or brachytherapy were used in women undergoing radiation therapy.

In the state of Santa Catarina, the *Centro de Pesquisas Oncológicas* (CEPON), a reference institution in the State, provided care to 887 women with cancer in the genital tract who needed radiation therapy between 2010 and 2014 (the only data period registered in the Hospital-based Cancer Registry (HCR). In accordance with care management in the scope of the Unified Health System (SUS) in Santa Catarina, CEPON is responsible for all cases of cancers in the macro-region of the Grande Florianópolis macro-region and all the other cases of the other macro regions of Santa Catarina, referred to the institution for Out of Home Treatment (OHT). This type of treatment allows health care outside the municipality of origin due to lack of technical conditions.

From 2006 to 2016, CEPON was the only public institution that offered brachytherapy for the control of cancer in the genital tract in Santa Catarina. Thus, all the women from Santa Catarina who required brachytherapy in the 2010-2014 period (study period) were referred to CEPON. However, diagnosis and initial therapies for disease control were performed in the macro-regions of each patient's origin.

The CEPON counts on a Hospital-based Cancer Registry (HCR), and data related to women affected by cancers in the genital tract undergoing radiation therapy have not yet been analyzed. The HCRs (source of the data analyzed in this study) record teletherapy and brachytherapy with the same symbol: RT.

The HCR is a computerized public database that systematically and continuously provides information on patients with a confirmed diagnosis of cancer[5]. The data provided by the HCR may be useful to the administrative planning of cancer care for women with cancer in the genital tract undergoing radiation therapy at the CEPON, since analysis of these data could improve the management of the institution's health service[6].

Therefore, the present study aimed to characterize the sociodemographic and clinical profile of women with cancer in the genital tract who underwent radiation therapy at the *Centro de Pesquisas Oncológicas* between 2010 and 2014.

METHOD

Ecological study that includes records of all the women with cancer in the genital tract who underwent radiation therapy from 2010 and 2014. Women with sarcomas and hematologic malignancies in the genital tract were excluded.

The study variables were: age (age group ≤ 19 years, 20-29, 30-39, 40-49, 50-59, 60-69, 70 years or more); race/color; marital status; degree of education; origin considering

the macro-region of Santa Catarina (defined by the State Government, according to the 2008 Regionalization Master Plan); morphology (adenocarcinoma, carcinoma or others); (ICD-0): vulva (C51.9), vagina (C52.9), cervix (C53.0, C53.1, C53 (C54.9, C54.9, C54.9) and ovary (C56.9) To facilitate statistical calculations, the following ICDs: C53.0, C53.1, C53.8, C53. 9 were grouped into the topography code cervix uteri and ICDs C54.1 and C54.9 were grouped into the topography code corpus uteri.

For data collection, The HCR/CEPON was requested in March 2017 to provide data on the study variables.

The data provided by the HCR were saved in spreadsheets built in Excel® 2016. The variables were coded and submitted to descriptive statistics. The variables cancer staging and age group; diagnosis and age group; macro-region and age group; macro-region and diagnosis were correlated. The variables age, cancer staging and topography of the neoplasias were submitted to the calculation of prevalence rate of the cases. Then, descriptive statistics and non-parametric correlation test were used.

The study was approved by a Research Ethics Committee under protocol no 1,948,795, and carried out in the database of the Hospital-based Cancer Registry of the *Centro de Pesquisas Oncológicas* (HCR/CEPON).

RESULTS

Of all the data provided by the HCR/CEPON, data related to the care provided to 887 women with cancer in the genital tract who underwent radiation therapy from 2010-2014 was analyzed. Of these records, seven were excluded because they were related to the diagnosis of sarcoma and to the diagnosis of lymphoma (exclusion criterion). Thus, the study population consisted of 880 records (100%). The number of women assisted per year was 188 (21.36%) in 2010; 239 (27.16%) in 2011; 130 (14.77%) in 2012; 73 (8.3%) in 2013; 250 (28.41%) in 2014.

The age range of 40-49 years, with 204 cases (23.18%) and the age range of 50-59 years, with 201 cases (22.84%) were the most prevalent age groups. The mean age was 51.53 years, with a minimum age of 14 years, a maximum age of 90 years and a range of 76 years. The age group with the highest prevalence rate was 60 to 69 years, with 82.2 cases per 100,000 women. However, only in the age range up to 29 years the prevalence rate remained below 10/0000 women, increasing after the age of 30 years (Table 1).

Table 1 - Number of women diagnosed with cancer of the genital tract assisted at the Center for Oncology Research between 2010 and 2014, and prevalence rate of cases by age group. Florianópolis, SC, Brazil, 2017 (continues)

Age	N	%	Prevalence rate/1000 women
≤ 19 years	2	0.23	0.74
20-29 years	48	5.45	8.59
30-39 years	154	17.5	31.34
40-49 years	204	23.18	44.42
50-59 years	201	22.84	59.03
60-69 years	165	18.75	82.28

70 or older	106	12.04	64.5
Total	880	100	36.22

Most women had incomplete and complete primary education: 558 (63.41%); followed by incomplete high school: 147 (16.70%); incomplete and complete higher education: 55 (6.25%); illiterate: 34 (3.86%), and in 86 records (9.77%) there was no information about education.

Regarding the color or race of the women, 829 (94.20%) were white; 24 (2.73%) were black; 21 (2.39%) were brown and one (0.11%) was yellow. There was no information about the skin color of five (0.57%) women.

Table 2 correlates marital status with the age of the women. Most of them were married 431 (48.98%) and with a mean age of 51 years.

Table 2 – Marital status of women diagnosed with cancer of the genital tract assisted at the Oncology Research Center between 2010-2014, according to the mean age and percentage. Florianópolis, SC, Brazil, 2017

Marital status	**N**	**Mean age**	**%**
Married	431	51.47	48.98
Single	159	42.77	18.07
Widow	118	65.41	13.41
Consensual union	47	41.73	5.34
Legally separated	93	53.65	10.57
Not reported	32	--	3.64
Total	880	--	100

Of the 880 records included in the study, 36 (4.09%) did not report disease staging (unreported). Stage III with 315 cases (35.8%) and II with 293 cases (33.30%) were the highest percentages obtained. Correlating the stage and age group, the highest values were found in stages III and II and age groups of 41-50 years and 51-60 years, according to data shown in Table 3.

Table 3 – Frequency of the staging of women with cancer in the genital tract, assisted at the Cancer Research Center between 2010-2014, according to age, mean age and prevalence rate of the cases. Florianópolis, SC, Brazil, 2017 (continues)

Staging	**I**		**II**		**III**		**IV**		**in situ**		**Not reported**		**Total**	
Age range	N	%	N	%	N	%	N	%	N	%	N	%	N	%
< 19 years	1	0.1	0	0	1	0.1	0	0	0	0	0	0	2	0.2

20-29 years	7	0.8	14	1.5	20	2.2	5	0.5	0	0	2	0.2	48	5.4
30-39 years	23	2.6	55	6.2	58	6.5	14	1.5	3	0.3	1	0.1	154	17.5
40-49 years	29	3.3	72	8.1	82	9.3	13	1.4	0	0	8	0.9	204	23.1
50-59 years	39	4.4	76	8.6	65	7.3	11	1.2	2	0.2	8	0.9	201	22.8
60-69 years	45	5.1	53	6	54	6.1	5	0.5	2	0.2	6	0.6	165	18.7
70 and older	29	3.3	23	2.6	35	3.9	8	0.9	2	0.2	9	1	106	12
Total	173	19.6	293	33.3	315	35.8	56	6.3	7	0.8	36	4	880	100
Mean age in years	61	--	60.03	--	50.51	--	50.3	--	61.5	--	48.1	--		--
Prevalence rate/ 100,000 women	7.12		12.06		12.97		2.30		1.48		0.29	--	36.2	--

Table 4 presents the percentages by topography (anatomical location of the malignant neoplasia). Cervical cancer (including the cervix, endocervix, exocervix, and neoplasm I overlapping sites of the corpus uteri) was the most prevalent, with 695 cases (78.97%), followed by the body of the uterus, with 166 cases (18, 87%). Of these, endometrial topography was the most affected in the body of the corpus uteri, with 159 cases (18.06%).

Table 4 – Topography of neoplasias in the genital tract of women who underwent radiation therapy at the Oncology Research Center between 2010 and 2014, and prevalence rate of the cases. Florianópolis, SC, Brazil, 2017

Topography	**N**	**%**	**Prevalence rate/100,000 women aged 14 to more than 70 years**
Cervix uteri	695	78.97	28.61
Corpus uteri	166	18.87	6.83
Vulva	8	0.91	0.33
Vagina	5	0.57	0.21
Ovary	6	0.68	0.25
Total	880	100	36.22

Table 5 shows the percentage per topography investigated. Since most women were diagnosed with cancer of the cervix uteri and corpus uteri, these topographies were highlighted and the other cancers were grouped. The topography was correlated with the macro-regions of the State of Santa Catarina. It can be seen most women who were treated for cervical cancer were those who lived in the Grande Florianópolis macro-region, with 274 cases (39.77%), followed by macro-region Sul with 99 cases (14.37%), Nordeste with 85 cases (12.34%) and Extremo Oeste, with 84 cases (12.19%). Regarding the women with cancer of the body of the uterus (corpus uteri), the origin (macro-region) of most of them is consistent with what has already been reported. However, 511 cases (58.07%) assisted at CEPON, of all topographies did not concern women from the Grande Florianópolis macro-region. The results are shown in Table 5.

Table 5 – Topography of cancers of the genital tract of women who underwent radiation therapy at the Oncology Research Center between 2010-2014, according to the macro-region of the State of Santa Catarina. Florianópolis, SC, Brazil, 2017

Macro-region	Cervix uteri and endocervix			Corpus uteri			Others			Total	
	N	% Macro	% SC	N	% Macro	% SC	N	% Macro	% SC	N	% SC
Sul	99	14.37	11.25	19	11.59	2.16	3	11.11	0.34	121	13.75
Grande Florianópolis	274	39.77	31.14	76	46.34	8.64	19	70.37	2.16	369	41.93
Foz do Rio Itajaí	2	0.29	0.23	0	0	0	1	3.70	0.11	3	0.34
Nordeste	85	12.34	9.66	10	6.10	1.14	1	3.70	0.11	96	10.91
Planalto Norte	23	3.34	2.61	9	5.49	1.02	0	0	0	32	3.64
Vale do Itajaí	6	0.87	0.68	3	1.83	0.34	1	3.70	0.11	10	1.14
Planalto Serrano	43	6.24	4.89	10	6.10	1.14	0	0	0	53	6.02
Meio Oeste	73	10.60	8.30	19	11.59	2.16	1	3.70	0.11	93	10.57
Extremo Oeste	84	12.19	9.55	18	10.98	2.05	1	3.70	0.11	103	11.70
Total	689	100	78.30	164	100	18.64	27	100	3.07	880	100

Regarding the morphology or type of cancer cells, carcinoma was the most prevalent, with 621 cases (70.57%), followed by adenocarcinoma, represented by 241 cases (27.39%). Other morphological types accounted for 18 cases (2.05%).

DISCUSSION

The characterization of the sociodemographic and clinical profile of women with cancer in the genital tract who underwent radiation therapy, object of this study, allows primarily the evaluation of social and health issues, which will be addressed in this discussion.

The need for radiation therapy clearly shows the limitation of early care to health problems, since most cases of cancer could have been treated earlier, before the onset of the disease because they were preventable and curable. The results point to the need for early diagnosis and incentives for public policies to prevent pre-neoplastic lesions.

Although such evidence is not new, it reaffirms that, even in the face of so many scientific advances, women's health care, which begins in basic care, requires urgent measures (widely disseminated from the scientific point of view, as well as in public policies), which are inexpensive compared to the costs of high complexity care for the control of cancers in the genital tract.

When the disease is at an advanced stage, radiation therapy is perceived as a major contributor to disease control, despite its biopsychosocial impact on women (gastrointestinal, hematological, cutaneous/mucosal disorders, in fertility, in sexuality, in relationships, anxiety, fears among others)[4]. For better prognosis, indication for radiation therapy should also be made as early as possible.

Profile characterization showed that the variable age is similar to the results of other studies that evaluated the sociodemographic and clinical profile of women with cervical cancer. The most prevalent age group found in two other studies conducted in the state

of Espírito Santo and in the city of Teresina-PI were, respectively, 40 and 59 years and 50 and 59 years[7-9]. Age is a risk factor that contributes to the development of cancers in the genital tract. Regarding cervical cancer, the greater the age, the greater the chance of developing cancer. The literature shows that this cancer is considered rare in women up to 30 years, but its incidence progressively increases until reaching its peak in the range of 45 to 50 years of age[10].

Ovarian cancer is most common in postmenopausal women between the sixth and seventh decades of life[11]. Such evidence was also found in this study. Vaginal cancer accounts for less than 1% of cases of female cancers, with a higher incidence between 65 and 69 years, according to data released by Cancer Research UK[12]. In Santa Catarina, the mean age of the affected women was 55 years, while in the United Kingdom, most cases occurred in the age range of 75-85 years.

Endometrial cancer is the most common gynecological cancer in developed countries, and its incidence is increasing. Women are often diagnosed when the disease is still confined to the body of the uterus[13]. Incidence rates, according to age, increase markedly after the age of 50 (90% of cases), with the highest incidence occurring in the 65-69 age group, and on average at the age of 63[14], which is consistent with the findings of this study.

Regarding schooling, most women had incomplete and complete primary education. In another study[9] conducted in Brazil, primary education also reached the highest percentage (49%). In a study conducted in a capital of the Northeastern region[8] 38.8% of the women had incomplete primary education; in a capital of the Southeastern region, 70.9% of the women had incomplete primary education[7]. However, in the present study, it can be seen that the percentages in Santa Catarina were even higher. Thus, a low educational level associated with a lower socioeconomic status and the difficulties of access to health services and health education contribute to the late diagnosis of cancers of the genital tract.

The predominant race/color was white. This is explained by the fact that most settlers of the state of Santa Catarina were of European origin (Spaniards, Italians, Germans and Azoreans), who are predominantly white. This reality differs from a Brazilian study[9] where brown color was the most prevalent, accounting for 47.9% of the cases, and two other studies[7-8] show that the predominant color was non-white, respectively, 76.8% and 82.1%.

Most of the women who had cancer of the genital tract were married, as was already reported in the results, corroborating the findings from other studies[7-9]. Therefore, most cancers of the genital tract occurred in the stage of life classified as young adulthood and adulthood, and most married women in Brazil are also at these stages of life: nearly 57.1% of the Brazilian population over 15 years of age are in some type of marital union[15].

In this study, the most prevalent cancer stages were III and II, and equal results were obtained in three other studies[7-9]. Staging classification helps doctors understand how tumor will behave and choose the appropriate treatment. The earlier the diagnosis, the earlier the stage of the cancer and the better the prognosis and control of the disease.

The main factor associated with advanced staging of cervical cancer, with a higher incidence of cases in this study, is the presence of squamous cell carcinoma, and older women have been more often diagnosed with cancer at an advanced stage than younger women. It is estimated that the risk of being diagnosed with carcinoma at an advanced stage increases by 3% per year[16].

It should be noted that cervical cancer was the most frequent among the genital tract cancers in the study population, and in the advanced stages, radiation therapy is one of the therapies of choice[17]. Thus, the number of appointments in the study setting is justified by the fact that brachytherapy treatment was only available in the State of Santa Catarina until 2016 in the referred study setting.

Most women lived in the macro-region Grande Florianópolis, followed by Sul, Extremo Oeste and Nordeste macro-regions. CEPON is responsible for supplying brachytherapy to

the Grande Florianópolis region (which includes the 22 municipalities close to the capital Florianópolis) and the city of Laguna[18]. This explains the findings.

Another factor that influenced the results obtained was the incidence of the diseases per macro-regions and the lack of high dose gradient brachytherapy outside Grande Florianópolis in the 2010-2014 period. For this reason, CEPON was responsible for the administration of brachytherapy to all women from all the macro-regions, which increased the number of women attended at the Center. The women who needed other therapies and teletherapy could obtain assistance in other macro-regions. However, most women with invasive cervical cancer, which was also the most frequent type of cancer in this study, undergo high dose gradient brachytherapy. The assistance provided in macro-regions decentralizes care, which is consistent with the Unified Health System.

The most common cell type found in the study was carcinoma, followed by adenocarcinoma. This result is similar to those from other studies where 88.0% of the cases had carcinoma, while 10.6% had adenocarcinoma[9], 87% carcinoma and 11.1% adenocarcinoma[7] and 51.1% carcinoma[8]. It should be noted that squamous cell carcinoma is the most common cervical cancer[7].

The high incidence of cervical cancer, among the cancers of the genital tract, reveals that this type of cancer is still affecting many women. Despite the advances in health and public policies targeted to the control of the disease, much remains to be done to reduce the number of women diagnosed with cervical cancer. Improving the training of health professionals is one way to improve this situation, as well as permanent education, the more accurate diagnostic exams, and the education of the population to control the risk factors and early detection. Another (long-term) strategy is related to health education for girls and boys to raise their awareness about the need to be vaccinated to prevent human papillomavirus (HPV) infections.

Therefore, the professionals involved in the diagnosis of cancers of the genital tract must collaborate to ensure early diagnosis and better quality and accuracy of the clinical, laboratory and imaging tests that allow this diagnosis. In this regard, nursing professionals, who are responsible for coordinating the care process, can contribute significantly in the different levels of care to ensure a better quality of life and health for women[19].

CONCLUSION

Regarding the sociodemographic profile of women with cancer in the genital tract who underwent radiation therapy at the CEPON in the 2010-2014 period, it should be stressed that most had completed elementary education: 558 (63.41%), and were aged 40-49 years: 204 (23.18%). Most women were aged 60-69 years, accounting for 82.28% of the cases for every 100,000 women.

Regarding the clinical profile, the main topography was related to cervical cancer, with 695 cases (78.97%), followed by cancer of the body of the uterus, with 166 cases (18.87%). In the corpus uteri, endometrial cancer was prevalent, with 159 cases (18.06%). As for the staging, stage III, with 315 cases (35.8%), followed by stage II, with 293 cases (33.3%), were the most frequent, indicating the delayed diagnosis of these diseases and the fragility of the health system regarding prevention and early diagnosis.

In view of these findings, the importance of cervical cancer control in the pre-neoplastic and early stages of the disease, with follow-up of women for early detection of other cancers of the genital tract, is unequivocal. The consequences of the sequelae of these diseases for women and their consequences, which often interfere with personal and social quality of life, deserve attention.

Implementation of existing public policies, permanent education of health professionals and health education for women are the main preventive actions of an effective strategy

for the control of the disease. The findings of this study may contribute to the evaluation and re-planning of preventive actions, early detection and high complexity care. It is also important to emphasize the importance of encouraging and providing opportunities for teaching and information.

The limitations of the present study concern its relatively short period that does not allow the construction of a historical series.

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Corresponding author:
Luciana Martins da Rosa
Universidade Federal de Santa Catarina
Campus Reitor João David Ferreira Lima, s/n - 88040-900 - Florianópolis, SC, Brasil
E-mail: luciana.m.rosa@ufsc.br

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