Cervical cancer – statistical analysis of data in Republic of North Macedonia and municipality of Shtip in 2016, 2017 and 2018

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Abstract
Cervical cancer is a malignant disease of the female reproductive system and is one of the most common malignant diseases affecting the female population. It is ranked second in the number of women with breast cancer in Republic of North Macedonia and third in the world. Thanks to preventive vaccination and PAP screening, it has a positive effect on reducing the number of newly diagnosed and deceased patients with cervical cancer. The mortality rate in our country from cervical cancer is on average 5-6 women per 100,000 women. Due to timely vaccination and timely screening, the number of newly diagnosed patients is declining from 2016 to 2018. In 2016, 47 women died of cervical cancer in Republic of North macedonia, and in 2017, died 30 women. In 2016, there were 37 patients with malignant neoplasm of the cervix of the uterus on the territory of the Municipality of Stip. In 2017 on the territory of Municipality of Stip there were 28 patients with cervical cancer and in 2018 there were 19 patients with cervical cancer. The data show a positive trend of decrease in the number of newly infected patients on the territory of the Municipality of Stip.

Keywords – analysis, cancer, cervix, oncology, Macedonia

1. Introduction

Malignant neoplasms are of great social and medical importance as a public health problem. The high prevalence of malignant neoplasms is a common cause of death, but also a common cause of permanent disability in patients. Expensive diagnostic procedures, long-term treatment and high treatment costs have a major negative socio-economic impact.

Cervical cancer is a malignant disease of the female reproductive system and is one of the most common malignant diseases affecting the female population. It is ranked second in the number of women with breast cancer in Republic of North Macedonia and third in the world. Cervical cancer usually develops in women of reproductive age, with an average occurring between 35 and 50 years of age.*(Angelovska N et al, 2002)*

The rate of newly registered cases of cervical cancer in Republic of North Macedonia is 22.97 / 100,000. Most new patients occur in countries that have not developed good screening programs combined with a high prevalence of human papillomavirus infections. Worldwide, the largest number of women with cervical cancer are in Sub-Saharan Africa and Latin America, and Europe, China, North America and Muslim countries in the Middle East have lower rates of new disease.*(Ministry of Health of the Republic of Macedonia, 2017)*

Multiple risk factors are responsible for the occurrence of cervical cancer, such as infection with Human Papillomavirus (HPV), early onset of sex and having multiple sex partners, genetic predisposition, and socioeconomic conditions themselves.

Human Papillomavirus infection is considered to be the most common and important factor for cervical cancer, but the absence of HPV infection does not guarantee the absence of disease. Thanks to the preventive vaccination and PAP screening, there is a positive effect on reducing the number of newly diagnosed and deceased patients with cervical cancer. *(ESE, 2015)*

Lesions detected on cytological smears are marked as:

CIN1 - mild dysplasia,

CIN2 - mild dysplasia,

CIN3 - severe dysplasia,

CIS - Carcinoma in situ localized to the basal membrane and invasive carcinoma where the process has crossed the basal membrane.

The clinical picture depends on the progression of the disease, often the symptoms can be delayed. Abnormal post-coital vaginal bleeding often indicates a cervical process. Treatment may be operative, radiotherapy and chemotherapy depending on the patient's condition and the extent of the disease.*(Smickoska S, 2014)*

Republic of North Macedonia is among the countries with a moderate incidence rate, but with high mortality due to untimely detection at an early stage, when the chances of a cure are higher. In 2017, 40,505 women between the ages of 40 and 60 were screened for PAP screening in our country, and 25,458 women were screened. According to epidemiological data, 80% of cervical cancers occur in developing countries such as our country.

The mortality rate in our country from cervical cancer is on average 5-6 women per 100,000 women. Due to timely vaccination and timely screening, the number of newly diagnosed patients is declining from 2016 to 2018. In 2016, 47 women died of cervical cancer in our country, and in 2017, died 30 women.

In 2016, there were 243 cancer patients on the territory of the Municipality of Stip, out of which 131 were women. In 2017, there were 106 cancer patients in the municipality of Stip, 46 of which were women. In 2018, there were 67 cancer patients on the territory of the Municipality of Stip, 34 of which were women.

In 2016, there were 37 patients with malignant neoplasm of the cervix of the uterus on the territory of the Municipality of Stip. In 2017 on the territory of Municipality of Stip there were 28 patients with cervical cancer of the uterus, and in 2018 there were 19 patients with cervical cancer of the uterus. The data show a positive trend of decrease in the number of newly infected patients on the territory of the Municipality of Stip.

The main goal of the paper is to focus on the importance of prevention and timely screening examinations that women should perform in order to prevent cervical cancer, but also timely diagnosis of any changes in the cervix. *(Todorov N, 2014), (Todorov N, 2015). (Todorov N, 2013),*

2. Material and methods

To meet the objectives of the study, were used the results which show the number of patients with cervical cancer at the level of the municipality of Stip in the period 2016-2018, the number of PAP tests performed at the state level in the period 2016-2018, the number of deceased cervical cancer patients at the state level in the period 2016-2018, as well as the number of analyzed PAP tests at the level of the municipality of Stip.

The working methods used are:

• Collection and analysis of data from the Center for Public Health - Stip, for the period 2016-2018.

• Collecting and analyzing data from the Institute of Public Health of the Republic of North Macedonia for the period 2016-2018.

• Collection and analysis of data from the State Statistical Office of the Republic of North Macedonia for the period 2016-2018.

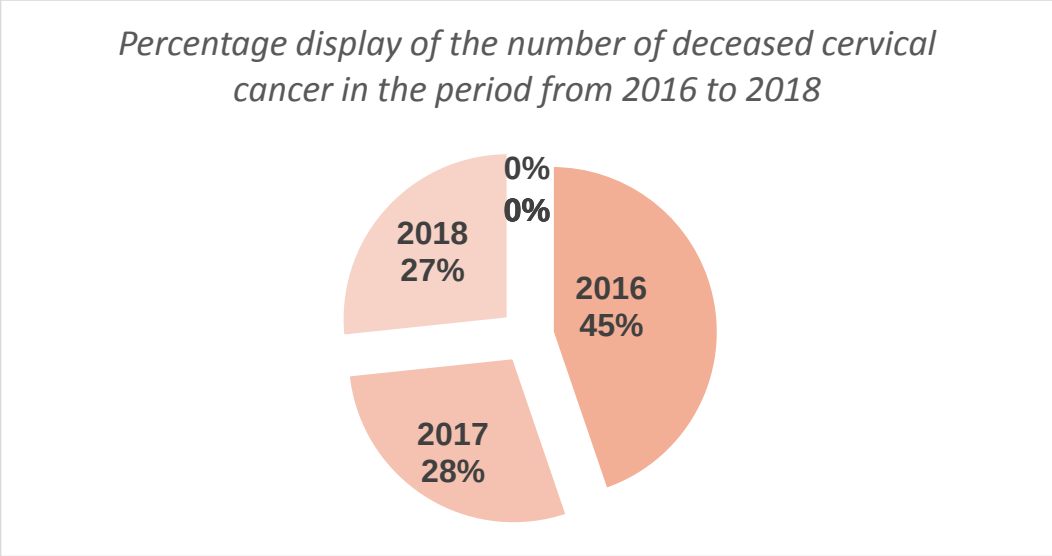
3. Results and discussion

This study included patients who received a preventive HPV vaccine, patients who underwent screening, patients who had cervical cancer, and patients who had died of cervical cancer. The results are presented in tables and graphs.

Table 1. Overview of the total number of deceased women from cervical cancer at the country level in the period from 2016 to 2018

Year	Number of deceased	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65-74	75 and more
2016	47	0	3	7	16	11	10
2017	30	4	3	7	4	6	6
2018	28	0	2	6	7	6	7
Total	105						

Chart 1.Percentage display of the number of deceased cervical cancer in the period from 2016 to 2018



In table 1 and charts 1 are shown the total number of deceased patients with cervical cancer in our country in the period of three years, from 2016 to 2018. The data are taken from the State Statistical Office. From the data we can see that the number of deceased women with cervical cancer in the last three years ie 2016, 2017 and 2018 is 105, or an average of 35 for each year. Data show that in 2016 there were the highest number of deaths, 47 or 45% in total, in 2017 there were 30 deaths or 28% in total, and in 2018 there were 28 deaths or 27% in total. From these data we can see that the number of deceased women with cervical cancer has been declining. Data are taken from the State Statistical Office of the Republic of North Macedonia.

Table 2. Number of women with cervical cancer in the territory of the Municipality of Stip in the period from 2016 to 2018

Year	Number of patients	Age	25-34	35-44	45-49	50-54	55-64	65-74	75+	Morbidity rate per 1,000 women
2016	37		1	3	4	5	16	8	0	1.5
2017	28		1	1	2	5	12	7	0	1.1
2018	19		0	2	2	5	5	5	0	0.7
Total	84									3.45 For period 2016-2018 Stip

Chart 2. Percentage of cervical cancer among all malignant diseases in women in the period from 2016 to 2018, in the territory of the municipality of Stip

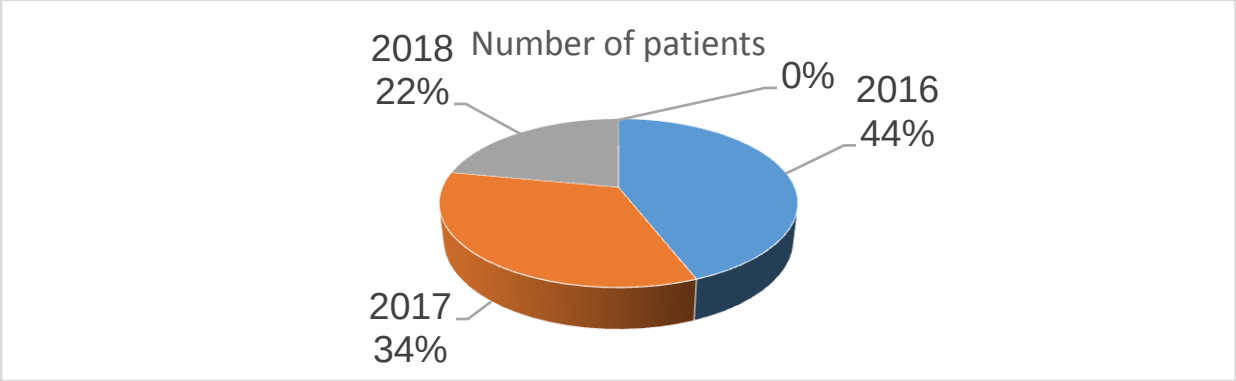


Table 2 and Chart 2 show the total number of women with cervical cancer in the municipality of Stip in the period 2016-2018. From the data it can be seen that in 2016 there were a total of 37 women with cervical cancer and a morbidity rate of 1.5 per 1000 women. In 2017 there were 28 women with cervical cancer and a morbidity rate of 1.1 per 1,000 women. In 2018 there were 19 infected women and a morbidity rate of 0.7 per 1000 women. The percentage of cervical cancer from all malignant diseases in women in 2016 was 44%, in 2017 the percentage was 34% and in 2018 it was 22%. According to these data, the number of women with cervical cancer on the territory of the Municipality of Stip in the period 2016-2018 has been decreasing. The data are taken from the Center for Public Health - Stip.

Table 3.An overview of the number of in situ cases of cervical cancer

Year		**Age**	**25-34**	**35-44**	**45-49**	**50-54**	**55-64**	**65-74**	**75+**
	Number of patients								
2016	13		5	1	3	1	2	1	0
2017	16		2	3	4	3	2	2	0
2018	18		3	2	3	5	3	2	0
Total	47								

Table 3 shows the number of patients with in situ cervical cancer in the period 2016-2018 on the territory of the Municipality of Stip. The data shows that the highest number of in situ cervical cancer is registered in 2018, that is, 18 women. Data are obtained from the Center for Public Health - Stip.

Table 4. Number of cytologically analyzed PAP tests at the level of R. Northern Macedonia and percentage of detected cellular abnormalities

Year	***Cytologically analyzed PAP tests***	***% of detected cellular abnormalities***
2016	37.589	14.9%
2017	25.458	11.9%
2018	31.630	9.3%

Chart 3. Percentage display of detected cellular abnormalities from the analyzed PAP tests at the state level for the period 2016-2018

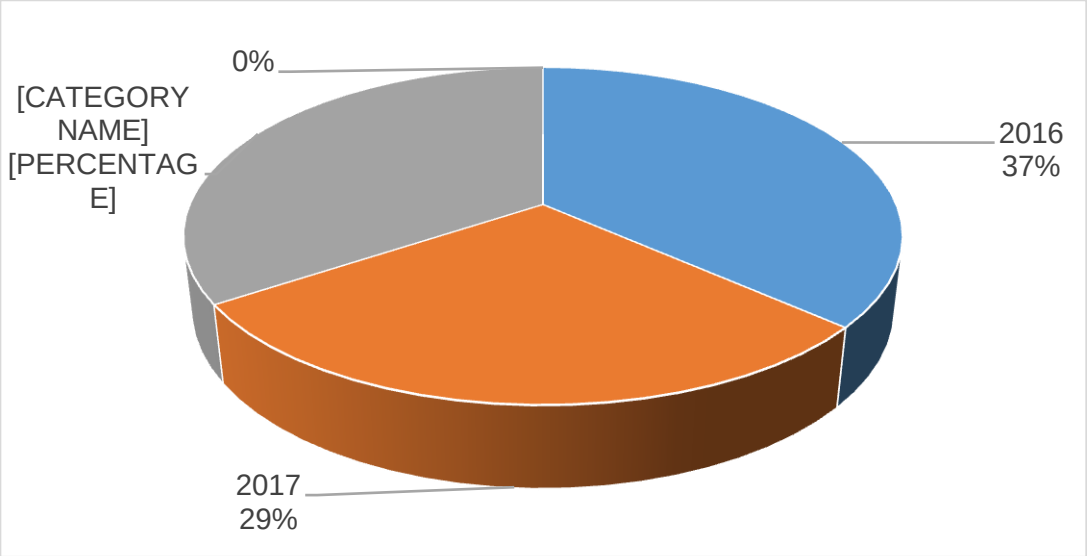


Table 4 and Chart 3 show data on the number of PAP tests performed at the level of R. North Macedonia in the period 2016-2018 as part of the screening program. The percentage of detected abnormalities from the analyzed PAP tests is also shown. Data are obtained from the State Statistical Office of the R. Northern Macedonia. In 2017, 40,505 women between the ages of 40 and 60 were screened for PAP screening in the country, and 25,458 women were screened and 11.9% had abnormalities. In 2016, 37,589 PAP tests were cytologically analyzed and abnormalities were detected on average 14.9%. In January-September 2018, 31,630 PAP tests were performed and abnormalities were detected in 2,946 women or 9.3% on average. CIN1 and HPV infections were most prevalent. In the country there is a free preventive PAP test from 01.04.2012 for all women aged 24-35, but this right in the period 2016-2018 was used by only 16% of women. In 2017, 193 PAP smears were analyzed in Stip and 7.8% of them had abnormalities.

In 2018, worldwide, cervical cancer was registered in 570,000 women, which is 6.6% of the prevalence of malignant diseases in women.

4. Conclusion

The number of newly diagnosed women with cervical cancer, as well as the number of deceased patients with cervical cancer in Republic of North Macedonia is declining from 2016 to 2018. HPV infection can be prevented by timely vaccination of girls and young women. Secondary prevention is in fact timely PAP tests for early detection of possible changes in the cervix, detection of possible HPV infection, as well as precancerous lesions for the purpose of timely treatment.

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