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A Relative Frequency of Female Gynecologic Cancers in South Iran in the Years 2014-2019

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ABSTRACT

Background: Gynecologic cancer makes up nearly 19% of all female cancers. We evaluated the relative frequency of gynecologic cancers in the south of Iran in 2014-2019.

Methods: This cross-sectional, descriptive study aimed to study 1222 patients with female gynecological cancers who were referred to the specialized oncology and radiotherapy clinics in Kerman city in the south of Iran. The required information was gathered from the cases recorded in available pathology centers in the Department of Health in Kerman province during 2014 -2019 years. The data analysis was done by SPSS20 software via descriptive statistics tests of Chi-square, Kolmogorov-Smirnov, Kruskal-Wallis, and ANOVA.

Results: The uterine (38.98%), and ovarian cancers (36.94%) had the highest relative frequencies. There was no significant difference in the relative frequency of female cancers in the five-time intervals ($p>0/01$). The age average of patients was 66/15 ±58/53 years which was significantly different among different types of cancer ($p<0/01$). The highest and lowest age average was related to the vagina (61.89±26.64) and placenta (30.66±5.50) cancers.

Conclusion: The most frequent cancer in the first two years of the study was ovarian cancer, while the most frequent cancer in the next three years of the study was uterine cancer. The highest and lowest age averages were related to vagina cancer, and trophoblastic cancer, respectively.

Keywords: Cancer, female, Gynecologic, Iran, prevalence.

INTRODUCTION:

It is estimated that in future decades, cancer will be the most important cause of mortality, and morbidity (1), and it is estimated that by 2025, female cancer cases will increase 19.3 million (2). In developed countries, cancer is the second leading cause of death after cardiovascular disease. Studies showed that 1 out of 4 cases of mortality were associated with cancer while in developing countries, it is the fourth; Finally, in Iran, it is considered the third cause of mortality (3). Thus, estimating the epidemiologic burden of cancer is a major priority of control programs for non-contagious diseases (4,5). A study indicates that gynecologic cancer (cancer of the ovary, uterus, fallopian tube, cervix, vagina, and vulva) makes up nearly 19% of all female cancers (6). Among the most common female cancers, the breast cancers, breast cancer has the highest rank, ovarian cancer ranks eighth, and the womb body ranks tenth. The gynecologic cancer prevalence is categorized as ovarian, uterine, and cervical cancer, respectively (3). Besides, the gynecologic cancer incidence is different in developed and developing countries as the womb body and ovarian cancers in developed countries, and cervical cancer in developing ones are considered the most common gynecologic cancers. In contrast, the vulva and vagina cancers are less prevalent worldwide (7,8). In addition, in developing countries, gynecologic cancers claim one-fourth of all female cancers with cervical cancer being the first, followed by ovarian, and then the womb body in those countries (9). Based on a study conducted from 2000- 2009 years in Iran, it was shown that uterine cancer is placed in the fifth most common cancer among the others (10).

We have been seeing an increase in cancer including the gynecologic one as a cause of worldwide mortality due to various factors such as lifestyle changes, life expectancy increases, and increasing ages (11). A growing number of cancers are being diagnosed at younger ages due to increased screening and recognition. Considering the concerning increase in cancer, and the requirement for an organized screening program to recognize and control cancer, this study aims to find a relative frequency of female gynecologic cancers in south Iran in 2014-2019.

Materials and Methods:

This study aimed to investigate the relative frequency of female gynecological cancers in south Iran. Kerman City was selected by random sampling among southern cities. In this retrospective descriptive study, all patients with female genital cancers who were referred to the pathology centers of Kerman were included. The required data were collected from the pathology centers in the Department of Health of Kerman from March 2014 to March 2020 with the studied population consisting of 1222 patients with genital cancers, including ovarian, uterine, cervical, vagina, and vulva, along with trophoblastic diseases. To protect patient privacy, the information of the cases was entered using private codes. The demographic information of the patients, including age, sex, and type of cancer was derived by the specialized data codes with the related data collected by SPSS software, version 20, and via the statistical descriptive index (number, percentage, average). The Kolmogorov-Smirnov test was used to examine the relationship between the variables, the Chi-square test and check the data normality. Moreover, to compare the normal distribution among the groups, the ANOVA test, and in the abnormal distribution, the Kruskal-Wallis test were applied. P range was considered less than 0.01.

Results:

The highest age means 61.89±26.64 years, was related to the patients with recognized vaginal cancer, while the lowest age means, 30/66±5/50 years, was associated with the patients suffering from the placenta cancer. The general age mean of patients was 53/58±15/34 years.

During six-time intervals, the general age average for all types of recognized cancers was significant (p≤0/01) (Table 1). The highest percentages of cancer diagnosis age were over 60 years old, moreover, the lowest ones were under 30 years old during the six-time intervals (Table 2).

During 2014-2015, ovarian cancer was the most

Table 1. The age averages of patients during diagnosis

Year Cancer Type	2014	2015	2016	2017	2018	2019	significance level
ovarian	53.90±16.04	53.30±16.52	50.02±18.11	50.83±15.12	52.67±15.26	52.06±15.72	0.83
uterine	57.09±14.26	54.38±12.33	57.69±13.39	56.06±11.60	56.00±11.69	56.82±13.40	0.97
cervical	51.33±15.90	54.25±12.08	50.34±14.66	51.51±12.92	50.78±13.89	60.21±52.81	0.35
vaginal	82.00±12.72	66.66±24.85	65.20±13.84	40.20±34.64	50.33±26.66	48.00±11.78	0.52
vulvar	57.75±21.82	32.00±00.00	51.33±24.41	68.28±14.99	66.50±0.70	54.14±8.53	0.05
trophoblastic	27.00±00.00	-	32.50±6.36	-	-	-	0.60

Table 2. The general frequency distribution of age categories

Year Ages	2014	2015	2016	2017	2018	2019
30<	%9.0	%7.0	%8.9	%6.1	%4.6	%5.0
31-40	%10.8	%12.0	%12.6	%11.0	%14.3	%13.3
41-50	%19.3	%20.3	%24.1	%21.9	%20.2	%19.1
51-60	%23.5	%27.2	%21.5	%28.1	%28.2	%27.8
61>	%37.4	%33.5	%33.0	%32.9	%32.8	%34.8
Total	%100	%100	%100	%100	%100	%100

frequent, and in 2016, uterine and ovarian cancers had the highest relative frequency, while in 2017-2019, uterine cancer was the rather most frequent one. During these six-time intervals, ovarian cancer, particularly uterine cancer had an ascending trend. Based on the test results of Chi-square, there was no significant difference among the frequency levels of the female cancers during the six-time intervals ($p \geq 0.01$). The highest frequency level in 2014 (39.2%), and 2015 (41.8%) was related to ovarian cancer. On the other hand, in 2016 (36.1%), 2017 (42.1%), 2018 (42%), and 2019 (42.7%), it was related to uterine cancer (36.1%) and ovarian cancer (35.6%). Considering previous studies, the trophoblastic cancer had the minimum frequency (Table 3 and Figure 2).

In general, the relative frequency of cancers was as uterine (38.9%), ovarian (36.9%), cervical (20.8%), vagina (2.4%), vulvar (2.4%), and trophoblastic (0.7%) (Figure 1). It is clear that the highest relative frequencies of stages of cancers while recording in the System of Pathology Center of Kerman were unknown (Table 4).

Discussion:

As mentioned earlier, the most frequent cancer in the first two time intervals of study was ovarian cancer, while the most frequent cancer in the next time intervals of study was uterine cancer. The least frequent was the trophoblastic one relatively. In an Arab study, ovarian cancer was reported as the most prevalent cancer of female genital cancer (12).

The uterine and ovarian cancers had an ascending trend. This result was not in line with those results

Table 3. The general frequency distribution of gynecologic cancer types during the six-time intervals

Year Cancer	2014	2015	2016	2017	2018	2019
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
OVARIAN	65 (%39.2)	66 (%41.8)	68 (%35.6)	81 (%35.5)	77 (%32.4)	80 (%33.2)
UTERINE	55 (%33.1)	49 (%31.0)	69 (%36.1)	96 (%42.1)	100 (%42)	103 (42.7)
CERVICAL	39 (%23.5)	36 (%22.8)	44 (%23.0)	39 (%17.1)	52 (%21.8)	46 (19.1)
VAGINAL	2 (%1.2)	6 (%3.8)	5 (%2.6)	5 (%2.2)	3 (%1.3)	3 (%1.2)
VULVAR	4 (%2.4)	1 (%0.6)	3 (%1.6)	7 (%3.1)	2 (%0.2)	7 (%2.9)
TROPHOBLASTIC	1 (%0.6)	-	2 (%1.0)	-	4 (1.7)	2 (0.8)
Total	166 (100)	158 (%100)	191 (%100)	228 (%100)	238 (100)	241 (100)

Table 4. The frequency distribution of stages of Cancers in different types of Gynecologic Cancers:

Cancer Type Stages	ovarian	uterine	cervical	vaginal	vulvar	trophoblastic
1	6.8%	21.6%	9.2%	3.4%	-	-
2	16.7%	20.5%	8.9%	6.9%	-	-
3	15.2%	15.1%	12.5%	24.1%	-	-
4	0.6%	0.0%	0.7%	0%	-	-
Unknown	60.7%	42.7%	68.9%	65.5%	%100	%100
Total	100%	100%	100%	%100	%100	%100

reported in the study conducted by Arab et al. in Tehran in 2014 which showed a descending trend for ovarian cancer incidence. Although, it concurred with the study of Babazadeh et al. In Mashhad, studies have shown that ovarian cancer incidence has risen during the study intervals. Another study by Berek in 2007 reported that 27000 new cases of ovarian cancer are seen in America each year (3), and an Arab study indicated an ascending trend in developing countries despite developing countries showing a descending trend [Ed1] as well (12).).

It was in line with the study of Ansari et al. that reported

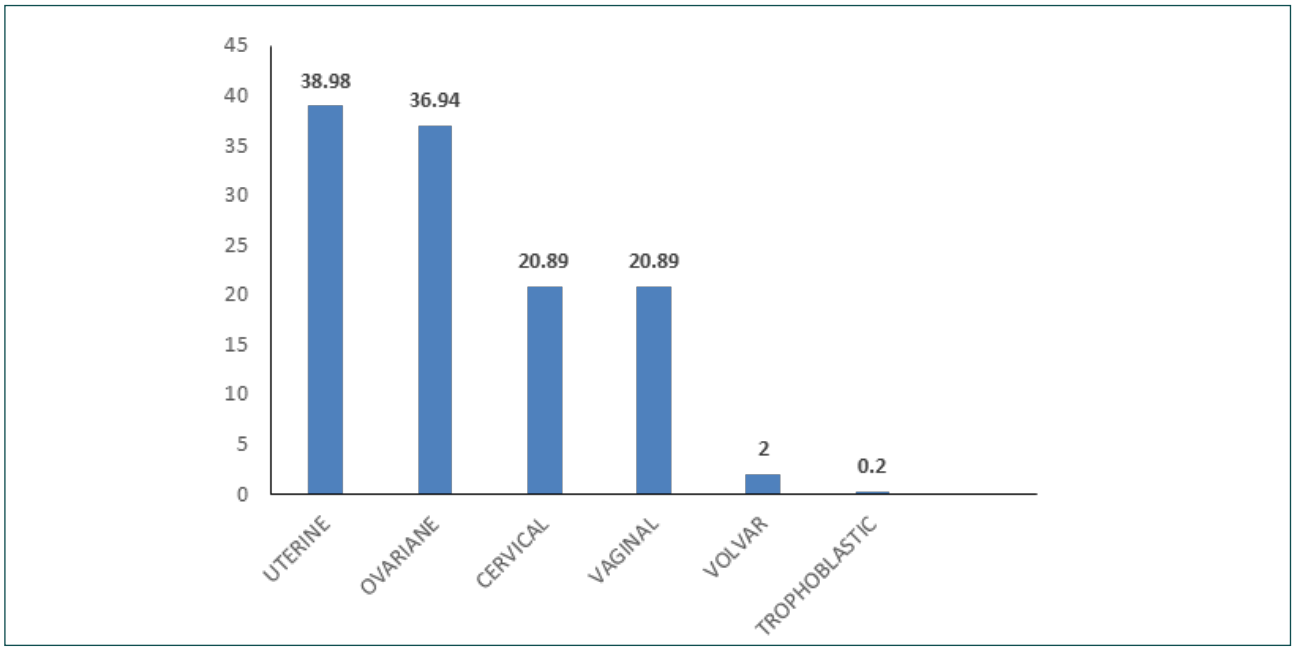

Figure 1. The relative frequency distribution of gynecologic cancer types

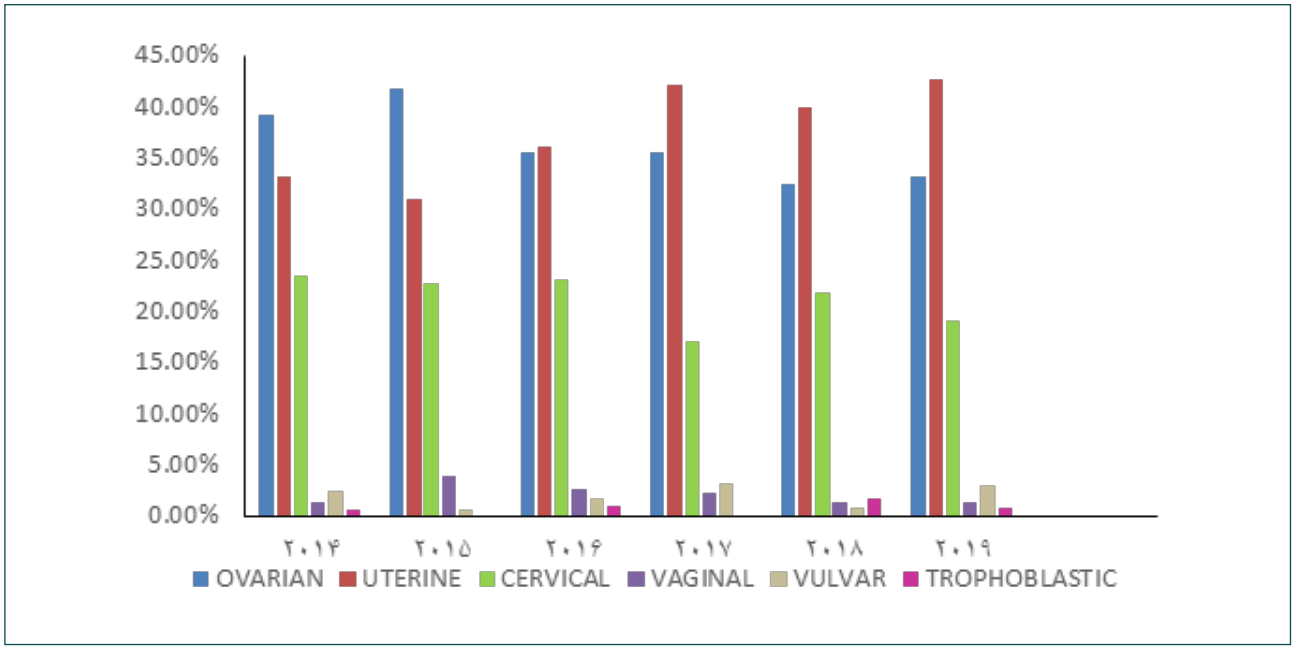

Figure 2. The relative frequency distribution of the gynecologic cancer types during the six-time intervals

uterine body cancer as the most common gynecologic cancer. Furthermore, Babaie et al in Semnan that stated both uterine and ovarian cancers were common, as well as the study in Markazi, Hemati in Ilam and with Kim, Day in Egypt, Lin in Taiwan, Day in Alaska native people and Minelli in Italy; they all stated that the uterine cancer is the most common (13-18). It concurred with the findings of Razi, Gilani, and Arab,

a researcher in Iran, Ugwa, Bassey, Mohammed in Nigeria, and Bhurgri, Akhtar, and Ashraf in Pakistan; all considered cervical cancer as the most common gynecologic one (12, 19-26).

During the last five decades, cervical cancer had a descending order in developed and developing countries. In our study, cervical cancer was the third most prevalent one. In the study by Arab et al. (2005) in Tehran and Ansari et al., it was mentioned as the third most prevalent gynecologic cancer which was in line with the other cases too (12, 13). However, there was no concordance between these, and the results obtained from the Yakasai, and Ugwa studies in Nigeria as well as Babaiezadeh in Mashhad all reporting reported cervical cancer as the first prevalent one (21).

In the vast majority of worldwide studies, the vulvar and uterine cancers were categorized as the rarest gynecologic ones (7). The vaginal and vulvar cancers were considered the fourth cancer in terms of incidence. In their study, Ansari et Al. observed no vaginal cancer though they ranked the vulvar cancer as the fourth most prevalent one (13).

Choriocarcinoma is a rare type of pregnancy trophoblastic(27).

In Iran, three types of cancer are more prevalent, including ovarian, uterine, and cervical, respectively (12). Changing the lifestyle is one of the risk factors for ovarian cancer; since physical activity declines in the modern world, inappropriate diet and high BMI area are considered risk factors (28, 29). In his study in 2005, Nojoomi also emphasized this point. Thus, since being overweight is becoming more prevalent with aging, the cause of ovarian cancer incidence with aging can be justified. Furthermore, a strong relationship between endometrial cancer, and overweight prevalence increase is the result of increasing uterine cancer prevalence. In developed and western countries, cervical cancer is descending because of the application of cytology, and screening to control and prevent the disease (9, 30).

In his study in Romania, Furau found that as the third gynecologic prevalent cancer (31), and it was ranked as the second in the study of Ansari Niaki et al. in Semnan and Yakasai, Kyari, Ugwu in Nigeria as well (13, 21, 32). Based on the findings of Mokhtari et Al. reviews in 2017, in Iran, the age-standardized incidence degree of female genital organ cancers (cervix, uterus, and ovary) is less than in other countries worldwide (33). The highest degree of cancer incidence is between 50-70 years (22, 32). Based on studies, the age trend (ASR) of ovarian cancer in Iran, as well as many African countries is ascending and it is also affirmed in some Western countries, such as Australia and the USA (12). More than 80% of ovarian cancer cases have occurred after the age of 45 years old. The age of uterine cancer incidence is 52, while the global statistics show 60 years old (3).

Conclusion:

Considering the crucial increase in cancer, and based on the effects of epidemiologicregional on the incidence of all malignancies in the female genital organ, an appropriate procedure is necessary to record the cancer cases precisely so that a suitable screening program would be planned to increase the accurate recognitions, as well as the subsequent preventive processes to control them. Furthermore, offering supplementary research to determine the risk factors of prevalent cancers is helpful.

Contributions:

H.S.: Data gathering, A.A.: first version, Sh.Z.: Data analysis, M.A.: last version

Declaration of interests: There is no conflict of interest for all of the authors.

Highlights:

- To plan for gynecological cancer services, determination of the prevalence is essential.
- Uterine Cancer had the highest relative frequency (38.98%), and Ovarian Cancer (36.94%) was the subsequent with a less difference in southern of Iran.
- The age average of the patients was generally 53.58±15.34 years in southern of Iran.

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