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Research Article

# A DESCRIPTIVE STUDY ON HISTOPATHOLOGICAL SPECTRUM AND CLINICAL PROFILE OF PATIENTS WITH MALIGNANT OVARIAN TUMOUR AT MEDICAL COLLEGE KOLKATA, WEST BENGAL

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## ABSTRACT

**Introduction**: Ovarian cancer is the sixth most common cancer in women and the second most common gynecological malignancy, accounting for 4% of all female cancers and 235 of gynecological cancers worldwide. One in 78 women is at risk of developing ovarian cancer, and 1 in 108 may die from it. **Aims**: To analyze the clinical profile and histopathological patterns of ovarian malignancies and assess their distribution in different socio-economic groups. **Materials & Methods**: An institution-based observational study was conducted from November 2022- April 2024 at Department of Gynaecology and Obstetrics in Medical college and Hospital, Kolkata, India. **Results**: Among patients, 6 (11.3%) had Irregular, 37 (69.8%) were Postmenopausal, and 10 (18.9%) had Regular Menstrual History. Serous carcinoma was the most common subtype, followed by mucinous and endometrioid. A statistically significant association was found between ovarian cancer and family history (z = 6.1321, p is <0.00001). **Conclusion**: Ovarian malignancies show varied histopathological subtypes, with serous carcinoma predominating. Postmenopausal status was the most frequent clinical profile. Family history in first-degree relatives was rare but statistically significant.

***Keywords***: *Ovarian cancer, histopathology, malignancy, RMI.*

## INTRODUCTION

It has been estimated that one in 78 women worldwide has chances of getting ovarian cancer and 1 in 108 women has chances to die due to ovarian malignancies. Ovarian malignancies are one of the common malignancies affecting women.[1] Worldwide, it is sixth most common cancer overall and second most common among gynaecological cancers. It consists of 4% of all female cancers and 23% of all gynaecological cancer worldwide.[2]

In India, during 2004–2005, ovarian cancer ranked 3rd/4th among all cancers in women. Age-standardized incidence rate for ovarian cancers in India varies with region and ranges from 0.9 to 8.4 per 100,000 person-years with its highest incidence in Delhi and Pune.[1]

Main bulk of ovarian malignancies are of epithelial origin.

| Histological types (% of invasive cancer) | Cellular type |
|---|---|
| serous (75-80%) | Endo salpingeal |
| mucinous (5%) | intestinal, endocervical |
| endometrioid (10%) | endometrial |
| clear-cell (5%) | mullerian |

| | |
|---|---|
| Brenner (less than 1%) | transitional |
| mixed epithelial (less than 1%) | mixed |
| undifferentiated (less than 1%) | may be anaplastic |
| unclassified (less than 1%) | —- |

(Seroy SF, Scully RE, Sobin LH international histological classification of tumours)

Among them all have benign borderline and malignant subtypes except undifferentiated and unclassified types. Non-epithelial ovarian cancers account for about 10% of all ovarian malignancies. The most important sign of epithelial ovarian cancer is the presence of a pelvic mass on physical examination.

Differentiation between ovarian cancer and benign ovarian neoplasm and ovarian cysts is very important. Serum CA-125 level is useful here. for a post -menopausal patient with adnexal mass and serum CA-125 >200U/ml there is a 96% positive predictive value for malignancy. Characteristics of mass are also important-a solid, fixed, irregular mass is highly suggestive of malignancy. USG findings which suggest malignancy– adnexal pelvic mass with areas of complexities, irregular border, multiple echogenic patterns, dense multiple irregular septas, etc.

For differentiation between benign and malignant ovarian tumours, RMI-4(Risk of Malignancy index) was formulated in 2009. According to RMI=U X CA-125 X M x S
U=1 (if 0-1 abnormal ultrasound finding) 4 (for 2 or > 2 abnormal finding)
USG findings are–Multilocular cystic lesions, Solid lesions, Bi-latelalism, Ascites, Metastasis.
M=1 for pre-menopausal women and 4 for post-menopausal women or women of age >50 years if Hysterectomy is already done.
S=The largest diameter of the mass. If <7cm then S=1, if >7cm then S=2. Serum CA-125 values are directly taken in the calculation. CUT OFF VALUES: for RMI 1,2,3 cut off value for malignancy was 200 and for RMI-4 cutoff value is 450. (Ali Yavuz can et al. Asian Pac Cancer Prev. 2013).

Histological typing and grading are done mainly by the World Health Organization (WHO) classification of ovarian tumours. The identification of various histological patterns is important for predicting tumour behaviour to decide further management of patients.[3] Serous tumours with more than 10% borderline architecture are classified as serous borderline tumours (SBT). If borderline architecture is <10%, it is classified as "serous cystadenoma with focal epithelial proliferation." However, the diagnostic criteria for SBT remain the same. Microinvasion criteria have been modified in SBT. Only small clusters (<5 mm) with cytology like epithelium in SBT surface and surrounded by retraction spaces are defined as microinvasive foci. Whereas solid nests or cribriform glands cytologically resembling low-grade serous carcinoma (LGSC), even if <5 mm, are now categorized as LGSC regardless of their size.[4] Molecular and genetic studies of SBT are like that of LGSC. SBT-micropapillary variant is now a subtype of SBT.[4] In latest WHO classification, peritoneal implants have been described as invasive and non-invasive implants. Only non-invasive implants can be associated with borderline serous tumours. Any invasive implants are now a feature of LGSC.[4]

In borderline mucinous tumour, subcategorization into intestinal and endocervical type has been removed. The entity "endocervical type of mucinous borderline tumours" has been termed as "Sero mucinous tumour." Moreover, intestinal type of mucinous borderline tumours is known as mucinous borderline tumour/atypical proliferating mucinous tumor.[4] Previously described term "tumour with low malignant potential" is no longer used for borderline tumors.[4]

**Epidemiology**

In the United States, the incidence of ovarian cancer is 10.6 per 100,000 women per year, based on 2015-2019 cases. [5] The incidence of ovarian cancer has decreased by about 1% per year since at least the mid-1970s among women younger than age 65, but only since the early 1990s in older women. Ovarian cancer is more common in whites than in blacks (11.0 versus 9.1 cases per 100,000 women per year, respectively). [5] Epithelial ovarian cancer can occur in girls as young as 15 years, but the median age at diagnosis is 63 years, and most cases are diagnosed in women 55-64 years of age.[5] In the United States, the estimated lifetime risk is 1.22%.

The American Cancer Society estimates that 19,88 new cases of ovarian cancer will be diagnosed in 2022 and 12,810 women will die from the disease. [6] Although ovarian cancer is the 18th most common cancer in women, it is the fifth most common cause of cancer death in women, accounting for 5% of cancer deaths—more than any other gynaecologic cancer. [5] From 2010 to 2019, the death rate from ovarian cancer decreased by an average of 2.7% each year. Median age at death is 70 years. [5]

**International statistics**

Internationally, ovarian cancer is the eighth most common cancer in women and the 18th most common cancer overall, with more than 313,000 new cases and more than 207,000 deaths in 2020. [7] The worldwide age-standardized rate is 6.6 cases per 100,000; the highest rate is 17.4, in Brunei.[7]

The prognosis of ovarian cancer is closely related to the stage at diagnosis, as determined according to the staging system developed by the International Federation of Gynaecology and Obstetrics (FIGO). (See Workup/Staging.) Approximately 20%, 5%, 58%, and 17% of women present with stage I, II, III, and IV, respectively.

- Stage I - 80-90%
- Stage II - 40-60%
- Stage III - 10-15%
- Stage IV - < 5%

Bakhru et al found poorer survival among patients with ovarian cancer and diabetes. Although the underlying reason for this association is unknown, further studies are needed.[8]

Given these epidemiology, this study aims to analyse clinical profile of patients of ovarian cancer and histopathological pattern of ovarian malignancies and to diagnose burden of disease in various socio-economic status.

## MATERIALS AND METHODS

**EXPERIMENT DESIGN:** It is an institutional based observational study.
**STUDY SETTING:** In patient and Out Patients Department of Gynaecology and Obstetrics in Medical college and Hospital, Kolkata, India

**TIME LINES:**
Study was conducted for 18 months. preparatory phase– 2 months
Patient recruitment and data collection– 12 months phase of data analysis– 2 months
Report writing and submission – 2 months DETAILS:
Preparatory phase: November 2022-December 2022
Patients was recruited from January 2023-December 2023, Data analysis from January 2024- February 2024,
Reporting and submission in March 2024 - April 2024.

**PLACE OF STUDY:** Medical college and hospital, Kolkata
**PERIOD OF STUDY:** November 2022- April 2024

**STUDY POPULATION:** patients who have been diagnosed as a case of ovarian tumour attending OPD or Emergency of Department of obstetrics and Gynaecology, Medical College Kolkata.

**SAMPLE SIZE:**
Global cancer observatory March 2021 shows 5 years prevalence of ovarian cancer in all age group is 15.65%
so for this study p=0.1565, q=1-0.1565, L=10% so sample size is 52.8 approx 53

**SAMPLING TECHNIQUE:** Simple random sampling.

**Inclusion criteria:**
All ovarian tumours irrespective of their clinical features, stage of disease or type of previous management implemented, diagnosed clinically or radiologically.

**Exclusion criteria:**
Ovarian tumours which are confirmed to be benign after proper diagnostic work-up Tubo-ovarian mass of other etiology. eg: Tuberculosis, endometriosis, etc.
Polycystic Ovary Disease, Functional cysts or Follicular cysts of ovary. Patients who lost follow-up.
**Control:** not required

**PLAN FOR ANALYSIS OF DATA:**
Data obtained from the study was analyzed using standard statistical methods.

**Statistical Analysis:**
For statistical analysis data were entered into a Microsoft excel spreadsheet and then analyzed by SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and GraphPad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Two-sample t-tests for a difference in mean involved independent samples or unpaired samples. Paired t-tests were a form of blocking and had greater power than unpaired tests. Z-test (Standard Normal Deviate) was used to test the significant difference of proportions.

**RESULTS AND OBSERVATIONS:**

**Table 1: Distribution of Age in group**

| Age in group | Frequency | Percent |
|---|---|---|
| ≤30 | 2 | 3.8% |
| 31-40 | 4 | 7.5% |
| 41-50 | 13 | 24.5% |
| 51-60 | 14 | 26.4% |
| 61-70 | 9 | 17.0% |
| 71-80 | 10 | 18.9% |
| ≥81 | 1 | 1.9% |
| Total | 53 | 100.0% |

**Table 2: Distribution of Obstetric History**

| Obstetric History | Frequency | Percent |
|---|---|---|
| P0+0 | 3 | 5.7% |
| P1+0 | 5 | 9.4% |
| P1+1 | 3 | 5.7% |
| P2+0 | 7 | 13.2% |
| P2+1 | 12 | 22.6% |
| P2+2 | 4 | 7.5% |
| P3+0 | 3 | 5.7% |
| P3+1 | 3 | 5.7% |
| P3+2 | 6 | 11.3% |
| P4+0 | 3 | 5.7% |
| P4+1 | 1 | 1.9% |
| P4+3 | 1 | 1.9% |
| P5+0 | 2 | 3.8% |
| Total | 53 | 100.0% |

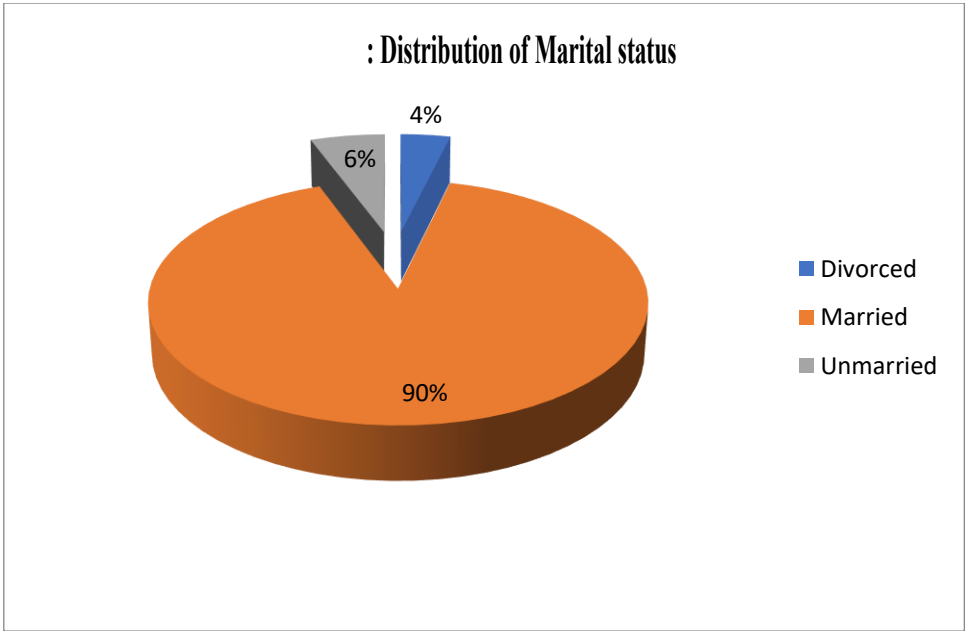


**Table3: Distribution of SES**

| SES | Frequency | Percent |
|---|---|---|
| **LC** | 16 | 30.2% |
| **LMC** | 24 | 45.3% |
| **MC** | 13 | 24.5% |
| **Total** | 53 | 100.0% |

**Table4: Distribution of Family History**

| Family History | Frequency | Percent |
|---|---|---|
| **Breast cancer in 1st degree relative** | 3 | 5.7% |
| **Endometrial cancer in 1st degree relative** | 2 | 3.8% |
| **NAD** | 43 | 81.1% |
| **Ovarian cancer in mother** | 1 | 1.9% |
| **Ovarian cancer in sister** | 1 | 1.9% |
| **Ovarian cancer of distant relative** | 2 | 3.8% |
| **Ovarian cancer on 1st degree relative** | 1 | 1.9% |
| **Total** | 53 | 100.0% |

**Table5: Distribution of Rural/Urban**

| Rural/Urban | Frequency | Percent |
|---|---|---|
| **Rural** | 16 | 30.2% |
| **Urban** | 37 | 69.8% |
| **Total** | 53 | 100.0% |

**Table6: Distribution of Contraception History**

| Contraception History | Frequency | Percent |
|---|---|---|
| **BLTL** | 8 | 15.1% |
| **none** | 41 | 77.4% |
| **OCP** | 4 | 7.5% |
| **Total** | 53 | 100.0% |

**Table7: Distribution of Menstrual History**

| Menstrual History | Frequency | Percent |
|---|---|---|
| **Irregular** | 6 | 11.3% |
| **Postmenopausal** | 37 | 69.8% |
| **Regular** | 10 | 18.9% |
| **Total** | 53 | 100.0% |

**Table8: Distribution of Chief Complain**

| Chief Complain | Frequency | Percent |
|---|---|---|
| **Abdominal distension** | 8 | 15.1% |
| **Abdominal distension with loss of appetite** | 7 | 13.2% |
| **Abdominal distension with post menopausal bleeding** | 1 | 1.9% |
| **Abdominal distension with weight loss** | 1 | 1.9% |
| **Hard mass in lower abdomen** | 1 | 1.9% |
| **Heavy menstrual bleeding** | 5 | 9.4% |

| | | |
|---|---|---|
| **Loss of appetite with vomiting** | 1 | 1.9% |
| **Lower abdominal hard mass** | 1 | 1.9% |
| **Lower abdominal mass** | 1 | 1.9% |
| **Pain abdomen** | 1 | 1.9% |
| **Pain abdomen with distension** | 9 | 17.0% |
| **Pain abdomen with vomiting** | 5 | 9.4% |
| **Pain abdomen with weight loss** | 9 | 17.0% |
| **Post menopausal bleeding** | 3 | 5.7% |
| **Total** | 53 | 100.0% |

**Table9: Distribution of Duration of Illness**

| Duration of Illness | Frequency | Percent |
|---|---|---|
| **1 month** | 1 | 1.9% |
| **12 months** | 4 | 7.5% |
| **2 months** | 6 | 11.3% |
| **2 weeks** | 3 | 5.7% |
| **3 months** | 4 | 7.5% |
| **4 months** | 19 | 35.8% |
| **6 months** | 14 | 26.4% |
| **8 months** | 2 | 3.8% |
| **Total** | 53 | 100.0% |

**Table10: Distribution of Comorbidity**

| Comorbidity | Frequency | Percent |
|---|---|---|
| **2nd degree heart block with pacemaker implanted on 2012** | 1 | 1.9% |
| **Diabetic** | 8 | 15.1% |
| **Diabetic and hypertensive** | 4 | 7.6% |
| **Epilepsy** | 1 | 1.9% |
| **Hypertensive** | 6 | 11.3% |
| **Hypothyroid** | 3 | 5.7% |
| **Hypothyroid with diabetes** | 1 | 1.9% |
| **Ischemic heart disease and hypothyroid** | 1 | 1.9% |
| **None** | 28 | 52.8% |
| **Total** | 53 | 100.0% |

**Table11: Distribution of mean Age**

| | Number | Mean | SD | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|
| **Age** | 53 | 56.3774 | 14.3168 | 17.0000 | 85.0000 | 56.0000 |

In above table showed that the mean Age (mean±s.d.) of patients was 56.3774±14.3168.

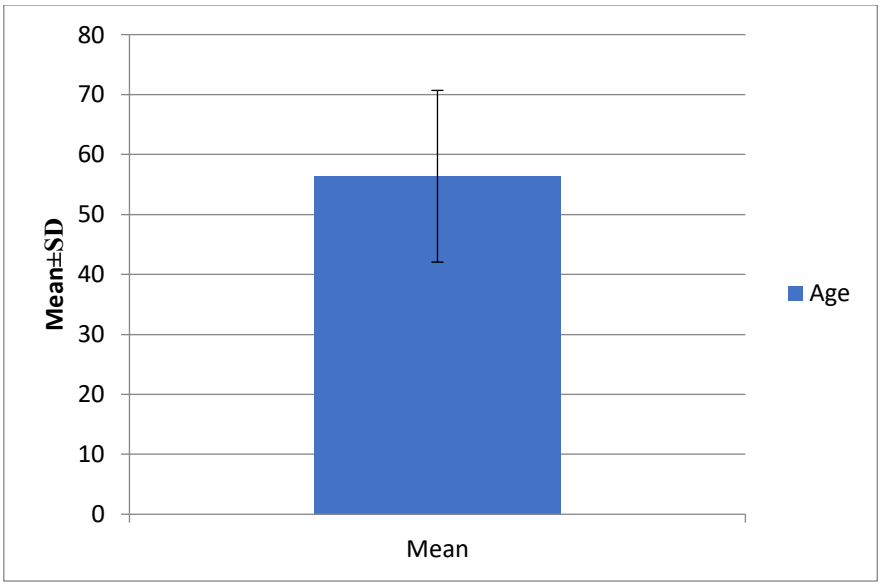
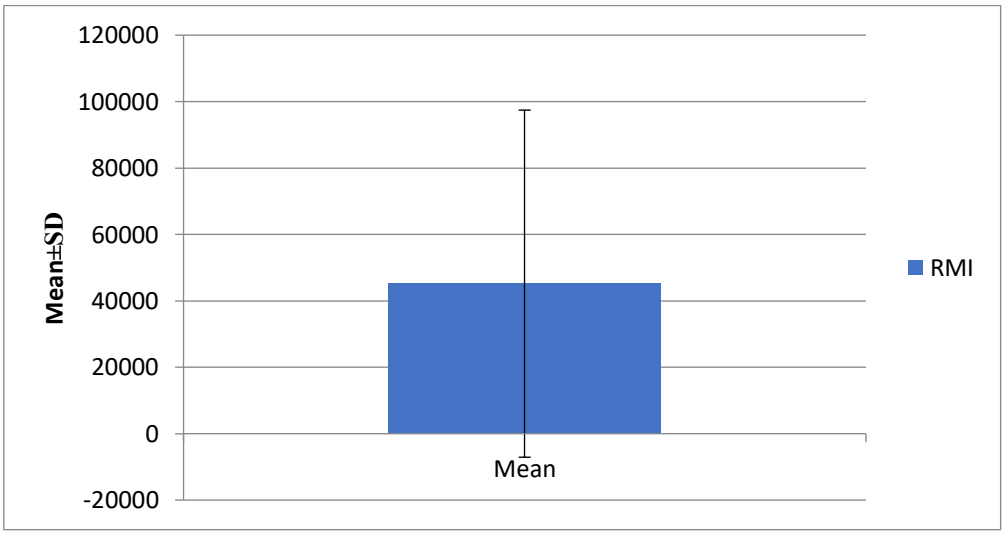



**Table12: Distribution of mean RMI**

| | Number | Mean | SD | Minimum | Maximum | Median |
|---|---|---|---|---|---|---|
| **RMI** | 53 | 45172.8732 | 52259.1449 | 572.0000 | 184480.0000 | 26400.0000 |

In above table showed that the mean RMI (mean±s.d.) of patients was 45172.8732±52259.1449.




**DISCUSSION**

The present study was an institutional based observational study. This Study was conducted from November 2022- April 2024 at Department of Gynaecology and Obstetrics in Medical college and Hospital, Kolkata, India.

**Gupta N et al [9](2019)** showed that the majority of cases, including benign, borderline, and malignant tumours, were seen in the age group of 31-40 years (25.71%)

In our study, out of 53 patients most of the patients were 51-60 years old [14 (26.4%)]. Which was statistically significant (p.0003), (z=3.6227)

We observed that, most number of patients had P2+1 Obstetric History [12 (22.6%)]. It was statistically significant (p=.00112), (z=3.2571)

We observed that, most number of patients were Married [48 (90.6%)]. It was statistically significant (p< .00001), (z=8.9502)

We showed that, most number of patients were Urban [37 (69.8%)]. It was statistically significant (p< .00001), (z=4.0794)

We found that, most number of patients had LMC of SES [24 (45.3%)]. It was not statistically significant (p=.0251), (z=2.2414)

**Jagadale K et al [10](2022)** observed that ovarian cancer accounts for roughly 30% of all cancers of the female genital system.

We observed that, lower number of patients had Ovarian cancer on 1st degree relative of Family History [1 (1.9%)]. It was statistically significant (p< .00001), (z=8.279)

We observed that, lowest number of patients had OCP [4 (7.5%)]. It was statistically significant (p< .00001), (z=7.2708)
We showed that, most number of patients had Pain abdomen [9 (17.0%)]. It was statistically significant (p=.00782), (z=2.6583)
We found that, most number of patients had 4 months Duration of Illness [19 (35.8%)]. It was statistically significant (p< .00001), (z=4.4685)
We observed that, most number of patients had Diabetic [8 (15.1%)]. It was statistically significant (p< .00001), (z=5.8826)
We found that, most number of patients had Right laterality [31 (58.5%)]. It was statistically significant (p< .00001), (z=6.0832)
We observed that, most number of patients had 10*8 cm Size of mass in USG (LA and pelvis) [7 (13.2%)]. It was statistically significant (p=.0271), (z=2.2062)
We found that, most number of patients had Solid cystic SOL, multilocular with thick septations [19 (35.8%)]. It was statistically significant (p< .00001), (z=4.4685)
We showed that, most number of patients had 10*12 cm Size of mass in CECT whole abdomen [5 (9.4%)]. It was not statistically significant (p.09296), (z=1.6813)
We observed that, most number of patients had thick walled SOL with papillary projections, RPLN involvement noted [7 (13.2%)]. It was not statistically significant (p=.01468), (z=2.4392)
We found that, most number of patients had Serous cystadeno carcinoma of HPE [40 (77.4%)]. It was not statistically significant (p< .00001), (z=7.778)
In our study, the mean Age of patients was [56.3774±14.3168], the mean CA 125 of patients was [1629.4815±1659.4373], the mean CA-19-9 of patients was [107.1723±287.5440], the mean CEA of patients was [1.6215±1.5278] the mean AFP of patients was [7.0221±17.4876], the mean Beta HCG level of patients was [1.6097±1.2054], the mean LDH of patients was [979.6604±542.3446] and the mean RMI of patients was [45172.8732±52259.1449].

## CONCLUSION

We concluded that our descriptive study sheds light on the diverse histopathological spectrum and clinical profiles of patients diagnosed with malignant ovarian tumors at Medical College Kolkata. We observed a variety of histological subtypes, with serous carcinoma being the most common, followed by mucinous and endometrioid subtypes. We observed that, lower number of patients had Ovarian cancer on 1st degree relative of Family History [1 (1.9%)]. It was statistically significant (p< .00001). Our study also highlighted the importance of early detection and diagnosis, as advanced stage at presentation was associated with poorer outcomes. Additionally, our findings underscore the need for further research to explore factors influencing the incidence and progression of ovarian malignancies, as well as the development of targeted therapeutic strategies tailored to different histological subtypes. Our study contributes valuable insights into the understanding and management of malignant ovarian tumors in our population, with potential implications for improving patient care and outcomes.

## REFERENCES


1. Murthy NS, Shalini S, Suman G, Pruthvish S, Mathew A. Changing trends in incidence of ovarian cancer – The Indian scenario. Asian Pac J Cancer Prev. 2009;10:1025–30.
2. Forae GD, Aligbe JU. A histopathological overview of ovarian lesions in Benin City, Nigeria: How common are the functional cysts? Int J Med Public Health. 2014;4:265–8.
3. Chen VW, Ruiz B, Killeen JL, Cote TR, Wu XC, Correa CN. Pathology and classification of ovarian tumours. North American Association of Central Cancer Registries. Cancer Suppl. 2003;97:2631–42.
4. Hauptmann S, Friedrich K, Redline R, Avril S. Ovarian borderline tumors in the 2014 WHO classification: Evolving concepts and diagnostic criteria. Virchows Arch. 2017;470:125–42.
5. Surveillance, Epidemiology, and End Results Program. Cancer Stat Facts: Ovary Cancer. National Cancer Institute. Available at http://seer.cancer.gov/statfacts/html/ovary.html. Accessed: August 19, 2021.
6. Cancer Facts & Figures 2022. American Cancer Society. Available at https://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2022/2022-cancer-facts-and-figures.pdf. Accessed: August 25, 2022.
7. Ovarian Cancer Statistics. World Cancer Research Fund. Available at https://www.wcrf.org/dietandcancer/cancer-trends/ovarian-cancer-statistics. Accessed: August 25, 2022.
8. Bakhru A, Buckanovich RJ, Griggs JJ. The impact of diabetes on survival in women with ovarian cancer. Gynecol Oncol. 2011 Apr. 121(1):106-11.
9. Gupta N, Yadav M, Gupta V, Chaudhary D, Patne SC. Distribution of various histopathological types of ovarian tumors: A study of 212 cases from a tertiary care center of Eastern Uttar Pradesh. Journal of Laboratory Physicians. 2019 Jan;11(01):075-81.
10. Ibrahimkhil AS, Malakzai HA, Haidary AM, Hussaini N, Abdul-Ghafar J. Pathological features of ovarian tumors, diagnosed at a tertiary care hospital in Afghanistan: A cross-sectional study. Cancer Management and Research. 2022 Jan 1:3325-33.