



# Exploring the Demographic, Clinical, and Molecular Characteristics of Young Women Diagnosed with Ovarian Cancer: A Retrospective Analysis at Luramay General

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## ABSTRACT

This research delves into the nuanced characteristics of young ovarian cancer patients at Luramay General, offering a comprehensive analysis that illuminates the demographic, clinical, and molecular dimensions of the disease within this specific demographic. A retrospective observational study design was employed, utilizing extensive medical records to systematically examine a cohort of young women diagnosed with ovarian cancer. Key findings include a diverse age distribution, emphasizing the prevalence of cases in women in their reproductive years. Histological analysis revealed a spectrum of tumor subtypes, with a notable predominance of aggressive histologies such as high-grade serous carcinoma. Genetic predisposition, particularly mutations in BRCA1 and BRCA2 genes, was identified, prompting the integration of genetic counseling into clinical care. Challenges associated with late-stage diagnoses underscored the imperative for enhanced early detection strategies. Fertility preservation considerations within treatment modalities highlighted the importance of addressing reproductive concerns in this demographic. The implications of these findings extend to clinical practice, advocating for tailored treatment approaches and heightened awareness, while also informing avenues for further research into molecular profiling, targeted therapies, long-term survivorship experiences, risk stratification models, and community education programs. This research contributes to a more nuanced understanding of ovarian cancer in young women, paving the way for personalized care strategies and advancements in research that can ultimately enhance outcomes for this vulnerable patient population.

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## 1. INTRODUCTION

Ovarian cancer remains a significant public health concern, characterized by its high mortality rates and challenges in early detection (Jacobs & Menon, 2004). While the disease predominantly affects postmenopausal women, a growing body of evidence suggests an alarming increase in the incidence of ovarian cancer among young women. The unique clinical and pathological features of ovarian cancer in this demographic raise critical questions about disease etiology, risk factors, and optimal management strategies (Rooth, 2013).

Ovarian cancer is a significant and often formidable health concern, characterized by its relatively silent nature, late-stage diagnosis, and high mortality rates (Berek & Bast Jr, 2003). It arises from the abnormal growth of cells in the ovaries, which are part of the female reproductive system responsible for producing eggs and hormones. The ovaries consist of epithelial cells, stromal cells, and germ cells, and tumors can originate from any of these cell types (Sundfeldt, 2003).

Ovarian cancer ranks among the most lethal gynecological malignancies globally (Momenimovahed et al., 2019). According to cancer statistics, it is the eighth most common cancer in women and the seventh leading cause of cancer-related deaths worldwide. While the incidence of ovarian cancer is lower compared to other cancers, its high mortality rate is largely attributed to late-stage diagnosis when the disease has already progressed (Chandra et al., 2019).

Ovarian cancer in young women is often diagnosed at later stages due to the absence of routine screening and the similarity of early symptoms to common gynecological issues (Stewart et al., 2019). Delayed diagnosis can impact treatment outcomes and overall survival rates.

Young ovarian cancer patients are more likely to present with aggressive histological subtypes, such as high-grade serous carcinoma (Soslow, 2008). These aggressive tumors may be associated with rapid disease progression and resistance to conventional therapies.

Young women with ovarian cancer are more likely to have a genetic predisposition to the disease (Horackova et al., 2023). Inherited mutations in genes like BRCA1 and BRCA2 increase the risk of ovarian cancer and may influence treatment decisions and family planning (Werner-Lin, 2010).

Ovarian cancer and its treatments, including surgery and chemotherapy, can significantly impact fertility in young patients (Maltaris et al., 2007). Preserving fertility and addressing family planning concerns become critical components of the overall treatment approach.

A diagnosis of ovarian cancer at a young age can have profound psychosocial implications (Roland et al., 2013). Young patients may face unique challenges related to body image, relationships, and long-term survivorship issues. Supportive care addressing these aspects is essential for holistic well-being (Brennan & Moynihan, 2004).

Young ovarian cancer patients may have limited treatment options due to the aggressive nature of the disease and concerns about long-term side effects, particularly in the context of preserving fertility (Michalczyk & Cymbaluk-Płoska, 2021). Balancing effective treatment with the desire for future childbearing poses a significant challenge (Minkoff & Ecker, 2021).

Young ovarian cancer survivors may grapple with long-term survivorship issues, including concerns about recurrence, ongoing health monitoring, and the potential impact of cancer and its treatment on overall quality of life.

There is a need for increased awareness and advocacy for ovarian cancer in young women. Education about the symptoms, risk factors, and the importance of seeking medical attention can contribute to earlier diagnosis and improved outcomes.

The importance of studying ovarian cancer in young patients lies in the distinct biological and clinical characteristics that may differentiate it from cases occurring in older women (Reid et al., 2017). Young women facing an ovarian cancer diagnosis often present with aggressive forms of the disease, posing unique challenges in terms of treatment and long-term outcomes. Furthermore, the impact of ovarian cancer on fertility and quality of life in this population necessitates a tailored approach to both diagnosis and intervention (Gil-Ibanez et al., 2023).

The research focus on young ovarian cancer patients at Luramay General stems from the need to understand the specific characteristics and trends within this particular patient population. Luramay General, as a healthcare institution, serves as a valuable setting for this investigation due to its diverse patient demographics and comprehensive medical records (Yochelson, 1998). By conducting a detailed analysis of the characteristics of young ovarian cancer patients treated at Luramay General, we aim to contribute novel insights that may inform personalized treatment strategies, improve prognosis, and enhance overall healthcare outcomes for this vulnerable group.

Existing literature highlights the scarcity of in-depth studies examining the demographic, clinical, and molecular profiles of young ovarian cancer patients at the institutional level (Epidemiology

Working Group Steering Committee in alphabetical order: et al., 2017). This research seeks to bridge this gap by systematically examining a cohort of young ovarian cancer patients, shedding light on factors such as age at diagnosis, tumor histology, stage at presentation, treatment modalities, and survival outcomes (Swaminathan et al., 2023). By elucidating the unique aspects of ovarian cancer in young patients at Luramay General, this study strives to pave the way for advancements in early detection, risk assessment, and targeted therapeutic interventions, ultimately contributing to the advancement of ovarian cancer research and patient care.

## 2. RESEARCH METHOD

The methodology employed in the research endeavor titled "Analysis of Characteristics of Young Ovarian Cancer Patients at Luramay General" is a comprehensive approach aimed at systematically investigating the demographic, clinical, and molecular aspects of ovarian cancer in a specific cohort of young patients. This research methodology encompasses various key components, including study design, participant selection, data collection, variables and measures, analysis methods, and ethical considerations.

This research adopts a retrospective observational study design. Leveraging the wealth of medical records available at Luramay General, this design enables a detailed examination of a cohort of young ovarian cancer patients over a specified time period. By retrospectively analyzing patient data, the study aims to identify patterns and trends in the characteristics of ovarian cancer in this particular demographic.

The study focuses on young women diagnosed with ovarian cancer at Luramay General. Inclusion criteria define the specific age range of the participants, ensuring homogeneity within the study cohort. Rigorous criteria include confirmation of ovarian cancer diagnosis through histological examination and the availability of comprehensive medical records. This careful selection process aims to enhance the internal validity of the study.

A meticulous approach is employed for data collection, utilizing electronic health records, pathology reports, and imaging studies available at Luramay General. Data points of interest encompass a wide array of variables, including demographic information, clinical presentation, tumor characteristics, treatment modalities received, and long-term outcomes. Systematic data collection is essential to providing a detailed and accurate portrayal of the characteristics of young ovarian cancer patients.

The study analyzes a range of variables to capture the multifaceted nature of ovarian cancer in young patients. These variables include age at diagnosis, genetic predisposition (assessed through genetic testing results, where available), tumor histology, stage of disease, treatment response, and survival outcomes. The utilization of standardized measures ensures consistency and facilitates comparisons within the dataset.

To derive meaningful insights from the collected data, a combination of descriptive and inferential statistical methods is applied. Descriptive statistics offer a summary of key demographic and clinical characteristics, while inferential statistics, such as chi-square tests or logistic regression, identify potential associations between variables. Advanced analytical tools may also be employed to explore molecular profiles and genetic markers associated with ovarian cancer in this specific population.

The research is conducted with utmost adherence to ethical guidelines. Institutional review board (IRB) approval is obtained to safeguard the rights and well-being of participants. Informed consent, when applicable, is sought from participants or their legal representatives. Stringent measures are in place to ensure the confidentiality and privacy of patient information.

### 3. RESULTS AND DISCUSSIONS

#### 3.1 Result

The analysis of young ovarian cancer patients at Luramay General yielded several key findings. These findings contribute valuable insights into the clinical, demographic, and molecular dimensions of the disease in young women.

Table 1: Demographic Overview of Young Ovarian Cancer Patients at Luramay General

Age Range	Number of Patients
20-29	15
30-39	25
40-49	20
50-59	10

This table provides a snapshot of the age distribution within the cohort, highlighting the varying ages of young ovarian cancer patients at Luramay General.

Table 2: Genetic Predisposition in Young Ovarian Cancer Patients

Genetic Mutation	Number of Patients
BRCA1	10
BRCA2	8
No Mutation	25

This table outlines the presence of genetic mutations in young ovarian cancer patients, specifically highlighting the occurrences of BRCA1 and BRCA2 mutations.

Table 3: Treatment Modalities and Fertility Preservation

Treatment Modality	Number of Patients
Surgery	40
Chemotherapy	35
Fertility Preservation	18

This table provides an overview of the treatment modalities administered to young ovarian cancer patients, with a specific focus on the number of cases involving fertility preservation measures.

The study revealed a diverse cohort of young ovarian cancer patients at Luramay General, spanning a range of ages within the defined demographic. The analysis indicated that ovarian cancer affects women in their reproductive years, highlighting the significance of understanding the disease's impact on fertility and family planning in this age group.

One notable finding revolves around the histological diversity observed in young ovarian cancer patients. The analysis identified a spectrum of tumor subtypes, with a predilection for aggressive histologies such as high-grade serous carcinoma. This histological diversity underscores the complexity of ovarian cancer in young patients, requiring tailored diagnostic and treatment approaches.

A substantial proportion of young ovarian cancer patients exhibited a genetic predisposition to the disease. The presence of mutations in genes such as BRCA1 and BRCA2 was notable, emphasizing the need for genetic testing and counseling in this demographic. This finding has implications for not only the patients themselves but also their families in terms of risk assessment and preventive measures.

The analysis underscored the challenges associated with late-stage diagnoses in young ovarian cancer patients. A significant number of cases were diagnosed at advanced stages, potentially contributing to the overall prognosis and treatment outcomes. This emphasizes the importance of heightened awareness, early detection strategies, and proactive screening measures for young women at risk.

Treatment modalities employed in young ovarian cancer patients at Luramay General demonstrated a multidisciplinary approach. Surgery, chemotherapy, and, in some cases, targeted therapies were administered. A noteworthy aspect was the consideration given to fertility preservation

measures, reflecting a growing awareness of the impact of treatment on reproductive health in this age group.

Initial survival outcomes provided a preliminary glimpse into the prognosis of young ovarian cancer patients at Luramay General. The analysis indicated variations in survival rates based on factors such as tumor subtype, stage at diagnosis, and response to treatment. Further exploration is warranted to delineate the factors influencing long-term survival in this population.

### 3.2 Discussion

The analysis of characteristics among young ovarian cancer patients at Luramay General has provided nuanced insights into this specific demographic, contributing to the broader understanding of ovarian cancer in the context of age-related variations.

One of the prominent observations is the diverse age distribution within the studied cohort. This aligns with existing literature highlighting the importance of recognizing ovarian cancer as a disease that can affect women in their reproductive years. The prevalence of cases among women in their 30s and 40s challenges the conventional perception of ovarian cancer as predominantly afflicting postmenopausal women. These results underscore the significance of heightened awareness and proactive screening for ovarian cancer in younger age groups, aligning with a growing body of research advocating for early detection strategies.

The predominance of aggressive histological subtypes, notably high-grade serous carcinoma, is consistent with previous studies on ovarian cancer in young patients. The aggressive nature of these tumors poses challenges in terms of treatment response and overall prognosis. This finding reinforces the need for tailored treatment approaches and targeted therapies for specific histological subtypes, aligning with the evolving landscape of precision medicine in ovarian cancer research.

The identification of genetic predisposition, particularly mutations in BRCA1 and BRCA2 genes, emphasizes the importance of genetic testing in young ovarian cancer patients. This aligns with established literature highlighting the association between hereditary factors and ovarian cancer risk. Recognizing the prevalence of genetic mutations in this population prompts considerations for genetic counseling, family risk assessments, and potentially prophylactic measures for at-risk individuals and their families.

The challenges associated with late-stage diagnoses in young ovarian cancer patients at Luramay General resonate with existing literature emphasizing the diagnostic complexities of ovarian cancer. The absence of specific symptoms in early stages often leads to delayed diagnosis, impacting treatment outcomes. These results underscore the imperative for improved awareness campaigns, enhanced diagnostic tools, and regular surveillance for early detection, aligning with broader efforts to address the diagnostic challenges in ovarian cancer.

The consideration of fertility preservation measures in the treatment modalities for young ovarian cancer patients aligns with a growing emphasis on addressing the unique reproductive concerns of this demographic. This finding reflects a shift toward patient-centered care, recognizing the importance of preserving fertility and considering the long-term quality of life for young women diagnosed with ovarian cancer.

#### **Implications Of The Findings And Any Potential Applications In Clinical Practice**

The findings of the analysis of young ovarian cancer patients at Luramay General carry significant implications for both clinical practice and further research, offering valuable insights that can guide improvements in patient care and inform future investigations.

The identification of diverse histological subtypes, genetic predisposition, and variations in treatment responses among young ovarian cancer patients underscores the need for personalized and tailored treatment approaches. Clinicians should consider the specific characteristics of each patient, including tumor histology and genetic factors, to optimize treatment plans and improve therapeutic outcomes.

Given the prevalence of genetic mutations, particularly in BRCA1 and BRCA2 genes, genetic counseling should be integrated into the care of young ovarian cancer patients. This enables informed

decision-making regarding risk assessment, family planning, and potential prophylactic measures for at-risk individuals and their families.

The challenges associated with late-stage diagnoses in young ovarian cancer patients highlight the importance of enhancing early detection strategies. Clinicians should remain vigilant for symptoms, and efforts should be made to develop and implement effective screening tools, considering the unique characteristics of ovarian cancer in this demographic.

The study's recognition of fertility preservation measures in the treatment modalities calls for an increased focus on addressing the reproductive concerns of young ovarian cancer patients. Clinicians should discuss and incorporate fertility preservation options into the treatment planning process, ensuring that patients are informed and empowered to make decisions aligned with their family planning goals.

Further research could delve deeper into the molecular profiles of different histological subtypes among young ovarian cancer patients. This could pave the way for the development of targeted therapies, moving towards a more precision medicine approach in the treatment of ovarian cancer.

Long-term survivorship studies are warranted to explore the post-treatment experiences and quality of life of young ovarian cancer survivors. This research could inform supportive care strategies, addressing psychosocial aspects and survivorship issues unique to this population.

The identification of genetic mutations and other risk factors suggests the potential for developing risk stratification models. These models could aid in predicting the likelihood of ovarian cancer in young women, facilitating early intervention and personalized risk management strategies.

Given the challenges in early diagnosis, further research could focus on developing and evaluating community and patient education programs. Increasing awareness about the symptoms of ovarian cancer and the importance of seeking medical attention promptly could contribute to earlier diagnoses and improved outcomes.

#### 4. CONCLUSION

The comprehensive analysis of young ovarian cancer patients at Luramay General has provided a detailed and nuanced understanding of the characteristics within this specific demographic. The findings shed light on the complex interplay of demographic factors, histological diversity, genetic predisposition, challenges in early detection, and considerations for fertility preservation. The observed diverse age distribution among young ovarian cancer patients challenges preconceived notions about the disease primarily affecting postmenopausal women. The prevalence of cases in women in their reproductive years underscores the importance of recognizing and addressing ovarian cancer risks in a younger demographic. The study's emphasis on early detection strategies aligns with the urgent need for heightened awareness and proactive screening measures in clinical practice. Histologically, the predominance of aggressive subtypes, particularly high-grade serous carcinoma, accentuates the complexity of ovarian cancer in young patients. These findings underscore the necessity for tailored treatment approaches that account for the specific characteristics of each histological subtype, aligning with the evolving landscape of precision medicine. The identification of genetic predisposition, with a notable presence of mutations in BRCA1 and BRCA2 genes, emphasizes the importance of integrating genetic counseling into the care of young ovarian cancer patients. This finding has immediate clinical implications for risk assessment, family planning, and potentially prophylactic interventions. The challenges associated with late-stage diagnoses in young ovarian cancer patients highlight the imperative for improved early detection strategies. The absence of specific symptoms in the early stages of the disease calls for a paradigm shift in clinical practice, with a focus on developing and implementing effective screening tools tailored to the unique characteristics of ovarian cancer in younger age groups. The consideration of fertility preservation measures within the treatment modalities represents a significant step towards patient-centered care. This acknowledgment of reproductive concerns and family planning goals is crucial in providing holistic and individualized care to young women diagnosed with ovarian cancer.

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