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Original Research Article

Patterns of presentation and delays in diagnosis of ovarian cancer among women in Bangladesh: a cross-sectional study

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ABSTRACT

Background: Ovarian cancer is one of the most aggressive gynecological cancers and is frequently diagnosed late in resource-limited settings because of its nonspecific symptoms. This study described the sociodemographic and reproductive profile, clinical presentation, and diagnostic delay among women with ovarian cancer in Bangladesh.
Methods: This retrospective cross-sectional study was conducted at the Department of Gynecologic Oncology, National Institute of Cancer Research and Hospital, Dhaka, Bangladesh, from January to December 2025 among 130 women with ovarian cancer. Sociodemographic and reproductive characteristics, clinical presentation, examination and investigation findings, histopathological profile, diagnostic pathway, and treatment status were retrieved from hospital records and analyzed descriptively using SPSS version 26.
Results: Most participants were aged 40-49 years (32.3%) and lived in rural areas (56.9%). Symptoms persisted for more than six months before diagnosis in 38.5% of women, and 46.2% first sought care from a local provider. Common findings included anemia (50%), ascites (60.8%), palpable pelvic mass (75.4%), and elevated CA-125 (79.2%). Epithelial tumors predominated (80.8%), with serous carcinoma as the most common histopathological subtype (36.9%). Half of the women had advanced or locally advanced disease, and 73.8% had extraovarian spread. Patient-related delay (60%) was more frequent than health-system delay (34.6%).
Conclusions: Women with ovarian cancer commonly presented late with prolonged symptoms and advanced disease at diagnosis. Patient-related delay was the major contributor to delayed diagnosis, highlighting the need to improve symptom awareness and promote earlier healthcare seeking.

Keywords: Ovarian cancer, Diagnostic delay, Clinical presentation, Bangladesh

INTRODUCTION

Ovarian cancer is one of the deadliest gynecological cancers in the world and is one of the most common causes of cancer-related mortality in women, due to its tendency to be diagnosed late, when it has spread beyond the ovary, and to have vague symptoms.[1] According to the global estimates, in 2022 there were more than 300,000 new cases of ovarian cancer and more than 200,000 deaths, and these numbers are expected to grow significantly by 2050, especially in areas where the burden of gynecological cancers is projected to rise most rapidly.[2] In some high-income countries, age-standardized incidence has decreased due to shifts in oral contraceptive use, while in some parts of Asia, it has increased as a result of demographic transition and the lack of early detection infrastructure.[3] One of the most important factors contributing to the poor prognosis of ovarian cancer is delayed diagnosis, which is influenced by a complex interplay of patient-related, tumor-related and health-system factors, such as limited symptom awareness, lower educational level, lack of family history, and structural barriers to specialist referral.[4] Women also have barriers related to social and economic disadvantage; in a South Asian cohort study, insecure attachment patterns and poor social support were independently associated with longer delay to specialist consultation, highlighting that delay is

as much context as it is biology.[5] Population surveys have also revealed that many women do not recognize early symptoms like persistent bloating, pelvic discomfort or change in bowel habit and think they are harmless, even in large national surveys.[6] In South Asia, hospital-based series have consistently found that women with ovarian cancer have advanced or metastatic disease at diagnosis after having consulted multiple times and experienced long referral pathways.[8,9] A recent study in the East Indian region confirmed this, with the majority of women with ovarian cancer having FIGO stage III or IV disease at diagnosis.[7] Although commonly used in triage, serum CA-125 has inconsistent diagnostic value and cannot replace a systematic referral pathway.[8] Systematic reviews of cancer care in LMICs have consistently found that delayed patient and health-system intervals, low health literacy, and restricted access to diagnosis are important factors in the late presentation of cancer by type, including gynecological cancers.[9] This is supported by tertiary center data from India, which shows that women attending gynecological oncology services are predominantly diagnosed with epithelial tumors and advanced disease.[10,11] Despite this evidence, information on the pattern of presentation, diagnostic journey, and delays in presentation of women with ovarian cancer in Bangladesh is limited. It is important to understand the interaction between sociodemographic characteristics, symptom duration, and referral pathways to inform the design of interventions to reduce the time from symptom onset to treatment in this context.

The purpose of this study was thus to describe the sociodemographic and reproductive profile, clinical presentation, diagnostic pathway, and pattern of delay in women diagnosed with ovarian cancer at in Bangladesh.

METHODS

This was a retrospective cross-sectional study, which was carried out at Department of Gynecologic Oncology, National Institute of Cancer Research and Hospital, Dhaka, Bangladesh from January to December 2025.

All women with a confirmed or strongly suspected diagnosis of primary ovarian cancer who presented to the study center during the study period for whom complete sociodemographic, clinical, and diagnostic records were available were included; women with secondary or metastatic ovarian involvement from a non-ovarian primary or incomplete case records were excluded.

The 130 women who met the inclusion criteria were recruited consecutively. Sociodemographic and reproductive variables included age, residence, marital status, menstrual status, parity, and family history of cancer.

Clinical presentation variables included main presenting complaint, duration of symptoms before diagnosis, and broad delay category. Details of the first point of healthcare contact and referral pathway were included, as were clinical examination and investigation findings, including anemia, ascites, palpable abdominal or pelvic mass, pouch-of-Douglas nodularity, serum tumor markers, and imaging findings suggestive of malignancy.

Serum tumor markers were selected according to the suspected histological subtype. CA-125 was assessed primarily for epithelial ovarian tumors, alpha-fetoprotein (AFP), beta-human chorionic gonadotropin (β-hCG), and lactate dehydrogenase (LDH) for suspected germ cell tumors, and carbohydrate antigen 19-9 (CA19-9) and carcinoembryonic antigen (CEA) for suspected mucinous tumors.

Sex cord-stromal tumors were diagnosed mainly on histopathological examination because serum Inhibin B testing was not routinely available due to its high cost. Histopathological and disease-profile characteristics included tumor category, histopathological pattern, tumor grade, disease stage, and extraovarian/metastatic spread. Diagnostic and treatment-related variables included mode of diagnostic confirmation, receipt of neoadjuvant chemotherapy, and surgical status.

Diagnostic delay was divided into three groups: ≤3 months, 4-6 months, and >6 months, and delay was classified as patient delay or health-system delay, depending on whether the main factor in the delay was the patient's care-seeking behavior or the health system's response after the patient had sought care.

The data were entered and analyzed using SPSS version 26. Throughout, descriptive statistics were used, categorical variables were summarized as frequencies and percentages and presented in tabular form, and cross-tabulations were used to explore the distribution of diagnostic delay by selected clinical and sociodemographic characteristics.

RESULTS

The sociodemographic and reproductive data of the 130 study participants are shown in Table 1. Most women were aged 40-49 years (32.3%), followed by 50-59 years (23.8%). Over half lived in rural areas (56.9%), and 11.5% had no record of where they lived. Most were married (92.3%). As far as menstrual status, 58.5% were premenopausal, and 30.8% were postmenopausal. Parity of four or more was the most common category (32.3%). Eleven and a half percent of participants had a family history of cancer.

The clinical presentation patterns and symptom duration of the participants are presented in Table 2. Abdominal distention or swelling (24.6%), abdominal or lower abdominal pain (23.8%), and abdominal or pelvic lump/mass (22.3%) were the most common presenting complaints. Thirty-eight and a half percent of women had symptoms for more than six months before diagnosis, and

24.6% had symptoms for 2-3 months. For the overall delay category, 38.5% had a delay of over 6 months. 46.2% of women first sought healthcare from local providers.

The results of clinical examination and investigation are summarized in Table 3. Half of the participants had anaemia (50.0%), and 60.8% had ascites. In 72.3% of women, a palpable abdominal mass was detected, and in 75.4%, a pelvic or vault mass. Nodules of Pouch-of-Douglas were found in 17.7% of cases. In most of the participants (79.2%), serum CA-125 was elevated, and imaging was suggestive of malignancy in 93.1% of women.

Histopathological and disease-profile characteristics are described in Table 4. Epithelial tumors were the most common type (80.8%), followed by germ cell (8.5%) and sex cord-stromal tumors (6.9%). The most frequent histopathological pattern was serous carcinoma (36.9%) followed by mucinous carcinoma/borderline tumors (17.7%). High-grade tumors accounted for 53.8% of cases. Of those who participated, 50.8% had advanced or locally advanced disease, and 73.8% of women had extraovarian or metastatic disease.

The diagnostic pathway and treatment status of participants are summarized in Table 5. Histopathology report (with or without cytology or imaging) confirmed the diagnosis in 51.5% of cases, while core biopsy confirmed the diagnosis in 21.5%. The most frequent referral pathway was to a tertiary center (43.8%) and the second most frequent pathway was a delayed or multiple-consultation pathway (25.4%). Neoadjuvant chemotherapy or chemotherapy (76.9%) was received by most women. As for surgical status, 42.3% of women had previously had surgery and 31.5% planned to have surgery.

The distribution of diagnostic delay by selected clinical characteristics is shown in Table 6. The delay was more than 6 months for 44.6% of rural residents, but only 34.1% of urban residents. Women who presented to a tertiary hospital (31.6%) were less likely to have a delay of more than 6 months compared to those who presented outside a tertiary hospital (41.3%). Delay of more than 6 months was more common in women with advanced or recurrent disease (43.0%) than in women with early or localized disease (29.5%).

The overall diagnostic delay pattern of participants is summarized in Table 7. In 38.5% of women, the delay in the diagnosis was more than six months, and in 33.1% of women, the diagnosis was made within three months. Sixty percent (60.0%) of patients had patient-related delay, while 34.6% had health-system delay. Local providers were the most common first point of healthcare contact (46.2%), and referral to a tertiary center was the most common referral pathway (43.8%).

Table 1: Sociodemographic and reproductive characteristics of the study participants, (n=130).

Variables	Category	N (%)
Age group (in years)	<30	25 (19.2%)
	30-39	26 (20.0%)
	40-49	42 (32.3%)
	50-59	31 (23.8%)
	≥60	6 (4.6%)
Residence	Rural	74 (56.9%)
	Urban	41 (31.5%)
	Unrecorded	15 (11.5%)
Marital status	Married	120 (92.3%)
	Unmarried	6 (4.6%)
	Widow	2 (1.5%)
	Divorced	2 (1.5%)
Menstrual status	Premenopausal	76 (58.5%)
	Postmenopausal	40 (30.8%)
	Surgical menopause	3 (2.3%)
	Not recorded	11 (8.5%)
Parity	P0	23 (17.7%)
	P1	9 (6.9%)
	P2	29 (22.3%)
	P3	16 (12.3%)
	P4	6 (4.6%)
	P4+	42 (32.3%)
	Not recorded	5 (3.8%)
Family history of cancer	Yes	15 (11.5%)
	No	115 (88.5%)

Table 2: Patterns of clinical presentation and symptom duration, (n=130).

Variables	Category	N (%)
Main presenting complaint	Abdominal distension/swelling	32 (24.6%)
	Abdominal/lower abdominal pain	31 (23.8%)
	Abdominal or pelvic lump/mass	29 (22.3%)
	Vaginal watery discharge	11 (8.5%)
	Metastatic/peritoneal presentation	8 (6.2%)
	Postmenopausal bleeding	8 (6.2%)
	Bowel/urinary difficulty	6 (4.6%)
	Non-specific/other symptoms	5 (3.8%)
Symptom duration before diagnosis	≤1 month	11 (8.5%)
	2-3 months	32 (24.6%)
	4-6 months	37 (28.5%)
	>6 months	50 (38.5%)
Broad delay group	≤3 months	43 (33.1%)
	4-6 months	37 (28.5%)
	>6 months	50 (38.5%)
First healthcare contact	Local provider	60 (46.2%)
	Tertiary hospital	38 (29.2%)
	District hospital	20 (15.4%)
	Private clinic	12 (9.2%)

Table 3: Clinical examination and investigation findings, (n=130).

Variables	Category	N (%)
Anemia	Yes	65 (50.0%)
	No	65 (50.0%)
Ascites	Yes	79 (60.8%)
	No	51 (39.2%)
Palpable abdominal mass	Yes	94 (72.3%)
	No	36 (27.7%)
Pelvic or vault mass	Yes	98 (75.4%)
	No	32 (24.6%)
POD nodule	Yes	23 (17.7%)
	No	107 (82.3%)
CA-125 level	Raised	103 (79.2%)
	Normal/low	27 (20.8%)
Imaging suggestive of malignancy	Yes	121 (93.1%)
	No	9 (6.9%)

Table 4: Histopathological and disease-profile characteristics, (n=130).

Variables	Category	N (%)
Tumor category	Epithelial	105 (80.8%)
	Germ cell	11 (8.5%)
	Sex cord-stromal	9 (6.9%)
	Other non-epithelial	1 (0.8%)
	Unknown	4 (3.1%)
Histopathology pattern	Serous carcinoma	48 (36.9%)
	Mucinous carcinoma/borderline	23 (17.7%)
	Metastatic or unspecified adenocarcinoma	13 (10.0%)
	Germ-cell tumor	11 (8.5%)
	Sex cord-stromal tumor	9 (6.9%)
	Other malignant tumor	8 (6.2%)
	Ovarian carcinoma, type not specified	4 (3.1%)
	Other/not specified	14 (10.8%)

Continued.

Variables	Category	N
Tumor grade	High grade	70 (53.8%)
	Borderline	2 (1.5%)
	Not applicable	23 (17.7%)
	Not recorded	35 (26.9%)
Disease stage/status	Advanced/locally advanced	66 (50.8%)
	Early/localized or not fully staged	36 (27.7%)
	Recurrent disease	18 (13.8%)
	Recurrent/advanced	4 (3.1%)
	Not recorded	6 (4.6%)
Extraovarian/metastatic disease	Yes	96 (73.8%)
	No	34 (26.2%)

Table 5: Diagnostic pathway and treatment status, (n=130).

Variables	Category	N (%)
Diagnostic confirmation	Histopathology report, with or without cytology or imaging	67 (51.5%)
	Core biopsy	28 (21.5%)
	Clinical/imaging/tumor marker-based	26 (20.0%)
	FNAC/cytology	9 (6.9%)
Referral pathway	Referred to a tertiary center	57 (43.8%)
	Delayed or multiple-consultation pathway	33 (25.4%)
	Post-operative/NACT pathway	16 (12.3%)
	Direct tertiary care	13 (10.0%)
	Follow-up pathway	8 (6.2%)
	Other pathway	3 (2.3%)
Received NACT/chemotherapy	Yes	100 (76.9%)
	No	30 (23.1%)
Surgery status	Operated	55 (42.3%)
	Surgery planned	41 (31.5%)
	Operated previously	23 (17.7%)
	Not yet/not recorded	9 (6.9%)
	Surgery refused	2 (1.5%)

Table 6: Distribution of diagnostic delay by selected clinical characteristics, (n=130).

Variables	Category	Total	≤3 months	4-6 months	>6 months
Residence	Rural	74	20 (27.0%)	21 (28.4%)	33 (44.6%)
	Urban	41	14 (34.1%)	13 (31.7%)	14 (34.1%)
	Unknown	15	9 (60.0%)	3 (20.0%)	3 (20.0%)
First healthcare contact	Tertiary hospital	38	15 (39.5%)	11 (28.9%)	12 (31.6%)
	Outside the tertiary hospital	92	28 (30.4%)	26 (28.3%)	38 (41.3%)
Disease status	Advanced/recurrent	86	23 (26.7%)	26 (30.2%)	37 (43.0%)
	Early/localized/not recorded	44	20 (45.5%)	11 (25.0%)	13 (29.5%)
Tumor category	Epithelial	105	33 (31.4%)	33 (31.4%)	39 (37.1%)
	Germ cell	11	4 (36.4%)	3 (27.3%)	4 (36.4%)
	Sex cord-stromal	9	2 (22.2%)	1 (11.1%)	6 (66.7%)
	Other/unknown	5	4 (80.0%)	0 (0.0%)	1 (20.0%)

Table 7: Summary of diagnostic delay pattern among ovarian cancer patients, (n=130).

Variables	Category	N (%)
Diagnostic delay category	≤3 months	43 (33.1%)
	4-6 months	37 (28.5%)
	>6 months	50 (38.5%)
Patient delay	Present	78 (60.0%)
	Absent	52 (40.0%)

Continued.

Variables	Category	N (%)
Health-system delay	Present	45 (34.6%)
	Absent	85 (65.4%)
First healthcare contact	Local provider	60 (46.2%)
	Tertiary hospital	38 (29.2%)
	District hospital	20 (15.4%)
	Private clinic	12 (9.2%)
Referral pathway	Referred to a tertiary center	57 (43.8%)
	Delayed or multiple-consultation pathway	33 (25.4%)
	Post-operative/NACT pathway	16 (12.3%)
	Direct tertiary care	13 (10.0%)
	Follow-up pathway	8 (6.2%)
	Other pathway	3 (2.3%)

DISCUSSION

This cross-sectional study of 130 women with ovarian cancer reveals a trend of late presentation and extended diagnostic delay. Over a third of participants had symptoms for more than 6 months before diagnosis, and more than half had advanced or locally advanced disease, which is consistent with Petrova et al who showed that patient and diagnostic intervals in lower-income countries are generally 1.5-4 times longer than in high-income countries, especially for gynecological malignancies.[12] The high proportion of abdominal distention, pain, and palpable mass as presenting symptoms in this study is consistent with Qu et al who showed that the known challenges of early diagnosis of ovarian cancer, as these symptoms are non-specific and often mimic those of benign gynecological or gastrointestinal disease, which has been repeatedly identified as a factor in delayed cancer diagnosis in resource-limited settings.[13] In this study, patient-related delay was more prevalent than health-system delay (60% versus 34.6%), indicating that the time between onset of symptoms and first health system contact was more likely to be a factor in overall delay than the subsequent diagnostic evaluation after first health system contact. This is in line with other resource-limited contexts where structural factors like limited access to specialist services, financial constraints, and low health literacy are acknowledged as key factors in delayed cancer diagnosis for all cancer types.[14] Almost half of the women in this study presented to local providers before tertiary care, and only a small proportion presented directly to tertiary providers, which is comparable to the Indian tertiary hospital-based series, where women with ovarian tumors often had to consult multiple providers before a final diagnosis was made.[15] The high percentage of women with elevated CA-125 (79.2%) and imaging suggestive of malignancy (93.1%) in our results suggests that ancillary tests were generally supportive of the clinical suspicion of malignancy. However, CA-125 has known limitations as a triage test due to its age-and menopausal status-dependent sensitivity and specificity, as well as its elevation in several non-malignant conditions. In addition to CA-125, AFP, β-hCG, and LDH are clinically useful markers for germ cell tumors, whereas CA19-9 and CEA may assist in the evaluation of mucinous ovarian tumors. Our results suggest that these markers were assessed selectively according to clinical indication and availability. Sex cord-stromal tumors were diagnosed primarily by histopathological examination because serum Inhibin B testing was not routinely performed owing to financial constraints. The clinicopathological profile of epithelial tumors, especially serous carcinoma, and the high proportion of high-grade and advanced disease seen here is similar to that reported from tertiary oncology centers in other parts of South Asia, where there is also a high proportion of high-grade and advanced disease, and where neoadjuvant chemotherapy is often necessary due to unrespectability at presentation.[16,17] Nearly three-quarters of women were diagnosed with extraovarian or metastatic disease, and the high percentage treated with neoadjuvant chemotherapy instead of primary surgery has direct implications for treatment intensity and ultimately survival. More comprehensive global analyses of ovarian cancer trends have revealed that low-resource areas have a disproportionately high burden of incident cases and deaths.[18] Equity-focused analyses and treatment-pattern studies have highlighted that those inequities in outcome between high- and low-resource settings are as much due to delayed access to diagnosis and treatment as to differences in tumor biology.[19,20] Similar delayed presentation has been reported for other cancers that are prevalent among women in resource-limited countries, suggesting that the barriers observed in this group are not specific to ovarian cancer, but are representative of a wider health-system and awareness-related issue.[21] These results collectively highlight the importance of interventions that tackle patient-level symptom awareness and system-level referral efficiency to reduce the time to diagnosis for women with ovarian cancer in this context.

Limitations

This single-center, cross-sectional study with no comparator population may limit generalizability, and reliance on hospital records may have introduced information and recall bias in the reported symptom duration. Subtype-specific serum tumor markers, particularly Inhibin B for sex cord-stromal tumors, were not routinely available because of cost limitations.

CONCLUSION

This study demonstrates that in this cohort of women with ovarian cancer, the disease is often diagnosed at an advanced stage after a long delay from symptom onset to diagnosis. The most common presenting features were non-specific symptoms (abdominal distension, pain and palpable mass), and almost half of the women initially sought care from local, non-tertiary providers. Delay in the health system accounted for a smaller proportion of the overall diagnostic delay than did patient-related delay. Epithelial tumors were the most common type, with the majority of women presenting with high-grade or extraovarian disease. The results indicate that there are still significant gaps in the early detection of symptoms and timely referral for ovarian cancer in this context. The delay in diagnosis in this cohort could be mitigated by increasing community awareness and improving referral processes.

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