

Original Research Article

ARRAY AND DISTRIBUTION OF LESIONS IN FEMALES FROM HISTOPATHOLOGY RECORDS: A RETROSPECTIVE OBSERVATIONAL STUDY FROM A TERTIARY CARE CENTRE IN BIHAR, INDIA

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ABSTRACT

Background: Objective: Female histopathology represents malignant, premalignant and benign lesions encountered routinely. Global and national evidence identifies breast and cervix as leading cancer sites, while studies from Bihar highlights gallbladder cancer as important regional malignancy. This study tries to appraise site specific classification, frequency, proportion and burden of benign, premalignant and malignant lesions among female patients.

Materials and Methods: A descriptive retrospective observational study was conducted using archived histopathology reports of female patients from 2020-2025 in Department of Pathology, NSMCH, Patna, Bihar. Female patients of any age with final histopathological diagnosis were included while duplicate entries and records lacking final diagnosis were excluded. Data were summarised using frequencies and percentages.

Results: Total of 3,029 female pathology records were analysed, comprising 82.1% benign, 1.3% premalignant and 16.6% malignant lesions. Overall commonest organ involved was breast with 21.5% cases, followed by cervix 14.3% and corpus uteri 13.8%. Of these commonest malignant sites include breast with 23.6% cases, followed by 13.5% cervix and 11.1% gallbladder cases and in benign lesions commonest site was breast with 21.2% cases, followed by 15.7% corpus uteri and 14.3% cervix. The largest malignant burden was observed in women aged 40–64 years (286/504; 56.7%).

Conclusion: Benign lesions being major routine diagnostic burden, while the malignant profile was led by breast, cervix, and gallbladder. These findings emphasise need for strengthening screening for early detection, and better coordination between health services.

Keywords: Female pathology; Retrospective observational study; Malignant lesions; Breast cancer; Cervical cancer; Gallbladder cancer; Bihar.

INTRODUCTION

Worldwide cancer is a major cause of premature mortality, disability and morbidity. Globally, there are nearly 20 million new cancer cases and 9.7 million cancer related deaths as per estimates published in GLOBOCAN 2022.^[1] Also according to IARC Cancer Incidence in Five Continents, Volume XII, the reported data from 460 different

population based cancer registries of 65 countries,^[25] the population based cancer registration and documentations in India remains limited particularly in rural areas.^[12] In populous states like Bihar this under representation is significant and hence the need for region- specific data is justified.

India is undergoing a rapid epidemiological transition, with a rising cancer burden among women. This burden shows a rising trend particularly in low and middle income countries as problems like inadequate infrastructure, limited screening, unequal access to specialist care leads to delayed diagnosis and hence adversely affect the outcome.^[2-4] This burden is anticipated to rise further as factors such as ageing, changing reproductive behaviour, population growth, physical inactivity, obesity transition in dietary habits, alcohol and tobacco exposure, environmental factors and chronic infections contribute significantly to the disease.^[5,7-10] Adding to these factors, poor health awareness socioeconomic disadvantages and limited access to specialist diagnostic and treatment facilities are major contributors for delayed presentation, diagnosis and poorer outcome.^[7-10]

According to National Cancer Registry Programme, there were approximately 1.46 million incident cancer cases in 2022, out of which 749,251 cases (51.3%) were among females. Breast cancer formed the major chunk of this proportion in female cancers nationally (28.8%), followed by cervix uteri (10.6%) and ovary (6.2%).^[3] It has been observed that breast cancer is the most commonly diagnosed malignancy among women, with more than 2.3 million new cases annually.^[1,2]

Cancer patterns within India show considerable regional variation and cannot be adequately represented by national averages alone. Breast and cervical cancers remain important across most regions, but their relative contribution varies with urbanisation, reproductive behaviour, lifestyle, HPV burden, tobacco exposure, screening practices, and access to health care.^{4,7} Interpretation of these patterns is also limited by incomplete registry coverage.

Bihar is an important setting for such assessment because of its predominantly rural population, limited availability of specialised oncology services, high expensive medical intervention expenditure, and historically restricted population-based cancer registration.^[12] Data from the TMH, Muzaffarpur Population-Based Cancer Registry identify breast, cervix uteri, gallbladder, lung, and ovary among the leading cancer sites in women.^[6] Gallbladder carcinoma is of particular regional importance, being disproportionately frequent in northern and eastern India, especially along the Gangetic belt.^[13-15] Reported risk factors include gallstones, chronic inflammatory conditions, female sex, parity, obesity, hormonal influences, chronic Salmonella typhi carriage, dietary factors, and environmental exposures such as arsenic contamination.^[13,15,16,18] Oral and head-and-neck malignancies also contribute to the regional burden, largely in association with smoked and smokeless tobacco, areca nut, and betel quid use.^[19-21]

Alongside invasive malignancy, premalignant, borderline, and low-risk lesions form an important intermediate spectrum because their recognition

may allow surveillance or intervention before the development of invasive disease. Premalignant lesions such as cervical intraepithelial neoplasia, atypical proliferative breast lesions, atypical endometrial hyperplasia/endometrial intraepithelial neoplasia, gallbladder epithelial dysplasia, and potentially malignant oral lesions are well known and can be helpful in identifying the malignant transformation and can guide in early diagnosis and treatment.^[28-30] In ovaries, borderline ovarian tumours, particularly mucinous and serous types, are characterised by proliferation of epithelium and atypia without stromal invasion and destruction,^[31,32] while in thyroid, non-invasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP) is classified as low-risk follicular cell-derived neoplasm.^[34-36]

Institution-based histopathology studies differ from population-based cancer registries. Population-based registries estimate incidence and survival within defined populations, whereas pathology departments reflect the diagnostic case mix encountered in clinical practice, including benign, precursor, borderline, and malignant lesions.^[12,22-24] Such records are useful for evaluating organ-specific disease patterns, age distribution, and the relative diagnostic burden within a regional referral centre.

Hence the present study aims to describe the organ-specific array of benign, premalignant/borderline, and malignant lesions among females presenting in the histopathology department of NSMCH, Bihta, Patna, with accentuation on their median age at presentation and frequency. The findings are intended to provide institution-based evidence on the female histopathological disease burden in Western Bihar and to supplement the limited regional data available from this part of India.

MATERIALS AND METHODS

A descriptive retrospective observational study was done in the Department of Pathology, Netaji Subhas Medical College and Hospital, Bihta, Patna, Bihar, India. The study was based on archived histopathology records routinely generated during diagnostic service delivery. Histopathology reports issued between 1 January 2020 and 31 December 2025 were reviewed.

Study population

The source population incorporated tissue specimens of females which were received, processed, and reported in the Department of Pathology during the study period.

Inclusion Criteria

Records of female patients of any age were included when final histopathological diagnosis and adequate information regarding the primary organ and biological behaviour of the lesion was available.

Exclusion Criteria

Duplicate entries, records outside the study period, and records lacking the minimum information

required for diagnosis or site-wise classification were excluded.

Data Processing

Data were abstracted into a structured proforma. Variables included lesion behaviour, organ/site, age group for malignant cases, broad malignant histopathological category, and district-wise residence information where available for geographical representation. Categorical variables were summarised as frequencies and percentages. Organ-wise counts and proportions were presented separately for benign and malignant lesions with exact denominators in tables and figures. District-wise case counts were plotted on a Bihar map using a graded choropleth scale, with the core catchment area of the tertiary care demarcated to show the institutional catchment pattern. The geographical map was interpreted descriptively as a catchment area distribution and not as a population-based incidence or risk map.

RESULTS

A total of 3,029 eligible female pathology records were reviewed, of which 2,487 benign cases (82.1%) were accounted for, 38 cases (1.3%) were of premalignant/borderline/low-risk lesions, and 504 cases (16.6%) were found out to be malignant lesions which is shown in Figure 1.

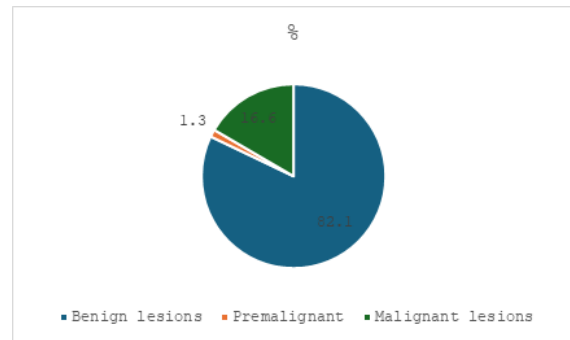


Figure 1: Overall classification of female pathology records by lesion (N=3029)

Table 1 shows the organ-specific wise distribution of female pathology among which breast was the commonest site overall, followed by cervix and corpus uteri. The overall pattern showed that benign lesions formed the larger share of routine pathology workload. Within the malignant group, breast was the leading site with 119 of 504 cases (23.6%), followed by cervix uteri with 68 cases (13.5%) and gallbladder with 56 cases (11.1%). Oral cavity, lung, and colorectum followed at lower frequencies. Among benign lesions, breast was also the largest category with 527 of 2,487 cases (21.2%), followed by corpus uteri with 391 cases (15.7%), cervix uteri with 356 cases (14.3%), and ovary with 285 cases (11.5%). It can be also seen that breast lesions were the most common organ/site group (21.5%) in the female study population, followed by cervix uteri, corpus uteri, gallbladder and thyroid lesions.

Table 1: Organ-specific distribution of benign, premalignant and malignant lesions among female pathology records (N=3029)

Organ/Site	Benign (n _b)	Benign, n _b (%) of benign cases	Premalignant (n _p)	Premalignant, n _p (%) of premalignant cases	Malignant (n _m)	Malignant, n _m (%) of malignant cases	Total, n (%) of all records
Breast	527	21.2	6	15.8	119	23.6	652 (21.5%)
Cervix uteri	356	14.3	9	23.7	68	13.5	433 (14.3%)
Corpus uteri	391	15.7	7	18.4	19	3.8	417 (13.8%)
Ovary	285	11.5	2	5.3	17	3.4	304 (10.0%)
Gallbladder	164	6.6	6	15.8	56	11.1	226 (7.5%)
Thyroid	180	7.2	1	2.6	18	3.6	199 (6.6%)
Skin and soft tissue	148	6.0	0	0.0	12	2.4	160 (5.3%)
Colorectum	132	5.3	2	5.3	20	4.0	154 (5.1%)
Oral cavity	103	4.1	4	10.5	26	5.2	133 (4.4%)
Lung	35	1.4	0	0.0	20	4.0	55 (1.8%)
Haemato-lymphoid	29	1.2	0	0.0	18	3.6	47 (1.6%)
Urinary tract	34	1.4	1	2.6	7	1.4	42 (1.4%)
Central nervous system	29	1.2	0	0.0	6	1.2	35 (1.2%)
Stomach	24	1.0	0	0.0	15	3.0	39 (1.3%)
Oesophagus	6	0.2	0	0.0	10	2.0	16 (0.5%)
Liver	8	0.3	0	0.0	10	2.0	18 (0.6%)
Pancreas	5	0.2	0	0.0	8	1.6	13 (0.4%)
Other specified sites*	31	1.2	0	0.0	55	10.9	86 (2.8%)
Total	2487		38		504		3029

*Other specified benign sites include salivary gland lesions, vulval/vaginal benign lesions, peritoneal/omental/endometriotic lesions, adrenal benign lesions, bone/cartilage benign lesions, benign lymph node/reactive lesions, and miscellaneous benign soft-tissue lesions.

Among women aged 40–64 years, it was observed that there were the highest proportion of malignant lesions, of which 286 of 504 cases were malignant (56.7%), followed by age group 65 years or older with 146 cases (29.0%) as shown in figure 2.

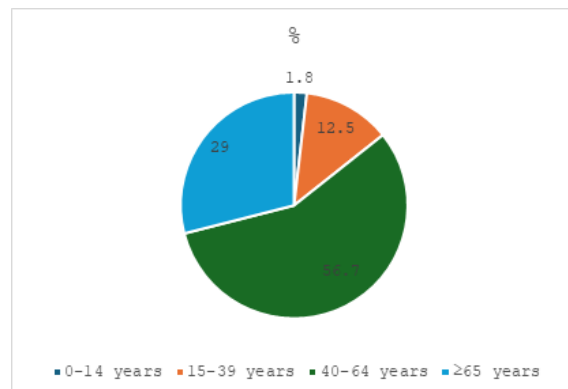


Figure 2: Age distribution of malignant lesions (n=504)

As seen in Table 2, 38 cases of total were found to be premalignant/borderline, of which cervix was the commonest site with 23.7% cases followed by corpus uteri 18.4% cases, gallbladder and breast 15.8% cases each, oral cavity with 10.5% cases, ovary and colorectum with 5.3% cases each, and thyroid and urinary tract with 2.6% case each.

Table 2: Organ-specific distribution of pre-malignant lesions among female pathology records (N=38)

Site	Premalignant / borderline lesion	n	% of 38
Cervix	CIN 1	5	13.2
	CIN 2	2	5.3
	CIN 3	2	5.3
Corpus uteri	Atypical endometrial hyperplasia/EIN	7	18.4
Breast	Atypical ductal hyperplasia	4	10.5
	Atypical lobular/other atypical proliferative lesion	2	5.3
Gallbladder	Dysplasia	6	15.8
Oral cavity	Leukoplakia with dysplasia	2	5.3
	Oral submucous fibrosis with dysplasia	1	2.6
	Erythroplakia with dysplasia	1	2.6
Colorectum	Adenomatous lesion with dysplasia	2	5.3
Urinary tract	Urothelial dysplasia	1	2.6
Ovary	Serous borderline tumor	1	2.6
	Mucinous borderline tumor	1	2.6
Thyroid	NIFTP	1	2.6
Total		38	100.0

The geographical distribution map demonstrated a marked concentration of cases around Patna and the adjoining districts of the catchment area as shown in figure 3. The highest density was observed in Patna, with substantial contributions from neighbouring western and southern districts including Bhojpur, Saran, Buxar, Arwal, Jehanabad, Nalanda, Rohtas, Kaimur, Aurangabad, Gaya, and Nawada. Smaller case contributions were seen from more distant districts such as Vaishali and Gopalganj. This distribution is likely to reflect distance from the institution, referral pathways, transport accessibility, and the presence of other tertiary-care centres in adjoining areas, supporting the expected institutional referral-catchment effect. Gallbladder cancer cases were reported from several districts within or near the Gangetic belt, including Patna, Vaishali, Saran, Gaya, and Bhojpur; however, the present study did not measure groundwater arsenic

or individual exposure and therefore cannot attribute this distribution to arsenic exposure.



Figure 3: Geographical distribution of the 3,029 study cases across Bihar, with the core NSMCH Bihta catchment area demarcated. The map illustrates institutional catchment and referral distribution and is not intended to represent population incidence

DISCUSSION

In this study of 3,029 female histopathology records from a tertiary care centre in Bihta, Patna, benign lesions contributed the majority of the departmental pathology workload, accounting for 2,487 cases (82.1%). Premalignant/borderline/low-risk lesions constituted 38 cases (1.3%), while 504 cases (16.6%) were malignant. The predominance of benign pathology, particularly involving the breast and gynaecological organs, highlights the broad diagnostic responsibility of a tertiary pathology service, where non-malignant inflammatory, hyperplastic, cystic, and benign neoplastic lesions are encountered far more frequently than malignancies. At the same time, the malignant component of the study showed a distinct and clinically important pattern, with breast as the leading malignant site, followed by cervix uteri and gallbladder.

When all diagnostic categories were considered together, breast remained the most frequently represented organ, with 652 cases (21.5% of all records), followed by cervix uteri (433; 14.3%), corpus uteri (417; 13.8%), ovary (304; 10.0%), gallbladder (226; 7.5%), and thyroid (199; 6.6%). This distribution highlights the substantial contribution of breast and gynaecological pathology to the routine histopathology workload at our institution.

The most common malignancy was the breast carcinoma, comprising of 119 of 504 malignant cases (23.6%) which is in agreement with global context as reported in the study done by Bray et al. (11.6%) in year 2022 and Sung et al. (11.7%) in year 2020, in the respective GLOBOCAN reports.^[1,2] In Indian context also similar findings were reported by Sathishkumar et al. (28.8% cases) and Mathur et al. (29.9 was the crude rate of breast cancers in females) with their respective study in India through the National Cancer Registry Programme, where breast cancer has emerged as the leading female malignancy nationally.^[3,4] In all these studies they identified breast cancer as the most commonly diagnosed cancer among women worldwide and a major contributor to cancer-related morbidity and mortality.^[1-4] It has also been documented that there is increasing burden of breast cancer among Indian women in a study done by Chaturvedi et al. where crude incidence rate was found to be 34.5.^[7] In the present series, an important component of routine diagnostic as well as oncological practice was the high frequency of both benign and malignant breast lesions. Early clinical evaluation, histopathological confirmation, receptor assessment, and timely multidisciplinary management therefore remain important for improving outcomes.^[10,11]

Cervix uteri was the second most frequent malignant site, with 68 cases (13.5%). This finding is broadly comparable with national data from the Indian

National Cancer Registry Programme, which reported cervical cancer as the second most common female malignancy, contributing approximately 10% of all female cancers,^[4] with a five year age standardised relative survival of 51.7%,^[27] and persistence of cervical malignancy in our pathology records reflects this larger public health gap and underlines the continuing role of HPV screening, cervical biopsy and hysterectomy specimens in diagnosis, confirmation of precursor lesions, and treatment planning.

Gallbladder carcinoma was the third most frequent malignancy which is one of the most striking findings in our study, accounting for 56 cases (11.1%). Prominent representation of it differs from the usual pattern seen nationally but the observations show it to be consistent with Bihar and the Indo-Gangetic belt, where it has been reported as an important female malignancy repeatedly,^[6,13-18] like from studies done by Budukh et al. (5.2% of female cancers), in the first population-based cancer registry report from Muzaffarpur, identified gallbladder as one of the leading cancer sites among women in Bihar.^[6] Pandey et al. (10–12% female cancers), in a hospital-based cancer registry analysis from Bihar, also reported a significant burden of gallbladder cancer in this region.^[17] Thus, the findings of the present study are in close agreement with Bihar-specific registry and hospital-based observations. The regional significance of gallbladder cancer has been further supported by Dutta, who described the epidemiology of gallbladder cancer in India and highlighted northern and eastern India as high-burden areas.^[13] Madhawi et al. (1291 cases; ~16% from Patna district) demonstrated a geographical association of gallbladder carcinoma in Bihar with the Ganga belt and soil arsenic levels.^[16] Kumar et al. reported the possible role of arsenic exposure in gallbladder cancer in Bihar (high arsenic detected in 512 GBC patients), while Sakamoto et al. provided geospatial evidence of gallbladder cancer clustering in the state.^[14,15] Other risk factors that have been proposed include female sex, chronic cholecystitis, gallstones, obesity, parity, diet, hormonal factors, chronic inflammation, infection, and environmental exposure.^[13-18] Since the present study is institution based, there is relatively high proportion of gallbladder carcinoma which reflect referral patterns and the geographical catchment of the hospital. It should not be interpreted as an estimate of population incidence.

Oral cavity malignancies accounted for 26 cases (5.2%). It is less frequent than breast, gallbladder and cervical malignancies, but their occurrence is important in Indian context as tobacco, areca nut, smokeless tobacco, and betel quid are risk factors which have been established for oral and head-and-neck cancers.^[19-21] This finding is also comparable with Gupta et al. who described oral cancer in India as a major public health problem, largely driven by tobacco, smokeless tobacco, areca nut, and betel

quid exposure.^[19] Chauhan et al. reported the association of head-and-neck cancers with tobacco use and site distribution (Head and neck cancers constituted 30% of all cancers; tobacco addiction in 84.4% of patients),^[20] while Asthana et al. showed a significant association between smokeless tobacco use and oral cancer risk.^[21] It is particularly relevant among women in areas where smokeless tobacco use is culturally prevalent.

Premalignant, borderline, and low-risk lesions accounted for 38 cases (1.3%). The most frequently involved site was the cervix with 9 cases (23.7%), succeeded by corpus uteri 7 cases (18.4%), gallbladder and breast with 6 cases each (15.8%), oral cavity with 4 cases (10.5%), ovary and colorectum with 2 cases each (5.3%), and thyroid and urinary tract with 1 case each (2.6%). As these lesions represent a small proportion of workload overall, their recognition is important as many of them offer an opportunity for, surveillance early diagnosis or treatment before they development into invasive malignancy.

The cervical precursor lesions included five cases of CIN1 and two cases each of CIN2 and CIN3. Basu et al. reported age-adjusted prevalences of 2.3%, 0.5%, and 0.4% for CIN1, CIN2, and CIN3, respectively, among previously unscreened Indian women.^[28] Although these figures are not directly comparable with our histopathology-based proportions, they demonstrate the continuing burden of cervical precursor disease. Also seen were the seven cases of atypical endometrial hyperplasia/endometrial intraepithelial neoplasia in the corpus uteri. Indian studies have reported premalignant endometrial lesions in approximately 4–5% of selected women undergoing endometrial evaluation.^[29,30]

The breast precursor group consisted of four cases of atypical ductal hyperplasia and two atypical lobular or other proliferative lesions, supporting their separation from conventional benign breast pathology because of their recognised association with increased subsequent breast cancer risk. Gallbladder dysplasia accounted for six cases and assumes added significance in view of the substantial gallbladder cancer burden observed in the present series. Four oral potentially malignant lesions were also identified, including leukoplakia, oral submucous fibrosis, and erythroplakia with dysplasia.

Two ovarian borderline tumours, one serous and one mucinous, were identified. In these tumours we can observe atypia and epithelial proliferation without stromal invasion and destruction. These occupy an biological category which is intermediate between benign tumours of epithelium and invasive carcinoma.^[31,32] Recognition of these are important as serous borderline tumours relate more closely to the low-grade serous pathway, whereas high-grade serous carcinoma has a distinct biological pathway.^[32,33] In thyroid intermediate lesion found was non-invasive follicular thyroid neoplasm with

papillary-like nuclear features (NIFTP), that has been currently classified as low-risk follicular cell-derived neoplasm.^[34-36] This separate inclusion reflects a contemporary pathological classification.

Age-wise, malignant lesions were concentrated predominantly in middle-aged and older women. Of the 504 malignant cases, 286 (56.7%) occurred in the 40–64-year age group and 146 (29.0%) among women aged ≥ 65 years. Only 63 cases (12.5%) occurred between 15 and 39 years and 9 (1.8%) in the 0–14-year group. Overall, 85.7% of malignancies occurred in women aged 40 years or older, which is consistent with the age distribution of many common epithelial cancers and emphasises the importance of timely clinical evaluation and tissue diagnosis in this age group.

The geographical distribution of cases showed a clear concentration around Patna and neighbouring districts within the NSMCH Bihta catchment area, with substantial contributions from Bhojpur, Saran, Buxar, Arwal, Jehanabad, Nalanda, Rohtas, Kaimur, Aurangabad, Gaya, and Nawada and fewer cases from more distant districts. This pattern is likely to reflect proximity to the institution, referral pathways, transport accessibility, and availability of other tertiary-care centres rather than true district-wise differences in disease incidence. Gallbladder cancer cases were also recorded from several districts within or close to the Gangetic belt. Although previous studies from Bihar have reported associations between gallbladder cancer, proximity to the Ganga, and environmental arsenic exposure,^[14-16] the present study did not assess individual exposure or population-based incidence and therefore cannot establish such a causal relationship.

Overall, the present study demonstrates a predominantly benign histopathology workload involving mainly the breast and female genital tract, alongside a malignant profile dominated by breast and cervical carcinoma and a notable regional contribution from gallbladder cancer. The additional identification of premalignant, borderline, and low-risk lesions across several organ systems further demonstrates the role of histopathology not only in definitive diagnosis but also in recognising lesions with potential for cancer prevention and early intervention.

CONCLUSION

In the present study of 3,029 female histopathology cases, benign lesions constituted the major disease burden (82.1%), followed by malignant lesions (16.6%), while premalignant/borderline/low-risk lesions accounted for 1.3% (38/3,029). The intermediate group was most frequently represented by lesions of the cervix, followed by corpus uteri, breast, gallbladder, oral cavity, ovary, colorectum, urinary tract, and thyroid. It included established precursor lesions such as CIN, AEH/EIN, atypical

proliferative breast lesions, gallbladder dysplasia, oral potentially malignant disorders, colorectal adenomatous dysplasia, and urothelial dysplasia, together with two ovarian borderline tumours and one thyroid NIFTP. The latter represents a low-risk follicular cell-derived neoplasm rather than carcinoma.^[34-36] Although premalignant and borderline lesions represented a small proportion of the total workload, their separate recognition provides a more complete representation of the female disease spectrum and identifies lesions with potential preventive relevance.

Among malignant lesions, the most frequently involved site was breast, followed by cervix and gallbladder. The breast and cervical cancer pattern were broadly consistent with national and global observations, whereas the prominence of gallbladder carcinoma reflects the recognised regional pattern reported from Bihar and the Indo-Gangetic belt. Persistence of cervical malignancy in our pathology records reflects this larger public health gap and underlines the continuing role of HPV screening, cervical biopsy and hysterectomy specimens in diagnosis, confirmation of precursor lesions, and treatment planning. Although cervical cancer is preventable, it continues to be a major female malignancy due to low screening uptake, delayed detection of precursor lesions, and low awareness and limited access to organized HPV-based prevention programmes. This is supported by a UK population-based study, which demonstrated that among women vaccinated against HPV at ages 12–13, there were zero cervical cancer deaths in the 20–24 year age group between 2020 and 2024, corresponding to a 100% reduction in mortality compared with historical rates.^[26] The presence of nine cervical precursor lesions along with 68 invasive malignancies in our series further underlines the importance of screening and timely histopathological evaluation.

The majority of malignancies occurred in women aged 40 years and above, emphasising the importance of timely clinical evaluation, screening where applicable, histopathological diagnosis, and coordinated multidisciplinary management which can help in reducing the disease burden and improving the survival outcomes of different malignancies.

The strength of this study lies in its organ-wise assessment of benign, premalignant/borderline, and malignant lesions, together with age distribution of malignancies and geographical representation of the institutional catchment area. However, this study has several limitations such as being single-centre, histopathology-based, retrospective study and was so it is subjected to referral bias and variation of institutional case mix. The absence of a defined population denominator precluded estimation of population-based incidence or prevalence. In addition, clinical staging, treatment details, follow-up, survival, and outcome data were not available. The geographical distribution reflected the

institutional referral and catchment pattern of the cases and should not be interpreted as incidence of disease district-wise. Despite these limitations, the study provides useful institutional evidence on the spectrum of female pathology encountered at a tertiary-care centre in Bihar and may assist in diagnostic workload assessment, service planning, and coordination between Pathology, Surgery, Gynaecology, Gastroenterology, Radiology, and Oncology.

Ethics approval: The study has been approved via institutional ethics committee vide letter no. NSMCH/Pat/CREC/2026/135 dated 15/04/2026.

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