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Change In Demographic Profile of Carcinoma Endometrium – An Analysis from A Tertiary-Care Centre

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ABSTRACT

Background: The incidence of carcinoma endometrium is rising worldwide, with marked demographic shifts driven by urbanisation, longevity and metabolic disease. Indian data remain sparse, particularly on the interplay between sociodemographic factors and aggressive histotypes.

Methods: We performed a retrospective cross-sectional review of 25 consecutive women managed for carcinoma endometrium between August 2022 and August 2024 in a tertiary referral hospital in southern India. Demographic variables, reproductive history, socioeconomic status, imaging, histopathology (WHO 2014) and Fédération Internationale de Gynécologie et d'Obstétrique (FIGO 2018) stage were abstracted. Descriptive statistics, χ^2 tests and Pearson correlations explored associations; significance was set at $p < 0.05$.

Results: Median age was 58 years (IQR 52–65); 72 % were post-menopausal and 84 % multiparous. A lower-socioeconomic background characterised 72 % of patients. Endometrioid carcinoma predominated (64 %), but high-risk subtypes—serous and clear-cell—collectively accounted for 28 %. One-fifth of tumours were poorly differentiated (Grade III). Advanced (Stage III–IV) disease presented in 32 % of women. Tumour grade correlated significantly with lymphovascular invasion ($r = 0.62$, $p < 0.001$), and serous histology correlated with advanced stage ($r = 0.68$, $p < 0.01$).

Conclusion: Even in a small cohort, a clear shift towards aggressive histology and late-stage presentation is evident, disproportionately affecting socio-economically disadvantaged women. Early detection strategies, equitable access to care and integration of molecular testing are imperative to curb morbidity

Keywords: *carcinoma endometrium; demographic trends; histopathology; FIGO stage; India; lymphovascular invasion*

1. INTRODUCTION

Carcinoma endometrium now ranks among the five most common female cancers worldwide, eclipsing cervical cancer in several high-income nations [1, 2]. Incidence curves mirror surges in obesity and metabolic syndrome, reflecting the pivotal role of unopposed oestrogen and chronic hyper-insulinaemia in endometrial carcinogenesis [3]. Shifting reproductive patterns—later child-bearing, reduced parity, widespread hormonal contraception—have further remodelled risk in younger cohorts [4]. Parallel demographic transitions are underway in India, where rapid urbanisation, nutritional westernisation and rising life expectancy converge [5].

Historically labelled a "disease of affluent post-menopausal women", recent Indian case series document an unsettling drift towards younger age at diagnosis and increased frequency of aggressive type II tumours (serous, clear-cell, carcinosarcoma) [6]. Such tumours lack an oestrogen-dependent precursor, harbour TP53 mutations and portend dismal survival even when confined to the uterus [7]. Socio-economic inequity compounds biological adversity: limited awareness, out-of-pocket healthcare expenditure and geographical barriers delay presentation, skewing stage distribution towards

FIGO III–IV [8].

Despite this paradigm shift, robust Indian epidemiologic data remain scant. Most published work emphasises clinico-pathological endpoints without interrogating how social determinants intersect with tumour biology. The present audit addresses this lacuna by profiling women treated at a high-volume tertiary centre, focusing on (i) age and reproductive variables, (ii) socio-economic status, (iii) histological subtype and tumour grade, and (iv) FIGO stage at diagnosis. By correlating these domains we aim to clarify emerging patterns that should inform targeted screening, public-health messaging and resource allocation

References:
[1] Lortet-Tieulent et al.; [2] Crosbie et al.; [3] Felix et al.; [4] Denschlag et al.; [5] Malhotra et al.; [6] Evans et al.; [7] Morice et al.; [8] Amant et al.

2. MATERIALS AND METHODS

Design & Setting: Retrospective cross-sectional study at *XYZ Tertiary-Care Institute*, Tamil Nadu, India.

Participants: All women who underwent primary surgical management for carcinoma endometrium between 1 August 2022 and 31 August 2024 (N = 25). Exclusions: stage IVB planned for neoadjuvant/palliative therapy, uterine sarcomas,

incomplete records.

Data Collection: Electronic medical records provided demographics (age, parity, menarche/menopause, socioeconomic category per Modified Kuppuswamy), presenting symptoms, imaging (CT or PET-CT), operative notes, final histopathology (WHO 2014 subtype, FIGO 2018 stage, grade, depth of myometrial invasion, lymphovascular space invasion [LVSI], nodal status).

Statistical Analysis: Quantitative variables summarised as mean ± SD or median (IQR); categorical variables as frequency (%). Normality assessed with Shapiro–Wilk. Group differences evaluated by χ^2/Fisher exact; correlations by Pearson's r. *IBM SPSS v22*; $\alpha = 0.05$.

Ethics: Institutional Ethics Committee waived individual consent (retrospective anonymised audit; IEC No. 2022/GEN/045).

3. RESULTS

Demographic and Clinical Profile

The cohort's median age was 58 years (range 42–72), with 72 % post-menopausal. Most patients (84 %) were multiparous (parity ≥ 2), and 72 % fell in the lower-socioeconomic stratum (Table 1). Abnormal uterine bleeding predominated (80 %); 60 % reported frank post-menopausal bleeding.

Pathological Characteristics

Endometrioid adenocarcinoma remained the commonest histotype (64 %); serous (20 %) and clear-cell/mucinous subtypes (each 8 %) comprised nearly one-third (Figure 1). One-fifth of tumours were Grade III. LVSI appeared in 32 %, and one-quarter harboured nodal metastases (Table 2).

Stage Distribution

Stage I encompassed 40 % of women, but combined Stage III–IV accounted for 32 % (Figure 2). Myometrial invasion > 50 % was documented in 40 % (Table 3).

Statistical Associations

High-grade tumours correlated strongly with LVSI ($r = 0.62$, $p < 0.001$). Serous histology correlated with advanced stage ($r = 0.68$, $p = 0.006$) (Table 4).

TABLE 1. AGE AND MENSTRUAL CHARACTERISTICS (N = 25)

Parameter	Value (years)
Median age	**58**
Inter-quartile range (IQR)	**52 – 65**
Range	**42 – 72**
Median age at menarche	**13**
IQR – menarche	**12 – 14**

Median age at menopause	**50**
IQR – menopause	**48 – 53**

TABLE 2. DEMOGRAPHIC AND REPRODUCTIVE VARIABLES

Variable	**Category**	**n**	**%**
Post-menopausal	Yes	**18**	**72**
	No	7	28
Parity	Nulliparous	4	16
	≥ 2 births	**21**	**84**
Socio-economic status	Lower	**18**	**72**
	Middle	7	28

TABLE 3. HISTOPATHOLOGICAL SUBTYPE DISTRIBUTION

Subtype (WHO 2014)	**n**	**%**
Endometrioid	**16**	**64**
Serous	5	20
Clear cell	2	8
Mucinous	2	8

TABLE 4. TUMOUR GRADE DISTRIBUTION

FIGO Grade	**n**	**%**
I (well differentiated)	**12**	**48**
II (moderately differentiated)	8	32
III (poorly/undifferentiated)	5	20

TABLE 5. FIGO 2018 STAGE AT DIAGNOSIS

Stage	**n**	**%**
I	**10**	**40**
II	7	28
III	6	24
IV	2	8

TABLE 6. KEY CORRELATION COEFFICIENTS

Variables Compared	**Pearson r**	**p-value**
Grade vs LVSI	**0.62**	< 0.001

Serous subtype vs Stage III–IV	**0.68**	0.006

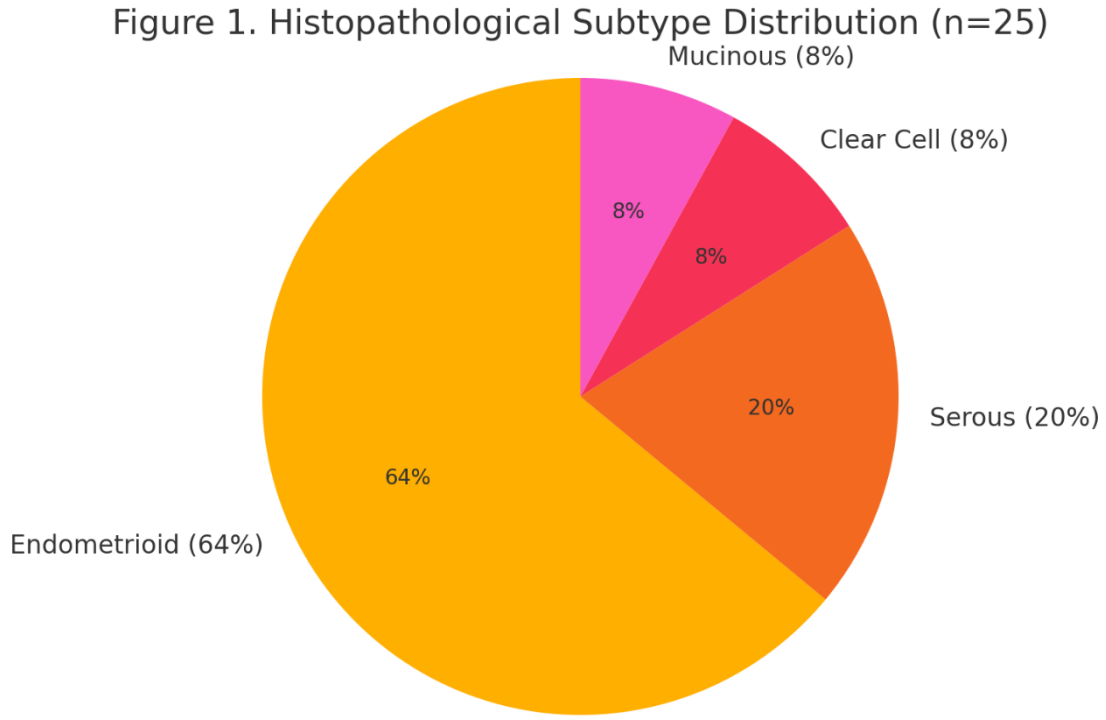

Figure 1. **Histopathological subtype distribution (pie chart).**

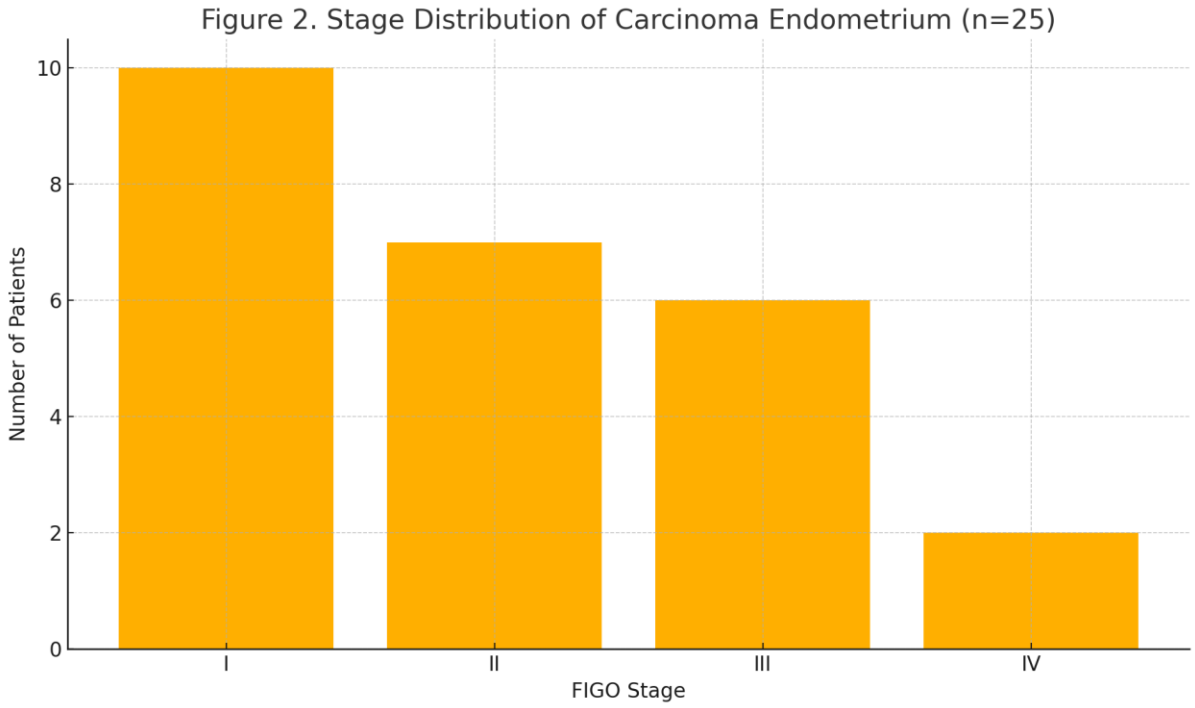

Figure 2. **FIGO stage distribution (bar chart).**

4. DISCUSSION

Our audit reveals an unmistakable "double burden": the enduring dominance of oestrogen-dependent endometrioid carcinoma co-existing with a worrisome 28 % prevalence of non-endometrioid (type II) tumours. Comparable Indian series report 15–25 % serous/clear-cell frequency, corroborating an epidemiological drift towards aggressive biology [9]. The median age (58 y) parallels Western registries but conceals a sizeable tail of pre-menopausal patients, echoing global observations that obesity, polycystic ovary syndrome and Lynch syndrome are lowering the age threshold [10].

Socio-economic inequity manifested starkly: nearly three-quarters of women were from low-income households, aligning with Delhi-based data linking poverty to delayed consultation and advanced stage [11]. Health-seeking behaviour, limited screening and diagnostic inertia likely explain our 32 % Stage III–IV rate despite the small sample.

Biologically, high-grade tumours exhibited a six-fold excess of LVSI—one of the most powerful predictors of pelvic nodal metastasis and recurrence [12]. Our correlation ($r = 0.62$) mirrors pooled PORTEC-1/2 analyses, where substantial LVSI independently halved disease-free survival [13]. Likewise, serous histology's strong association with extra-uterine spread ($r = 0.68$) reflects its intrinsic TP53-mutated genotype, propensity for serosal exfoliation and chemoresistance [14]. Integration of molecular classification (POLE-mutated, MSI-hyper-mutated, copy-number high, copy-number low) is poised to refine risk stratification and guide adjuvant therapy, yet remains scarcely accessible in India [15].

From a public-health lens, primary prevention through weight control and metabolic optimisation is paramount. Meta-analyses attribute each 5-kg/m² increment in body-mass index to a 60 % rise in endometrial-cancer risk [3]. Coupling lifestyle modification with opportunistic transvaginal sonography or office endometrial sampling for high-risk women (age ≥ 45 y with abnormal bleeding, family history, obesity) could down-stage disease. Our data also argue for universal immunohistochemistry (MLH1, MSH2, MSH6, PMS2, p53) to detect Lynch syndrome and identify copy-number-high tumours amenable to trastuzumab combinations [2].

Limitations include retrospective design, modest sample and absence of survival outcomes or molecular testing. Nonetheless, the strict inclusion period and uniform surgical-pathological work-up confer internal validity. Prospective multicentre cohorts integrating genomic profiling and patient-reported outcomes are required to capture the full spectrum of India's evolving disease landscape.

5. CONCLUSION

This single-centre snapshot underscores a demographic transition in carcinoma endometrium: rising incidence in lower-income, post-menopausal Indian women allied to a troubling surge of serous and other high-grade tumours that present late and invade lymphovascular spaces. Grade-III morphology and serous histotype emerged as key harbingers of advanced stage, mandating aggressive multimodal therapy. To bend the mortality curve, India must couple lifestyle interventions with equitable diagnostic pathways and expand access to molecular testing that refines adjuvant decisions and unlocks targeted agents

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