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ORGANIZATION OF ENDOMETRIAL CANCER PREVENTION IN UZBEKISTAN

Latifjonova Gulnoza Erkinjon qizi
Assistant, Department of Urology and Oncology
Fergana Medical Institute of Public Health

Abstract
This article examines the current organizational framework of endometrial cancer prevention in Uzbekistan. The study analyzes screening coverage, stage distribution at diagnosis, risk factor profiles, and diagnostic resource availability across four regional oncological facilities over a five-year period. Evidence-based recommendations for systemic reform of preventive care infrastructure are proposed to reduce morbidity and mortality.

Keywords: Endometrial cancer, uterine body cancer, cancer prevention, screening, early detection, risk factors, adenocarcinoma, endometrial hyperplasia, transvaginal ultrasound, hysteroscopy, oncogynecology, Uzbekistan healthcare, cancer registry, prophylactic examination, metabolic syndrome.

Introduction

Endometrial cancer (EC) is the most prevalent gynecological malignancy in developed countries, and its incidence is rising sharply across Central Asia, including Uzbekistan. According to GLOBOCAN 2020 data, approximately 417,000 new EC cases are registered globally each year, placing it sixth among all cancers in women. In Uzbekistan, the national oncological registry records a consistent upward trend, with incidence reaching 8.4 per 100,000 women in 2021 - a 22% increase compared to 2012 figures. The disease predominantly affects postmenopausal women aged 55-65, yet an increasing proportion of diagnoses now occurs in younger cohorts burdened by metabolic disorders. Despite being one of the most biologically curable solid tumors when detected early, EC in Uzbekistan continues to present at advanced stages in a substantial proportion of cases, reflecting organizational rather than scientific shortcomings in prevention.

Literature review

The scientific foundation for EC prevention rests on several decades of accumulated research. Ya.V. Bokhman (1989) established the two-variant pathogenetic classification of EC - hormonal and autonomous - which remains the conceptual cornerstone of all modern preventive strategies. M.I. Davydov and E.N. Aksel (2011) documented rising EC incidence across post-Soviet republics, underscoring the epidemiological burden shared by Uzbekistan. V.I. Chissov and V.V. Starinskiy (2009) critically evaluated regional cancer screening effectiveness in Russia, identifying organizational bottlenecks applicable to the Central Asian context. E.N. Imyanitov (2010) described molecular and metabolic biomarkers enabling high-risk group stratification for targeted prevention. Uzbek researchers Sh.Sh. Nazarov and collaborators (2018) conducted the first systematic assessment

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of regional oncological service capacity in Uzbekistan, revealing critical gaps in staffing and equipment. T.K. Makhkamov (2020) evaluated screening program outcomes specifically within Fergana region dispensaries. Together, these works define the research gap this study addresses: the absence of quantified, region-specific data on EC prevention organization in Uzbekistan.

Methodology

A retrospective cross-sectional study was conducted across four regional oncological dispensaries: Fergana, Andijan, Namangan, and Tashkent city. The study period covered January 2019 through December 2023 - five complete calendar years of institutional data. The primary objective was to quantitatively evaluate the organizational effectiveness of existing EC prevention programs through analysis of detection rates, stage distribution, screening coverage, risk factor burden, and diagnostic resource availability.

The study population comprised 1,248 women diagnosed with uterine body cancer during the observation period, drawn from the unified oncological registry of Uzbekistan. By region: Tashkent city - 687 cases (55.0%); Fergana - 231 (18.5%); Andijan - 198 (15.9%); Namangan - 132 (10.6%). In addition, data from 14,360 women aged 45-70 years who attended preventive gynecological examinations at the same facilities were included to assess screening program coverage and efficiency.

Primary data were extracted from clinical case histories (forma No. 003/u), cancer notification cards (forma No. 090/u), and dispensary observation records (forma No. 030/u). Variables systematically recorded for each diagnosed case included: age at diagnosis (mean 58.4 ± 7.2 years; range 34-81 years); body mass index (mean BMI 31.6 ± 4.8 kg/m²); type 2 diabetes mellitus (present in 34.2%); arterial hypertension (61.7%); nulliparity (18.3%); prior hormone replacement therapy use (7.4%); and positive family history of gynecological malignancy (11.2%). The standard protocol employed at all facilities comprised three components: bimanual pelvic examination, transvaginal ultrasound (TVUS) with endometrial thickness measurement, and cytological analysis of aspiration biopsy material. An endometrial thickness threshold of ≥5 mm in postmenopausal women was applied, consistent with ESGO 2016 guidelines. Hysteroscopy with directed biopsy was performed in 389 of 1,248 diagnosed cases (31.2%) as part of initial diagnostic workup.

All data were processed using IBM SPSS Statistics 26.0. Descriptive statistics were computed for continuous variables (mean ± SD) and categorical variables (frequency, percentage). The chi-square test assessed associations between categorical variables; Student's t-test compared group means. Statistical significance was defined as $p < 0.05$. Five-year survival analysis was performed by the Kaplan-Meier method; subgroup differences were evaluated using the log-rank test. Multivariate logistic regression was used to quantify independent risk factor contributions. The study was approved by the Ethics Committee of Fergana Public Health Medical Institute (Protocol No. 7, March 12, 2019). All patient data were anonymized prior to analysis, in accordance with the Law of the Republic of Uzbekistan on Healthcare (2019 revision).

Results

Of 1,248 diagnosed EC cases, only 412 (33.0%) were identified at stage I - the most treatable stage. Stage II accounted for 287 cases (23.0%), stage III for 341 (27.3%), and stage IV for 208 (16.7%).

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Stage I detection rates varied significantly by region: Tashkent city - 38.4% (264/687); Fergana - 30.3% (70/231); Andijan - 28.3% (56/198); Namangan - 24.2% (32/132). The inter-regional difference in early-detection rates was statistically significant ($\chi^2 = 14.87$; $p = 0.002$), confirming that geographic location - as a proxy for resource availability - materially influences diagnostic outcomes.

Among 14,360 women enrolled in preventive examination programs, only 6,847 (47.7%) completed the full three-component protocol. The remaining 7,513 women (52.3%) received partial screening, most commonly limited to bimanual examination alone. TVUS was performed in 9,214 women (64.2%); aspiration biopsy in 4,108 (28.6%). Among the 6,847 women completing full-protocol screening, endometrial pathology was detected in 318 cases (4.6%): endometrial hyperplasia without atypia in 127 (1.9%), atypical hyperplasia in 89 (1.3%), and stage IA EC in 102 (1.5%).

Multivariate logistic regression confirmed obesity (BMI ≥30 kg/m²) as the strongest independent EC predictor (OR = 3.84; 95% CI: 2.91-5.07; p <0.001), followed by type 2 diabetes mellitus (OR = 2.76; 95% CI: 2.04-3.74; p <0.001), arterial hypertension (OR = 2.13; 95% CI: 1.62-2.80; p <0.001), nulliparity (OR = 1.89; 95% CI: 1.32-2.70; p = 0.001), and late menopause (age ≥55 years; OR = 1.67; 95% CI: 1.21-2.30; p = 0.002). The metabolic triad - obesity combined with diabetes and hypertension - was present in 387 women (31.0%) and associated with a 6.2-fold EC risk increase versus women with none of these factors (OR = 6.18; 95% CI: 4.33-8.82; p <0.001).

Five-year overall survival differed dramatically by stage: stage I - 91.3%; stage II - 74.8%; stage III - 44.2%; stage IV - 11.6%. Women whose cancer was detected through preventive programs had a significantly higher five-year survival (87.4%) than those presenting symptomatically (52.8%; log-rank p <0.001). The mean diagnostic interval was 4.8 ± 2.1 months in symptomatic versus 0.6 ± 0.3 months in screen-detected cases (p <0.001). Resource assessment revealed that only 2 of 4 facilities (50%) possessed functional hysteroscopy units. Aspiration biopsy kits were consistently available in 3 of 4 centers (75%). Histopathological report turnaround time exceeded the recommended 10-day standard in 68.3% of cases, with a mean processing time of 17.4 ± 4.6 days - a delay directly affecting treatment initiation timelines.

Discussion

The findings of this study expose a measurable and consequential gap between established organizational standards for EC prevention and their actual implementation across Uzbekistan's regional oncological network. The overall stage I detection rate of 33.0% falls substantially below the 60-75% achieved in Western European countries with structured endometrial surveillance programs. This is not attributable to biological differences in tumor presentation but to deficiencies in organizational design.

The inter-regional disparity in early detection - Tashkent 38.4% versus Namangan 24.2% - is particularly significant. It reflects the capital-periphery resource gradient that characterizes post-Soviet healthcare systems and translates directly into a survival disadvantage for women in underserved regions. Closing this gap cannot be achieved through clinical guidelines alone; it requires targeted infrastructure investment and decentralization of diagnostic capacity.

The incomplete screening protocol completion rate of 47.7% is perhaps the most operationally actionable finding of this study. The principal bottleneck was the failure to perform TVUS and aspiration biopsy, attributable to three overlapping causes: equipment shortages, insufficient numbers

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of trained gynecologists in regional centers, and inadequate patient health literacy regarding the importance of preventive examination. All three are modifiable. The finding that full three-component screening detected stage IA EC in 1.5% of asymptomatic women is not a marginal result - it represents a clinically and economically significant yield that justifies sustained investment in screening infrastructure.

The metabolic risk factor profile documented here - with the combined obesity-diabetes-hypertension triad present in 31.0% of cases and associated with a sixfold risk elevation - has direct implications for healthcare organization. Women receiving care for metabolic disorders at endocrinology, cardiology, and general practice facilities represent a high-yield target population for EC screening referrals. Yet no formal interdisciplinary referral pathway for this purpose exists within current Uzbekistan clinical protocols. Establishing such a pathway would require modest bureaucratic effort but could meaningfully expand early-detection coverage without proportional cost increases. The infrastructure deficiencies identified - absent hysteroscopy in 50% of facilities, pathology delays exceeding 14 days in over two-thirds of cases - are not merely inconveniences; they create measurable harm. Each additional week of diagnostic delay corresponds to increased disease progression, rising treatment complexity, and diminished survival probability. The government of Uzbekistan has demonstrated willingness to invest in oncological care through successive health sector reform programs; directing a portion of that investment toward gynecological oncology infrastructure in regional centers is both scientifically justified and operationally feasible. Finally, the survival gap between screen-detected and symptom-presenting cases - 87.4% versus 52.8% at five years - provides the clearest possible argument for accelerating prevention program reform. These numbers make the case not in abstract terms, but in the concrete language of lives that can be saved through organizational change. A national commitment to standardized three-component screening, metabolic risk integration, and regional resource equity would represent a transformative step in Uzbekistan's response to the growing burden of endometrial cancer.

Endometrial cancer prevention in Uzbekistan is currently constrained by incomplete screening coverage, pronounced inter-regional resource disparities, and the absence of interdisciplinary referral pathways for metabolically high-risk women. Organizational reforms - including standardized three-component screening protocols, targeted infrastructure investment, and integration of EC prevention within non-communicable disease management - represent the most evidence-based and achievable strategy for improving early-detection rates and reducing EC mortality nationwide.

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