Submitted: 11 February, 2025 Accepted: 27 April, 2025 Published: 15 June, 2025 DOI:10.22514/ejgo.2025.077

European Journal of Gynaecological Oncology

SYSTEMATIC REVIEW

Prognostic factors and corresponding nursing measures for patients with endometrial cancer: a systematic review and meta-analysis

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Abstract

Backgrounds: Endometrial cancer (EC) is a common gynecological malignant tumor, and its prognosis is affected by many factors. This study aimed to identify the key clinical factors associated with poor prognosis in patients with EC and propose targeted nursing interventions. **Methods**: The relevant literature on prognostic factors for EC patients was retrieved from PubMed, Elsevier and Web of Science, and the quality of the included studies was assessed using the Newcastle-Ottawa Scale (NOS). Meta-analysis of 10 studies (n = 5288 patients) was conducted via STATA 12.0 to evaluate associations between factors and overall survival. **Results**: Significant predictors included age (hazard ratio (HR) = 1.45, 95% confidence interval (CI): 1.10–1.91), history of diabetes (HR = 1.26, 95% CI: 1.02–1.56), abnormal nutritional score (HR = 1.84, 95% CI: 1.16–2.92) and elevated carbohydrate antigen 125 (CA125) levels (HR = 1.80, 95% CI: 1.21–2.69). Body mass index (BMI), metformin use, and neutrophil-to-lymphocyte ratio (NLR) showed no significant prognostic impact. Elderly patients should pay attention to comprehensive assessment and provide psychological support; Nutrition score abnormal patients need to make a weight management plan and reasonably arrange diet counseling; History of diabetes patients should be blood sugar monitoring, optimizing sugar control scheme. **Conclusions**: These findings suggest that age, nutrition score and history of diabetes may lead to poor prognosis in EC patients, and nursing interventions should focus on these factors to improve survival rates and enhance the quality of life of these patients. **The INPLASY Registration**: INPLASY2024110012.

Keywords

Endometrial cancer; Prognosis prediction; Risk factors; Meta-analysis; Targeted nursing

1. Introduction

Endometrial carcinoma (EC) is one of the most prevalent malignancies of the female genital tract, and its incidence has shown a steady increase worldwide in recent years, with particularly high rates observed in European and American countries, where it is now the leading gynecological malignancy [1]. Research has indicated that factors such as an increase in women's average lifespan, shifts in reproductive behaviors, the widespread use of exogenous estrogens, and an age of onset trend toward younger populations in recent years have contributed to this rise [2]. Despite advances in medical technology that enable early detection and diagnosis, EC continues to be associated with factors that adversely affect prognosis, thereby significantly impacting patients' quality of life and survival outcomes [3]. The prognosis of EC is determined by various factors, including clinical stage, pathological type, tumor size, depth of myometrial invasion, extent of local and distant invasion, lymph node metastasis and extrauterine spread [4–6]. While early-stage EC, particularly stage I, is associated with favorable outcomes, with 5-year survival rates exceeding 95% following standardized treatment [7], prognosis deteriorates with advancing disease stage as in advanced stages, patients often develop metastases, which are associated with markedly poor survival outcomes [8].

In addition to staging and pathological features, several high-risk factors contribute to poor prognosis in EC patients, such as older age, late menopause, early menarche, increased levels of endogenous and exogenous estrogens, obesity, diabetes, hypertension and genetic predisposition [9]. These factors not only influence disease progression but also highlight the need for targeted interventions to address their impact on patient outcomes. In this regard, targeted nursing interventions have been shown to play an essential role in managing these poor prognostic factors, as these interventions allow comprehensive assessments of patient conditions, psychological support, effective pain management, nutritional optimization, and assistance with adjuvant therapies such as radiotherapy and chemotherapy. Thus, systematic nursing care may alleviate symptoms, improve quality of life, and potentially extend survival in EC patients.

Herein, we designed this study to systematically evaluate the clinical factors affecting lymph node involvement in EC patients and, based on the findings, propose evidence-based nursing recommendations. These recommendations aim to serve as a scientific basis for improving clinical management and nursing care strategies for patients with EC , particularly by guiding personalized interventions tailored to individual risk profiles such as age, BMI and anemia status.

2. Methods

2.1 Study design

This meta-analysis was conducted following the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), See **Supplementary material** for the checklist. The protocol for the meta-analysis was registered with INPLASY (registration number: INPLASY2024110012), which can be accessed at https://inplasy.com/inplasy-2024-11-0012/.

2.2 Literature search strategy

A systematic and comprehensive search was performed to identify studies investigating poor prognostic factors in EC patients. Searches were conducted in PubMed, Elsevier, and Web of Science databases using the key words included "EC", "prognostic factors", "age" , "BMI","Nutrition score", "anemia", "diabetes", "survival time". The search terms were adjusted to meet the specific requirements of each database. Only articles published between 2014 and 2024 were included to ensure the study's timeliness and relevance. All retrieved articles were managed using EndNote 21 software (Clarivate Analytics, Philadelphia, PA, USA).

2.3 Literature inclusion and exclusion criteria

The literature inclusion criteria were as follows: (a) The study type had to be high-quality clinical research focusing on poor prognostic factors in EC patients, with clearly reported survival data. (b) The study population must have included EC patients with detailed clinical information and relevant demographic or clinical data. (c) Data completeness was necessary, including comprehensive datasets with baseline characteristics and specific prognostic factors. (d) The study quality had to meet a high standard, with rigorous methodologies, reliable data collection processes and valid conclusions.

Studies were excluded if they (a) had poor methodological quality, (b) did not investigate prognostic factors in EC patients and (c) contained incomplete datasets or outcome measures.

2.4 Literature screening and data extraction

Before data extraction, the researchers were provided professional training to ensure a thorough understanding of the data extraction process and associated methods. During the research process, regular discussions were organized among the researchers to address any issues or challenges encountered. The data extraction process was conducted independently by two researchers and subsequently double-checked to ensure accuracy and consistency.

The full text of each included study was reviewed to extract key information, such as the authors, publication year, study type, study population and sample size. Specific factors associated with poor prognosis reported in the literature were also identified, with a focus on preoperative clinical baseline characteristics of EC patients, such as age, BMI, preoperative anemia, diabetes and metformin use. Additionally, statistical data such as odds ratios (ORs), hazard ratios (HRs), and their corresponding 95% confidence intervals (CIs) for each poor prognostic factor were extracted.

After the initial extraction, the data were meticulously reviewed to ensure completeness and accuracy. In cases where disagreements arose between the two primary researchers during the literature screening process, a third researcher was consulted, and a consensus was reached through collective discussion and negotiation, ensuring that the screening results were objective, fair and consistent.

2.5 Literature quality evaluation

The quality of the included studies was assessed using the Newcastle-Ottawa Scale (NOS), which is a tool designed to evaluate studies across three categories: selection, comparability and outcome. Each item in the scale, except for comparability (which can receive up to 2 stars), was assigned a maximum of 1 star. The total score ranged from 0 to 9 stars, with higher scores reflecting better study quality. Studies that scored $\geq$6 were classified as high quality.

2.6 Statistical analysis

The statistical analysis was conducted using STATA 12 (StataCorp LLC, College Station, TX, USA) to synthesize the results from the included studies. The association between prognostic risk factors for EC and overall survival (OS) was evaluated by calculating pooled HRs or ORs along with their 95% CIs, depending on the data reported in the studies. Specifically, when the HR or OR was greater than 1 and its 95% CI did not include 1, this indicated that the overexpression of the risk factor might be associated with shorter survival. Heterogeneity among the included studies was quantified using the Cochran Q test and the Higgins I-squared (I^2) statistic. An I^2 value greater than 50% and a Q-test p-value less than 0.10 indicated significant heterogeneity. In such cases, a random-effects model (REM) was applied to combine the HRs and their 95% CIs. If heterogeneity was not significant, a fixed-effects model (FEM) was used for data synthesis. Sensitivity analyses were conducted by excluding each study sequentially to assess the stability of pooled results. Publication bias was assessed using the Begg test. For this study, a p-value of less than 0.05 was considered the threshold for statistical significance.

3. Results

3.1 Eligible studies and characteristics

A total of 953 articles were initially retrieved for this study, including 400 from Elsevier, 206 from PubMed and 347 from Web of Science. After removing duplicate articles, 710 articles remained. After reviewing their titles and abstracts, 574 articles were excluded due to lack of direct relevance to our criteria. Then, the full texts of the remaining 136 articles were assessed, following which 126 articles were excluded, leading to 10 articles included in the final study analysis (Fig. 1).

The included 10 studies involved a total of 5288 patients, with an average age ranging from 56.0 to 71.0 years. Most of the patients had a BMI exceeding 28 kg/m^2 and were classified as obese. These studies were conducted in various countries, including the United States, Germany, Italy, China and others. Further details on the included studies are provided in Table 1 (Ref. [10–19]).

The quality of the included studies was evaluated using the Newcastle-Ottawa Scale (NOS). All 9 studies achieved NOS scores greater than 6, indicating that they were of high quality. Therefore, the overall quality of the included literature in this meta-analysis was deemed relatively high.

3.2 Factors influencing EC patient prognosis

3.2.1 Age

Seven studies [13–19] assessed the impact of age on the OS of patients with EC. Substantial heterogeneity was observed (I^2 = 86.6%, $p < 0.001$), and the random-effects model was used. The combined analysis yielded a hazard ratio (HR) of 1.45 (95% CI: 1.10–1.91, $z = 2.758$, $p = 0.006$), indicating that older EC patients had a significantly worse prognosis (Fig. 2).

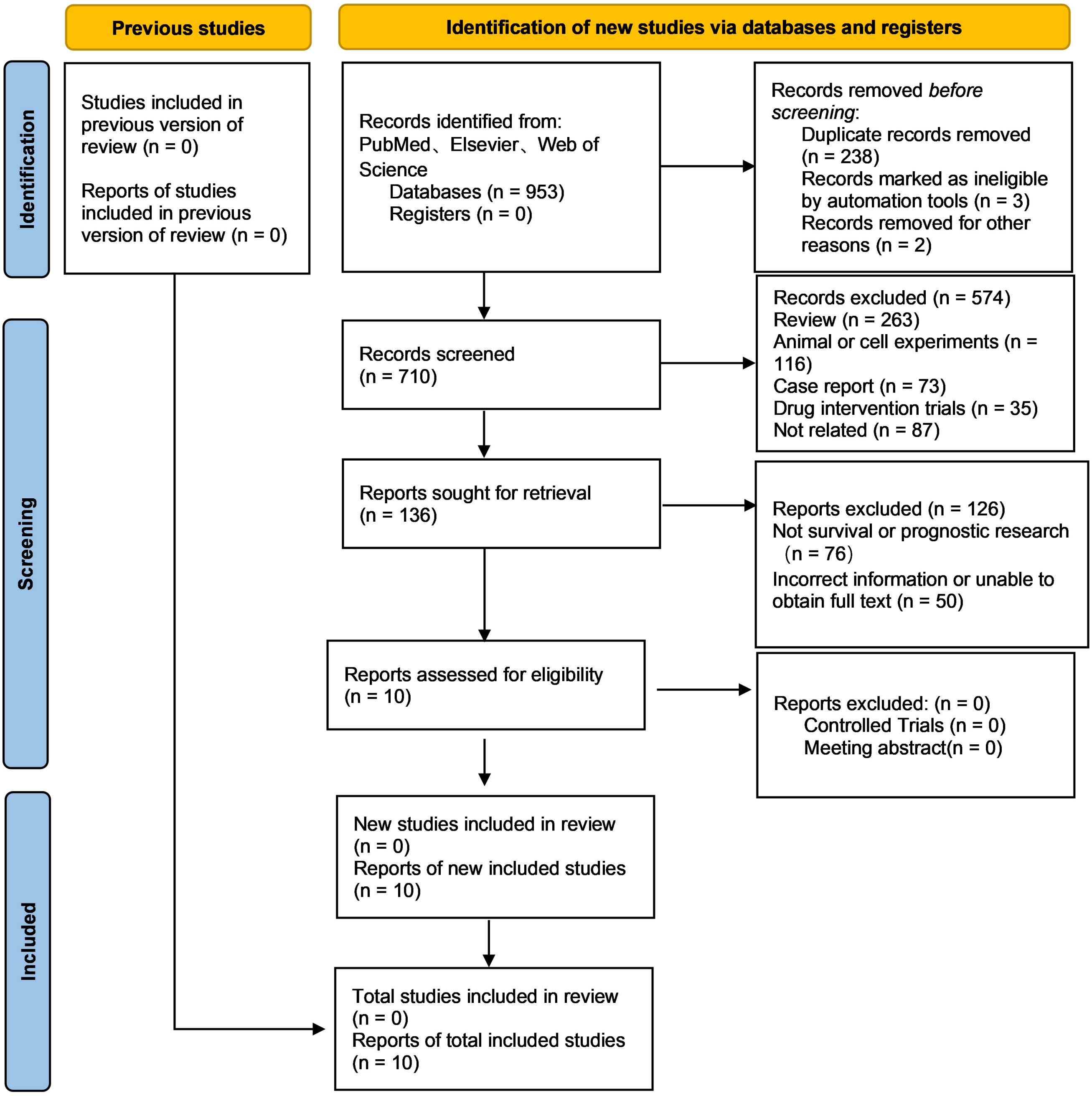

FIGURE 1. The process of literature screening and inclusion.

TABLE 1. Basic characteristics of the included articles.

Author and publication year	Age (yr)	BMI (kg/m^2)	Sample (n)	FIGO-Stage ≥III	FIGO grade ≥3	Research design type	Country	Outcome indicators
Al Hilli 2016 [10]	64.6 ± 11.5	33.4 ± 9.4	1303	316 (24.30)	359 (27.60)	Retrospective cohort study	U.S.A	HR
Anic 2022 [11]	71.0 ± 7.4	-	152	22 (14.47)	30 (19.60)	Retrospective cohort study	GERMANY	HR
Cummings 2015 [12]	60.7 ± 6.8	-	733	108 (14.73)	151 (20.60)	Retrospective cohort study	U.K	HR
Donkers 2021 [13]	70.0 ± 58.0	29.4 ± 39.4	176	68 (38.63)		Retrospective cohort study	BRITAIN	HR
Kiuchi 2019 [14]	-	-	32	ALL IVB		Retrospective cohort study	JAPAN	HR
Kolehmainen 2020 [15]	66.0 (60.0–73.0)	28.5 (24.3–33.2)	515	71 (13.79)	79 (15.34)	Retrospective cohort study	FINLAND	HR
Lemanska 2015 [16]	65.0	35.0	126	7 (6.54)	9 (8.41)	Retrospective cohort study	POLAND	HR
Li 2021 [17]	56.0 (51.0–61.0)	24.2 (22.5–25.4)	1038	123 (11.85)	167 (16.08)	Retrospective cohort study	CHINA	HR
Seebacher 2016 [18]	65.3 ± 15.2	29.0 ± 9.5	465	121 (26.02)	91 (19.60)	Retrospective cohort study	AUSTRIA	HR
Yuan 2023 [19]	-	-	785	80 (10.20)	85 (10.80)	Retrospective cohort study	CHINA	HR

Note: HR: Hazard Ratio; BMI: Body Mass Index; FIGO: The International Federation of Gynecology and Obstetrics.

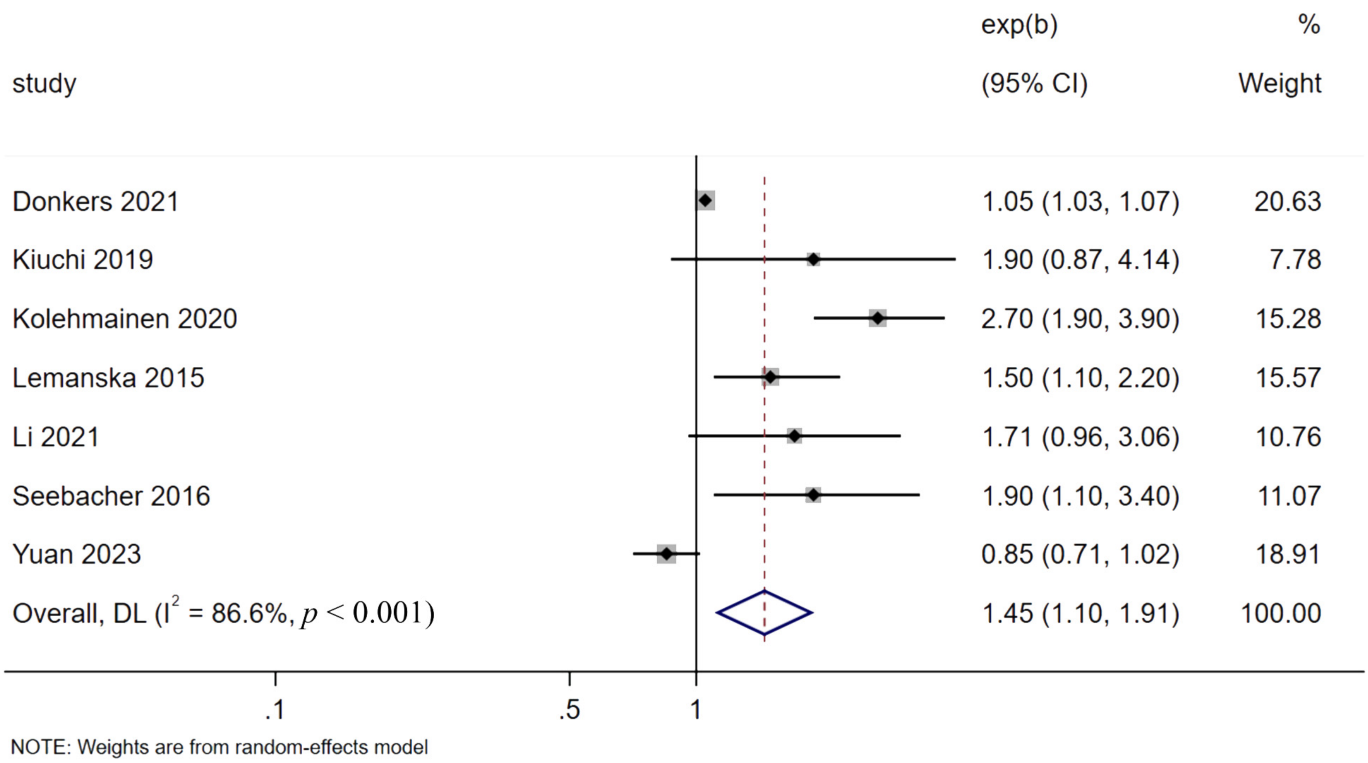

FIGURE 2. Forest plot showing the impact of age on the prognosis of EC patients. CI: confidence interval; DL: DerSimonian and Laird.

3.2.2 Body mass index (BMI)

Four studies [13, 15, 16, 19, 20] investigated the effect of BMI on the prognosis of EC patients. Moderate heterogeneity was identified ($I^2 = 73.8\%$, $p = 0.009$), and a random-effects model was applied. The obtained pooled HR was 1.19 (95% CI: 0.47–3.02, $z = 1.180$, $p = 0.238$), demonstrating that BMI did not had a significant impact on the prognosis of EC patients (Fig. 3).

3.2.3 History of diabetes

Four studies [10, 13, 15, 16] examined the influence of a history of diabetes on the prognosis of EC patients. Low heterogeneity was observed ($I^2 = 3.9\%$, $p = 0.373$), and a fixed-effects model was applied. The combined result showed an HR of 1.26 (95% CI: 1.02–1.56, $z = 2.104$, $p = 0.035$), indicating that a history of diabetes have a significant impact on the prognosis of EC patients (Fig. 4).

3.2.4 Metformin use

Three studies [10, 16, 18] evaluated the effect of metformin use on the prognosis of EC patients. Moderate heterogeneity was observed ($I^2 = 60.4\%$, $p = 0.080$), and a random-effects model was employed. The pooled HR was 1.09 (95% CI: 0.53–2.25, $z = 0.232$, $p = 0.816$), suggesting that metformin use did not significantly impact the prognosis of EC patients (Fig. 5).

3.2.5 Nutritional score

Three studies [14, 17, 19] assessed the role of nutritional scores in the prognosis of EC patients. Moderate heterogeneity was identified ($I^2 = 55.2\%$, $p = 0.107$), and a random-effects model was used. The pooled analysis resulted in an HR of 1.84 (95% CI: 1.16–2.92, $z = 2.611$, $p = 0.009$), indicating that nutritional score have a significant impact on prognosis (Fig. 6).

3.2.6 Preoperative anemia

Two studies evaluated the influence of preoperative anemia on the prognosis of EC patients. High heterogeneity was observed ($I^2 = 90.7\%$, $p = 0.001$), prompting the use of a random-effects model. The pooled HR was 0.77 (95% CI: 0.14–4.29, $z = -0.301$, $p = 0.763$), indicating that preoperative anemia did not have a significantly impacted the prognosis of EC patients (Fig. 7).

3.2.7 CA125

Two studies evaluated the influence of CA125 on the prognosis of EC patients. Low heterogeneity was observed ($I^2 = 0.0\%$, $p = 0.560$), prompting the use of a fixed-effects model. The pooled HR was 1.80 (95% CI: 1.21–2.69, $z = 2.882$, $p = 0.004$), indicating that CA125 have a significant impact on prognosis of EC patients (Fig. 8).

3.2.8 NLR

Four studies evaluated the influence of NLR on the prognosis of EC patients. High heterogeneity was observed ($I^2 = 85.3\%$, $p < 0.001$), prompting the use of a random-effects model. The pooled HR was 1.74 (95% CI: 0.89–3.42, $z = 1.617$, $p = 0.106$), indicating that NLR not significantly impacted the prognosis of EC patients (Fig. 9).

3.2.9 PLR

Two studies evaluated the influence of Platelet-to-Lymphocyte Ratio (PLR) on the prognosis of EC patients. High heterogeneity was observed ($I^2 = 93.0\%$, $p < 0.001$), prompting the use of a random-effects model. The pooled HR was 1.71 (95% CI: 0.82–3.58, $z = 1.431$, $p = 0.153$), indicating that PLR not significantly impacted the prognosis of EC patients (Fig. 10).

4. Discussion

4.1 Factors influencing poor prognosis EC patients

The prognosis of EC patients is affected by various factors, particularly basic clinical characteristics, which play an essential role in guiding effective nursing care. These factors help nursing teams develop tailored interventions, including psy-

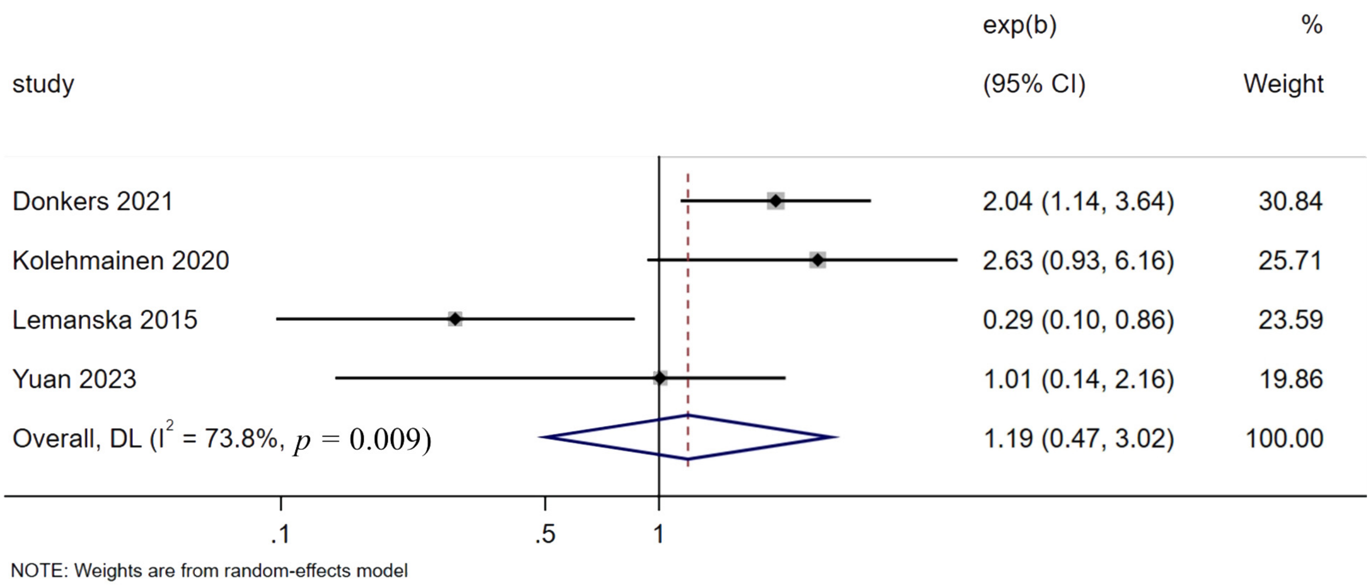

FIGURE 3. Forest plot showing the impact of BMI on the prognosis of EC patients. CI: confidence interval; DL: DerSimonian and Laird.

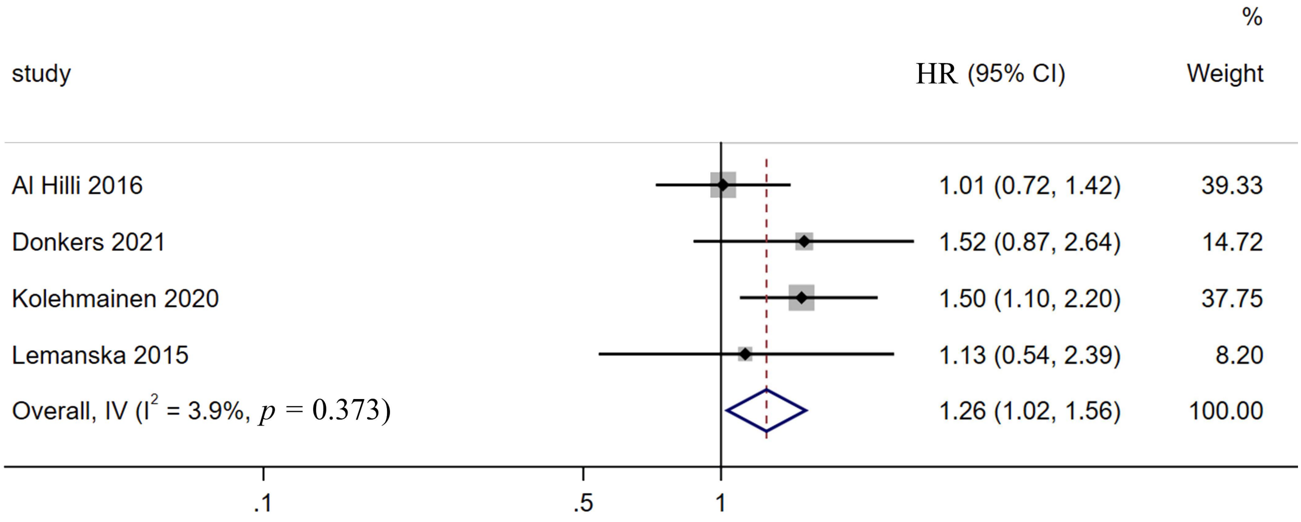

FIGURE 4. Forest plot showing the impact of a history of diabetes on the prognosis of EC patients. CI: confidence interval; IV: Inverse variance; HR: hazard ratio.

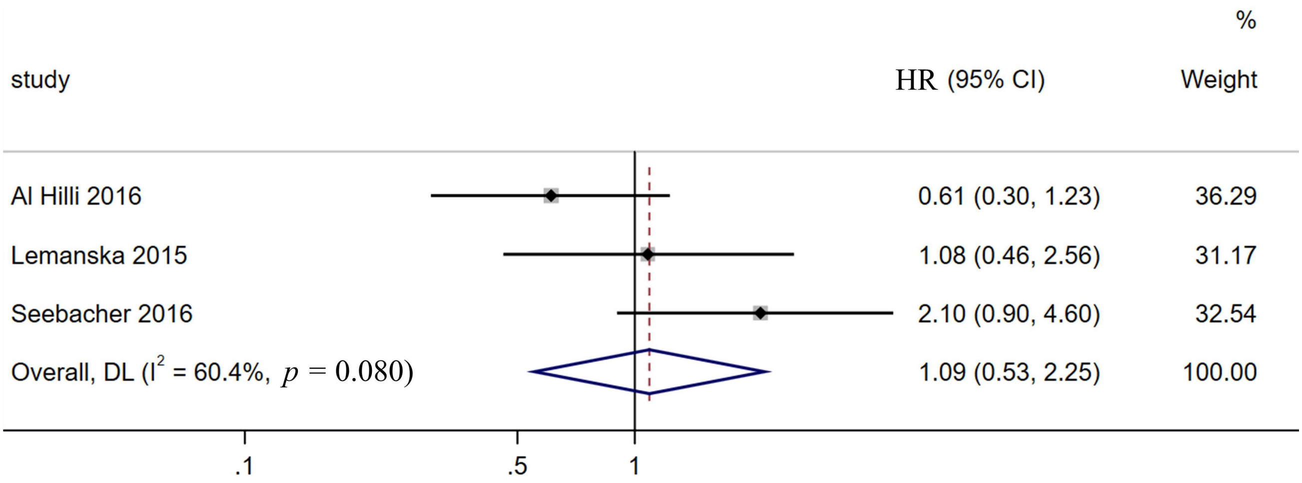

FIGURE 5. Forest plot showing the impact of metformin use on the prognosis of EC patients. CI: confidence interval; DL: DerSimonian and Laird; HR: hazard ratio.

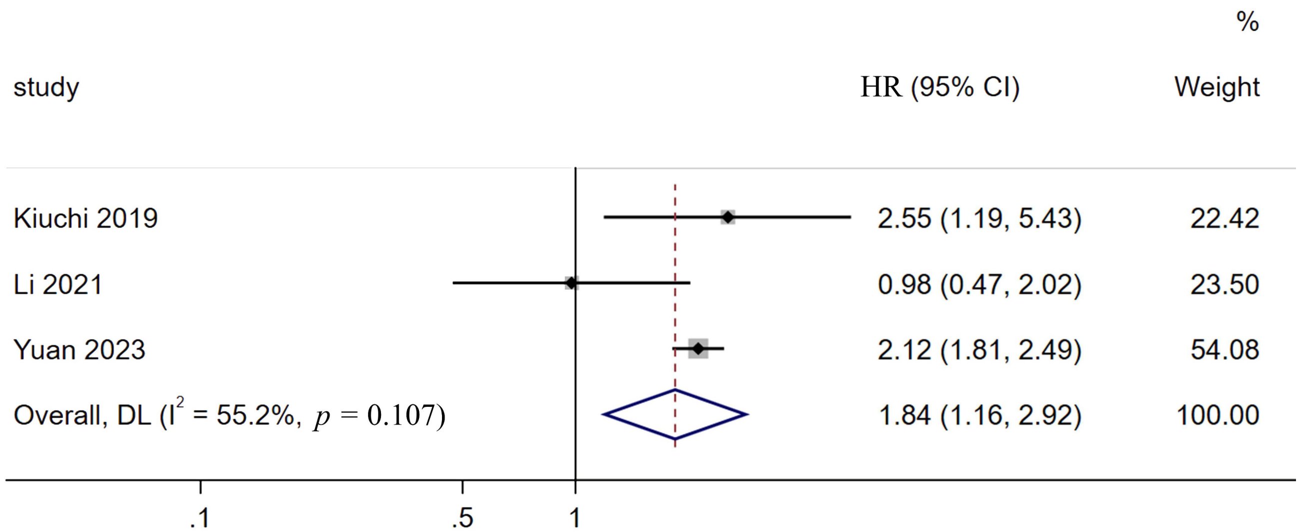

FIGURE 6. Forest plot showing the impact of nutritional score on the prognosis of EC patients. CI: confidence interval; DL: DerSimonian and Laird; HR: hazard ratio.

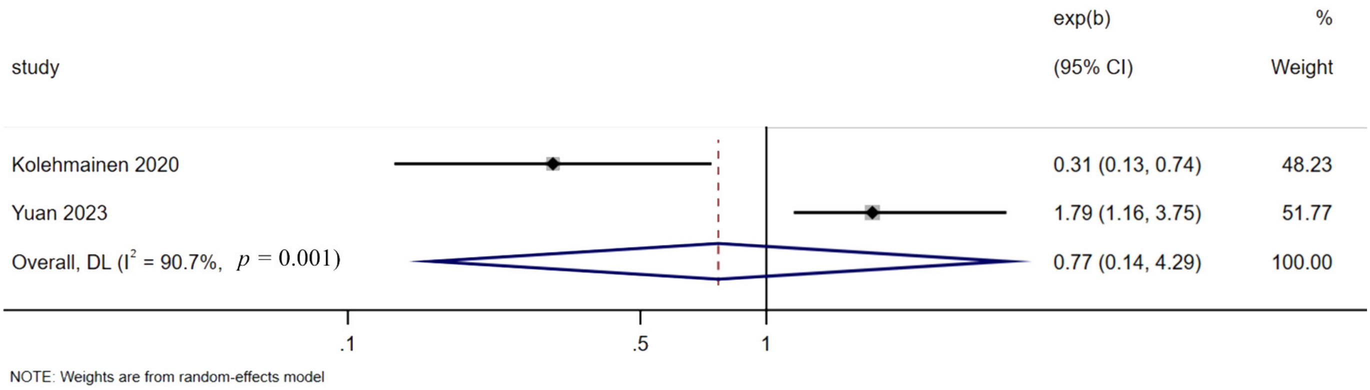

FIGURE 7. Forest plot of the impact of preoperative anemia on the prognosis of EC patients. CI: confidence interval; DL: DerSimonian and Laird.

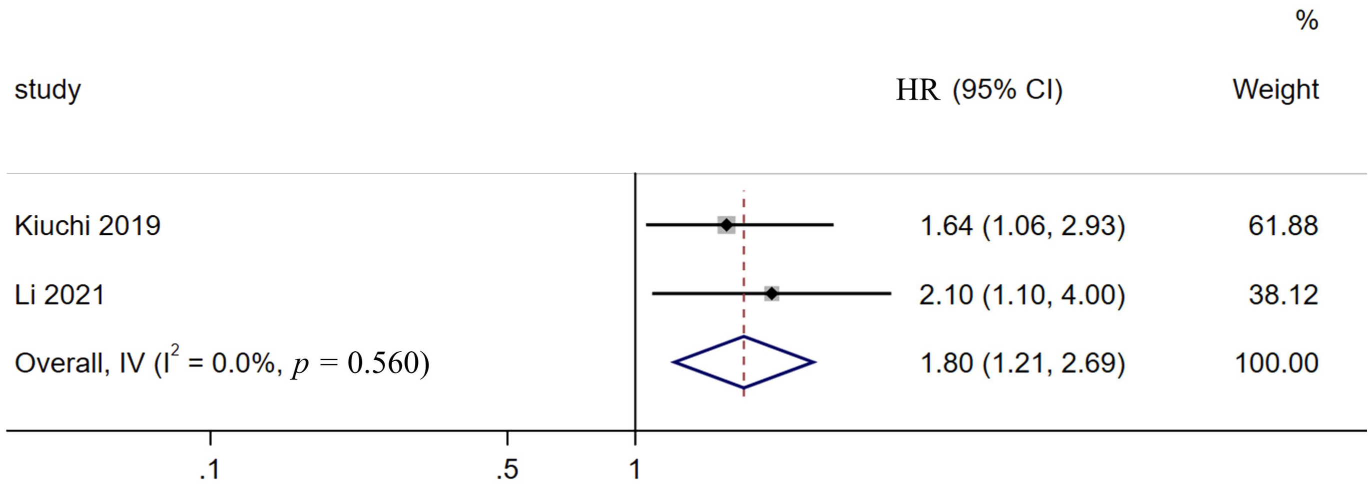

FIGURE 8. Forest plot of the impact of CA125 on the prognosis of EC patients. CI: confidence interval; IV: Inverse variance; HR: hazard ratio.

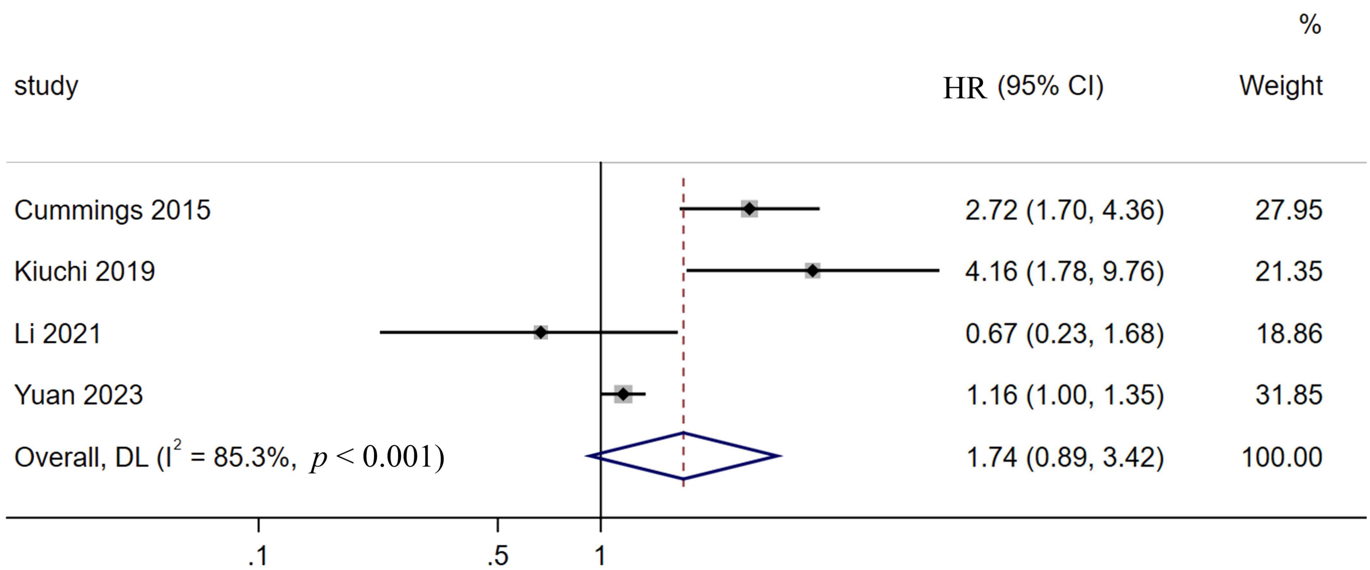

FIGURE 9. Forest plot of the impact of NLR on the prognosis of EC patients. CI: confidence interval; DL: DerSimonian and Laird; HR: hazard ratio.

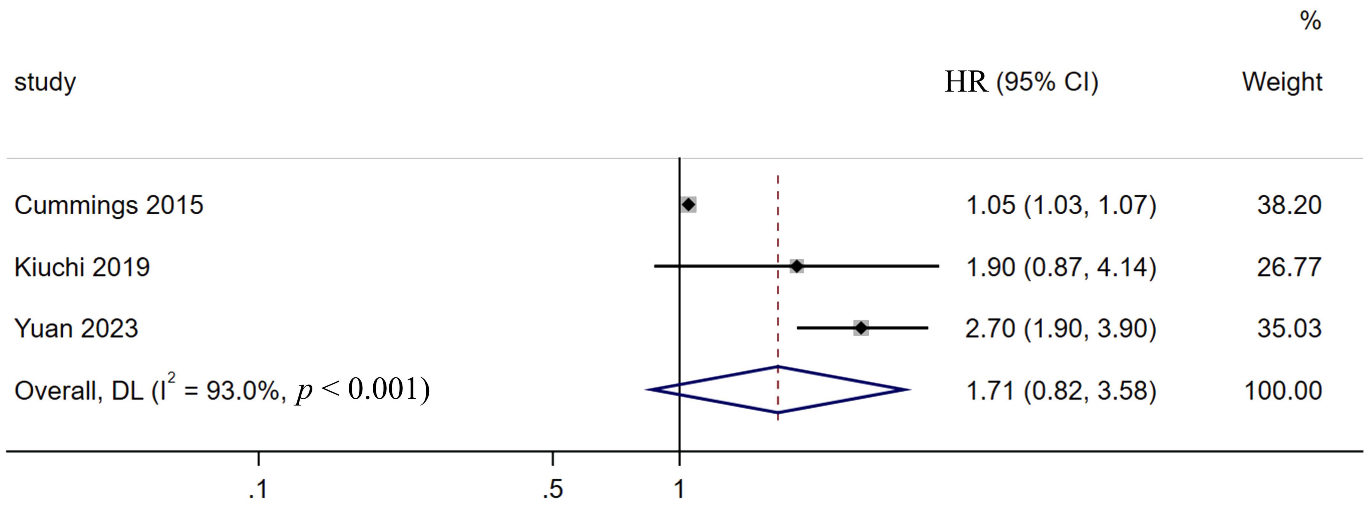

FIGURE 10. Forest plot of the impact of PLR on the prognosis of EC patients. CI: confidence interval; DL: DerSimonian and Laird; HR: hazard ratio.

chological support, daily care, pain management, prevention of complications and rehabilitation guidance. Although meta-analyses have identified molecular biomarkers such as L1 cell adhesion molecule [21], instability [22], Catenin Beta 1 exon 3 mutation [23] and Programmed Death-Ligand 1 expression [24], as well as pathological features like primary tumor size >20 mm [25], as significant predictors of prognosis, this study focuses on basic clinical factors such as the impact of age, BMI, diabetes history and preoperative anemia on EC prognosis.

The results of meta-analysis in this paper show that patients' age, nutritional score and diabetes history are risk factors for poor prognosis (shortened overall survival) of Meta-analysis patients. Preoperative anemia has no significant effect on the prognosis of patients with EC, which may be related to the fact that the progress of EC is mainly dominated by tumor biological characteristics (such as staging, grading and molecular typing), and the pathological effects of anemia are covered up by more direct prognostic factors such as metabolic abnormality and inflammatory state. The results of this study demonstrate that older EC patients experience poorer prognoses, as indicated by an HR of 1.45 (95% CI: 1.10–1.91, $p < 0.001$). Advanced age has been associated with shorter survival in EC patients [26]. The effect of age on postoperative prognosis depends on the cutoff values used; for instance, patients with postoperative recurrence have been found to have a median age of 71 years compared to 69 years for those without recurrence. Furthermore, the risk of recurrence increases by 1.29 times for every decade of age [27]. Similarly, older age is positively correlated with all-cause mortality [28]. Younger patients generally present with fewer comorbidities, better treatment tolerance and improved survival outcomes. Age also affects estrogen levels, which have a direct impact on the progression of EC [29].

Nutritional score reflects the nutritional status of patients. Too high nutritional score can lead to obesity, which is closely related to the occurrence of EC [30], possibly due to metabolic reprogramming associated with excess adipose tissue [31]. However, the impact of obesity on EC prognosis remains controversial, with mixed findings regarding its influence on OS and progression-free survival (PFS) [32–34]. Of note, BMI alone may not fully represent the actual impact of obesity. In this regard, visceral-to-subcutaneous fat ratio has been shown to be a more reliable predictor of both PFS [35, 36] and EC risk [37]. Additionally, nutritional status, reflected in indices such as the prognostic nutritional index [38], is influenced by dietary patterns [39] and can affect patient outcomes. BMI alone may not fully capture the metabolic impact of obesity. Alternative markers such as visceral-to-subcutaneous fat ratio or insulin resistance indices may provide more accurate prognostic insights. Therefore, for EC patients with abnormal nutritional score, in addition to routine treatment, attention should be paid to weight control and lifestyle improvement to improve the treatment effect and prognosis.

The findings of this study indicate that diabetes history is an independent prognostic factor in EC patients, which is of significant importance [40]. Research has shown that diabetes history is an independent predictor of early recurrence in EC patients [41]. A large-scale, multicenter study in China revealed that the 5-year OS of patients with early recurrence was significantly shorter than that of patients with late recurrence [42]. Therefore, diabetes history is an independent predictor affecting postoperative OS in EC patients. The chronic hyperglycemic state and insulin resistance caused by diabetes can activate the insulin/insulin-like growth factor-1 signaling pathway, promoting tumor cell proliferation and inhibiting apoptosis. Meanwhile, hyperglycemia-induced oxidative stress and the accumulation of advanced glycation end products can trigger persistent inflammation in the tumor microenvironment, promoting angiogenesis and stromal remodeling [43]. Furthermore, the immunosuppression associated with diabetes (such as T cell dysfunction and polarization of macrophages towards the M2 tumor-promoting phenotype) can weaken the anti-tumor immune response, accelerating tumor metastasis and drug resistance. The synergistic effects of the metabolic-inflammatory-immune network make EC in diabetic patients more invasive, significantly worsening the prognosis even after adjusting for factors such as tumor stage and grade.

Serum biomarkers play a crucial role in tumor diagnosis and prognosis evaluation. In recent years, systemic inflammation-related markers in the blood, which reflect the inflammatory status in the tumor microenvironment and changes in the host immune response, have received extensive attention. This study demonstrates that CA125 (1.80 (95% CI: 1.21–2.69, z = 2.882, p = 0.004, p = 0.560)) is an independent risk factor for poor prognosis in endometrial cancer patients, indicating that inflammation and immune responses play a pivotal role in tumor development and progression. The expression level of CA125 in endometrial cancer not only correlates with tumor burden but also profoundly reflects the dynamic equilibrium of the inflammatory-immune network within the tumor microenvironment [44]. CA125 forms a bidirectional tumor-promoting loop with the tumor microenvironment through inflammatory factor regulatory mechanisms: On the one hand, pro-inflammatory factors such as Interleukin (IL)-6 and Tumor Necrosis Factor (TNF)-α secreted by macrophages and neutrophils directly stimulate tumor cells to upregulate CA125 secretion, which in turn activates the Nuclear Factor (NF)-κB pathway to amplify inflammatory cascade reactions [45]. On the other hand, CA125 weakens the host's anti-tumor immune response by binding to inhibitory receptors on NK cells and expanding Regulatory T Cells/Myeloid-Derived Suppressor Cells populations. Simultaneously, inflammation mediated by CA125 accelerates tumor invasion and metastasis by remodeling the extracellular matrix and promoting angiogenesis [46]. This study confirms the prognostic value of CA125, suggesting that targeting the CA125-MUC16 signaling axis or combining anti-inflammatory therapies (such as IL-6 inhibitors) may disrupt the inflammatory tumor-promoting cycle and provide new strategies for improving the prognosis of endometrial cancer patients.

4.2 Targeted nursing interventions for EC patients

In the nursing care of patients with EC, it is essential to consider individual factors such as age, BMI and anemia status when designing effective and personalized nursing strategies. See Table 2 for details.

Nursing interventions for elderly EC patients should begin with a comprehensive assessment of their physical and mental health, including evaluations of underlying diseases, physical fitness and psychological state, based on which individualized nursing plans should be developed to ensure both the feasibility and safety of treatment regimens. Continuous monitoring of vital signs, such as heart rate, blood pressure and respiration, is necessary to detect and manage complications like infections and thrombosis at an early stage. Professional psychological support, including emotional counseling and cognitive restructuring, should be provided to build patient confidence, alleviate anxiety, and improve treatment adherence.

For Nutrition score abnormal patients, weight management should be a key focus of nursing care. A personalized diet plan should be developed to reduce the intake of high-calorie and high-fat foods while increasing the consumption of vegetables, fruits and whole grains to improve nutritional status and control weight. Individualized exercise programs tailored to the patient's physical fitness, such as low-intensity aerobic exercises and strength training, can enhance physical fitness and metabolic status. Complications such as hypertension and diabetes should be closely monitored, and treatment regimens should be adjusted promptly to minimize their negative impact on prognosis.

Hyperglycemia and insulin resistance aggravate inflammation and inhibit immune function. It is necessary to strictly monitor blood sugar (target fasting $\leq$7 mmol/L), prevent infection and delay wound healing, and coordinate endocrinology department to optimize sugar control scheme. Recent studies have highlighted the importance of targeted nursing interventions in improving compliance with oral oncological treatments and managing treatment-related side effects. Tailored educational programs and close monitoring by nursing staff have been shown to significantly enhance adherence rates among patients undergoing prolonged oral chemotherapy. Furthermore, proactive management of side effects such as nausea, fatigue and mucositis through individualized care plans has been associated with improved treatment outcomes and reduced treatment discontinuation rates. These findings underscore the potential of integrating targeted nursing interventions into clinical practice to address both the immediate and long-term needs of patients, as they not only help optimize treatment adherence but also contribute to improved quality of life and long-term treatment success in EC patients. Future studies should explore protocols for integrating these interventions into multidisciplinary care pathways, including training programs for nursing staff and patient education materials.

5. Conclusions

This systematic review and meta-analysis identified age, Nutritional score and diabetes history as key clinical factors influencing the prognosis of patients with EC, which could be used as a reference for providing personalized nursing interventions to enhance patient outcomes. However, there were several limitations that should be considered. First, despite synthesizing data from 16 studies, the heterogeneity among the included studies may have influenced the robustness of the conclusions. Second, the proposed targeted nursing interventions have not yet been validated in clinical settings.

TABLE 2. Proposed targeted nursing interventions based on prognostic factors.

Prognostic Factor	Nursing Intervention
Age	Comprehensive geriatric assessment, psychological support
Nutrition score	Protein/trace elements, enteral nutrition support
Preoperative Anemia	Blood sugar monitoring, optimizing sugar control scheme

Future research should focus on including a broader range of relevant studies to define better the clinical factors affecting EC prognosis. Additionally, efforts should be made to optimize the proposed nursing interventions and validate their effectiveness through clinical implementation, which could contribute to developing evidence-based nursing practices to improve the survival and quality of life of patients with EC. Future research should investigate long-term outcomes of precision nursing programs and biomarker-guided interventions.

AVAILABILITY OF DATA AND MATERIALS

The authors declare that all data supporting the findings of this study are available within the paper and any raw data can be obtained from the corresponding author upon request.

AUTHOR CONTRIBUTIONS

YHX, LLC, XLQ—designed the study and carried them out. YHX, XLQ, LLC, TWG, JYW—supervised the data collection; analyzed the data; interpreted the data. YHX, LLC—prepared the manuscript for publication and reviewed the draft of the manuscript. All authors have read and approved the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This article contains no investigations on human participants or animals by any of the authors.

ACKNOWLEDGMENT

Not applicable.

FUNDING

This research received no external funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

SUPPLEMENTARY MATERIAL

Supplementary material associated with this article can be found, in the online version, at https://oss.ejgo.net/files/article/1933395748543447040/attachment/Supplementary%20material.docx.

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How to cite this article: Yuhong Xu, Xueling Qi, Tianwei Gao, Jianying Wang, Lili Chai. Prognostic factors and corresponding nursing measures for patients with endometrial cancer: a systematic review and meta-analysis. European Journal of Gynaecological Oncology. 2025; 46(6): 23-33. doi: 10.22514/ejgo.2025.077.