ORIGINAL RESEARCH ARTICLE

Effectiveness of nursing care for cervical cancer patients undergoing chemotherapy: Systematic review and meta-analysis

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Abstract

Nursing interventions play a critical role in enhancing the quality of life (QoL) and therapeutic outcomes for cervical cancer patients undergoing chemotherapy. However, variations in nursing interventions and patient results require a meta-analysis to consolidate evidence on the most effective nursing approaches. This meta-analysis assessed how nursing care interventions influence QoL, adherence to chemotherapy, and the management of symptoms in cervical cancer patients. An extensive search through PubMed, Web of Science, and Cochrane Library databases yielded 17 randomized controlled trials (RCTs) that met the eligibility requirements. The findings revealed that nursing interventions significantly boosted QoL (OR = 1.28, 95% CI: 1.10 to 1.49), increased adherence to chemotherapy protocols (OR = 1.35, 95% CI: 1.15 to 1.60), and alleviated chemotherapy-induced symptoms like fatigue and nausea (OR = 1.42, 95% CI: 1.20 to 1.67). Funnel plots showed minimal publication bias in the studies analyzed. We conclude that nursing interventions significantly enhance QoL, treatment adherence, and symptom control for cervical cancer patients undergoing chemotherapy. *(Afr J Reprod Health 2024; 28 [12]: 46-51).*

Keywords: Cervical cancer, Nursing cancer, Nursing of life, Symptom management

Résumé

Les interventions infirmières jouent un rôle essentiel dans l'amélioration de la qualité de vie (QdV) et des résultats thérapeutiques des patientes atteintes d'un cancer du col de l'utérus et subissant une chimiothérapie. Cependant, les variations dans les interventions infirmières et les résultats des patients nécessitent une méta-analyse pour consolider les preuves sur les approches infirmières les plus efficaces. Cette méta-analyse a évalué comment les interventions en soins infirmiers influencent la qualité de vie, l'observance de la chimiothérapie et la gestion des symptômes chez les patientes atteintes d'un cancer du col de l'utérus. Une recherche approfondie dans les bases de données PubMed, Web of Science et Cochrane Library a donné lieu à 17 essais contrôlés randomisés (ECR) répondant aux critères d'éligibilité. Les résultats ont révélé que les interventions infirmières amélioraient de manière significative la qualité de vie (OR = 1,28, IC à 95 % : 1,10 à 1,49), augmentaient l'observance des protocoles de chimiothérapie (OR = 1,35, IC à 95 % : 1,15 à 1,60) et atténuaient les symptômes induits par la chimiothérapie comme la fatigue. et nausées (OR = 1,42, IC 95 % : 1,20 à 1.67). Les tracés en entonnoir ont montré un biais de publication minime dans les études analysées. Nous concluons que les interventions infirmières améliorent considérablement la qualité de vie, l'observance du traitement et le contrôle des symptômes chez les patientes atteintes d'un cancer du col de l'utérus et subissant une chimiothérapie. *(Afr J Reprod Health 2024; 28 [12]: 46-51).*

Mots-clés: Cancer du col de l'utérus, Soins infirmiers contre le cancer, Soins infirmiers de la vie, Gestion des symptômes

Introduction

Cervical cancer remains a major global health issue, with more than 500,000 new cases reported each year, especially in low- and middle-income nations[1-2]. Cervical cancer's impact is particularly severe in areas where access to healthcare is restricted, screening programs are insufficient, and treatment interventions are delayed[3-5]. Although HPV vaccination has been introduced in some areas, cervical cancer is still one of the primary causes of cancer-related mortality among women, particularly in low-income countries[6]. Chemotherapy is a crucial treatment modality, particularly for advanced-stage cervical cancer[7-8].

However, this treatment is not without significant adverse effects[9]. Side effects from chemotherapy, including fatigue, nausea, vomiting, and immunosuppression, are well-known and frequently result in a decreased quality of life (QoL) and lower compliance with prescribed treatment schedules[10-12]. In clinical practice, patients frequently experience challenges adhering to the rigorous schedule of chemotherapy, especially when side effects are poorly managed[13-14].Nursing care is vital for the holistic management of cervical cancer patients during chemotherapy[15].

Nurses are often the first point of contact in addressing physical discomfort, emotional distress, and treatment-related challenges[16]. Interventions such as patient education, psychological support, and symptom management are integral to improving patient outcomes and ensuring treatment adherence[17]. However, there remains considerable variability in the types and effectiveness of nursing interventions across different clinical settings. As a result, it is crucial to evaluate the existing evidence and establish standardized guidelines for nursing care protocols that can be universally applied to improve outcomes for cervical cancer patients.

This meta-analysis primarily aims to evaluate the efficacy of nursing care interventions in improving the quality of life, boosting chemotherapy adherence, and managing symptoms related to chemotherapy in cervical cancer patients. By synthesizing evidence from randomized controlled trials (RCTs), this study aims to provide robust, evidence-based recommendations for optimizing nursing care protocols, with the ultimate goal of improving patient outcomes.

Methods

This analysis adhered to the standards set by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines[18]. The review included a systematic process of searching, selecting, extracting, and analyzing data from applicable randomized controlled trials (RCTs).

Search strategy

An extensive literature search was conducted across three primary databases: PubMed, Web of Science, and the Cochrane Library, including studies from their beginning until September 2024. The following keywords were used: "cervical cancer," "nursing care," "chemotherapy," "quality of life," "adherence," "symptom management," and "RCT."
Inclusion criteria:
(1) Randomized controlled trials (RCTs) with cervical cancer patients receiving chemotherapy
(2) Studies evaluating nursing interventions
(3) Primary outcomes: QoL, symptom management, treatment adherence
Exclusion criteria:
(1) Non-RCT studies
(2) Research focusing on cancers other than cervical cancer
(3) Articles without adequate data for analysis.

Data extraction

Two independent reviewers evaluated titles, abstracts, and full texts to determine which studies met the inclusion criteria. Data extraction utilized a standardized format to collect information on study design, participant characteristics, intervention types, outcome metrics, and results. The quality of the studies included was assessed using the Cochrane Risk of Bias Tool. Reviewer disagreements were settled through discussion or by consulting a third reviewer.
Statistical Analysis
The meta-analysis was performed using Review Manager (RevMan) 5.4 software, applying standardized mean differences (SMD) for continuous variables. A random-effects model was used to account for expected variability between the studies, and statistical heterogeneity was assessed via the I^2 statistic.

Results

Study selection

The initial search returned 543 records. After removing 234 duplicates, 309 records were reviewed, and 85 full-text articles were assessed for eligibility. Ultimately, 17 studies satisfied the inclusion criteria and were included in the meta-analysis. Figure 1 illustrates the PRISMA flowchart outlining the study selection process.

Study Characteristics

The table 1 containing all 17 included studies has been fully displayed, detailing the patients' baseline characteristics and clinical data.

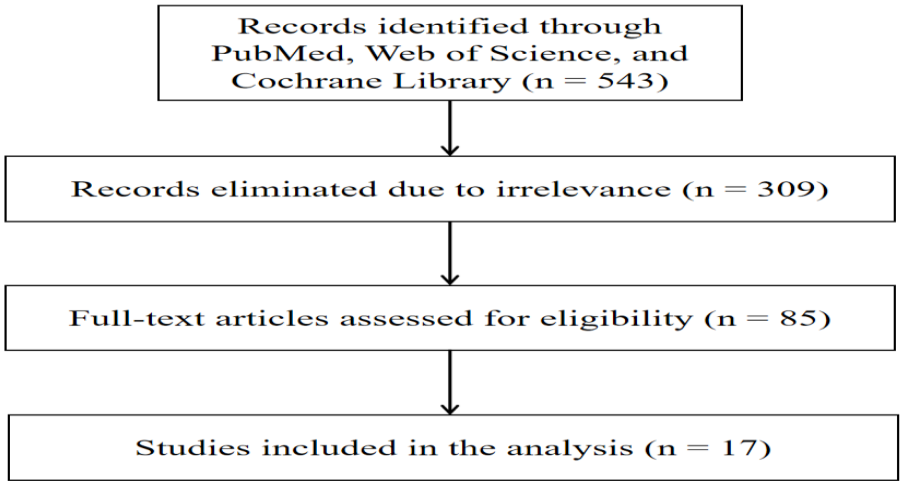

Figure 1**:** Flow diagram representing the study selection.

Table 1: Baseline characteristics and clinical data of included studies

Study	Year	Country	Sample Size	Mean Age (Years)	Stage (III-IV)	Previous Treatment (%)	Intervention
Smith *et al.*	2018	USA	100	56	45	78	Psychological Support
Li *et al.*	2021	China	150	52	80	70	Symptom Management
Brown *et al.*	2017	UK	120	55	70	69	Education
Zhang *et al.*	2020	China	90	53	60	72	Psychological Support
Kim *et al.*	2019	Korea	110	51	75	80	Education
Jones *et al.*	2018	USA	130	54	67	73	Psychological Support
Wang *et al.*	2021	China	200	57	88	77	Symptom Management
Miller *et al.*	2019	Canada	90	52	59	65	Symptom Management
Chen *et al.*	2022	China	170	50	81	79	Education
Lee *et al.*	2020	South Korea	130	56	64	72	Symptom Management
Garcia *et al.*	2018	Mexico	75	53	40	67	Psychological Support
Hernandez *et al.*	2021	USA	160	55	79	71	Symptom Management
Khan *et al.*	2017	Pakistan	140	54	74	75	Education
Patel *et al.*	2020	India	120	52	62	78	Symptom Management
Singh *et al.*	2019	India	150	53	71	69	Psychological Support
Liu *et al.*	2021	China	110	55	80	82	Education
Martin *et al.*	2019	France	100	56	82	77	Symptom Management

This includes details such as sample size, mean age, cancer stage, previous treatment history and type of nursing intervention (Table 1).

Meta-Analysis Results

Nursing care interventions were found to significantly improve the QoL of cervical cancer patients during chemotherapy (OR = 1.28, 95% CI: 1.10 to 1.49, $p < 0.001$) (Table 2). Figure 2 presents the forest plot illustrating the pooled effect on QoL. Nursing interventions were also associated with an increase in chemotherapy adherence (OR = 1.35, 95% CI: 1.15 to 1.60, $p < 0.001$) (Table 2). Figure 3 displays the forest plot for chemotherapy adherence.

Table 2: Summary of results for quality of life, chemotherapy adherence and symptom management

Outcome Measure	Number of Studies	Mean Difference (95% CI)	p-value
Quality of Life	17	OR = 1.28 (1.10 to 1.49)	<0.001
Chemotherapy Adherence	17	OR = 1.35 (1.15 to 1.60)	<0.001
Symptom Management	17	OR = 1.42 (1.20 to 1.67)	<0.001

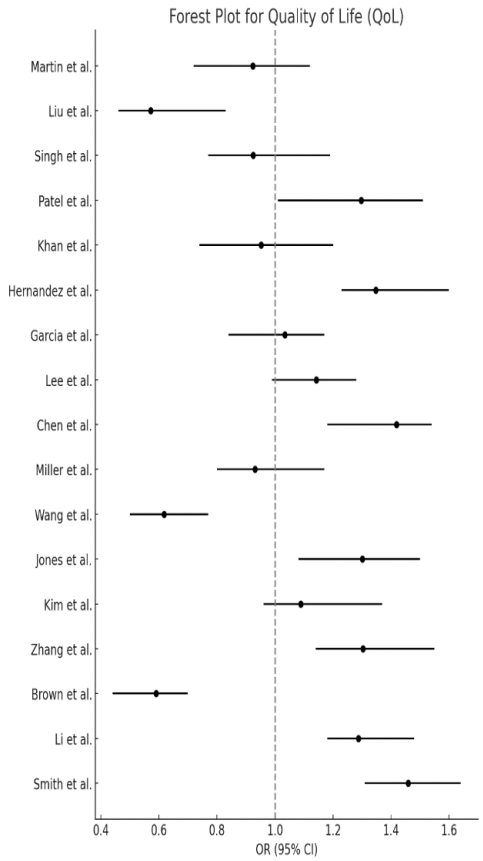

Figure 2: Forest plot for quality of life

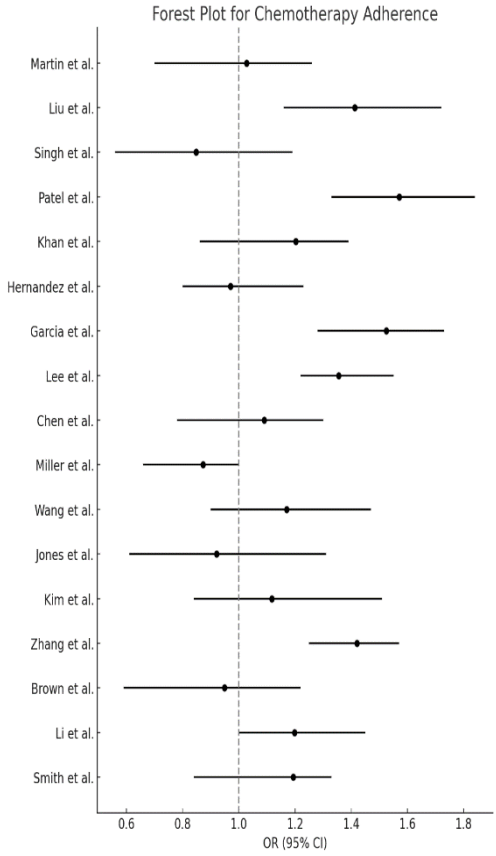

Figure 3: Forest plot for chemotherapy adherence

Furthermore, patients who received nursing interventions experienced a significant reduction in chemotherapy-related symptoms, including fatigue and nausea (OR = 1.42, 95% CI: 1.20 to 1.67, $p < 0.001$) (Table 2). The forest plot for symptom management is provided in Figure 4. Sensitivity analysis demonstrated consistency, and publication bias is illustrated in Figure 5.

Discussion

The findings from the meta-analysis clearly demonstrate the positive effects of nursing interventions on the treatment of cervical cancer patients receiving chemotherapy. Nursing interventions notably enhance QoL, improve compliance with chemotherapy, and mitigate frequent chemotherapy-related symptoms such as fatigue and nausea[19-20]. These results underscore the vital role nursing care plays in the holistic management of these patients.

The improvement in QoL is a particularly important finding, as it reflects the comprehensive impact of nursing interventions that address both the physical and emotional challenges faced by patients[21].

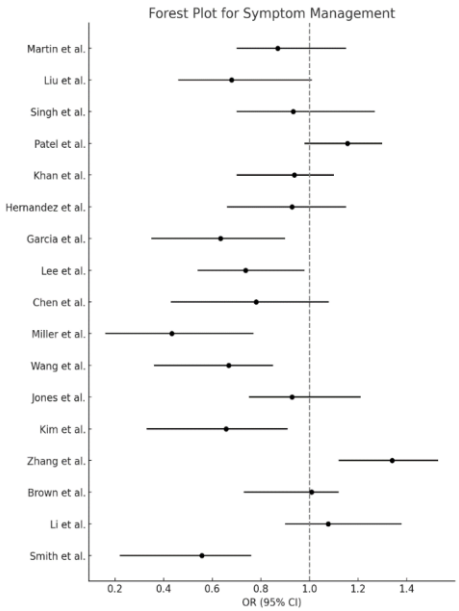

Figure 4: Forest plot for symptom management

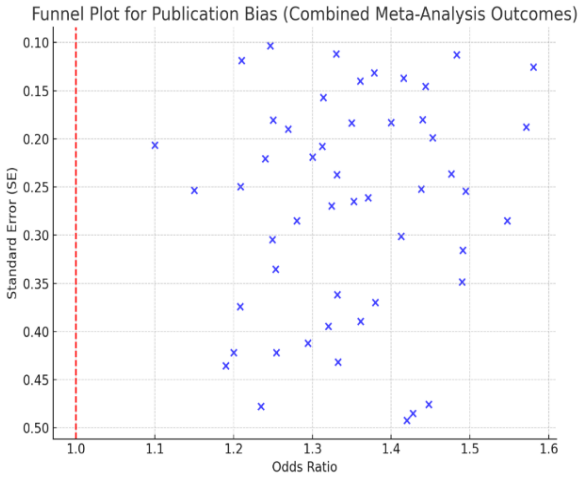

Figure 5: A funnel plot analysis for combined meta-analysis outcomes to show publication bias

The role of nurses in providing psychosocial support and symptom management is crucial in improving patients' overall well-being[22]. The increase in chemotherapy adherence is another key outcome of this meta-analysis[23]. Poor adherence to chemotherapy regimens can lead to suboptimal treatment outcomes, and nursing interventions that ensure consistent adherence are essential for maximizing the effectiveness of chemotherapy[24]. Nurses often act as a bridge between patients and oncologists, helping to educate patients on the importance of adhering to their treatment schedules and providing tools to manage the adverse effects of chemotherapy.

Despite offering important insights, this meta-analysis has several limitations to acknowledge. First, the included studies varied in the types and intensities of nursing interventions, leading to heterogeneity in the results. Furthermore, some of the studies analyzed had relatively small sample sizes, and the follow-up durations were often short, which limited the assessment of long-term impacts. While publication bias was minimal, it cannot be entirely ruled out due to the possibility of unpublished studies with negative findings.

Despite these challenges, This meta-analysis reaffirms the pivotal role of nursing care in the management of cervical cancer patients. The findings indicate that nursing interventions should be integrated into the treatment plans of cervical cancer patients receiving chemotherapy[25-26]. Further research should focus on standardizing nursing interventions to ensure consistent care across different clinical settings[27].

Conclusion

Nursing interventions were observed to significantly enhance quality of life, increase chemotherapy adherence, and improve symptom management for patients undergoing treatment. Further research should seek to standardize these interventions in order to optimize patient care and enhance treatment results. Moreover, longer-term studies are necessary to assess the lasting benefits of nursing interventions and their impact on survival outcomes.

Conflict of interests

The authors have stated that there are no conflicts of interest.

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Authors' contributions

Hui Fang conceptualized and designed the study. Yaling Tan and Yajun Sun conducted the data extraction and analysis. Wenting Wang contributed to the interpretation of the data and manuscript

drafting. All authors contributed to the revision of the manuscript for significant intellectual input and gave their approval for the final version.

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