

Diagnostic accuracy of self-collected menstrual blood for high-risk human papillomavirus testing for cervical intraepithelial neoplasia and cervical cancer: a systematic review and meta-analysis

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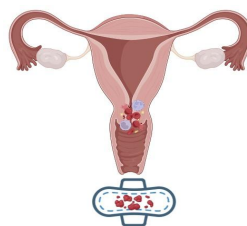
Abstract

Introduction

Human papillomavirus (HPV) test is the most commonly used method for cervical cancer screening, but the participation rates remain low in many countries. Self-sampling menstrual blood (MB) high-risk HPV (hr-HPV) test may offer a solution to this issue. The aim of this meta-analysis was to examine the accuracy of MB HPV test in detecting cervical cancer and cervical intraepithelial neoplasia (CIN).

Methods

Electronic databases (PubMed, Embase, and Cochrane) were searched for articles published through October 23, 2024, with the following search terms: (menstrual blood OR menstruation) AND (human papillomavirus). Observational studies (eg. cross-sectional studies, retrospective studies and prospective studies) that reported cervical histopathological biopsy outcomes in women undergoing self-sampling MB HPV testing were included.



Data extraction was performed by two independent reviewers according to the PRISMA guidelines. Meta-analyses were conducted based on sensitivities and specificities and corresponding 95% Confidence intervals (CIs) using bivariate random-effects model and hierarchical summary receiver operating characteristic (HSROC) model. The risk of publication bias and heterogeneity were also assessed. Data were analyzed from October to November 2024.

Results

Seven studies involving 1 672 adult women were included. The overall sensitivity and specificity of hrHPV testing from the MB samples for the diagnosis of CIN and cervical cancer were 0.96 (95% CI=0.74–1.00, $I^2 = 86.14$) and 0.53 (95% CI=0.11–0.91, $I^2 = 98.24$), respectively.

Discussion

The evidence from this meta-analysis, which includes women with and without CIN and cervical cancer, shows the high sensitivity and low specificity of the MB hrHPV test. Further large-scale diagnostic studies that combine multiple testing modalities are recommended to support and validate the application of the MB hrHPV test.

