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Carcinogenic risks of human papillomavirus genotypes and their coverage in vaccine delivered to ethiopian women

Abstract:

Introduction: Cervical cancer is a significant public health concern in Ethiopia. It is caused by persistent infection with the human papillomavirus (HPV). The aim of this study was to assess the relationship between carcinogenic risk of probable, possible and low risk HPV infection and those of cervical intraepithelial neoplasia (CIN) and cervical cancer.

Methods: A prospective cohort study was conducted between January and December 2023 among patients attending the gynecology unit of Felege Hiwot Comprehensive Specialized Hospital in Bahir Dar, Ethiopia. Trained gynecologists carried out physical and gynecological examination and collected cervical swab specimens for HPV DNA testing, cytological specimens and biopsies in cases where there were positive results from colposcopic impressions. Statistical analyses were performed using SPSS version 26.0. **Results:** In this study, the total prevalence of any HPV types was 46.8% (139/297). The rates of high risk and probable high risk HPV was 34.68% (103/297); single infection and multiple (2 or more) infection accounting 23.23 % (69/297) and 11.45% (34/297), respectively. The rates of possible high risk (HR) and low risk HPV only was 12.12% (36/297) with 9.76% (29/297). HPV-16 was associated with the highest risk of CIN II+, (AOR = 15.42; 95% CI: 6.81 – 34.91). In addition, HPV-52, -18, -53 and -58, were significantly associated with an increased risk of CIN II+, (AOR = 7.38(1.73 – 31.54), 5.42(1.61 -18.31), 4.08(1.53 – 10.87), and 3.17(1.00 – 10.03)), respectively.

Conclusions: The current study shows high rate of HPV with predominance of HPV-16, -53, -58, -18, -35, and -52. HPV-16, -52, -18, -53, and -58 were associated with the highest risk of CIN II+. The quadrivalent and nonavalent vaccine had only covered 27.1% and 45% of the circulating HPV genotypes. Ethiopia may need to consider introduction of nonavalent vaccine into the national public health strategy as part of a comprehensive approach to cervical cancer prevention and control.