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**Title**

*Adverse Childhood Experiences (ACEs) and the Development of Human Papilloma Virus (HPV) Related Cancers*

**Priority 1 (Research Category)**

Cancer research (not screening)

**Presenters**

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**Abstract**

Context: Adverse childhood experiences (ACEs) consist of instances of abuse, neglect, and household dysfunction occurring before the age of 18. ACEs are associated with negative health outcomes, including sexually transmitted infections and cancer. A gap in literature exists surrounding ACEs and their relationship to human papilloma virus (HPV)-related cancers.

Objective: Investigate the association between ACEs and development of HPV-related cancer and implications for primary care.

Study Design and Analysis: We used STATA 17.0 to conduct survey-based descriptive statistics, chi-square tests for bivariate analysis, and multiple multinomial logistic regression analysis controlled for covariates for this cross-sectional observational study.

Setting/Dataset: Behavioral Risk Factor Surveillance System data from states that implemented the ACEs and Cancer Type modules in 2020 and 2021 (Minnesota, Montana, Vermont, Washington, and Wisconsin).

Population Studied: Adults who responded to both the ACEs and Cancer Type modules (N=218,245).

Intervention/Instrument: Participants were grouped by no cancer, HPV-related cancer, or non-HPV related cancer types, stratified by demographics and ACE score.

Outcome Measures: Type of cancer.

Results: Participants with an ACE score of  $\geq 3$  had an increased frequency of HPV-related cancer (52.6%), followed by no cancer (27.6%) and non-HPV-related cancer (20.1%). In the multiple multinomial regression model, an ACE score of  $\geq 3$  was associated with an elevated risk of HPV-related cancer (RRR:2.24; 95% CI: 1.67-3.02). Female gender had an increased risk in developing HPV-related cancer (RRR: 3.40; 95% CI: 2.23-5.17). African Americans had a lower risk of any type of cancer compared to

Caucasian (non-HPV-related cancer with a RRR of 0.42 (95% CI: 0.36-0.48) and HPV-related cancer with a RRR of 0.39 (95% CI: 0.21-0.75)). Former or current smokers had a positive relationship with the development of HPV-related cancer (former smoker: RRR: 2.05, 95% CI: 1.46-2.88; current with some days: RRR: 5.28, 95% CI: 2.87-9.72; current with everyday: RRR: 3.64, 95% CI: 2.42-5.46).

Conclusions: Results indicate a significant relationship between an ACE score of  $\geq 3$  in the development of HPV-related cancer. Smoking was identified as a risky behavior for HPV-related cancer. These results have implications for primary care, emphasizing a need for trauma-informed care and HPV prevention strategies among those with high ACE scores or trauma histories.