

HUMAN PAPILLOMAVIRUS INFECTION: NATION-WIDE STUDY OF HIGH-RISK TYPES' PREVALENCE AMONG KAZAKHSTANI WOMEN

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Introduction

Cervical cancer is one of the top causes of morbidity and mortality related to cancer among women worldwide. In Kazakhstan, the annual rate of cervical cancer incidence increased from 16.3 ± 0.4 per 100,000 female population in 2009 to 19.5 ± 0.5 in 2018 (1). Almost all cases of cervical cancer are related to human papillomavirus (HPV), (2). Although cervical cancer represents a great burden to the health of women in Kazakhstan, little is known about the prevalence of high-risk HPV (HR-HPV), (3). Therefore, this study aimed to conduct a nationwide genotyping analysis of HR-HPV among women attending gynecological clinics.

Methods

Sample collection was conducted in five different regions of Kazakhstan (south, north, west, south, east, center). Patients' demographic data and cervical swab samples were collected by gynecologists from women attending gynecological clinics. In total 1645 women aged between 18 and 70 participated in the study. Genotyping of sample was performed using AmpliSens® HPV HCR genotype-titre-FRT kit on the CFX 96 Real-Time PCR machine (Bio-Rad Laboratories). Descriptive statistics was obtained using STATA 16 software (4).

References

1. Igissinov N, et al. New Trends of Cervical Cancer Incidence in Kazakhstan. 2021;22:1295–304.
2. Bruni L, et al. Human Papillomavirus and Related Diseases in Kazakhstan. Summary Report. Inf Cent HPV and Cancer (HPV Inf Centre) [Internet]. 2019;(June).
3. Aimagambetova G, et al. Cervical cancer screening and prevention in Kazakhstan and Central Asia. J Med Screen. 2020;4–6.
4. StataCorp LLC. Stata Statistical Software: Release 16 [Internet]. 2019.

Results

In the sample population, 39% were positive for HR-HPV infection, where 26% had single HR-HPV infection and 13% had multiple HR-HPV infection. HPV-16 (54%), HPV-68 (7%), HPV-51 (7%), and HPV-18 (6%) were the most prevalence among single HR-HPV positive women. Among multiple HR-HPV infection, the most prevalent were HPV-16 (57%), HPV-68 (36%), HPV-31 (20%), HPV-51 (19%), and HPV52 (19%). There was a statistically significant difference between the age groups ($p=0.042$). HR-HPV genotypes were frequently detected in the 26-35 age group, followed by 36-45 age group.

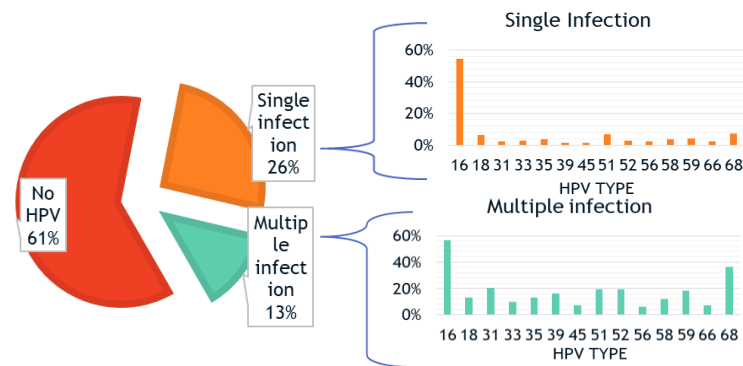


Figure 1. Distribution of HR-HPV in single and multiple infection

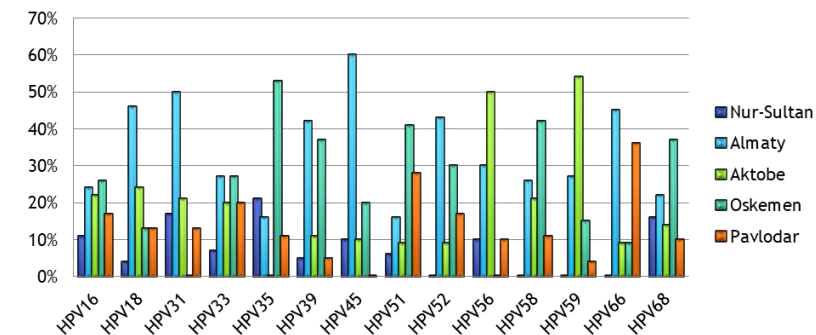


Figure 2. Distribution of HR-HPV types by cities

Conclusion

This study identified high prevalence of HR-HPV infection, especially in case of multiple HR-HPV infection among Kazakhstani women. In addition, this study showed that inclusion of HR-HPV testing into cervical cancer screening program could decrease cervical cancer incidence in Kazakhstan.

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