PalStudent Journal
A Palestinian Scientific Journal for the Youth

ABSTRACTS: VOLUME 7, SPECIAL ISSUE {7th Undergraduate Conference}

ABSTRACT

Next Generation Sequencing-Based Assay for Oral HPV Screening and Genotyping in Healthy Patients from Dental Clinics in the West Bank, Palestine.

Bisan Safi
Supervisor: Dr. Abed Nasereddin
Al-Quds Bard

Oral Human Papillomavirus (HPV) is a significant contributor to oropharyngeal cancers globally. In Palestine, however, research on oral HPV prevalence and genotype distribution remains virtually absent, with no national HPV database or vaccination programs targeting HPV. This study pioneers the use of next-generation sequencing (NGS) to investigate oral HPV epidemiology in a healthy Palestinian population, aiming to establish local and global epidemiological data and data to support public health strategies.

A cross-sectional study was conducted across dental clinics in the West Bank, where buccal swabs were collected from 75 healthy individuals. DNA was extracted using a commercial purification kit, and a highly sensitive nested PCR approach targeting the L1 gene region (GP5+/6+ primers) was employed to amplify low-copy HPV DNA. Positive samples were genotyped through Illumina NGS platform, enabling simultaneous detection of multiple HPV genotypes and rare variants. Sequencing data were analyzed using the Galaxy platform with BLAST alignment and multiple sequence analysis. Participants completed structured questionnaires to provide demographic and behavioral information.

Correspondence concerning this article should be addressed to the mentioned authors at the mentioned institutes.

E-mail: research@admin.alquds.edu
Palestine, Abu Dis, Al-Quds University

Out of the 75 fully analyzed samples, five were positive for oral HPV DNA, yielding an overall positivity rate of 6.7%. Genotyping revealed two cases of HPV-18, two cases of HPV-31, and one case of HPV-38. Participants were predominantly female (59.7%), with most aged between 18-24 years (43.1%). Approximately one-third of participants reported regular smoking, and only 20.8% reported prior awareness of HPV, while just one participant had received HPV vaccination. The HPV-positive cases were distributed geographically across Bethlehem and Ramallah, with smokers more likely to be male among positive individuals. Phylogenetic analysis confirmed that the detected sequences clustered closely with known HPV reference strains. A preliminary system validation performed before the study using external samples also demonstrated that NGS corrected genotype misclassification compared to Sanger sequencing, highlighting the superior diagnostic sensitivity of the system used.

This study is the first worldwide and in Palestine to apply next-generation sequencing for oral HPV detection and genotyping. The findings highlight the power of NGS in providing sensitive, accurate identification of HPV genotypes compared to traditional methods, and contribute essential baseline epidemiological data from a previously unrepresented population. These insights support advocacy for incorporating HPV education, screening, and vaccination initiatives into Palestinian healthcare policy, while strengthening global HPV surveillance efforts with rare regional data.

Correspondence concerning this article should be addressed to the mentioned authors at the mentioned institutes.

E-mail: research@admin.alquds.edu
Palestine, Abu Dis, Al-Quds University