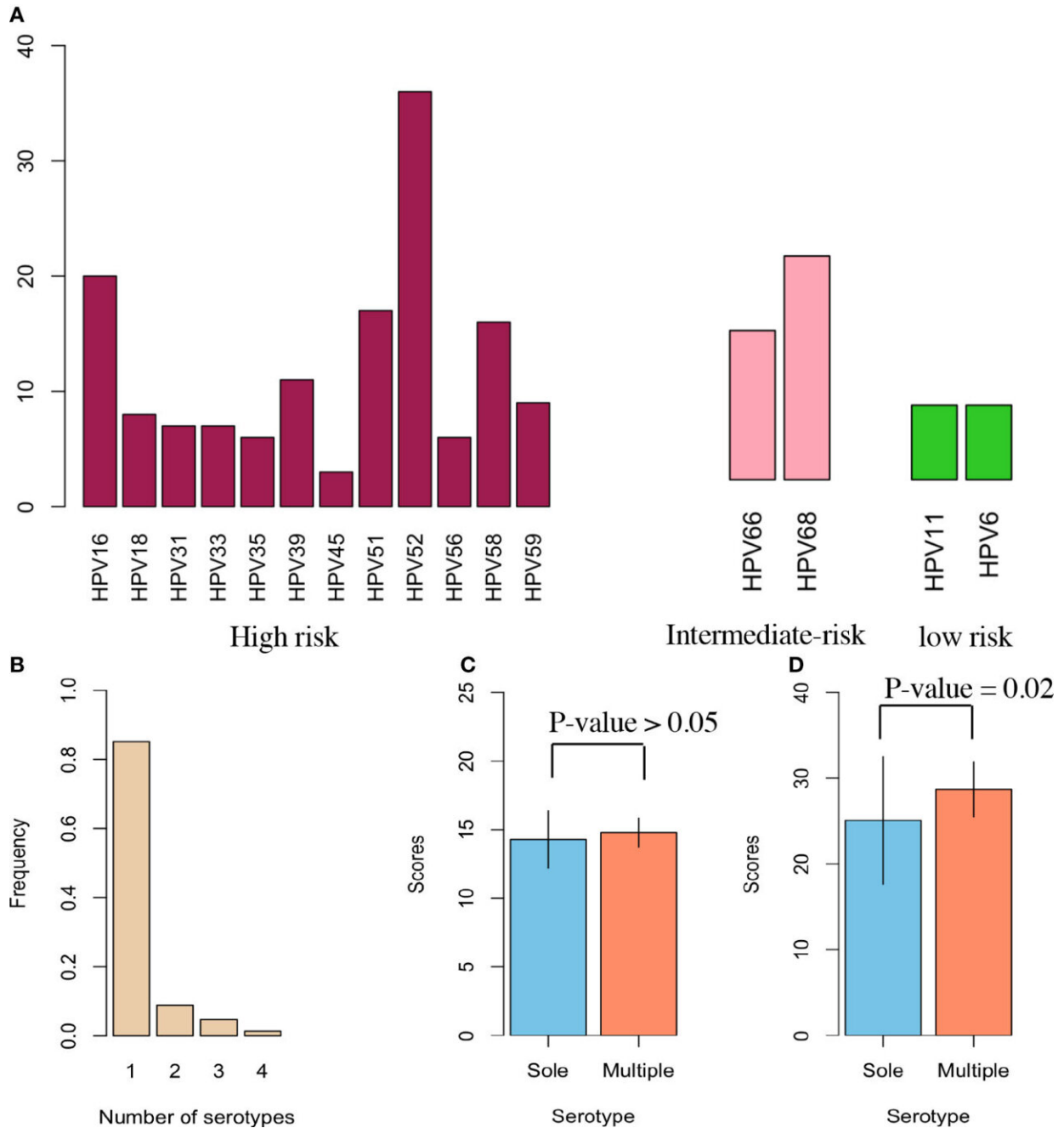


Exercise and nutrition: A statistically significant combination against HPV infection

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Each HPV serotype's prevalence involved 12 high-risk HPV (hrHPV), 2 intermediate-risk HPV (irHPV), and 2 low-risk HPV (lrHPV). All identifiable serotypes were denoted at the x-axis, and their proportions as percentages were designated at the y-axis among all HPV-infected women. The left red columns indicate the prevalence of each serotype for the 12 hrHPV; the middle pink columns the prevalence of each serotype for the 2 irHPV; the right green columns the prevalence of each serotype for the 2 lrHPV. Credit: BGI Genomics

Human well-being has been linked to physical activity, diet balance, sleep quality, depression and anxiety. A new cross-sectional study co-authored by Dr. Yantao Li, BGI Genomics, published in *Frontiers in Oncology*, investigated the association between these lifestyle factors and the risk of human papillomavirus (HPV) infection.

HPV is a virus that can cause different types of cancer, including cervical cancer. Most HPV risk factor studies focus on sexual factors or gynecological infections in women. However, there are few cross-sectional studies that account for [lifestyle factors](#) and other current disease or disease history. Two lifestyle factors appeared to demonstrate significant association with HPV [infection](#): [physical activity](#) and [diet balance](#). Meanwhile, current disease or disease history are not significantly correlated with HPV infection.

A total of 495 women aged 18 to 59 years were recruited through a digital eHealth platform in Shenzhen, China, and were assessed for physical activity, diet balance, and HPV infection through questionnaires and HPV genotyping assay tests.

Lifestyle factors

Physical activity was evaluated using self-reported questionnaires, where participants were asked about their frequency and duration of physical activity in the past year. This data was then used to classify the participants into three levels of physical activity: low, moderate, and high. The high-activity group included women who reported engaging in more than 300 minutes of moderate-intensity or more than 150 minutes of vigorous-intensity physical activity per week.

As expected, patients with a high level of physical activity were less

likely to be infected with HPV in comparison to participants with a low level of physical activity. This association was significant for P-values

Diet balance was assessed using a validated food frequency questionnaire. This data was used to calculate the dietary diversity score (DDS) for each participant, which is a measure of the variety of different food groups consumed. A higher DDS indicates a more balanced diet.

The study found that the prevalence of HPV infection was significantly lower in women with a higher DDS compared to women with a lower DDS. This suggests that a diet with a higher intake of fruits and vegetables and a lower intake of fat and sugar may have a protective effect against HPV infection.

Physical activity and diet balance among HPV serotypes

With regard to HPV serotypes, the prevalence of proportions involved 80.66% high-risk HPVs, 13.81% intermediate-risk HPVs and 5.52% low-risk HPVs. HPV 52 had the largest prevalence (19.89%) from the hrHPVs, followed by HPV16 (11.05%), HPV 51 (9.39%) and HPV 18 (4.42%).

Most HPV infections involved a sole HPV serotype (83%), and diet balance was the most significant difference between sole and multiple HPV infections. Therefore, the authors recommend two solutions for improving diet balance. Through this paper's questionnaires, one way is to ensure the appropriate consumption of dairy products and animal food products with vitamin A. Another way is to eat more fruits (e.g., tomatoes) or vegetables.

This study follows relevant regulations related to biological and [medical research](#) and has been approved by the BGI Ethics Committee and relevant ethics committees of research partners. The patients/participants provided their written [informed consent](#) to participate in this study.

More information: Yantao Li et al, The lifestyle factors of physical activity and diet balance associated with HPV infection in China: The cross-sectional study, *Frontiers in Oncology* (2022). [DOI: 10.3389/fonc.2022.1043937](#)

Provided by BGI Genomics

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