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KNOWLEDGE AND AWARENESS OF HUMAN PAPILLOMAVIRUS INFECTION AND VACCINATION AMONG HEALTH SERVICES VOCATIONAL SCHOOL STUDENTS: A CROSS-SECTIONAL STUDY

SAĞLIK HİZMETLERİ MESLEK YÜKSEKOKULU ÖĞRENCİLERİNDE HUMAN PAPİLLOMAVİRUS ENFEKSİYONU VE AŞISINA İLİŞKİN BİLGİ VE FARKINDALIK: KESİTSEL BİR ÇALIŞMA

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ABSTRACT

Objective: This study aimed to determine knowledge and awareness levels regarding human papillomavirus (HPV) infection, HPV screening, and HPV vaccination among health services vocational school students and to examine their associations with selected sociodemographic characteristics.

Methods: This cross-sectional study was conducted at Aydın Adnan Menderes University, Nazilli Health Services Vocational School, between May and July 2022. A total of 361 students responded to the online survey. Sociodemographic and HPV awareness data were summarized for all respondents, whereas HPV Knowledge Scale (HPV-KS) score-based comparisons were reported for 151 students. Data were collected using a Personal Information Form and the HPV-KS via Google Forms.

Results: Among the 361 respondents, 75.1% were female and the mean age was 20.26±2.78 years. Overall, 41.8% (n=151) reported having heard of HPV, 28.8% (n=104) had heard of HPV testing, and 28.8% (n=104) had heard of the HPV vaccine. In the score-based analysis group (n=151), the mean total HPV-KS score was 13.03±6.91 out of 33. HPV-KS scores did not differ significantly by gender or department and were not significantly correlated with age. Overall group differences were observed for selected subscales according to place of residence, income level, marital status, and parental education.

Conclusion: HPV-related knowledge and awareness were limited in this group of health services vocational school students. Targeted, reliable, and regularly reinforced education on HPV infection, screening, and vaccination may help improve knowledge and awareness among university students.

Keywords: Awareness, HPV, HPV vaccination, Knowledge, University students.

ÖZET

Amaç: Bu çalışmanın amacı, sağlık hizmetleri meslek yüksekokulu öğrencilerinin Human Papillomavirus (HPV) enfeksiyonu, HPV taraması ve HPV aşısına ilişkin bilgi ve farkındalık düzeylerini belirlemek ve seçilmiş sosyodemografik özelliklerle ilişkilerini incelemektir.

Gereç ve Yöntem: Bu kesitsel çalışma Mayıs-Temmuz 2022 tarihleri arasında Aydın Adnan Menderes Üniversitesi Nazilli Sağlık Hizmetleri Meslek Yüksekokulu'nda yürütülmüştür. Çevrim içi ankete toplam 361 öğrenci yanıt vermiştir. Sosyodemografik özellikler ve HPV farkındalığına ilişkin veriler tüm katılımcılar üzerinden özetlenirken, Human Papillomavirus Bilgi Ölçeği (HPV-BÖ) puanlarına dayalı karşılaştırmalar 151 öğrenci üzerinden raporlanmıştır. Veriler Kişisel Bilgi Formu ve HPV-BÖ kullanılarak Google Forms aracılığıyla toplanmıştır.

Bulgular: Toplam 361 katılımcının %75,1'i kadın olup yaş ortalaması 20,26±2,78 yıldır. Katılımcıların %41,8'i (n=151) HPV'yi, %28,8'i (n=104) HPV testini ve %28,8'i (n=104) HPV aşısını daha önce duyduğunu bildirmiştir. Puan temelli analiz grubunda (n=151) toplam HPV-BÖ puan ortalaması 33 puan üzerinden 13,03±6,91 olarak bulunmuştur. HPV-BÖ puanları cinsiyet ve bölüme göre anlamlı farklılık göstermemiş, yaş ile anlamlı korelasyon saptanmamıştır. İkamet yeri, gelir düzeyi, medeni durum ve ebeveyn eğitimine göre bazı alt ölçeklerde genel grup farklılıkları görülmüştür.

Sonuç: Bu sağlık hizmetleri meslek yüksekokulu öğrencilerinde HPV ile ilişkili bilgi ve farkındalık düzeyleri sınırlıdır. HPV enfeksiyonu, tarama ve aşılamaya yönelik hedeflenmiş, güvenilir ve düzenli olarak pekiştirilen eğitimlerin üniversite öğrencilerinin bilgi ve farkındalıklarını geliştirmeye katkı sağlayabileceği düşünülmektedir.

Anahtar kelimeler: Bilgi, Farkındalık, HPV, HPV aşısı, Üniversite öğrencileri.

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INTRODUCTION

Cervical cancer is one of the most common malignancies in women and poses a significant public health problem worldwide. Approximately 99% of cervical cancer cases are associated with human papillomavirus (HPV) infection (Akalın, 2022; Tsige & Beyene, 2024). According to Globocan 2020 data, approximately 605.000 women are diagnosed with cervical cancer annually, and 340.000 women die from this disease (Sung ve ark., 2021). In Turkey, cervical cancer is the ninth most common cancer among women, with an incidence rate of 4.3 per 100.000 (Agabekova ve ark., 2022; Ministry of Health of the Republic of Türkiye, 2022).

HPV infection is a widespread sexually transmitted disease that poses a significant health risk among young individuals due to unprotected sexual activity and early sexual initiation (Çevik ve Coşkun, 2021). Vaccination programs developed against HPV are recognized as the primary prevention method for cervical cancer. At the time of data collection in 2022, the HPV vaccine was not included in Turkey's national immunization schedule, and vaccination depended on individual choice and financial access (Tikbaş ve ark., 2022). This situation creates barriers such as lack of information and misconceptions about the HPV vaccine.

Knowledge of HPV infection, screening, and vaccination is particularly important among university students because young adulthood is a period in which sexual health knowledge and preventive health behaviors are being established. This is especially relevant for students enrolled in health-related programs, who may later contribute to patient education and community health promotion. Previous studies have reported variable but frequently insufficient levels of HPV awareness and vaccination knowledge among university and health sciences students (Alkan & Akyüz, 2021; Durusoy ve ark., 2010; Dönmez ve ark., 2019; Kocaay, 2023).

Accordingly, describing the current level of HPV-related knowledge and identifying sociodemographic characteristics associated with knowledge scores may help inform educational priorities in university settings. This study aimed to determine the knowledge and awareness levels of health services vocational school students regarding HPV infection, HPV screening, and HPV vaccination, and to examine their associations with selected sociodemographic characteristics.

MATERIALS AND METHODS

This cross-sectional study was conducted between May and July 2022 at Aydın Adnan Menderes University, Nazilli Health Services Vocational School. The study population consisted of 677 enrolled students. Using G*Power, the target sample size was calculated as 400 students based on an effect size of 0.25, a power (1-β) of 0.95, and an alpha level of 0.05. A total of 361 students responded to the survey. Sociodemographic characteristics and HPV awareness were summarized for all 361 respondents. Among these participants, 151 students reported having heard of HPV and were included in the HPV-KS score-based analyses presented in Tables 2 and 3. Within this subgroup, 104 students reported having heard of HPV testing and 104 reported having heard of the HPV vaccine.

Data Collection Tools

The data for this study were collected using a Personal Information Form and the Human Papillomavirus Knowledge Scale (HPV-KS), administered via Google Forms.

PersonalInformationForm

This form, prepared by the researchers based on a literature review, consists of 14 questions designed to assess students' sociodemographic characteristics and their general knowledge about HPV and the HPV vaccine (Ateşeyan, 2021; Ayazöz, 2020).

Human Papillomavirus Knowledge Scale (HPV-KS)

The HPV Knowledge Scale (HPV-KS) was developed by Waller ve ark. (2013) to assess knowledge of HPV, HPV screening, and HPV vaccination. Its Turkish validity and reliability were established by Demir (2019). The 33-item scale comprises four subscales: General HPV Knowledge (items 1-16), HPV Screening Test Knowledge (items 17-22), General HPV Vaccine Knowledge (items 23-27), and Knowledge of the Current HPV Vaccination Program (items 28-33). Items are answered as "Yes," "No," or "I don't know." Each correct response is scored as 1 and incorrect or "I don't know" responses are scored as 0, yielding a total score from 0 to 33; higher scores indicate greater HPV-related knowledge. Correct and incorrect statements are mixed to reduce response bias. The Cronbach's alpha coefficient reported in the Turkish validation study was 0.96 (Demir, 2019). In this study, the Cronbach's alpha coefficient was calculated as 0.94.

StudyVariables

The independent variables of the study were students' sociodemographic characteristics and their general knowledge about HPV and HPV vaccination. The dependent variable was the scores obtained from the Human Papillomavirus Knowledge Scale (HPV-KS) and its subscales.

Data Collection Process

Data were collected online using a Google Forms questionnaire. Responses were included in the descriptive analysis when the relevant items had been completed, and the analytic sample used for HPV-KS score comparisons is specified separately in the Results and table titles.

Statistical Analysis

Data were analyzed using SPSS. Descriptive statistics were reported as mean, standard deviation, minimum-maximum, frequency, and percentage, as appropriate. Distributional assumptions were assessed using visual inspection together with the Kolmogorov-Smirnov test. Based on the assessment of normality, Mann-Whitney U tests were used for two-group comparisons, Kruskal-Wallis H tests for comparisons involving three or more groups, and Spearman's rho for correlation analyses. Statistical significance was set at $p<0.05$.

Ethical Aspects of the Research

Permission for the research was obtained from the Adnan Menderes University Social and Human Sciences Research Ethics Committee (Date: 02.05.2022, Decision No: 11). Institutional permission, permission for the use of the scale, and permission from participants to participate online in the research were also obtained.

RESULTS

A total of 361 students responded to the survey. Of these, 75.1% (n=271) were female and 24.9% (n=90) were male, and the mean age was 20.26±2.78 years. Most participants were single (98.6%, n=356). By department, 39.1% (n=141) were enrolled in Home Patient Care, 38.5% (n=139) in Elderly Care, and 22.4% (n=81) in Physiotherapy. Regarding income, 49.3% (n=178) reported income equal to expenses and 40.2% (n=145) reported income lower than expenses. Most participants lived in a nuclear family (70.9%, n=256). Regarding HPV awareness, 41.8% (n=151) reported having heard of HPV, 28.8% (n=104) had heard of HPV testing, and 28.8% (n=104) had heard of the HPV vaccine. In the HPV-KS score analysis group (n=151), mean scores were 8.41±3.71 for General HPV Knowledge, 1.51±1.53 for HPV Screening Test Knowledge, 1.92±1.98 for General HPV Vaccine Knowledge, 1.17±1.45 for Knowledge of the Current HPV Vaccination Program, and 13.03±6.91 for the total HPV-KS (Table 1).

Table 1. Distribution of Participants' Characteristics and HPV Awareness (n=361)

Variables	**Count (n)**	**Percentage (%)**
Personal Characteristics	**Count (n)**	**Percentage (%)**
Gender		
Male	90	24.9
Female	271	75.1
Marital Status		
Married	5	1.4
Single	356	98.6
Department		
Home Patient Care	141	39.1
Elderly Care	139	38.5
Physiotherapy	81	22.4
Income Level		
Income Less Than Expenses	145	40.2
Income Equal To Expenses	178	49.3
Income More Than Expenses	38	10.5
Family Characteristics	Count (n)	Percentage (%)
Family Type		
Nuclear Family	256	70.9
Extended Family	77	21.3
Single-Parent Family	28	7.8
Mother's Education Level		
Primary School and Below	208	57.6
Middle School	81	22.4
High School and Above	72	19.9
Father's Education Level		
Primary School and Below	147	40.7
Middle School	122	33.8
High School and Above	92	25.5
Mother's Employment Status		
Unemployed	276	76.5
Employed	85	23.5
Father's Employment Status		
Unemployed	134	37.1
Employed	227	62.9
HPV Characteristics	**Count (n)**	**Percentage (%)**
Have you ever heard of HPV?		
No	170	47.1
Yes	151	41.8
Don't know	40	11.1
Have you ever heard of the HPV test?		
No	36	10
Yes	104	28.8
Don't know	11	3
Unanswered	210	58.2
Have you ever heard of the HPV vaccine?		
No	35	9.7
Yes	104	28.8
Don't know	12	3.3
Unanswered	210	58.2

HPV-KS scores,	**Mean ± SD (observed range)**
General HPV Knowledge	8.41±3.71 (0-15)
HPV Screening Test Knowledge	1.51±1.53 (0-6)
General HPV Vaccine Knowledge	1.92±1.98 (0-5)
Knowledge of the Current HPV Vaccination Program	1.17±1.45 (0-5)
Total HPV-KS	13.03±6.91 (0-29)
Age, mean ± SD (min-max): 20.26±2.78 (18-42)	

SD: standard deviation; n: number; %: percentage. The min-max values shown for HPV-KS scores are observed ranges in the analyzed sample.

There was no statistically significant difference in HPV-KS total or subscale scores according to gender or academic department, and no significant correlation was found between age and HPV-KS scores. Married students had higher scores on the Knowledge of the Current HPV Vaccination Program subscale than single students (U=71.500, p=0.030); however, only three married students were included in the score-analysis group, so this finding should be interpreted cautiously. Kruskal-Wallis analyses showed an overall difference in General HPV Knowledge according to place of residence (H=7.586, p=0.023) and in HPV Screening Test Knowledge according to income level (H=6.262, p=0.044). No other personal-characteristic comparisons were statistically significant (Table 2).

Table 2. Comparison of Participants' Personal Characteristics with HPV-KS and Subscale Scores (n=151)

Characteristic	**n (%)**	**General HPV Knowledge Mean±SD (Median)**	**HPV Test Knowledge Mean±SD (Median)**	**HPV Vaccine Knowledge Mean±SD (Median)**	**Current Program Knowledge Mean±SD (Median)**	**Total HPV-KS Mean±SD (Median)**
Gender*	Female n=119 (78.8)	8.53±3.61(9)	1.61±1.52(1)	1.96±1.67(2)	1.16±1.14(1)	13.28±6.76(14)
	Male n=32 (21.2)	7.96±4.10(9)	1.15±1.52(1)	1.78±1.75(1.5)	1.21±1.62(0)	12.12±7.51(13)
Statistical Analysis		U=1720.500 p=0.401	U=1511.000 p=0.065	U=1787.500 p=0.586	U=1848.500 p=0.785	U=1696.500 p=0.344
Marital Status*	Married n=3 (2.0)	11.33±3.51 (11)	2.00±1.00(2)	3.00±1.00(3)	3.00±1.00(3)	19.33±4.50(19)
	Single n=148 (98.0)	8.35±3.71(9)	1.50±1.54(1)	1.90±1.69(2)	1.14±1.43(0)	12.91±6.90(14)
Statistical Analysis		U=129.000 p=0.212	U=154.000 p=0.350	U=138.500 p=0.253	U=71.500 p=0.030	U=94.000 p=0.087
Department **	Home Patient Care n=54(35.8)	8.59±3.60(9)	1.66±1.49(1)	1.92±1.65(2)	1.27±1.50 (0.5)	13.46±6.85(14)

	Elderly Care n=60(39.7)	8.38±3.68(9)	1.45±1.59(1)	1.96±1.67(2)	1.33±1.42(1)	13.13±6.84(13.5)
	Physiotherapy n=37 (24.5)	8.21±4.02(9)	1.40±1.49(1)	1.86±1.79(1)	0.78±1.37(0)	12.27±7.25(14)
Statistical Analysis		H=0.128 p=0.938	H=1.327 p=0.515	H=0.073 p=0.964	H=5.062 p=0.080	H=0.614 p=0.736
Residence**	State Dormitory n=68 (45.0)	7.73±3.94(9)	1.36±1.38(1)	1.80±1.64(2)	1.26±1.46(1)	12.17±6.91(14)
	Private Dormitory n=21 (13.9)	7.71±3.05(8)	1.28±1.05(1)	1.90±1.60(2)	0.80±1.28(0)	11.71±5.60(12)
	House n=62 (41.1)	9.40±3.48(10)	1.75±1.78(1)	2.06±1.78(2)	1.20±1.49(0)	14.43±7.17(14)
Statistical Analysis		H=7.586 p=0.023	H=0.958 p=0.619	H=0.768 p=0.681	H=1.689 p=0.430	H=2.750 p=0.253
Income Level**	Income Less Than Expenses n=63 (41.7)	8.26±3.82(9)	1.25±1.37(1)	1.73±1.63(2)	1.06±1.31(0)	12.31±6.44(14)
	Income Equal To Expenses n=69 (45.7)	8.39±3.75(9)	1.57±1.63(1)	2.02±1.73(2)	1.20±1.48(0)	13.20±7.41(13)
	Income More Than Expenses n=19 (12.6)	9.00±3.36(10)	2.15±1.46(2)	2.21±1.71(3)	1.47±1.77(1)	14.84±6.53(15)
Statistical Analysis		H=0.682 p=0.711	H=6.262 p=0.044	H=1.565 p=0.457	H=0.533 p=0.766	H=1.719 p=0.423
Age***	Mean±SD (min-max)	r p	r p	r p	r p	r p
	20.56±2.58 (18-42)	0.053 0.259	0.030 0.359	0.037 0.324	0.038 0.321	0.042 0.303

**Mann-Whitney U; **Kruskal-Wallis H; ***Spearman's rho. SD: standard deviation.*

No statistically significant differences were found in HPV-KS scores according to family type, mother's employment status, or father's employment status. Kruskal-Wallis analyses showed an overall difference in General HPV Knowledge according to mother's education level (H=6.479, p=0.039) and in General HPV Vaccine Knowledge according to father's education level (H=4.253, p=0.039). Other family-characteristic comparisons were not statistically significant (Table 3).

Table 3. Comparison of Participants' Family Characteristics with HPV-KS and Subscale Scores (n=151)

Family characteristic	**n (%)**	**General HPV Knowledge Mean±SD (Median)**	**HPV Test Knowledge Mean±SD (Median)**	**HPV Vaccine Knowledge Mean±SD (Median)**	**Current Program Knowledge Mean±SD (Median)**	**Total HPV-KS Mean±SD (Median)**
Family Type**	Nuclear Family n=117(77.5)	8.24±3.78 (9)	1.58±1.58 (1)	1.89±1.69 (2)	1.20±1.42 (1)	12.93±7.17 (14)
	Extended Family n=21 (13.9)	7.96±4.10 (9)	1.15±1.52 (1)	1.78±1.75 (1.5)	1.21±1.62 (0)	12.12±7.51 (13)
	Single-Parent Family n=13 (8.6)	9.38±3.42 (10)	1.07±1.44 (1)	2.15±1.67 (2)	1.31±1.84 (0)	13.92±5.63 (14)
Statistical Analysis		H=1.613 p=0.446	H=1.454 p=0.483	H=0.406 p=0.816	H=0.601 p=0.741	H=0.012 p=0.994
Mother's Education**	Primary School and Below n=83(55.0)	8.17±3.51 (9)	1.39±1.30 (1)	1.86±1.67 (2)	1.02±1.33 (0)	12.45±6.40 (13)
	Middle School n=33(21.9)	7.63±4.19 (8)	1.24±1.56 (1)	1.72±1.56 (2)	1.09±1.44 (0)	11.69±7.16 (13)
	High School and Above n=35 (23.2)	9.69±3.48 (10)	2.05±1.86 (1)	2.25±1.82 (2)	1.61±1.66 (1)	15.61±7.34 (15)
Statistical Analysis		H=6.479 p=0.039	H=4.776 p=0.092	H=1.631 p=0.442	H=3.637 p=0.162	H=5.290 p=0.071
Father's Education**	Primary School and Below n=62(41.1)	7.72±4.12 (9)	1.37±1.39 (1)	1.64±1.72 (1)	0.91±1.28 (0)	11.66±7.14 (12.5)
	Middle School n=47(31.1)	8.78±2.80(9)	1.53±1.39(1)	2.29±1.55(2)	1.21±1.31(1)	13.82±5.62(15)
	High School and Above n=42(27.8)	9.02±3.89(10)	1.71±1.85(1)	1.92±1.73(2)	1.52±1.75 (0.5)	14.19±7.66(14)
Statistical Analysis		H=0.759 p=0.384	H=0.453 p=0.501	H=4.253 p=0.039	H=1.691 p=0.193	H=2.530 p=0.112
Mother's Employment Status*	Unemployed n=119(78.8)	8.59±3.77(9)	1.56±1.53(1)	2.00±1.68(2)	1.34±1.69(0)	13.30±6.92(14)
	Employed n=32(21.2)	7.75±3.47(8)	1.34±0.53(1)	1.62±1.69(1.5)	1.13±1.38(0)	12.06±6.92(13)

Statistical Analysis		U=1575.000 p=0.128	U=1723.500 p=0.397	U=1641.000 p=0.219	U=1839.500 p=0.751	U=1685.000 p=0.318
Father's Employment Status*	Unemployed n=62(41.1)	8.19±4.02(9)	1.48±1.60(1)	1.97±1.69(1.5)	1.08±1.46(0)	12.61±7.30(13)
	Employed n=89 (58.9)	8.57±3.50(9)	1.53±1.48(1)	1.85±1.69(2)	1.24±1.44(1)	13.33±6.66(14)
Statistical Analysis		U=2640.500 p=0.652	U=2632.500 p=0.622	U=2674.000 p=0.741	U=2539.500 p=0.371	U=2565.500 p=0.464

**Mann-Whitney U; **Kruskal-Wallis H. SD: standard deviation.*

DISCUSSION

This cross-sectional study showed limited awareness and knowledge of HPV infection, HPV testing, and HPV vaccination among health services vocational school students. Only 41.8% of the full respondent group reported having heard of HPV, and 28.8% reported having heard of HPV testing or the HPV vaccine. Studies from different countries and student populations have likewise reported substantial gaps in HPV awareness, although the level of awareness varies across settings (Dönmez ve ark., 2019; Kellogg ve ark., 2019; Teeluck ve ark., 2022). Differences between studies may reflect variation in health education, access to preventive services, sociodemographic characteristics, and health literacy.

In the HPV-KS score-analysis group, the mean total score was 13.03±6.91 out of a possible 33 points. Mean scores were also limited across the four subscales, indicating gaps in general HPV knowledge as well as knowledge of screening and vaccination. Similar knowledge deficits have been reported among university and health sciences students in previous studies (Dönmez ve ark., 2019; Kavanagh ve ark., 2018; Kellogg ve ark., 2019; Rančić ve ark., 2020). These findings support the need for accurate and repeated HPV education in university settings.

The present study did not identify statistically significant differences in HPV-KS total or subscale scores according to gender or academic department, and age was not significantly correlated with the scale scores. Some previous studies have reported higher HPV knowledge among women or health sciences students (Berenson ve Rahman, 2012; Kops ve ark., 2019; Rančić ve ark., 2020; Teeluck ve ark., 2022; Turhan ve ark., 2019). The absence of statistically significant differences in the present sample suggests that HPV-related educational needs may extend across student subgroups.

Marital status was associated with the Knowledge of the Current HPV Vaccination Program subscale, with higher scores observed among married students. This result should be interpreted cautiously because the score-analysis group included only three married participants. In addition, overall Kruskal-Wallis differences were observed for General HPV Knowledge by place of residence and for HPV Screening Test Knowledge by income level. Because omnibus Kruskal-Wallis tests do not identify which groups differ, these findings should be interpreted at the overall-group level until appropriate post-hoc pairwise comparisons are reported.

Parental education was associated with selected HPV-KS subscales at the omnibus-test level: General HPV Knowledge differed across maternal education groups, and General HPV Vaccine Knowledge differed across paternal education groups. Previous literature suggests that socioeconomic and educational factors may be related to HPV vaccine knowledge and uptake, although the direction and magnitude of these relationships vary across populations (Kellogg ve ark., 2019; Teeluck ve ark., 2022). Given the cross-sectional design, the present findings indicate associations rather than causal effects.

Overall, the findings indicate an ongoing need for HPV-related health education among students in health-service programs. University-based education can emphasize routes of transmission, prevention, screening, vaccine recommendations, and access to reliable sources of information. Digital communication may be useful for reinforcement, but educational content should be evidence-based and integrated with formal health education rather than relying solely on informal sources.

LIMITATIONS

This study has several limitations. It was conducted at a single health services vocational school, which limits generalizability to other universities and to the broader young adult population. The cross-sectional design does not allow causal inferences. Data were collected online and were self-reported, which may introduce response and selection bias. The target sample size of 400 was not reached, although 361 students responded to the survey, and HPV-KS score-based comparisons were reported for a smaller subgroup (n=151). Some subgroups were very small, particularly married students (n=3) in the score-analysis group. These limitations should be considered when interpreting the findings.

CONCLUSION

This study found limited HPV-related knowledge and awareness among health services vocational school students. The results support the need for university-based education that addresses HPV infection, screening, and vaccination using clear, reliable, and regularly reinforced information. Educational initiatives should be designed for the wider student population rather than assuming that knowledge is adequate in particular gender or department groups.

Selected sociodemographic characteristics were associated with specific HPV-KS subscale scores, but these associations should be interpreted cautiously in light of the cross-sectional design, small subgroups, and the need for post-hoc analyses after significant Kruskal-Wallis tests. Future multicenter studies with larger and more diverse samples may help clarify these relationships and support the development of targeted HPV education strategies.

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Conflict of Interest

The authors report no actual or potential conflicts of interest related to this study.

Author Contributions

P.T.: Study conceptualization, methodology, data collection, and manuscript review and editing.

D.Y.: Methodology, formal analysis, and manuscript review and editing.

Ş.Ö.: Methodology and manuscript review and editing.

F.A.: Study conceptualization, methodology, formal analysis, and manuscript review and editing.

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