

GENOTYPING OF HUMAN PAPILLOMA VIRUS PATIENTS WITH CUTANEOUS, PLANTER AND GENITAL WARTS IN ANBAR PROVINCE-IRAQ

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Abstract:

Background: Infection with human papillomavirus (HPV) causes skin warts (common, flat, plantar) and genital warts as well as urogenital cancer. Identifying the most common types of HPV in different types of warts can help determine treatment, predict outcomes, establish vaccination schedules, and monitor for cancer prevention.

Objective: To determine the prevalence of human papillomavirus (HPV) genotypes in patients with skin, planter and genital warts in Anbar province, western Iraq

Patients and methods: Biopsies from 150 volunteers (79 males, 71 females) with an mean age of 22.59 years were taken and tested for HPV using PCR. Positive samples were subjected to further analysis to identify low, moderate and high risk HPV types using a new PCR method and DNA sequencing. The sequencing results were analyzed using the DNASTAR package.

Results: Most warts had a single HPV type (81.34%), 13.3% of the wart smears were HPV-negative. Common warts associated with HPV-1, 3, 4 and 65. Flat warts associated with HPV-1, 3 and 10. Planter warts associated with HPV-2, with several types frequently showing HPV-1 and 2. Genital warts mostly showed a single type, especially HPV-6 and 11. Of note, HPV-16 and 18 were not detected in any of the samples. Common warts were evenly distributed across the age groups (in contrast to previous studies). The most common HPV types varied by age group in both common and flat warts. Genital warts in younger age groups (<= 17) frequently had HPV-11, while planter warts contained HPV-2 and 77. Planter warts in older age groups (18-28, 29+) frequently had HPV-2, 94 and 117. Several HPV types were observed in all age groups. HPV-11 most common in genital warts in females. HPV-2, 77, 94 and 117 most common in planter warts in females. HPV-11 most common in genital warts in males. HPV-2 most common in planter warts in males. Various combinations of HPV types have been observed in both sexes for warts with multiple types.

Conclusions: HPV-16, 18 and 51 as well as other high-risk HPVs were not present in any of the samples. Common warts are often associated with HPV-1, 3, 4 and 65, while flat warts are usually caused by HPV-1, 3 and 10. Planter warts are commonly associated with HPV-2, occasionally in combination with HPV-1, and genital warts are commonly caused by HPV-6 and 11.

Keywords: HPV, Genotyping, Cutaneous, Planter, Genital, Warts, PCR, Clinical, Diagnoses.

Introduction

200 HPV types responsible for benign warts and urogenital cancer. Certain HPV types are associated with certain warts or cancer. Alpha-HPV targets the mucosal epithelium, while beta-, gamma-, mu- and nu-HPV cause skin lesions (1). Low-risk HPV

types (HPV-6 and HPV-11) and high-risk HPV types (HPV-16 and HPV-51) were found in both cutaneous and genital warts (2), (3). Many patients with warts had multiple HPV infections, and the prevalence of specific HPV genotypes varied among different populations (4), (5).

In Korean patients, HPV-27, HPV-57, HPV-65, and HPV-4 were commonly detected (6). For cutaneous skin warts, HPV57, 1, 2, and 27 were prevalent, while in plantar warts, HPV-57, HPV-27, HPV-1a, HPV-2, and HPV-65 were most common (7), (8). HPV 6 and 11 are the most common genotypes associated with external anogenital warts, present in 98.9% of cases in a Hungarian study (9). High-risk HPV is uncommon in cutaneous warts and is more prevalent in immunocompromised patients. Among 62 wart samples, mucosal HPV was predominantly found, with 67.2% being high-risk HPV(4).

Previous studies have shown that the genotype of HPV affects the natural course and response to treatment for plantar warts, highlighting the importance of performing HPV genotyping to improve treatment plans (6). A study by Bruggink et al. found that the HPV genotype affects the natural course and response to treatment in plantar warts, with HPV genotype being the strongest predictor of treatment response (10).

The distribution of human papillomavirus genotypes varies by region(11). HPV prevalence varies globally, and region-specific data is valuable for new screening strategies and vaccination prevention. Identifying specific HPV genotypes can help determine treatment, predict outcomes, shape vaccination plans, and monitor for cancer prevention (6), (10), (11). There is limited research on genotype-specific HPV prevalence in the Iraqi population. PCR testing is crucial for identifying the most common types of HPV in different types of warts (11), (12). The effect of HPV vaccines on the prevalence of infection and genotype distribution is unknown (13). A prospective analysis of warts will be performed to calculate the overall prevalence, as well as the genotype distribution.

Current data on HPV prevalence in Iraq is outdated and inadequate, highlighting the need for updated research. Identifying specific HPV genotypes is important for treatment, predicting outcomes, shaping vaccination plans, and monitoring for cancer prevention. Certain genotypes may respond differently to therapies and increase the risk of developing specific

cancers (11), (13). Current study aims to investigate the prevalence of HPV genotypes in cutaneous, planter, and genital warts and to detect the high-risk HPV types present in Iraqi patients.

Patients and methods

From February 2022 to July 2023, a study was conducted to investigate HPV genotypes in patients with skin, plantar and genital warts to identify high-risk types. Biopsies were taken from 150 volunteers (79 males, 71 females) with a mean age of 22.59 years. Two dermatology specialists supervised the clinical diagnosis and determination of the clinical type of skin, plantar and genital warts and the collection of the samples.

The study was approved by the Ethics Committee of the University of Anbar, Iraq (reference number 130, on 4-1-2024). Written informed consent was obtained from all subjects. Biopsies were frozen at -70°C and then tested for HPV by PCR (2). Positive samples were subjected to further analysis to identify low, intermediate and high risk HPV types using a new PCR method and Sanger sequencing with the ABI 3730XL DNA Analyzer (Bioneer, Seoul, Korea). The sequencing results were analysed using the DNASTAR package (DNASTAR, Madison, USA).

The study included patients aged 10 years or older with clinically diagnosed genital warts, skin warts and plantar warts, regardless of gender and whether it was a first or recurrent case. However, those who had undergone cryotherapy or surgery, were taking long-term medication, were pregnant or had acute genital inflammation were excluded.

Results

A study of 150 patients found that 246 provided wart swabs for HPV testing. The mean age was 22.59 years, with 52.7% male participants. The patients had various types and numbers of warts, with common warts being the most prevalent. Out of 150 wart swabs, 13.3% were negative for HPV DNA, 81.34% were positive for a single HPV genotype, and 5.33% contained DNA from multiple HPV types, Figure 1, Table 1.

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Figure 1: Show HPV Genotyping

Table 1: Histopathological distribution of Iraqi cases selected and analysed for HPV genotyping.

Type of warts	Frequency	Percentage
Common warts (verruca vulgaris)	76	50.7
Flat warts (verruca plana)	11	7.3
Genital warts (condylomata acuminata)	29	19.3
Planter warts	34	22.7
Total	150	100.0

Table 2 shows the distribution of HPV genotypes and species in common warts (Verruca vulgaris). The most common HPV types in common warts with only one HPV type were HPV-1, HPV-3, HPV-4 and HPV-65.

In common warts with multiple HPV types, the most common combinations were HPV-1, 2 and 7, and HPV-10 and 57. In addition, 9.2% of warts tested negative for HPV.

Table 2: HPV genotype and species distribution on common warts (verruca vulgaris) among the Iraqi population analysed.

Type of warts	HPV type	HPV Species	Number of Wart single (%)	Number of warts with multiple HPV (%)		
Common warts	HPV-1	Mu	5(6.6)	HPV-1, 2	Mu, Alpha	1 (0.7)
	HPV-2	Alpha	3(3.9)	HPV-1, 2, 7	Mu, Alpha	13(17.1)
	HPV-3	Alpha	14(18.4)	HPV-1, 7, 65	Mu, Gamma	1(1.3)
	HPV-4	Gamma	6(7.9)	HPV-10, 27	Alpha	4(5.3)
	HPV-7	Beta	4(5.3)	HPV-10, 57	Alpha	5(3.3)
	HPV-8	Beta-High risk	1(1.3)	-	-	-
	HPV-10	Alpha	2(2.6)	-	-	-
	HPV-60	Gamma	4(2.7)	-	-	-

(verruca vulgaris) No.76	HPV-63	Gamma	2(2.6)	-	-	-
	HPV-65	Gamma	3(3.9)	-	-	-
	HPV-117	Gamma	1(1.3)	-	-	-
	Negative HPV		7(9.2)	Total		76(100.0)

Research is investigating the prevalence of HPV genotypes in different types of warts. HPV-1, HPV-3 and HPV-10 were the most prevalent types, with some warts testing negative for HPV. No cases of multiple HPV types were found. In plantar warts, HPV-2 was the predominant type in warts with a single HPV type, while HPV-1 and HPV-2 were predominant in warts with multiple types. In genital warts, HPV-11 was the most prevalent type in warts with a single HPV

type, while HPV-6 and HPV-11 were prevalent in cases with multiple types. HPV-16 and HPV-18 were not found in any sample, and some cases tested negative for HPV (Table 3).

Table 3: HPV genotype and species distribution on Flat warts (Verruca Plana), Planter warts and Genital warts (Condylomata acuminata) among the Iraqi population analysed

Type of warts	HPV type	HPV Species	Number of warts with single HPV (%)	HPV type	HPV Species	Number of warts with multiple HPV (%) Per cent
Flat warts (Verruca Plana)	HPV-1	Mu	1(9.1)	-	-	-
	HPV-3	Alpha	3(27.3)	-	-	-
	HPV-10	Alpha	4(36.4)	-	-	-
	HPV-Negative		3(27.3)	-	-	-
	Total		11(100.0)	-	-	-
Planter warts	HPV-2	Alpha	10(29.4)	HPV-1, 2	Alpha, Mu	4(11.8)
	HPV-77	Beta	2(5.9)	HPV-3, 10	Alpha	3(8.8)
	HPV-94	Beta	2(5.9)	HPV-10, 27	Alpha	4(11.8)
	HPV-117	Beta	2(5.9)	HPV-10, 57	Alpha	2()5.9
	-	-	-	HPV-Negative	-	5(14.7)
	-	-	-	Total		34(100.0)
Genital warts (Condylomata acuminata)	HPV-11	Alpha	3(10.3)	HPV-6, 11	Alpha	16(55.2)
	-	-	-	HPV-11, 6, 43, 44, 55	Alpha	517.2 ()
	-	-	-	HPV-Negative	-	5(17.2)
	-	-	-	Total	-	29(100.0)

The prevalence of HPV genotypes in common warts varies across different age groups. In individuals aged 17 or younger, the most common HPV types were HPV-1, HPV-3, HPV-7, HPV-10, HPV-4, and HPV-117. Among those aged 18-28, prevalent HPV types included HPV-1, HPV-2, HPV-3, HPV-4, HPV-60, HPV-63, and HPV-65. For those aged 29 and older, common HPV types for single cases were HPV-1, HPV-2, HPV-3, HPV-4, HPV-7, HPV-8, and HPV-65. The distribution of HPV genotypes on flat warts also varied by age group Table 4.

The analysis of HPV genotypes for genital and plantar warts revealed different predominant types depending on the age group. HPV-11 was predominant for genital warts in the age group for genital warts, while HPV-2 and HPV-77 were predominant for plantar warts in persons aged 17 years and younger. In individuals aged 18 to 28 years, HPV-2 was most prevalent in plantar warts, while in those aged 29 years and older, HPV-2, HPV-94 and HPV-117 were most prevalent in cases with one HPV type, with multiple HPV types also observed Table 5.

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Table 4: HPV genotype and species distribution on common warts (*verruca vulgaris*) and Flat warts (*Verruca Plana*) according age groups among the Iraqi population analysed.

Type of warts	HPV genotypes	Age group				HPV genotypes	Age group			
		<= 17	18 – 28	29+	Total		<= 17	18 - 28	29+	Total
Common warts (<i>verruca vulgaris</i>)	HPV-7	3 (3.9%)	0(0.0%)	1(1.3%)	4(5.3%)	HPV-10, 57	0 (0.0%)	2(2.6%)	3(3.9%)	5(6.6%)
	HPV-2	0 (0.0%)	2(2.6%)	1(1.3%)	3(3.9%)	HPV-60	0 (0.0%)	4(5.3%)	0(0.0%)	4(5.3%)
	HPV-3	6 (7.9%)	2(2.6%)	6(7.9%)	14(18.4%)	HPV-65	0 (0.0%)	1(1.3%)	2(2.6%)	3(3.9%)
	HPV-10	2 (2.6%)	0(0.0%)	0(0.0%)	2(2.6%)	HPV-117	1 (1.3%)	0(0.0%)	0(0.0%)	1(1.3%)
	HPV-1	2 (2.6%)	2(2.6%)	1(1.3%)	5(6.6%)	HPV-8	0 (0.0%)	0(0.0%)	1(1.3%)	1(1.3%)
	HPV-1, 2	1 (1.3%)	0(0.0%)	0(0.0%)	1(1.3%)	HPV-10, 27	0 (0.0%)	1(1.3%)	3(3.9%)	4(5.3%)
	HPV-2, 1, 7	5 (6.6%)	3(3.9%)	5(6.6%)	13(17.1%)	HPV-4	2 (2.6%)	2(2.6%)	2(2.6%)	6(7.9%)
	HPV-1, 7, 65	0 (0.0%)	1(1.3%)	0(0.0%)	1(1.3%)	HPV-63	0 (0.0%)	2(2.6%)	0(0.0%)	2(2.6%)
	Negative HPV	0 (0.0%)	3(3.9%)	4(5.3%)	7(9.2%)	Total	22 (28.9%)	25(32.9%)	29(38.2%)	76(100.0%)
Flat warts (<i>Verruca Plana</i>)	HPV-3	2 (18.2%)	-	1(9.1%)	3(27.3%)	HPV-Negative	3 (27.3%)	-	0(0.0%)	3(27.3%)
	HPV-10	4 (36.4%)	-	0(0.0%)	4(36.4%)	-	-	-	-	-
	HPV-1	1 (9.1%)	-	0(0.0%)	1(9.1%)	Total	10 (90.9%)	-	1(9.1%)	11(100.0%)

Table 5: HPV genotype and species distribution on Genital warts (*Condylomata acuminata*) and Planter warts according age groups among the Iraqi population analysed.

Type of warts	HPV genotypes	Age group				HPV genotypes	Age group			
		<= 17	18 - 28	29+	Total		<= 17	18 - 28	29+	Total
Genital warts (<i>Condylomata acuminata</i>)	HPV-6, 11	6 (20.7%)	10 (34.5%)	-	16(55.2%)	HPV-Negative	1 (3.4%)	4(13.8%)	-	5(17.2%)
	HPV-11	2 (6.9%)	1(3.4%)	-	3(10.3%)	-	-	-	-	-
	HPV-11, 6, 43, 44, 55	0 (0.0%)	5(17.2%)	-	5(17.2%)	Total	9 (31.0%)	20(69.0%)	-	29(100.0%)
Planter warts	HPV-2	4 (11.8%)	4(11.8%)	2(5.9%)	10(29.4%)	HPV-10, 27	0 (0.0%)	2(5.9%)	2(5.9%)	4(11.8%)
	HPV-1, 2	1 (2.9%)	1(2.9%)	2(5.9%)	4(11.8%)	HPV-10, 57	0 (0.0%)	2(5.9%)	0(0.0%)	2(5.9%)
	HPV-3, 10	0 (0.0%)	0(0.0%)	3(8.8%)	3(8.8%)	HPV-77	1 (2.9%)	1 (2.9%)	0(0.0%)	2(5.9%)

	HPV-94	0(0.0%)	1(2.9%)	1(2.9%)	2(5.9%)	HPV-Negative	2(5.9%)	3(8.8%)	0(0.0%)	5(14.7%)
	HPV-117	0(0.0%)	1(2.9%)	1(2.9%)	2(5.9%)	Total	8(23.5%)	15(44.1%)	11(32.4%)	34(100.0%)

The distribution of HPV genotypes in common warts varies according to gender. In females, notable types include HPV-1, HPV-3, HPV-7, HPV-10, HPV-4, HPV-60, HPV-63 and HPV-65. In males, common types include HPV-1, HPV-2, HPV-3, HPV-7, HPV-

10, HPV-4, HPV-8, HPV-60, HPV-63 and HPV-117. HPV-3 and HPV-10 are the most common types of flat warts in females, while HPV-1, HPV-3 and HPV-10 predominate in males Table 6.

Table 6: HPV genotype and species distribution on common warts (verruca vulgaris) and Flat warts (Verruca Plana) according gender among the Iraqi population analysed

Type of warts	HPV genotypes	Gender			HPV genotypes	Gender		
		Female	Male	Total		Female	Male	Total
Common warts (verruca vulgaris)	HPV-7	1 (1.3%)	3(3.9%)	4(5.3%)	HPV-10, 57	2 (2.6%)	3(3.9%)	5(6.6%)
	HPV-2	0 (0.0%)	3(3.9%)	3(3.9%)	HPV-60	1(1.3%)	3(3.9%)	4(5.3%)
	HPV-3	7 (9.2%)	7(9.2%)	14(18.4%)	HPV-65	3 (3.9%)	0(0.0%)	3(3.9%)
	HPV-10	1(1.3%)	1(1.3%)	2(2.6%)	HPV-117	0 (0.0%)	1(1.3%)	1(1.3%)
	HPV-1	2 (2.6%)	3(3.9%)	5(6.6%)	HPV-8	0 (0.0%)	1(1.3%)	1(1.3%)
	HPV-1, 2	1 (1.3%)	0(0.0%)	1(1.3%)	HPV-10, 27	0 (0.0%)	4(5.3%)	4(5.3%)
	HPV-1, 2, 7	5 (6.6%)	8(10.5%)	13(17.1%)	HPV-4	1 (1.3%)	5(6.6%)	6(7.9%)
	HPV-1, 7, 65	1 (1.3%)	0(0.0%)	1(1.3%)	HPV-63	1 (1.3%)	1(1.3%)	2(2.6%)
	Negative HPV	0 (0.0%)	7(9.2%)	7(9.2%)	Total	26 (34.2%)	50(65.8%)	76(100.0%)
Flat warts (Verruca Plana)	HPV-3	2 (18.2%)	1(9.1%)	3(27.3%)	HPV-Negative	1 (9.1%)	2(18.2%)	3(27.3%)
	HPV-10	2 (18.2%)	2(18.2%)	4(36.4%)	-	-	-	-
	HPV-1	0 (0.0%)	1(9.1%)	1(9.1%)	Total	5 (45.5%)	6(54.5%)	11(100.0%)

The prevalence of HPV genotypes and species in genital and plantar warts varies by gender, with different types being more common in females and males. In females, HPV-11 is the most common type for genital warts of the simple type, while in men

HPV-11 also predominates in warts of the simple type. For plantar warts, the predominant HPV types differ between the sexes, with HPV-2 being most common in males and HPV-117 being one of the predominant types in females Table 7.

Table 7: HPV genotype and species distribution on Genital warts (Condylomata acuminata) and Planter warts according gender among the Iraqi population analysed

Type of warts	HPV genotypes	Gender			HPV genotypes	Gender		
		Female	Male	Total		Female	Male	Total
Genital warts (condylom)	HPV-6, 11	15 (51.7%)	1(3.4%)	16(55.2%)	HPV-Negative	5 (17.2%)	0(0.0%)	5(17.2%)

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ata acuminata)	HPV-11	2 (6.9%)	1(3.4%)	3(10.3%)				
	HPV-11, 6, 43, 44, 55	5 (17.2%)	0(0.0%)	5(17.2%)	Total	27 (93.1%)	2(6.9%)	29(100.0%)
Planter warts	HPV-2	2 (5.9%)	8(23.5%)	10(29.4%)	HPV-10, 27	3(8.8%)	1(2.9%)	4(11.8%)
	HPV-1, 2	1 (2.9%)	3(8.8%)	4(11.8%)	HPV-10, 57	0 (0.0%)	2(5.9%)	2(5.9%)
	HPV-3, 10	1 (2.9%)	2(5.9%)	3(8.8%)	HPV-77	2 (5.9%)	0(0.0%)	2(5.9%)
	HPV-94	2 (5.9%)	0(0.0%)	2(5.9%)	HPV-Negative	0 (0.0%)	5(14.7%)	5 (14.7%)
	HPV-117	2 (5.9%)	0(0.0%)	2(5.9%)	Total	13 (38.2%)	21(61.8%)	34(100.0%)

Discussion

The study found that 59.21% of the 76 common warts had single HPV genotypes, with HPV-3, HPV-4, HPV-57 and HPV-60 being the most common genotypes found. Previous studies have shown the prevalence of HPV-57 in patients with skin warts, along with HPV-1, HPV-27 and HPV-2. Similar results were observed in studies from Japan and the UK (14) (15).

Recent study show that about 31.57% of samples with multiple HPV genotypes contain two or three genotypes. This suggests a lack of natural competition between genotypes, even though most infections are associated with a single HPV genotype. It is unclear whether different genotypes coexist in the same cell or whether warts are caused by a single genotype. The presence of mixed infections could be due to harmless HPV on the wart surface or it is a common phenomenon.

Multiple studies have found that a significant portion of HPV-positive samples contain multiple HPV genotypes, with one study showing 16% (10) and another showing 51% (8). HPV1, 2, 27, and 57 are commonly found in skin warts (16), with HPV2 being the most prevalent in plantar warts (17).

In the study, different HPV types were identified in skin warts, with HPV 1, 3, 4 and others being predominant. In cases of multiple HPV infections, HPV 1, 2 and 7 were the most common. This is in contrast to previous study where different HPV genotypes was identified in plantar warts and other body sites (9). In the present study, HPV 2, 77, 94 and 117 were found to be predominant. Warts infected with HPV 27 and HPV 57 had similar clinical profiles, which is consistent with previous study (10).

A recent study found that common warts occur in all age groups. This contradicts previous research which suggested a higher incidence in the 11 to 20 age group (7). It contradicts previous studies which suggested that different age groups are most affected by cutaneous HPV infections (10).

A recent study found a higher prevalence of HPV in males (65.8%) than in females (34.2%), possibly due to regional and work-related factors. This gender difference could be related to a lack of education and health awareness, especially in certain privileged circles. However, there is no difference in the prevalence of skin warts between the sexes (18). These results contradict an previous study by Bruggink (10).

The study sheds light on the distribution of HPV genotypes in warts in different age and gender groups and provides information on prevention measures and treatment strategies for HPV-related infections. Further research is needed to understand the specific role of HPV types in wart development and possible correlations with disease severity.

Genital HPV genotypes are categorized into high-risk and low-risk groups based on their carcinogenic potential. High-risk genotypes such as 16, 18, 31, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73 and 82 are the most dangerous, while low-risk genotypes include 6, 11 and 40 (2) (19). Types 16, 31, 35 and 51 are associated with an increased risk of cervical cancer in persistent skin infections (19). The low-risk HPV types 11, 6, 43, 44, and 55 are exclusive to genital warts, whereas the high-risk HPV types were not identified in the present study.

Genital warts are caused by HPV infection and identifying the specific HPV type is important for treatment and prevention. Low-risk HPV types such as HPV-6 are commonly found in genital warts, with a prevalence of over 90% in clinical samples (20). One study found that 55.2% of HPV-positive samples contained HPV-6 and 11, indicating a high prevalence of these low-risk types (21). This is in contrast to the results of other studies in which high-risk HPV types (HPV-16, HPV-18) were found in patients with genital warts(5), (22).

The study discusses cases of co-infection with different HPV types, including HPV-11, 6, 43, 44 and 55, and highlights the high rate of HPV-6 and -11 co-infection in genital warts and the predominance of HPV-54 and 55 in genital tumors. In addition, the absence of HPV-

18 in anogenital warts, as shown in a previous study, is not evident (23).

According to our research, people aged 18 to 28 with genital warts have a higher risk of HPV infection. Several studies have found a higher incidence of high-risk HPV infections in patients under 35 years of age and a higher prevalence of HPV genotypes in cervical cancer and genital warts in patients between 30 and 39 years of age (24), (25). In addition, a notable proportion of low-risk HPV genotypes were found in patients under 20 years of age (11).

Our study found a correlation between HPV infection and gender, with certain HPV types being more common in females than in males. The researchers suggest that further research with a larger study population could help to understand the role of environmental factors in HPV infections. A correlation between HPV types and gender has also been observed in previous studies, with a greater incidence of HPV genotypes found in females with genital warts (10), (23).

Conclusion

Different types of warts are caused by certain types of the human papillomavirus (HPV). Common warts are associated with HPV-1, 3, 4 and 65, while flat warts are usually caused by HPV-1, 3 and 10. Plantar warts are often associated with HPV-2, sometimes HPV-1, and genital warts are often caused by HPV-6 and 11, with HPV-16/18 absent. Wart types vary in different age groups, with younger people having different HPV types than older people. HPV-11 is prevalent in genital warts in both sexes, while the HPV types associated with plantar warts are different in males (HPV-2) and females (HPV-2, 77, 94, 117).

A recent study contradicted previous findings, indicating an even distribution of common warts across all age groups.

ETHICAL DECLARATIONS

Ethics Approval and Consent to Participate

Written approval was obtained from the Ethical Approval Committee of the University of Anbar, Iraq. Study data/information was used for research purposes only. Informed consent was obtained from each participant.

Consent for Publication: No personal data included.

Availability of Data and Material

The datasets produced and/or analysed during the present study can be obtained from the corresponding author upon reasonable request.

Competing Interests: The authors declare that there is no conflict of interest.

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Authors' Contributions

All the listed authors have made significant, direct, and intellectual contributions to the work and have approved it for publication.

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