

# CO-PREVALENCE OF HUMAN PAPILLOMAVIRUS AND EPSTEIN BARR VIRUS IN HEALTHY BLOOD DONORS IN QATAR

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## BACKGROUND

Human papillomaviruses (HPVs) and Epstein-Barr virus (EBV) are human oncoviruses that can co-exist together. HPV DNA can be present in circulating blood, including peripheral blood mononuclear cells, sera, plasma, and arterial cord blood. On the other hand, human herpesvirus 4, commonly known as EBV is a DNA lymphotropic herpesvirus that is responsible for causing infectious mononucleosis.

Co-presence of high-risk HPVs and EBV mRNA in cervical, breast as well as oral cancers, is indicative of patients that are at a higher risk for developing metastases. The objective of this study is to establish whether HPV and EBV DNA are present in the blood of healthy individuals in the middle east region, more specifically in Qatar.

## MATERIALS AND METHODS

DNA extracted from the buffy coat of 385 healthy blood donors were examined for the presence of EBV and low- and high-risk HPVs.

Five micrograms of purified genomic DNA (Qiagen GmbH, Hilden, Germany) from each sample was analyzed for EBV and HPV by PCR using specific primers for LMP1 as well as low (6 and 11) and high-risk HPV types (16, 18, 31, 33, 35, 39, 45, 51, 52, and 58), while, primers for GAPDH gene were used as an internal control.

## RESULTS

Table 1. Demographic Data

	EBV (+) (235)	EBV (-) (150)
Category	Total No. (%)	Total No. (%)
<b>Nationality &amp; Gender</b>		
<b>Qatari</b>	102 (43.4%)	28 (18.66%)
<b>Male</b>	101	27
<b>Female</b>	1	1
<b>Non-Qatari</b>	133 (56.5%)	122 (81.33%)
<b>Male</b>	131	119
<b>Female</b>	2	3
<b>Age Group</b>		
<b>20-39</b>	52 (22.12%)	46 (30.66%)
<b>30-39</b>	95 (40.4%)	63 (42%)
<b>40-49</b>	60 (25.5%)	34 (22.66%)
<b>50-59</b>	28 (11.91%)	7 (4.66%)

Table 2. Prevalence of low- and high-risk HPVs in healthy blood donors

Samples	No. of Cases	HPV Types (%)											
		6	11	16	18	31	33	35	45	51	52	56	
<b>EBV (+)</b>	235	41.3	45.5	35.7	34.5	39.6	4.6	35.3	30.6	36.2	37.9	27.7	
<b>EBV (-)</b>	150	76	63.3	41.3	38.6	76	0	61.3	56.6	68	66.7	22.6	
<b>Total</b>	385	54.8	52.5	37.9	36.1	53.8	2.8	45.4	40.7	48.6	49.1	25.7	

Table 3. Association between HPV-subtypes and the studied populations (Qatari vs. Non-Qatari)

Samples	QATARIS v/s NON-QATARIS			
	HPV-Subtypes (%)			
	52	56	66	68
<b>Qataris (102)</b>	47	37.2	39.2	19.6
<b>Non-Qataris (133)</b>	30.8	24.8	26.3	32.3
<b>p-value</b>	<b>0.022*</b>	<b>0.034*</b>	<b>0.0355*</b>	<b>0.029*</b>

## CONCLUSIONS

In this study, we demonstrated for the first time that HPVs and EBV are commonly co-present in healthy blood donors in Qatar. We found that 55% and 61% of the samples were HPVs and EBV positive, respectively. Co-presence of both high-risk HPVs and EBV was seen in 40% of the samples.