

Table 1: Risk factors for KSHV prevalence and antibody levels among adults 18 to 103 years.

1A: Risk factors for KSHV prevalence

Risk factor	KSHV prevalence	Adjusted ^a Odds Ratio (95% CI)	P value
Age		1.01 (1.003, 1.02)	0.010
<u>Sex</u>			
Males	94% (1218/1297)	1	
Females	89% (1653/1852)	0.61 (0.46, 0.80)	0.001
<u>HIV and CD4 count status</u>			
(-) CD4 count unknown	92% (2615/2841)	1	
(+) CD4 count > 500	70% (32/46)	0.16 (0.10, 0.26)	<0.0001
(+) CD4 count ≤ 500	90% (76/84)	0.61 (0.16, 2.36)	0.451
(+) CD4 count unknown	83% (146/175)	0.53 (0.29, 0.96)	0.039
Haemoglobin levels ^b		0.86 (0.77, 0.96)	0.006
<u>Anaemia^c</u>			
Normal	91% (2153/2370)	1	
Anaemic	92% (718/779)	1.25 (0.87, 1.79)	0.229

1B: Risk factors for anti-K8.1 and anti-ORF73 antibody levels

Risk factor	K8.1		ORF73	
	Adjusted ^a Coef. ^d (95% CI)	P value	Adjusted ^a Coef. ^d (95% CI)	P value
Age	0.004 (0.001, 0.007)	0.015	0.01 (0.007, 0.013)	<0.0001
<u>Sex</u>				
Males	Ref			

Females		-0.25 (-0.35, -0.14)	<0.0001	-0.24 (-0.34, -0.14)	<0.0001
<u>HIV and CD4 count status</u>					
(-) CD4 count unknown	Ref			Ref	
(+) CD4 count > 500		-0.77 (-1.21, -0.33)	0.001	-0.71 (-1.15, -0.29)	0.001
(+) CD4 count ≤ 500		-0.33 (-0.64, -0.02)	0.036	-0.48 (-0.79, -0.17)	0.003
(+) CD4 count unknown		-0.28 (-0.51, -0.06)	0.014	-0.38 (-0.59, -0.16)	0.001
Haemoglobin levels ^b		-0.03 (-0.06, 0.01)	0.119		
<u>Anaemia^c</u>					
Normal	Ref				
Anaemic		0.007 (-0.11, 0.13)	0.910	0.28 (0.16, 0.39)	<0.0001

1C: Age group specific association between anti-ORF73 antibody levels and haemoglobin levels

	Age group	Adjusted ^a Coef. (95% CI)	P value	Interaction P value
Haemoglobin levels ^b	18-24	-0.09 (-0.16, -0.02)	0.009	
	25-44	-0.08 (-0.12, -0.03)	0.001	
	45-103	-0.17 (-0.21, -0.12)	<0.0001	0.007

^a adjusted for age, sex, HIV status and household socio-economic status, CI: confidence interval. Anti-K8.1 and anti-ORF73 antibody levels (measured as optical density) were obtained from ELISA. KSHV seropositivity was defined as reactivity to either K8.1 or ORF73 antigens. ^bhaemoglobin levels were mean (13.7 g/dL) centred. ^chaemoglobin levels were altitude adjusted and categorised into normal and anaemic following WHO guidelines. ^dCoef.: regression coefficient, CI: confidence interval. Logistic regression, allowing for the survey design was used for statistical analysis of risk factors for KSHV prevalence. Linear regression with bootstrapped confidence intervals was used for statistical analysis of risk factors for antibody levels. Table 1C: Age group specific associations between ORF73 antibody levels and haemoglobin levels were reported due to interaction between age and Haemoglobin levels. CD4 counts were measured in cells/ μ L.

Table 2: Risk factors for KSHV prevalence and antibody levels among children aged 1 to 17 years.

2A: Risk factors for KSHV prevalence

Risk factor (n)	KSHV prevalence	Adjusted ^a		Adjusted ^b	
		OR (95% CI)	P value	OR (95% CI)	P value
<u>Haemoglobin</u>					
levels (3199) ^c		0.89 (0.84, 0.93)	<0.0001	0.93 (0.88, 0.98)	0.005
<u>Anaemia^d</u>					
Normal	44% (1143/2584)	1			
Anaemic	48% (294/615)	1.42 (1.18, 1.71)	<0.0001	1.23 (1.01, 1.49)	0.037
<u>Malaria</u>					
Negative	41% (1088/2630)	1		1	
Positive	61% (348/569)	2.22 (1.84, 2.69)	<0.0001	2.13 (1.75, 2.58)	<0.0001
Age (4134)		1.17 (1.15, 1.18)	<0.0001	1.18 (1.15, 1.21)	<0.0001
<u>Sex</u>					

Boys	52% (1076/2061)	1		1	
Girls	50% (1041/2073)	0.93 (0.82, 1.07)	0.27	0.94 (0.82, 1.07)	0.33
<u>HIV</u>					
Negative	53% (2030/3812)	1		1	
Positive	40% (19/48)	0.49 (0.25, 0.96)	0.04	0.55 (0.30, 1.03)	0.06

2B: Risk factors for antibody levels

	K8.1			ORF73				
	Adjusted ^a		Adjusted ^b	Adjusted ^a		Adjusted ^b		
Risk factor (n)	Coef. ^e . (95% CI)	P value	Coef. (95% CI)	P value	Coef. (95% CI)	P value	Coef. (95% CI)	P value
<u>Malaria</u>								
Negative (2630)	ref		ref		ref		ref	
Positive (569)	0.27 (0.18, 0.38)	<0.0001	0.26 (0.16, 0.37)	<0.0001	0.30 (0.21, 0.38)	<0.0001	0.26 (0.18, 0.34)	<0.0001
Age (4134)	0.08 (0.07, 0.09)	<0.0001	0.1 (0.08, 0.11)	<0.0001	0.06 (0.05, 0.07)	<0.0001	0.05 (0.04, 0.06)	<0.0001

Haemoglobin levels (3199) ^c	-0.04 (-0.06, -0.01)	0.003	-0.02 (-0.05, 0.01)	0.2	-0.03 (-0.06, -0.01)	0.001	-0.02 (-0.04, 0.005)	0.13
<u>Anaemia^d</u>								
Normal	ref		ref		ref		ref	
Anaemic	0.04 (-0.05, 0.13)	0.414	-0.02 (-0.12, 0.07)	0.649	0.12 (0.05, 0.19)	0.001	0.07 (-0.01, 0.14)	0.073
<u>Sex</u>								
Boys (2061)	ref		ref		ref		ref	
Girls (2073)	-0.05 (-0.11, 0.02)	0.17	-0.01 (-0.09, 0.06)	0.75	0.01 (-0.04, 0.07)	0.63	-0.01 (-0.07, 0.05)	0.66
<u>HIV</u>								
Negative (3808)	ref		ref		ref		ref	
Positive (270)	-0.24 (-0.56, 0.07)	0.13	-0.12 (-0.48, 0.24)	0.5	0.20 (-0.17, 0.57)	0.29	0.29 (-0.13, 0.72)	0.18

^aadjusted for age, sex and HIV status and ^badjusted for age, sex, HIV status, haemoglobin and malaria parasitaemia. Logistic regression, allowing for survey design was used for statistical analysis of risk factors and KSHV prevalence. OR: Odds Ratio, ^cCoef.: regression coefficient CI: confidence Interval. ORF73 and K8.1 antibody levels (measured as optical density) were obtained from ELISA. KSHV prevalence defined as antibody reactivity to either K8.1 or ORF73 antigens. HIV status obtained using rapid diagnostic tests. Malaria parasitaemia determined using rapid diagnostic tests. ^chaemoglobin levels were mean (13.0 g/dL) centred. ^dhaemoglobin levels were altitude adjusted and categorised into normal and anaemic following WHO guidelines. Linear regression with bootstrapped confidence interval used in the analysis of risk factors for KSHV antibody levels.