

Supplementary Materials

Table S1: The search strategy of the umbrella review.

Category	Search Terms
Human papillomavirus	("human papillomavirus"[Title/Abstract] OR "HPV"[Title/Abstract] OR "papillomavirus"[Title/Abstract] OR "human papilloma virus"[Title/Abstract] OR "papilloma virus"[Title/Abstract] OR "HPV-16"[Title/Abstract] OR "HPV-18"[Title/Abstract] OR "high-risk HPV"[Title/Abstract] OR "oncogenic HPV"[Title/Abstract] OR "DNA virus"[Title/Abstract] OR "alphapapillomavirus"[Title/Abstract] OR "Papillomavirus Infections"[MeSH Terms])
Oropharyngeal cancer	("oropharyngeal cancer"[Title/Abstract] OR "oropharyngeal carcinoma"[Title/Abstract] OR "oropharyngeal neoplasm"[Title/Abstract] OR "oropharyngeal tumor"[Title/Abstract] OR "oropharyngeal tumour"[Title/Abstract] OR "oropharynx cancer"[Title/Abstract] OR "oropharynx carcinoma"[Title/Abstract] OR "tonsillar cancer"[Title/Abstract] OR "tonsil cancer"[Title/Abstract] OR "base of tongue cancer"[Title/Abstract] OR "posterior pharyngeal wall cancer"[Title/Abstract] OR "soft palate cancer"[Title/Abstract] OR "pharyngeal cancer"[Title/Abstract] OR "throat cancer"[Title/Abstract] OR "head and neck cancer"[Title/Abstract] OR "squamous cell carcinoma of oropharynx"[Title/Abstract] OR "OPSCC"[Title/Abstract] OR "oropharyngeal squamous cell carcinoma"[Title/Abstract] OR "Oropharyngeal Neoplasms"[MeSH Terms] OR "Carcinoma, Squamous Cell"[MeSH Terms] OR "Head and Neck Neoplasms"[MeSH Terms])
Systematic review/meta-analysis	("systematic review"[Title/Abstract] OR "meta-analysis"[Title/Abstract] OR "meta analysis"[Title/Abstract] OR "systematic literature review"[Title/Abstract] OR "systematic overview"[Title/Abstract] OR "pooled analysis"[Title/Abstract] OR "quantitative review"[Title/Abstract] OR "Systematic Review"[Publication Type] OR "Meta-Analysis"[Publication Type] OR "Review Literature as Topic"[MeSH Terms])
Combination	(HPV terms) AND (OPC terms) AND (systematic review/meta-analysis terms) — full Boolean combination of all three blocks above

Table S2: Methodological quality assessment of the included systematic reviews using AMSTAR 2.

Ref	Q1	Q2 (C)	Q3	Q4 (C)	Q5	Q6	Q7 (C)	Q8	Q9 (C)	Q10	Q11 (C)	Q12	Q13 (C)	Q14	Q15 (C)	Q16	Quality
[1]	Y	N	Y	Y	Y	Y	N	Y	PY	N	Y	PY	PY	Y	N	Y	Low
[2]	Y	Y	Y	PY	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N	Y	Moderate
[3]	Y	N	Y	Y	Y	PY	N	Y	Y	N	NA	Y	Y	Y	N	Y	Moderate
[4]	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	PY	PY	Y	Y	Y	Moderate
[5]	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	High
[6]	Y	N	Y	PY	N	N	N	Y	N	N	Y	N	N	PY	N	Y	Critically low
[7]	Y	N	Y	Y	Y	N	PY	Y	N	N	Y	N	N	Y	Y	Y	Low

Table 2: continue.

[8]	Y	N	Y	PY	Y	N	N	Y	N	N	Y	N	N	Y	N	Y	Critically low
[9]	Y	Y	Y	Y	Y	PY	N	Y	Y	N	Y	PY	PY	Y	Y	Y	Moderate
[10]	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	Moderate
[11]	Y	N	Y	Y	Y	Y	N	Y	N	N	Y	N	N	Y	N	Y	Low
[12]	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N	Y	Moderate
[13]	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	High
[14]	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Moderate
[15]	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	PY	Y	Moderate
[16]	Y	N	Y	Y	Y	Y	N	Y	N	N	Y	N	N	Y	N	Y	Low
[17]	Y	N	Y	Y	Y	Y	N	Y	N	N	Y	Y	Y	Y	Y	Y	Moderate
[18]	Y	N	Y	PY	Y	Y	N	Y	N	N	Y	N	PY	Y	Y	Y	Moderate
[19]	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y	N	Y	Y	N	Y	Low
[20]	Y	N	Y	Y	Y	Y	N	Y	N	N	Y	N	PY	Y	N	Y	Moderate
[21]	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	High
[22]	Y	N	Y	Y	N	N	N	Y	N	N	Y	N	PY	Y	N	Y	Critically low
[23]	Y	N	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	N	Moderate
[24]	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	High

(C): critical domain; N: no; NA: not applicable; PY: partially yes; Y: yes. Q1: PICO components in research question; Q2: protocol registered prior to review; Q3: justification for study designs; Q4: comprehensive literature search; Q5: study selection in duplicate; Q6: data extraction in duplicate; Q7: list of excluded studies with justification; Q8: included studies described in adequate detail; Q9: satisfactory technique for risk of bias assessment; Q10: funding sources reported; Q11: appropriate statistical combination; Q12: impact of RoB on results assessed; Q13: RoB accounted for in interpretation; Q14: heterogeneity discussed; Q15: publication bias investigated; Q16: conflict of interest reported.

Table S3: Corrected Covered Area (CCA) overlap analysis of included systematic reviews and meta-analyses.

Analysis	k	Unique Studies (N)	Corrected Count	CCA (%)	Overlap Category
Prevalence	18	568	223	2.31	Slight
Survival	8	160	30	2.68	Slight
Overall	26	631	350	2.22	Slight

CCA, corrected covered area; k, number of meta-analyses; N, total unique primary studies.

Overlap categories: 0–5% = slight; 6–10% = moderate; 11–15% = high; >15% = very high.

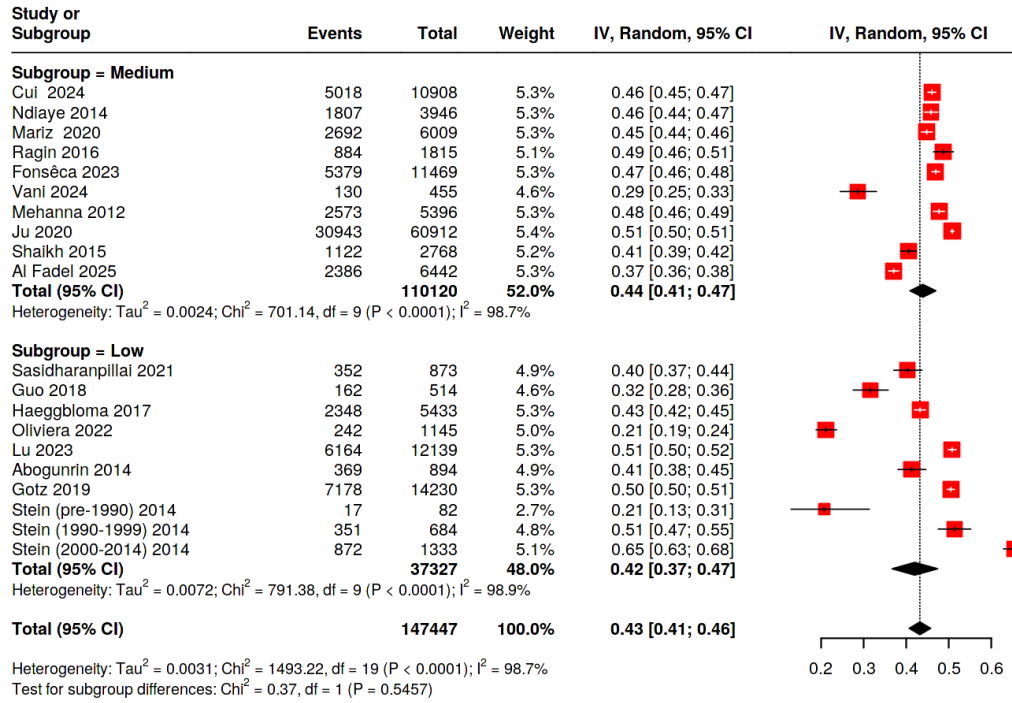


Figure S1: Forest plot of the prevalence of HPV-positive oropharyngeal cases stratified according to study quality

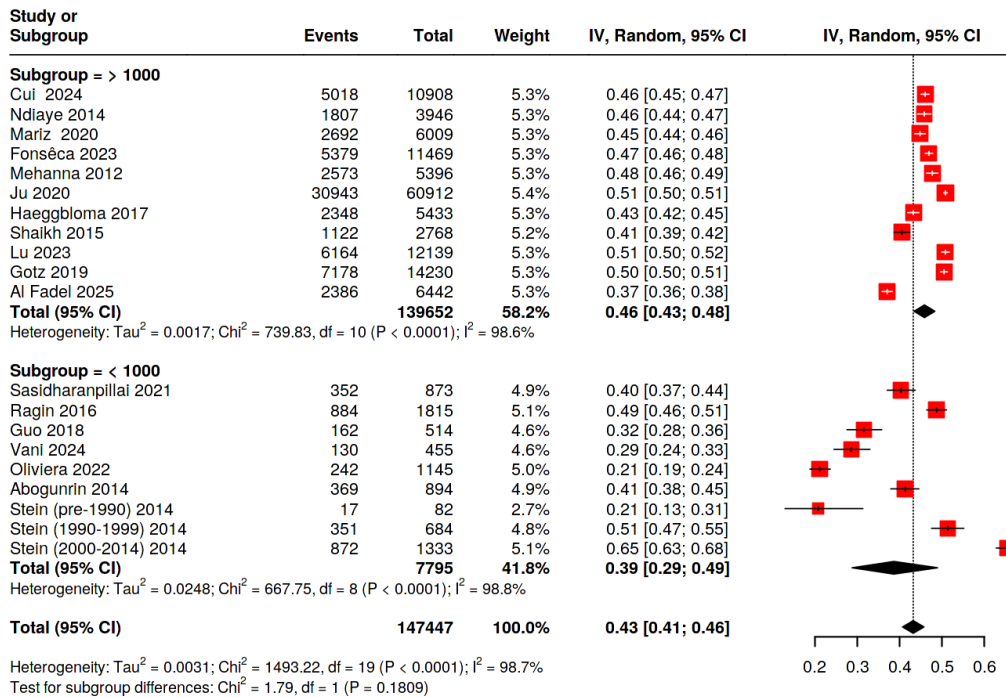


Figure S2: Forest plot of the prevalence of HPV-positive oropharyngeal cases stratified according to sample size

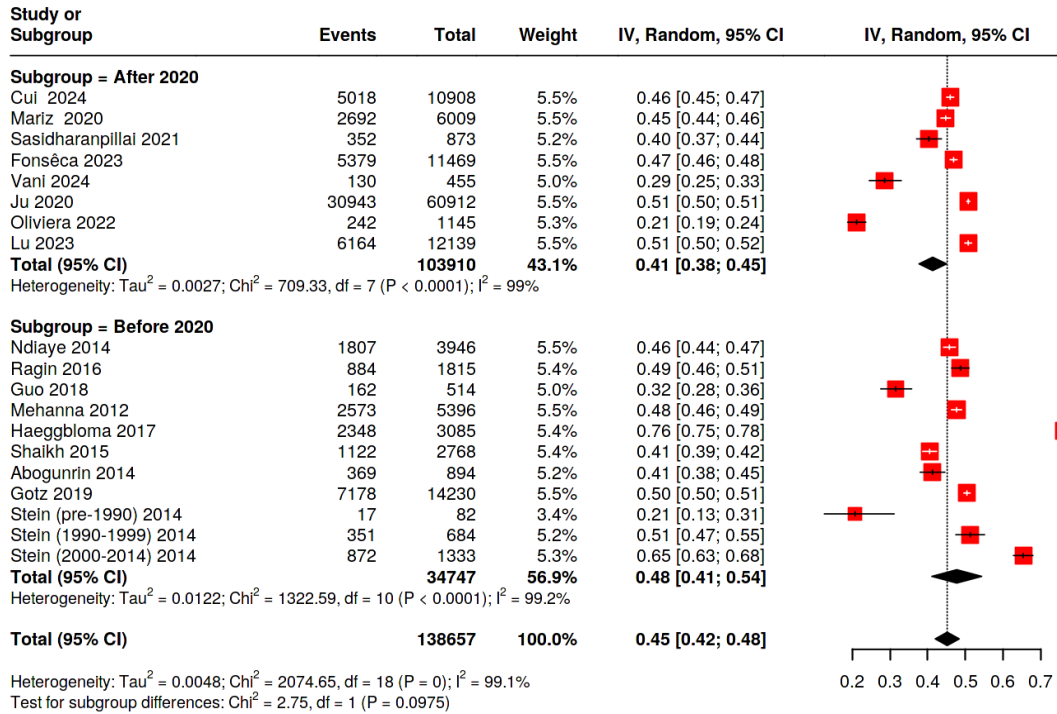


Figure S3: Forest plot of the prevalence of HPV-positive oropharyngeal cases comparing before and after 2020.

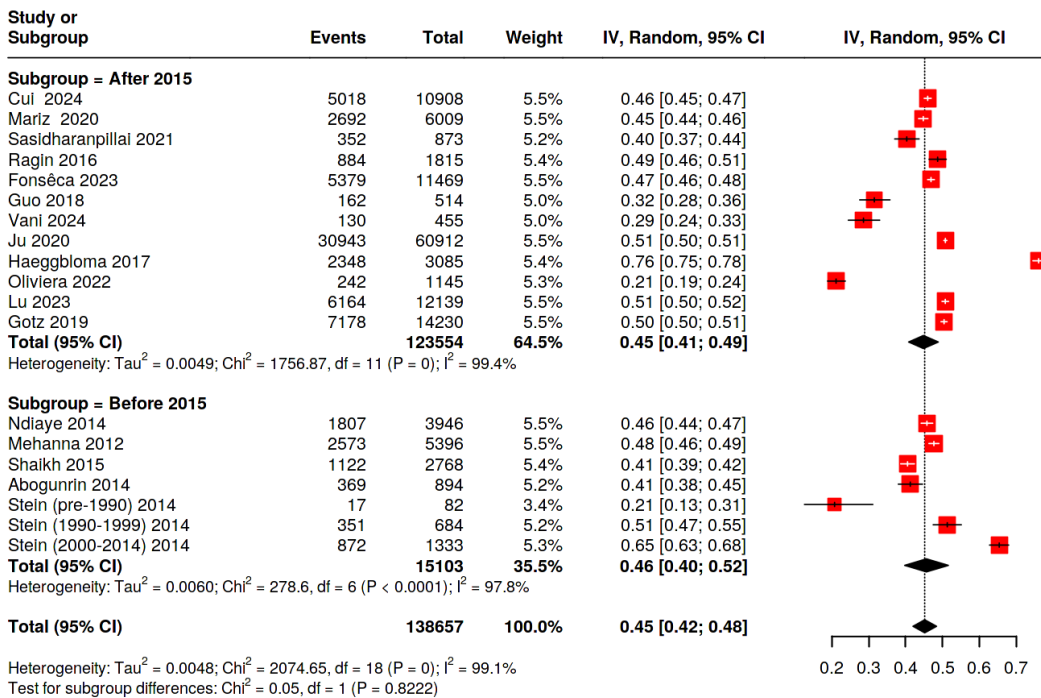


Figure S4: Forest plot of the prevalence of HPV-positive oropharyngeal cases comparing before and after 2015.

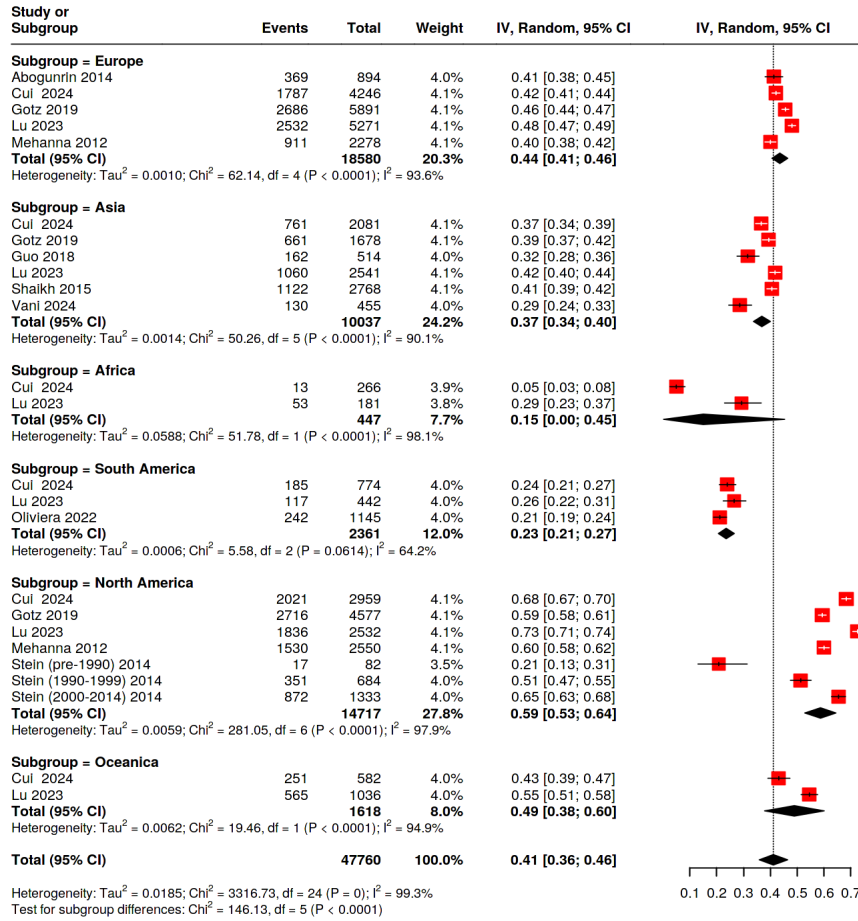


Figure S5: Forest plot of the prevalence of HPV-positive oropharyngeal cases stratified by continents.

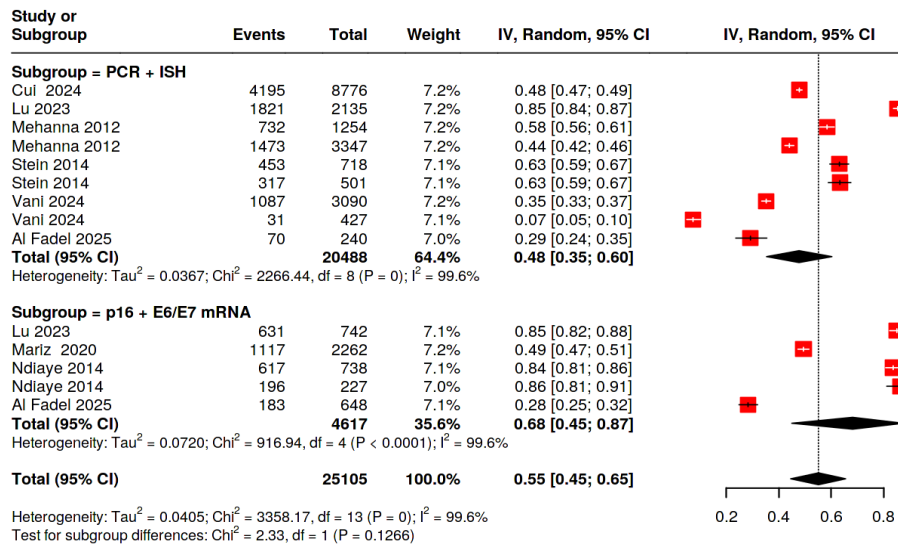


Figure S6: Forest plot of the prevalence of HPV-positive oropharyngeal cases comparing detection methods of PCR + ISH and p16 + E6/E7 mRNA.

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