

Supplementary Materials

Table S1. PRISMA Checklist

Section and Topic	Item #	Checklist items	Location where item is reported (Page no)
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist. (made as per the Journal guidelines)	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	4
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	4, Table S2
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Table S2
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	4
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	4
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g., for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	3
	10b	List and define all other variables for which data were sought (e.g., participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	4

Section and Topic	Item #	Checklist items	Location where item is reported (Page no)
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Table S3
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	5
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	4,5
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	NA
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	4.5
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	5
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	6
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	5
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	NA
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Table S2
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	NA
Study characteristics	17	Cite each included study and present its characteristics.	4,5 Table 1
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Table S3
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using	Table 1, Figure 2

Section and Topic	Item #	Checklist items	Location where item is reported (Page no)
		structured tables or plots.	
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	4
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	5,4 Figure 2
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	5, Figure 3
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	NA
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	NA
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	NA
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	5,6, 7
	23b	Discuss any limitations of the evidence included in the review.	7
	23c	Discuss any limitations of the review processes used.	7
	23d	Discuss implications of the results for practice, policy, and future research.	7
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	3
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	3
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	NA
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	8
Competing interests	26	Declare any competing interests of review authors.	7
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Supplementary Materials

Table S2. The adjusted search terms as per searched electronic databases

Database	Search query	Result
PUBMED	<p>((("Human papillomavirus" [Title/Abstract] OR "HPV" [Title/Abstract] OR "Papillomaviridae" [MeSH Terms] OR "Papillomavirus Infections" [MeSH Terms] OR "HPV-related" [Title/Abstract] OR "HPV-associated" [Title/Abstract] OR "HPV-positive" [Title/Abstract] OR "HPV-induced" [Title/Abstract] OR "HPV-driven" [Title/Abstract] OR "HPV-linked" [Title/Abstract] OR "HPV-attributable" [Title/Abstract]))</p> <p>AND</p> <p>("Head and neck cancer" [Title/Abstract] OR "HNC" [Title/Abstract] OR "Head and Neck Neoplasms" [MeSH Terms] OR "Oropharyngeal cancer" [Title/Abstract] OR "Oropharyngeal Neoplasms" [MeSH Terms] OR "Oropharyngeal carcinoma" [Title/Abstract] OR "Head and neck squamous cell carcinoma" [Title/Abstract] OR "HNSCC" [Title/Abstract] OR "Pharyngeal Neoplasms" [MeSH Terms] OR "Laryngeal Neoplasms" [MeSH Terms] OR "Tonsillar Neoplasms" [MeSH Terms] OR "Laryngeal cancer" [Title/Abstract] OR "Pharyngeal cancer" [Title/Abstract] OR "Tonsillar cancer" [Title/Abstract] OR "Oral cancer" [Title/Abstract] OR "Mouth cancer" [Title/Abstract] OR "Nasopharyngeal Neoplasms" [MeSH Terms] OR "Nasopharyngeal cancer" [Title/Abstract]))</p> <p>AND</p> <p>("Survival Rate" [MeSH Terms] OR "Overall survival" [Title/Abstract] OR "Prognosis" [MeSH Terms] OR "Mortality" [MeSH Terms] OR "Survival Analysis" [MeSH Terms] OR "Outcome" [Title/Abstract] OR "Survival outcome" [Title/Abstract] OR "Survival probability" [Title/Abstract] OR "Survival time" [Title/Abstract] OR "Survival rate" [Title/Abstract] OR "Patient survival" [Title/Abstract] OR "Survival" [Title/Abstract]))</p> <p>AND</p> <p>("Gender differences" [Title/Abstract] OR "Sex differences" [Title/Abstract] OR "Gender disparities" [Title/Abstract] OR "Sex Factors" [MeSH Terms] OR "Sex-specific" [Title/Abstract] OR "Gender-specific" [Title/Abstract] OR "Sex-based" [Title/Abstract] OR "Gender-based" [Title/Abstract] OR "Sex disparity" [Title/Abstract] OR "Gender disparity" [Title/Abstract]))</p>	50
EMBASE	<p>((('human papillomavirus'/exp OR 'HPV':ti,ab OR 'papillomaviridae'/exp OR 'papillomavirus infection'/exp OR 'HPV-related':ti,ab OR 'HPV-associated':ti,ab OR 'HPV-positive':ti,ab OR 'HPV-induced':ti,ab OR 'HPV-driven':ti,ab OR 'HPV-linked':ti,ab OR 'HPV-attributable':ti,ab)</p> <p>AND</p> <p>('head and neck cancer'/exp OR 'HNC':ti,ab OR 'head and neck tumor'/exp OR 'head and neck carcinoma'/exp OR 'oropharyngeal cancer'/exp OR 'oropharyngeal tumor'/exp OR 'oropharyngeal carcinoma'/exp OR 'head and neck squamous cell carcinoma':ti,ab OR 'HNSCC':ti,ab OR 'pharyngeal cancer'/exp OR 'laryngeal cancer'/exp OR 'tonsillar cancer'/exp OR 'oral cancer':ti,ab OR 'mouth cancer':ti,ab OR 'nasopharyngeal cancer'/exp OR 'pharyngeal tumor'/exp OR 'laryngeal tumor'/exp OR 'tonsillar tumor'/exp)</p> <p>AND</p> <p>('survival rate'/exp OR 'overall survival':ti,ab OR 'prognosis'/exp OR 'mortality'/exp OR 'survival analysis'/exp OR 'outcome':ti,ab OR 'survival outcome':ti,ab OR 'survival probability':ti,ab OR 'survival time':ti,ab OR 'survival rate':ti,ab OR 'patient survival':ti,ab OR 'clinical outcome':ti,ab OR 'survival':ti,ab)</p> <p>AND</p>	27

	('gender difference':ti,ab OR 'sex difference':ti,ab OR 'gender disparity':ti,ab OR 'sex factor'/exp OR 'sex-specific':ti,ab OR 'gender-specific':ti,ab OR 'sex-based':ti,ab OR 'gender-based':ti,ab OR 'sex disparity':ti,ab OR 'gender disparity':ti,ab))	
Web of Science	<p>TS=("Human papillomavirus" OR "HPV" OR "Papillomaviridae" OR "Papillomavirus Infections" OR "HPV-related" OR "HPV-associated" OR "HPV-positive" OR "HPV-induced" OR "HPV-driven" OR "HPV-linked" OR "HPV-attributable")</p> <p>AND</p> <p>TS=("Head and neck cancer" OR "HNC" OR "Head and Neck Neoplasms" OR "Oropharyngeal cancer" OR "Oropharyngeal Neoplasms" OR "Oropharyngeal carcinoma" OR "Head and neck squamous cell carcinoma" OR "HNSCC" OR "Pharyngeal Neoplasms" OR "Laryngeal Neoplasms" OR "Tonsillar Neoplasms" OR "Laryngeal cancer" OR "Pharyngeal cancer" OR "Tonsillar cancer" OR "Oral cancer" OR "Mouth cancer" OR "Nasopharyngeal Neoplasms" OR "Nasopharyngeal cancer")</p> <p>AND</p> <p>TS=("Survival Rate" OR "Overall survival" OR "Prognosis" OR "Mortality" OR "Survival Analysis" OR "Outcome" OR "Survival outcome" OR "Survival probability" OR "Survival time" OR "Survival rate" OR "Patient survival" OR "Clinical outcome" OR "Survival")</p> <p>AND</p> <p>TS=("Gender differences" OR "Sex differences" OR "Gender disparities" OR "Sex Factors" OR "Sex-specific" OR "Gender-specific" OR "Sex-based" OR "Gender-based" OR "Sex disparity" OR "Gender disparity")</p>	30

Table S3. Newcastle-Ottawa Scale for the quality assessment of included studies

Study	SELECTION (max 4 points)				COMPARABILITY (max 2 points)	OUTCOME (max 3 points)			SCORE (out of 9)
	Representativeness of the disease population	Selection of the comparator	Ascertainment of diagnosis	Demonstration of the outcome of interest was not present at start of study		Assessment of outcome	Was follow-up long enough for outcomes to occur?	Adequacy of the follow-up	
Abdel-Rahman 2020	1	0	1	1	1	1	1	1	6
Amini 2016	1	0	1	1	1	1	0	1	5
Baliga 2023	1	1	1	1	2	1	0	0	7
Berger 2021	1	0	1	1	1	1	1	1	6
Faraji 2019	1	0	1	1	1	1	1	1	6
Goodman 2015	1	0	1	1	2	1	1	1	8
Kao 2022	1	1	1	1	2	1	0	0	7
Li 2018	1	0	1	1	1	1	1	1	6
Preissner 2022	1	1	1	1	2	1	0	0	7
Sheth 2021	1	1	1	1	2	1	1	0	8
Wookey 2019	1	0	1	1	1	1	1	1	6
Wu 2021	1	0	1	1	1	1	0	1	5
Yin 2018	1	0	1	1	1	1	1	1	6

