

Supplementary Table 1: Study Characteristics of included studies for systematic review

S. No	Author, Year & Population	Sample Size	Age	Gender	Salivary Sialic Acid Levels in Healthy Individuals (Mean $\pm$ SD) (mg/dL)	Salivary Sialic Acid Levels in Oral Precancer (Mean $\pm$ SD) (mg/dL)	Salivary Sialic Acid Levels in Cancer (Mean $\pm$ SD) (mg/dL)	Outcome
1	Diana Daniel et al . [25] , India	n=60	20-70 years	NIL	25.45 $\pm$ 16.07	169.80 $\pm$ 66.43	545.45 $\pm$ 100.04	Elevated salivary sialic acid levels indicate its role as a tumor marker
2	V.T. Hemalatha et al . [26] , Chennai	n=60	Group I - 37.25 + 6.74 Group II - 47.40 + 9.54 Group III - 56.35 + 10.95	Group I - 1.70 + 0.47 Group II - 1.20 + 0.41 Group III - 1.20 + 0.41	FSA - 4.22 $\pm$ 0.48 PBSA - 2.10 $\pm$ 0.52	FSA - 6.73 $\pm$ 0.71 PBSA- 2.60 $\pm$ 0.34	FSA - 2.65 $\pm$ 0.67 PBSA - 2.97 $\pm$ 0.33	Significantly elevated salivary FSA & PBSA in of oral cancer patients, suggests correlation of elevated salivary sialic acid levels to the progression of precancer
3	Bhairavi N et al . [19], Gujarat	n=250	Group I - 19 - 56 Group II - 16 - 65 Group III - 19 - 73	Group I - M: 92, F: 8 Group II - M: 47, F: 3 Group III - M: 84, F: 16	0.0086 $\pm$ 0.00065	0.0126 $\pm$ 0.0010	0.0128 $\pm$ 0.00022	Higher levels of salivary TSA/ TP ratio in patients with OPC and oral cancer patients.
4	Maya Ramesh et al . [27] , India	n=60	Group I - 32 - 65 Group II - 35 - 64 Group III - 47 - 68	Group I - M: 15, F: 5 Group II - M: 14, F: 6 Group III - M: 16, F: 4	21.65 $\pm$ 5.71	59.75 $\pm$ 7.29	204.85 $\pm$ 60.38	TSA was low in healthy, moderate for pre cancer and very high values for OSCC
5	Dadhich M et al . [20] 2014, India	n=85	Group I - 21 - 52 Group II - 18 - 60 Group III - 25 - 75	Group I - M: 18, F: 12 Group II - M: 23, F: 2 Group III - M: 23, F: 7	1.15113 $\pm$ 1.494	2.3303 $\pm$ 1.31440	9.0304 $\pm$ 6.2134	A consistent elevation in the salivary sialic acid level from normal to OPMD to oral cancer has been observed which suggest that sialic acid is a valuable early biomarker for OPMD and OC
6	Sonika Achalli et al . [34] , India	n=90	20 - 70 years	M: 76.7% F: 23.3%	40.373 $\pm$ 1.554	57.5626 $\pm$ 1.5656	80.4223 $\pm$ 1.4926	High expression of sialic acid in saliva of subjects with OPMDs and OC when compared to healthy controls.
7	Anandhi Sekar et al 2020, India, [44]	n=60	20 - 60 years	NIL.	1.35 $\pm$ 1.53	4.27 $\pm$ 2.19	5.30 $\pm$ 1.45	The salivary sialic acid levels were highly significant among the study groups and can be used as a predictable tumour marker.

S. No	Author, Year & Population	Sample Size	Age	Gender	Salivary Sialic Acid Levels in Healthy Individuals (Mean $\pm$ SD) (mg/dL)	Salivary Sialic Acid Levels in Oral Precancer (Mean $\pm$ SD) (mg/dL)	Salivary Sialic Acid Levels in Cancer (Mean $\pm$ SD) (mg/dL)	Outcome
8	Krithigaa Sivaraman et al 2021, India, [45]	n=60	20 - 60 years	M: 64.28%. F: 35.71%	15.29	46.3	36.5	The sialic acid levels showed a statistical difference between clinical staging and histological grading of leukoplakia, OSMF and OSCC.
9	Dahal S et al . [31] , India	n=60	NIL	45 - Males 15 - females	FSA - 1.80 PBSA - 2.10	FSA - 3.70 PBSA - 5.20	FSA - 5.80 PBSA - 3.81	SSA levels may be a good marker for prediction of premalignancy and oral squamous cell carcinoma transformation.
10	Shivashankara AR et al 2011, India, [46]	n=120	20 - 60 years	Group I - M: 50 Group II - M: 70	NIL	FSA - 21% PBSA - 31%	NIL	Higher levels of SSA in oral precancer and cancer compared to healthy group and could serve as a sensitive biomarker of OSCC
11	Rohit Mohan et al . [35] , India	n=100	Group I: 21 - 77 years Group II: 14 - 57 years	Group I - M:31, F: 19 Group II - M: 30, F: 20	FSA - 2.460 $\pm$ 0.376 PBSA - 1.649 $\pm$ 0.376	FSA - 3.559 $\pm$ 0.554 PBSA - 3.648 $\pm$ 0.289	NIL	There is an increase in levels of bound SSA in OPMD subjects when compared with control group. Thus, bound SSA appears to be a potential biomarker.
12	Sivakumar et al . [32] , India	n=172	Group I and Group II - 43.6 - 46.8	Group I and Group II - M: 144 F: 28	1.898 $\pm$ 0.289	2.680 $\pm$ 0.189	NIL	SSA levels are significantly raised in patients with OL and thus it proves to be a sensitive, specific, and cost-effective biomarker for OL.
13	PR Sanjay et al 2008, Karnataka, [47]	n=60	Group I: < 40 - 24 > 40 - 6 Group II: < 40 - 5 > 40 - 25	Group I - M: 29 F: 1 Group II - M: 25 F: 5	FSA - 3.4 $\pm$ 0.02 PBSA- 2.06 $\pm$ 0.01	NIL	FSA - 4.3 $\pm$ 0.01 PBSA - 3.02 $\pm$ 0.01	Higher levels of FSA & PBSA levels in OSCC and suggests correlation of elevated salivary sialic acid levels to the progression of OSCC.
14	Nidhi Dhakar et al . [30] , India	n=60	Group II - 45 - 60 years	Group II - M: 31 F: 9	40.941 $\pm$ 5.7722	NIL	102.12 $\pm$ 15.3856	SSA levels may be used as a tumour marker for early diagnosis as well as to predict the prognosis of a malignancy.

S. No	Author, Year & Population	Sample Size	Age	Gender	Salivary Sialic Acid Levels in Healthy Individuals (Mean $\pm$ SD) (mg/dL)	Salivary Sialic Acid Levels in Oral Precancer (Mean $\pm$ SD) (mg/dL)	Salivary Sialic Acid Levels in Cancer (Mean $\pm$ SD) (mg/dL)	Outcome
15	Sayeeda Mussavira et al . [43] , Karnataka	n=75	Group I - 41 - 69 Group II - 33 - 76	Group I - M: 31, F: 19 Group II - M: 15, F: 10	3.665 (2.043 - 6.331)	NIL	3.664 (1.5 - 5.419)	SA levels can be used for differentiation of OSCC from healthy controls. Cut-off value - 5.4mg/dL, sensitivity - 95.24%, specificity - 100%.
16	Pratibha Poudel et al . [29] , Nepal	n=100	NIL	Group I and Group II - M: 72% F: 28%	FSA - 0.401 $\pm$ 0.138 PBSA- 0.092 $\pm$ 0.038	NIL	FSA - 0.936 + 0.391 PBSA - 0.494 + 0.419	The study suggests that sialic acid is a valuable biomarker of OSCC. It may be used to assess the histological grading of oral cancer and predict the disease outcome and response to the therapy.
17	Mahnaaz Sultana Azeem et al . [39] , India	n=96	31 - 60 years	Group I - M: 12, F: 20 Group II - M: 4, F: 28. Group III - M: 11, F: 21	FSA - 21.62 + 8.86 PBSA - 22.73 + 3.01	NIL	FSA - 63.45 + 9.8 PBSA - 31.17 + 7.6	SSA levels are significantly raised in oral cancer. The FSA levels in saliva can be used as a biomarker in the detection of oral cancer.
18	Paul Simon et al 2021, India, [48]	n=71	Group I - 45–62 years Group II - 45 - 68 years	M: F - 25: 6	PBSA - 1.25 + 0.22	NIL	PBSA - 2.83 + 0.41	Significantly higher levels of sialic acid in the saliva of HNC patients. Salivary biochemical parameters could serve as sensitive and convenient biomarkers of HNC.
19.	Kriti Garg et al . [33] , India	n=138	35 - 65 years Group I - 35-45 (5) 45-55 (34) 55-65 (28) >65 (11)	Group I - M: 42, F: 36	TSA - 42.75 $\pm$ 3.41 PBSA - 1.68 $\pm$ 0.10	NIL	TSA - 111.11 $\pm$ 5.108 PBSA- 1.668 $\pm$ 0.197	A significant increase in SSA, suggests that it can be used as a reliable biomarker in saliva for screening and early detection of oral cancer.
20.	Suganya Rajaram et al . [36] , Pondicherry	n=31	NIL	NIL	11.91 + 2.36	NIL	26.56 + 24.47	Increase in SSA levels with histopathologic grades of carcinoma correlates with progression of cancer.

S. No	Author, Year & Population	Sample Size	Age	Gender	Salivary Sialic Acid Levels in Healthy Individuals (Mean $\pm$ SD) (mg/dL)	Salivary Sialic Acid Levels in Oral Precancer (Mean $\pm$ SD) (mg/dL)	Salivary Sialic Acid Levels in Cancer (Mean $\pm$ SD) (mg/dL)	Outcome
21.	Mahmood Rasool et al . [37] , India	n=80	NIL	NIL	0.16 $\pm$ 0.08	NIL	1.88 $\pm$ 0.73	SSA could serve as sensitive markers of OSCC. Sensitivity of sialic acid levels were high, 100% in saliva and low 93.33% in blood.
22.	Mohd. Saleem et al . [24] , India	n=100	26 - 73 years	Group I - M: 88%, F: 12% Group II - M: 84%, F: 16%	FSA - 3.26 $\pm$ 0.09 PBSA - 2.11 $\pm$ 0.09	NIL	FSA - 4.10 $\pm$ 0.06 PBSA - 2.92 $\pm$ 0.03	FSA & PBSA were elevated in oral precancer when compared to healthy group and thus, could help in early diagnosis of oral cancer.