

Table S1 Univariate analysis of factors associated with all-cause mortality of patients with ACC of salivary gland

Variable	Median survival time* (95% CI)	HR (95% CI)	χ^2	P
Sex			6.28	0.012
Male	10.5 (9.33, /)			
Female	/ (/, /)	0.78 (0.64, 0.95)		
Marriage status			20.29	<0.001
Married	/(10.83, /)			
Alone	/(10.75, /)	0.92 (0.69, 1.21)		
Other	7.83 (6.92, /)	1.61 (1.28, 2.02)		
Race			4.37	0.497
Non-Hispanic White	10.75 (9.5, /)			
Hispanic (all races)	/(/, /)	0.75 (0.53, 1.06)		
Non-Hispanic Black	/(9.42, /)	0.9 (0.64, 1.27)		
Non-Hispanic Asian or Pacific Islander	/(10.83, /)	0.83 (0.59, 1.15)		
Non-Hispanic Unknown Race	8.5 (/, /)	0.48 (0.07, 3.44)		
Non-Hispanic American Indian/Alaska Native	/(/, /)	0.56 (0.08, 3.98)		
T stage			118.85	<0.001
T0 or T1	/(/, /)			
T2	/(10.58, /)	1.98 (1.38, 2.83)		
T3	8.33 (6.67, /)	3.64 (2.58, 5.12)		
T4	6.25 (4.67, 8.17)	4.93 (3.53, 6.89)		
Unknown	10.75 (7.17, /)	3.17 (2.13, 4.73)		
N stage			146.21	<0.001
N0	/(/, /)			
N1/N2/N3	3.17 (2.33, 5.83)	3.71 (2.96, 4.66)		
Unknown	8.5 (5.67, /)	1.9 (1.32, 2.75)		
M stage			272.62	<0.001
M0	/(11.92, /)			
M1	1.83 (1.33, 2.42)	6.14 (4.8, 7.84)		
Unknown	/(7.17, /)	1.08 (0.63, 1.86)		
AJCC			240.14	<0.001
I	/(/, /)			
II	/(10.75, /)	1.8 (1.2, 2.7)		
III	/(8.75, /)	2.61 (1.76, 3.86)		
IV	4.42 (3.25, 5.75)	7.23 (5.16, 10.14)		
Unknown	/(10.75, /)	2.39 (1.52, 3.77)		
Age, years			90.75	<0.001
<60	/(/, /)			
≥60	7.67 (6.5, 8.75)	2.61 (2.12, 3.2)		
Tumor size, mm			72.49	<0.001
<40	/(/, /)			
≥40	6.25 (4.33, 7.75)	2.64 (2.09, 3.33)		
Unknown	10.75 (7.25, /)	1.64 (1.24, 2.19)		
Surgery therapy			152.94	<0.001
No	3 (2, 4.75)			
Yes	/(/, /)	0.25 (0.2, 0.31)		
Radiation therapy			36.27	<0.001
No	8.5 (6.67, /)			
Yes	/(10.92, /)	0.55 (0.45, 0.67)		
Chemotherapy			100.86	<0.001
No	/(10.92, /)			
Yes	3.42 (1.83, 4.5)	3.58 (2.75, 4.67)		

*, when more than half of the samples survived at the end of follow-up, the median survival time could not be obtained. ACC, adenoid cystic carcinoma; AJCC, the American Joint Commission on Cancer. HR, hazard ratio; CI, confidence interval.

Table S2 Univariate analysis of factors associated with cancer-specific mortality of patients with ACC of salivary gland

Variable	HR (95% CI)	P
Gender		
Male	Ref	
Female	0.81 (0.63, 1.06)	0.120
Marriage status		
Married	Ref	
Alone	1.1 (0.78, 1.53)	0.600
Other	1 (0.72, 1.39)	1.000
Race		
Non-Hispanic White	Ref	
Hispanic (All Races)	1.03 (0.68, 1.58)	0.880
Non-Hispanic Black	1.17 (0.77, 1.79)	0.460
Non-Hispanic Asian or Pacific Islander	1.13 (0.76, 1.69)	0.550
Non-Hispanic Unknown Race	0 (0, 0)	<0.001
Non-Hispanic American Indian/Alaska Native	0 (0, 0)	<0.001
T stage		
T0 or T1	Ref	
T2	2.62 (1.51, 4.56)	<0.001
T3	5.35 (3.19, 8.99)	<0.001
T4	8.72 (5.28, 14.42)	<0.001
Unknown	4.06 (2.2, 7.51)	<0.001
N stage		
N0	Ref	
N1/N2/N3	6.23 (4.74, 8.2)	<0.001
Unknown	2.39 (1.43, 4)	<0.001
M stage		
M0	Ref	
M1	6.21 (4.55, 8.49)	<0.001
Unknown	0.9 (0.4, 2.02)	0.800
AJCC		
I	Ref	
II	2.37 (1.19, 4.75)	0.015
III	4.43 (2.32, 8.46)	<0.001
IV	15.44 (8.64, 27.59)	<0.001
Unknown	3.19 (1.5, 6.81)	0.0027
Age, years		
<60	Ref	
≥60	1.3 (1, 1.68)	0.048
Tumor size, mm		
<40	Ref	
≥40	2.72 (2.03, 3.65)	<0.001
Unknown	1.47 (0.98, 2.19)	0.061
Surgery therapy		
No	Ref	
Yes	0.29 (0.21, 0.4)	<0.001
Radiation therapy		
No	Ref	
Yes	0.75 (0.58, 0.98)	0.036
Chemotherapy		
No	Ref	
Yes	4.4 (3.2, 6.05)	<0.001

ACC, adenoid cystic carcinoma; AJCC, the American Joint Commission on Cancer; HR, hazard ratio; CI, confidence interval.

Table S3 Univariate analysis of factors associated with all-cause mortality of patients with ACC of mouth and oropharynx

Variable	Median survival time* (95% CI)	HR (95% CI)	χ^2	P
Sex			2.24	0.134
Male	9.83 (7.5, /)			
Female	11.17 (8.92, /)	0.79 (0.58, 1.08)		
Marriage status			9.22	0.010
Married	11.33 (9.42, /)			
Alone	9.92 (9.42, /)	0.86 (0.54, 1.38)		
Other	7.33 (6.25, 9.67)	1.62 (1.14, 2.3)		
Race			12.36	0.030
Non-Hispanic White	11.08 (8.75, /)			
Hispanic (All Races)	/ (7.5, /)	0.76 (0.44, 1.31)		
Non-Hispanic Black	9.67 (7.83, /)	1.18 (0.76, 1.85)		
Non-Hispanic Asian or Pacific Islander	8.92 (7, /)	1.2 (0.74, 1.96)		
Non-Hispanic Unknown Race	/ (/, /)	0 (0, Inf)		
Non-Hispanic American Indian/Alaska Native	4.5 (1.67, /)	4.72 (1.48, 15.03)		
T stage			46.04	<0.001
T0 or T1	/ (11.33, /)			
T2	11.67 (9.42, /)	1.23 (0.71, 2.11)		
T3	5.58 (4.08, /)	3.92 (2.13, 7.2)		
T4	7.25 (5.83, 9.67)	3.15 (2.05, 4.85)		
Unknown	7.83 (6.25, /)	2.8 (1.67, 4.68)		
N stage			46.19	<0.001
N0	11.17 (9.42, /)			
N1/N2/N3	2.67 (1.58, /)	3.78 (2.45, 5.84)		
Unknown	6.25 (3.75, /)	2.16 (1.32, 3.55)		
M stage			37.84	<0.001
M0	11.17 (9.17, /)			
M1	2.83 (1.42, /)	3.88 (2.44, 6.17)		
Unknown	9.83 (6.25, /)	1.18 (0.62, 2.24)		
AJCC			55.03	<0.001
I	/ (11.33, /)			
II	11.67 (9.42, /)	1.29 (0.71, 2.32)		
III	8.42 (5.58, /)	2.29 (1.1, 4.77)		
IV	6.83 (4.75, 8.33)	4.05 (2.59, 6.33)		
Unknown	8.92 (6.75, /)	2.66 (1.52, 4.66)		
Age, years			36.19	<0.001
<60	/ (/, /)			
≥60	7.58 (6.83, 8.75)	2.63 (1.9, 3.64)		
Tumor size, mm			38.46	<0.001
<40	11.33 (9.92, /)			
≥40	4.92 (3.75, 9.67)	3.12 (2.11, 4.61)		
Unknown	7.83 (6.25, /)	1.83 (1.23, 2.72)		
Surgery therapy			49.82	<0.001
No	5.25 (3.92, 7.5)			
Yes	11.67 (11.08, /)	0.32 (0.23, 0.44)		
Radiation therapy			9.86	0.002
No	8.42 (7.5, 11.08)			
Yes	11.67 (11.17, /)	0.61 (0.45, 0.84)		
Chemotherapy			23.76	<0.001
No	11.17 (9.67, /)			
Yes	5.25 (3.08, 8.92)	2.72 (1.79, 4.13)		

*, when more than half of the samples survived at the end of follow-up, the median survival time could not be obtained. ACC, adenoid cystic carcinoma; AJCC, the American Joint Commission on Cancer; HR, hazard ratio; CI, confidence interval.

Table S4 Univariate analysis of factors associated with cancer-specific mortality of patients with ACC of mouth and oropharynx

Variable	HR (95%CI)	P
Gender		
Male	Ref	
Female	0.79 (0.52, 1.2)	0.260
Marriage status		
Married	Ref	
Alone	1.17 (0.67, 2.04)	0.590
Other	1.13 (0.68, 1.9)	0.630
Race		
Non-Hispanic White	Ref	
Hispanic (All Races)	1.69 (0.93, 3.1)	0.088
Non-Hispanic Black	1.65 (0.9, 3.03)	0.110
Non-Hispanic Asian or Pacific Islander	1.13 (0.76, 1.69)	0.550
Non-Hispanic Unknown Race	2.23 (1.25, 3.95)	0.006
Non-Hispanic American Indian/Alaska Native	2.23 (1.25, 3.95)	0.0062
T stage		
T0 or T1	Ref	
T2	1.16 (0.54, 2.49)	0.710
T3	3.79 (1.63, 8.77)	0.0019
T4	2.96 (1.62, 5.39)	<0.001
Unknown	2.47 (1.2, 5.08)	0.015
N stage		
N0	Ref	
N1/N2/N3	5.73 (3.3, 9.95)	<0.001
Unknown	2.39 (1.19, 4.82)	0.015
M stage		
M0	Ref	
M1	6.32 (3.61, 11.04)	<0.001
Unknown	0.98 (0.36, 2.67)	0.960
AJCC		
I	Ref	
II	1.27 (0.51, 3.17)	0.610
III	2.74 (0.96, 7.78)	0.059
IV	5.36 (2.73, 10.49)	<0.001
Unknown	2.45 (1.03, 5.82)	0.042
Age, years		
<60	Ref	
≥60	1.18 (0.78, 1.79)	0.430
Tumor size, mm		
<40	Ref	
≥40	2.47 (1.43, 4.28)	0.0012
Unknown	1.94 (1.13, 3.31)	0.016
Surgery therapy		
No	Ref	
Yes	0.42 (0.26, 0.66)	<0.001
Radiation therapy		
No	Ref	
Yes	0.94 (0.62, 1.42)	0.750
Chemotherapy		
No	Ref	
Yes	3.65 (2.23, 5.97)	<0.001

ACC, adenoid cystic carcinoma; AJCC, the American Joint Commission on Cancer; HR, hazard ratio; CI, confidence interval.

Table S5 Univariate analysis of factors associated with all-cause mortality of patients with ACC of nose, nasal cavity and middle ear

Variable	Median survival time* (95% CI)	HR (95% CI)	χ^2	P
Sex			0.69	0.405
Male	5.83 (4.92, 7.42)			
Female	6.75 (5.5, 8.5)	0.89 (0.68, 1.17)		
Marriage status			19.4	<0.001
Married	7.42 (6.17, 10.58)			
Alone	5 (3.58, 8.92)	1.69 (1.16, 2.47)		
Other	3.92 (3, 6.75)	1.94 (1.41, 2.67)		
Race			5.46	0.363
Non-Hispanic White	5.5 (4.83, 7.08)			
Hispanic (All Races)	10.08 (7.42, /)	0.75 (0.48, 1.18)		
Non-Hispanic Black	5.92 (3.92, /)	1.07 (0.71, 1.61)		
Non-Hispanic Asian or Pacific Islander	8.42 (5.83, /)	0.66 (0.41, 1.05)		
Non-Hispanic Unknown Race	7.58 (7.58, /)	0.48 (0.07, 3.41)		
Non-Hispanic American Indian/Alaska Native	/ (1, /)	0.52 (0.07, 3.73)		
T stage			6.40	0.171
T0 or T1	9.67 (6.08, /)			
T2	7.25 (4.92, /)	1.03 (0.53, 2)		
T3	5.58 (4.5, 9.83)	1.62 (0.96, 2.74)		
T4	6.08 (4.42, 7.42)	1.61 (1, 2.59)		
Unknown	5.67 (3.92, /)	1.5 (0.87, 2.57)		
N stage			6.05	0.048
N0	6.92 (5.92, 7.83)			
N1/N2/N3	2.67 (1.5, /)	1.8 (1, 3.24)		
Unknown	5.25 (3.42, 7.42)	1.34 (0.95, 1.88)		
M stage			29.39	<0.001
M0	7.08 (5.83, 8.5)			
M1	1.58 (0.83, /)	3.25 (2.07, 5.1)		
Unknown	5.42 (3.83, /)	1.27 (0.86, 1.87)		
AJCC			8.93	0.063
I	9.67 (4.75, /)			
II	7.25 (6.92, /)	0.84 (0.41, 1.7)		
III	6.75 (5.42, /)	1.18 (0.66, 2.1)		
IV	5.33 (4.33, 7.08)	1.62 (1, 2.64)		
Unknown	5.58 (3.92, /)	1.38 (0.8, 2.39)		
Age, years			23.87	<0.001
<60	7.67 (7.08, 10.58)			
≥60	4.5 (3.67, 5.5)	1.96 (1.49, 2.59)		
Tumor size, mm			8.51	0.014
<40	7.58 (5.83, /)			
≥40	6.25 (4.33, /)	1.3 (0.89, 1.89)		
Unknown	5.17 (3.92, 6.92)	1.6 (1.16, 2.21)		
Surgery therapy			73.57	<0.001
No	3.33 (2.5, 3.92)			
Yes	8.67 (7.33, 10.58)	0.32 (0.24, 0.42)		
Radiation therapy			45.98	<0.001
No	3.83 (3.33, 4.75)			
Yes	8.67 (7.33, 10.67)	0.39 (0.3, 0.52)		
Chemotherapy			5.00	0.025
No	6.83 (5.67, 7.67)			
Yes	5.08 (3.83, 8.67)	1.45 (1.04, 2)		

*, when more than half of the samples survived at the end of follow-up, the median survival time could not be obtained. ACC, adenoid cystic carcinoma; AJCC, the American Joint Commission on Cancer; HR, hazard ratio; CI, confidence interval.

Table S6 Univariate analysis of factors associated with cancer-specific mortality of patients with ACC of nose, nasal cavity and middle ear

Variable	HR (95% CI)	P
Gender		
Male	Ref	
Female	0.95 (0.68, 1.35)	0.790
Marriage status		
Married	Ref	
Alone	1.17 (0.67, 2.04)	0.590
Other	1.13 (0.68, 1.9)	0.630
Race		
Non-Hispanic White	Ref	
Hispanic (All Races)	0.78 (0.43, 1.4)	0.400
Non-Hispanic Black	0.96 (0.58, 1.6)	0.890
Non-Hispanic Asian or Pacific Islander	0.8 (0.46, 1.37)	0.410
Non-Hispanic Unknown Race	0.97 (0.24, 3.98)	0.970
Non-Hispanic American Indian/Alaska Native	1.15 (0.1, 13.51)	0.910
T stage		
T0 or T1	Ref	
T2	2.08 (0.75, 5.75)	0.160
T3	3.02 (1.28, 7.12)	0.012
T4	4.46 (2, 9.91)	<0.001
Unknown	3.16 (1.3, 7.67)	0.011
N stage		
N0	Ref	
N1/N2/N3	2.55 (1.19, 5.43)	0.016
Unknown	1.15 (0.72, 1.82)	0.560
M stage		
M0	Ref	
M1	2.2 (1.17, 4.16)	0.015
Unknown	1.42 (0.85, 2.37)	0.180
AJCC		
I	Ref	
II	2.25 (0.78, 6.52)	0.130
III	2.66 (1.04, 6.84)	0.042
IV	4.66 (1.97, 11.01)	<0.001
Unknown	2.9 (1.13, 7.44)	0.026
Age, years		
<60	Ref	
≥60	0.82 (0.58, 1.17)	0.280
Tumor size, mm		
<40	Ref	
≥40	1.17 (0.73, 1.87)	0.520
Unknown	1.56 (1.04, 2.34)	0.030
Surgery therapy		
No	Ref	
Yes	0.34 (0.24, 0.49)	<0.001
Radiation therapy		
No	Ref	
Yes	0.53 (0.37, 0.74)	<0.001
Chemotherapy		
No	Ref	
Yes	1.34 (0.88, 2.04)	0.170

ACC, adenoid cystic carcinoma; AJCC, the American Joint Commission on Cancer; HR, hazard ratio; CI, confidence interval.