

Summary of missingness

Supplementary Table 1. Missingness of primary outcome (API) against demographic characteristics, stratified by timepoint. API was never missing at Baseline.

Characteristic	API at 6 Weeks			API at 12 Weeks		
	Missing N = 41 ¹	Present N = 117 ¹	p- value ²	Missing N = 103 ¹	Present N = 55 ¹	p- value ²
Treatment			0.2			>0.9
Control	10/41 (24%)	41/117 (35%)		33/103 (32%)	18/55 (33%)	
OHI + DOHE	19/41 (46%)	35/117 (30%)		36/103 (35%)	18/55 (33%)	
DOHE alone	12/41 (29%)	41/117 (35%)		34/103 (33%)	19/55 (35%)	
Location			0.7			0.7
Westmead CEAP	24/41 (59%)	65/117 (56%)		57/103 (55%)	32/55 (58%)	
Blacktown CEAP	17/41 (41%)	52/117 (44%)		46/103 (45%)	23/55 (42%)	
Sex			0.4			0.2
Male	32/41 (78%)	98/117 (84%)		82/103 (80%)	48/55 (87%)	
Female	9/41 (22%)	19/117 (16%)		21/103 (20%)	7/55 (13%)	
Age in years	61.5 (13.4)	62.2 (10.7)	0.8	61.3 (11.9)	63.4 (10.6)	0.3
Age Group			0.6			0.4
64 and under	21/41 (51%)	55/117 (47%)		52/103 (50%)	24/55 (44%)	
65 and over	20/41 (49%)	62/117 (53%)		51/103 (50%)	31/55 (56%)	
Ethnicity			0.020			0.048
Aboriginal and/or Torres Strait Islander	2/41 (5%)	1/117 (1%)		2/103 (2%)	1/55 (2%)	
Australia/New Zealand	6/41 (15%)	43/117 (37%)		25/103 (24%)	24/55 (44%)	
Asia (South, East, South-East)	19/41 (46%)	43/117 (37%)		42/103 (41%)	20/55 (36%)	
Other	14/41 (34%)	30/117 (26%)		34/103 (33%)	10/55 (18%)	
Income			0.5			0.2
≤\$49,000	16/41 (39%)	33/117 (28%)		31/103 (30%)	18/55 (33%)	
\$49,001 — \$80,000	6/41 (15%)	17/117 (15%)		16/103 (16%)	7/55 (13%)	
\$80,001 — \$120,000	3/41 (7%)	15/117 (13%)		9/103 (9%)	9/55 (16%)	
≥\$120,001	6/41 (15%)	28/117 (24%)		20/103 (19%)	14/55 (25%)	
Prefer not to say	10/41 (24%)	24/117 (21%)		27/103 (26%)	7/55 (13%)	
Highest Education Qualification			0.6			0.10
Up to primary school	0/41 (0%)	3/117 (3%)		3/103 (3%)	0/55 (0%)	
Secondary school	11/41 (27%)	37/117 (32%)		26/103 (25%)	22/55 (40%)	
Tertiary education	30/41 (73%)	77/117 (66%)		74/103 (72%)	33/55 (60%)	
Private Health	13/41 (32%)	65/117 (56%)	0.009	47/103 (46%)	31/55 (56%)	0.2
Eligible for Public Dentistry			0.2			>0.9
Eligible	15/41 (37%)	30/117 (26%)		29/103 (28%)	16/55 (29%)	
Not eligible	26/41 (63%)	87/117 (74%)		74/103 (72%)	39/55 (71%)	
Employment Status			0.5			0.5
Employed	18/41 (44%)	61/117 (52%)		49/103 (48%)	30/55 (55%)	
Retired	17/41 (41%)	45/117 (38%)		41/103 (40%)	21/55 (38%)	
Unemployed	6/41 (15%)	11/117 (9%)		13/103 (13%)	4/55 (7%)	
Atherosclerosis/CHD	38/41 (93%)	103/117 (88%)	0.6	90/103 (87%)	51/55 (93%)	0.3
Valve conditions	1/41 (2%)	13/117 (11%)	0.12	9/103 (9%)	5/55 (9%)	>0.9
Rhythm conditions	1/41 (2%)	16/117 (14%)	0.074	9/103 (9%)	8/55 (15%)	0.3
Other CVD	5/41 (12%)	8/117 (7%)	0.3	9/103 (9%)	4/55 (7%)	>0.9
Cardiometabolic conditions (Diabetes, Hypertension, CKD, high cholesterol, fatter liver)	36/41 (88%)	83/117 (71%)	0.031	80/103 (78%)	39/55 (71%)	0.3
Other	23/41 (56%)	68/117 (58%)	0.8	55/103 (53%)	36/55 (65%)	0.14
None	4/41 (10%)	17/117 (15%)	0.4	15/103 (15%)	6/55 (11%)	0.5
BMI kg/m2	29.3 (5.3)	28.2 (4.8)	0.3	28.9 (5.0)	27.8 (4.8)	0.14
Heart rate	74.9 (13.2)	74.0 (14.4)	0.6	75.1 (14.5)	72.7 (13.0)	0.3
Systolic BP	129.1 (19.1)	125.0 (18.8)	0.2	126.8 (18.3)	124.8 (20.1)	0.3
Diastolic BP	77.3 (9.4)	75.2 (9.5)	0.3	76.4 (9.5)	74.5 (9.4)	0.2
API % at baseline	95.3 (6.5)	94.3 (9.1)	>0.9	94.4 (8.6)	95.0 (8.3)	0.5
Number of teeth	23.2 (7.1)	24.1 (6.8)	0.3	24.1 (6.6)	23.5 (7.4)	>0.9
Number of teeth < 20			0.5			0.7
<20 teeth	8/41 (20%)	17/117 (15%)		17/103 (17%)	8/55 (15%)	
≥20 teeth	33/41 (80%)	100/117 (85%)		86/103 (83%)	47/55 (85%)	

Supplementary Table 1. Missingness of primary outcome (API) against demographic characteristics, stratified by timepoint. API was never missing at Baseline.

Characteristic	API at 6 Weeks		p-value ²	API at 12 Weeks		p-value ²
	Missing N = 41 ¹	Present N = 117 ¹		Missing N = 103 ¹	Present N = 55 ¹	
Highest PSR Code			0.7			0.4
1	0/41 (0%)	1/117 (1%)		0/103 (0%)	1/55 (2%)	
2	21/41 (51%)	67/117 (57%)		55/103 (53%)	33/55 (60%)	
3	9/41 (22%)	26/117 (22%)		25/103 (24%)	10/55 (18%)	
4	11/41 (27%)	23/117 (20%)		23/103 (22%)	11/55 (20%)	
Dental letter issued	24/41 (59%)	62/117 (53%)	0.5	56/103 (54%)	30/55 (55%)	>0.9
Reason for dental letter			0.8			0.4
Decay (obvious/suspected)	9/13 (69%)	24/41 (59%)		19/31 (61%)	14/23 (61%)	
Gum disease (PSR 3-4)	3/13 (23%)	14/41 (34%)		11/31 (35%)	6/23 (26%)	
Other	1/13 (8%)	3/41 (7%)		1/31 (3%)	3/23 (13%)	
Toothbrushing habits			0.5			>0.9
Suboptimal (≤1× daily)	16/41 (39%)	52/117 (44%)		44/103 (43%)	24/55 (44%)	
Optimal (≥2× daily)	25/41 (61%)	65/117 (56%)		59/103 (57%)	31/55 (56%)	
Interdental cleaning habits			0.9			0.7
Suboptimal (none)	16/41 (39%)	47/117 (40%)		40/103 (39%)	23/55 (42%)	
Optimal (floss, IDB, water flosser, toothpick)	25/41 (61%)	70/117 (60%)		63/103 (61%)	32/55 (58%)	
Interdental cleaning timing			0.8			0.7
Suboptimal (<1x daily)	13/25 (52%)	34/70 (49%)		32/63 (51%)	15/32 (47%)	
Optimal (≥1x daily)	12/25 (48%)	36/70 (51%)		31/63 (49%)	17/32 (53%)	
Mouth rinsing habits			0.2			0.6
Any use	31/41 (76%)	98/117 (84%)		83/103 (81%)	46/55 (84%)	
No use	10/41 (24%)	19/117 (16%)		20/103 (19%)	9/55 (16%)	
Dental care attendance			>0.9			0.8
Regular (every 3-6 months)	16/41 (39%)	45/117 (38%)		39/103 (38%)	22/55 (40%)	
Irregular (less often, or emergencies only)	25/41 (61%)	72/117 (62%)		64/103 (62%)	33/55 (60%)	
Confidence in oral self-care			>0.9			>0.9
Confident (Strongly Agree/Agree to any)	40/41 (98%)	113/117 (97%)		100/103 (97%)	53/55 (96%)	
Not confident (Neutral/Disagree/Strongly Disagree)	1/41 (2%)	4/117 (3%)		3/103 (3%)	2/55 (4%)	
Self-perceived oral health status			0.5			0.5
Optimal (Excellent/Very Good/Good)	19/41 (46%)	61/117 (52%)		54/103 (52%)	26/55 (47%)	
Suboptimal (Fair/Poor)	22/41 (54%)	56/117 (48%)		49/103 (48%)	29/55 (53%)	
Was not given oral health advice after cardiac diagnosis	39/41 (95%)	111/117 (95%)	>0.9	98/103 (95%)	52/55 (95%)	>0.9

¹n/N Non-missing (%); Mean (SD)

²Pearson's Chi-squared test; Wilcoxon rank sum test; Fisher's exact test

Missing data imputation for lowered API at 6 weeks using two methods

As pre-specified, a missingness of API at 6 weeks greater than 10% requires a sensitivity analysis. We used Multiple Imputation by Chained Equations (MICE) via the R¹ package mice v3.17.0 to impute missing values of API reduction at 6 weeks among participants from the Control and OHI+DOHE arms, using the predictive mean matching method (PMM) (Table 1). We used the method of von Hippel (2020)² in the package howManyImputations v0.2.5 to determine the number of imputed datasets to generate and found that our 28 imputations were far in excess of the 18 imputations suggested to reduce the variation in standard errors to less than 0.1.

The covariates used for MICE were treatment, age group, clinic location, sex, weight, height, BMI, number of teeth, baseline PSR, yearly income, education, and First Nations status. Ethnicity and employment status were not included because MICE omitted them due to some values being constant with missingness. The same unadjusted and adjusted primary outcome models were fitted to the multiply-imputed datasets, a “worst case” scenario where every missing outcome was assumed to have been no improvement, and also a complete-cases subset of the data. The total missingness of the API outcome at 6 weeks among usual care and OHI+DOHE arms was 27.62% (29/105). Most missing came from males with tertiary education (68.97% (20/29)), and then from females with secondary education (17.24% (5/29)).

Supplementary Table 2. Unadjusted and adjusted models of reduction in API at 6 weeks, fitted either on 28 MICE-imputed datasets, a 'worst case' scenario where every missing outcome was assumed to be no improvement, or only on complete cases.

		OR		
Group	Characteristic	OR ¹	95% CI ¹	p-value
MICE Models	Pooled	Arm: OHI + DOHE (ref = Control)	6.66	2.33-19.07
		Age: ≥65 years (ref = ≤64)	1.07	0.33-3.50
		Clinic: Blacktown Mt Druitt (ref = Westmead)	1.00	0.35-2.90
'Worst Case' Models	Case'	Arm: OHI + DOHE (ref = Control)	3.59	1.55-8.74
		Age: ≥65 years (ref = ≤64)	1.05	0.45-2.47
		Clinic: Blacktown Mt Druitt (ref = Westmead)	0.89	0.38-2.08
Complete Cases Models		Arm: OHI + DOHE (ref = Control)	9.16	3.34-27.75
		Age: ≥65 years (ref = ≤64)	1.13	0.39-3.29
		Clinic: Blacktown Mt Druitt (ref = Westmead)	0.94	0.33-2.74

¹OR = Odds Ratio, CI = Confidence Interval

Changes in clinical measurements

Supplementary Table 3. Population and mean of group API and SBI at each time point

Measurement	Overall, N = 158 ¹	Control, N = 51 ¹	Group A, N = 54 ¹	Group B, N = 53 ¹	p-value ²
API % at baseline					
Mean (SD)	94.6 (8.5)	95.2 (7.0)	93.5 (9.6)	95.2 (8.7)	-
Median [Min, Max]	100 [64.0-100]	100 [75.0-100]	100 [64.0-100]	100 [68.0-100]	
API % at 6 weeks					
Mean (SD)	87.0 (16.9)	94.3 (9.4)	79.2 (21.1)	86.3 (15.9)	<0.001
Median [Min, Max]	93 [4.0-100]	100 [64.0-100]	86.0 [4.0-100]	93.0 [29.0-100]	
API % at 12 weeks					
Mean (SD)	86.9 (15.1)	94.0 (11.0)	81.2 (16.1)	85.5 (15.3)	<0.001
Median [Min, Max]	89 [43.0-100]	100 [60.0-100]	84.5 [43.0-100]	89.0 [54.0-100]	
SBI % at baseline					
Mean (SD)	38.5 (32.9)	41.1 (35.0)	37.4 (30.9)	37.0 (33.4)	-
Median [Min, Max]	35.5 [0-100]	35.0 [0-100]	36.5 [0-100]	29.0 [0-100]	
SBI % at 6 weeks					
Mean (SD)	44.0 (33.3)	48.9 (33.6)	43.0 (33.6)	40.0 (32.8)	0.15
Median [Min, Max]	44.0 [0-100]	50.0 [0-100]	43.0 [0-100]	39.0 [0-96.0]	
SBI % at 12 weeks					
Mean (SD)	50.6 (32.0)	48.6 (31.6)	57.5 (23.2)	46.1 (39.3)	0.009
Median [Min, Max]	54.0 [0-100]	52.0 [0-100]	57.0 [4.0-100]	50.0 [0-94.0]	

¹ Mean (SD)

² Linear regression testing each time point with baseline.

Supplementary Table 4. Analysis of clinically meaningful API and SBI scores at follow-up

	Treatment group			OR (95% CI) ¹	p-value
	Control, N = 51	Group A, N = 54	Group B, N = 53		
API Score ≤35%					
API Score ≤35% at 6 weeks	0 / 41 (0.0%)	1 / 35 (2.9%)	1 / 41 (2.4%)	N/A N/A	N/A N/A
SBI Score ≤25%					
SBI Score ≤25% at 6 weeks	14 / 41 (34.1%)	14 / 35 (40.0%)	16 / 41 (39.0%)	C vs A 1.11 (0.40-3.05) C vs B 1.21 (0.46-3.22)	0.833 0.694
API Score ≤35%					
API Score ≤35% at 12 weeks	0 / 18 (0.0%)	0 / 18 (0.0%)	0 / 19 (0.0%)	N/A N/A	N/A N/A
SBI Score ≤ 25%					
SBI Score ≤ 25% at 12 weeks	5 / 18 (27.8%)	1 / 18 (5.6%)	8 / 19 (42.1%)	C vs A 0.1 (0.0-0.92) C vs B 1.06 (0.18-6.09)	0.069 0.943

¹OR = Odds Ratio, CI = Confidence Interval

Changes to knowledge items

Supplementary Table 5. Percent of participants who got every answer correct within domains of the CVD knowledge questionnaire, by treatment arm.

Group	Timepoint	Control ^{1,2}	OHI + DOHE ^{1,2}	DOHE alone ^{1,2}	p-value ³
Oral health implications on heart health	Baseline	17/51 (33.3%) (CI: 21.1–48.0%)	19/54 (35.2%) (CI: 23.0–49.4%)	17/53 (32.1%) (CI: 20.3–46.4%)	0.943
	Wk 6	18/44 (40.9%) (CI: 26.7–56.7%)	27/44 (61.4%) (CI: 45.5–75.3%)	33/43 (76.7%) (CI: 61.0–87.7%)	0.003
	Wk 12	12/24 (50.0%) (CI: 29.6–70.4%)	17/24 (70.8%) (CI: 48.8–86.6%)	18/24 (75.0%) (CI: 52.9–89.4%)	0.150
Heart medications	Baseline	0/51 (0.0%) (CI: 0.0–8.7%)	5/54 (9.3%) (CI: 3.5–21.1%)	0/53 (0.0%) (CI: 0.0–8.4%)	0.011
	Wk 6	2/44 (4.5%) (CI: 0.8–16.7%)	3/44 (6.8%) (CI: 1.8–19.7%)	2/43 (4.7%) (CI: 0.8–17.1%)	>0.999
	Wk 12	2/24 (8.3%) (CI: 1.5–28.5%)	4/24 (16.7%) (CI: 5.5–38.2%)	4/24 (16.7%) (CI: 5.5–38.2%)	0.756
Oral health knowledge	Baseline	21/51 (41.2%) (CI: 27.9–55.8%)	29/54 (53.7%) (CI: 39.7–67.2%)	24/53 (45.3%) (CI: 31.8–59.4%)	0.421
	Wk 6	23/44 (52.3%) (CI: 36.9–67.3%)	21/44 (47.7%) (CI: 32.7–63.1%)	30/43 (69.8%) (CI: 53.7–82.3%)	0.092
	Wk 12	13/24 (54.2%) (CI: 33.2–73.8%)	21/24 (87.5%) (CI: 66.5–96.7%)	19/24 (79.2%) (CI: 57.3–92.1%)	0.024

¹(n/N Non-missing) %

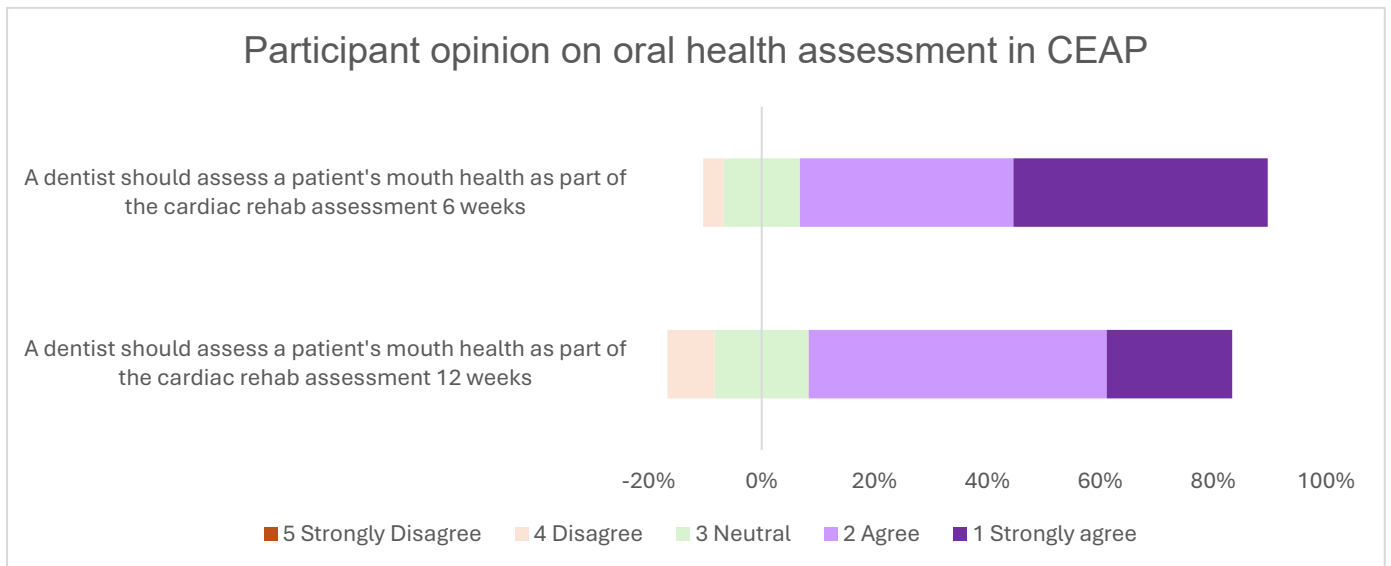
²CI = Confidence Interval

³Pearson's Chi-squared test

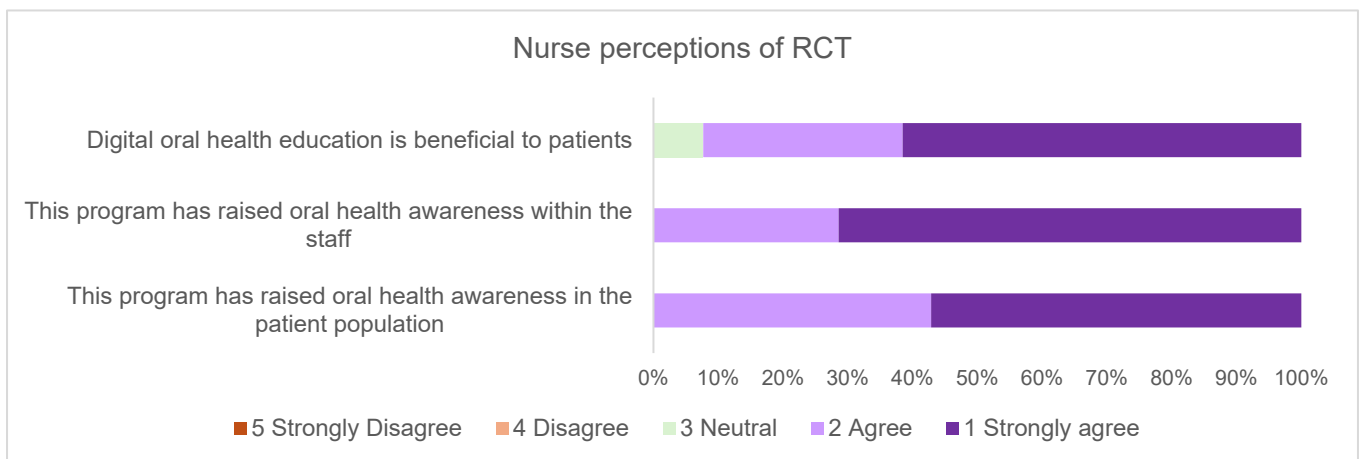
Supplementary Table 6. Percentage of participants who answered knowledge questions correctly by time point.

	Baseline			6 Weeks			12 Weeks		
Question	Control N = 51 ¹	OHI+DOH E N = 54 ¹	DOHE alone N = 53 ¹	Control N = 51 ¹	OHI+DOHE N = 54 ¹	DOHE alone N = 53 ¹	Control N = 51 ¹	OHI+DOHE N = 54 ¹	DOHE alone N = 53 ¹
People with heart problems should avoid dental treatment (False)	31 / 51 (60.8%)	41 / 54 (75.9%)	34 / 53 (64.2%)	34 / 44 (77.3%)	34 / 44 (77.3%)	38 / 43 (88.4%)	18 / 24 (75.0%)	19 / 24 (79.2%)	22 / 24 (91.7%)
People with existing heart problems should visit a dentist regularly for a check up (True)	38 / 51 (74.5%)	40 / 54 (74.1%)	33 / 53 (62.3%)	33 / 44 (75.0%)	42 / 44 (95.5%)	39 / 43 (90.7%)	20 / 24 (83.3%)	23 / 24 (95.8%)	23 / 24 (95.8%)
People with heart problems should only see a dentist when there is an emergency (False)	40 / 51 (78.4%)	41 / 54 (75.9%)	36 / 53 (67.9%)	35 / 44 (79.5%)	36 / 44 (81.8%)	39 / 43 (90.7%)	21 / 24 (87.5%)	20 / 24 (83.3%)	21 / 24 (87.5%)
Poor mouth health may affect an existing heart condition (True)	31 / 51 (60.8%)	30 / 54 (55.6%)	24 / 53 (45.3%)	27 / 44 (61.4%)	40 / 44 (90.9%)	40 / 43 (93.0%)	16 / 24 (66.7%)	23 / 24 (95.8%)	22 / 24 (91.7%)
Some medications for high blood pressure can cause people to experience dry mouth (True)	20 / 51 (39.2%)	17 / 54 (31.5%)	23 / 53 (43.4%)	23 / 44 (52.3%)	24 / 44 (54.5%)	20 / 43 (46.5%)	12 / 24 (50.0%)	15 / 24 (62.5%)	17 / 24 (70.8%)
Dry mouth does not increase the risk of dental decay (False)	11 / 51 (21.6%)	15 / 54 (27.8%)	7 / 53 (13.2%)	16 / 44 (36.4%)	10 / 44 (22.7%)	11 / 43 (25.6%)	11 / 24 (45.8%)	10 / 24 (41.7%)	11 / 24 (45.8%)
Some medications for high blood pressure can affect the sense of taste (True)	15 / 51 (29.4%)	18 / 54 (33.3%)	19 / 53 (35.8%)	14 / 44 (31.8%)	19 / 44 (43.2%)	17 / 43 (39.5%)	6 / 24 (25.0%)	13 / 24 (54.2%)	9 / 24 (37.5%)
Some heart medications can cause swelling or overgrowth (thickening) of the gums (True)	5 / 51 (9.8%)	13 / 54 (24.1%)	6 / 53 (11.3%)	8 / 44 (18.2%)	7 / 44 (15.9%)	9 / 43 (20.9%)	3 / 24 (12.5%)	7 / 24 (29.2%)	7 / 24 (29.2%)
The overgrowth of gums can lead to poor mouth health (True)	34 / 51 (66.7%)	39 / 54 (72.2%)	35 / 53 (66.0%)	36 / 44 (81.8%)	31 / 44 (70.5%)	36 / 43 (83.7%)	19 / 24 (79.2%)	23 / 24 (95.8%)	20 / 24 (83.3%)
Bad breath is a sign of gum disease (True)	40 / 51 (78.4%)	45 / 54 (83.3%)	47 / 53 (88.7%)	36 / 44 (81.8%)	38 / 44 (86.4%)	42 / 43 (97.7%)	21 / 24 (87.5%)	23 / 24 (95.8%)	22 / 24 (91.7%)
Loose teeth is one sign of severe gum disease (True)	37 / 51 (72.5%)	41 / 54 (75.9%)	41 / 53 (77.4%)	37 / 44 (84.1%)	36 / 44 (81.8%)	39 / 43 (90.7%)	20 / 24 (83.3%)	24 / 24 (100.0%)	21 / 24 (87.5%)
Flossing or using interdental brushes should be done daily to clean in between teeth (True)	43 / 51 (84.3%)	51 / 54 (94.4%)	44 / 53 (83.0%)	38 / 44 (86.4%)	43 / 44 (97.7%)	42 / 43 (97.7%)	23 / 24 (95.8%)	23 / 24 (95.8%)	23 / 24 (95.8%)
¹ n (%)									

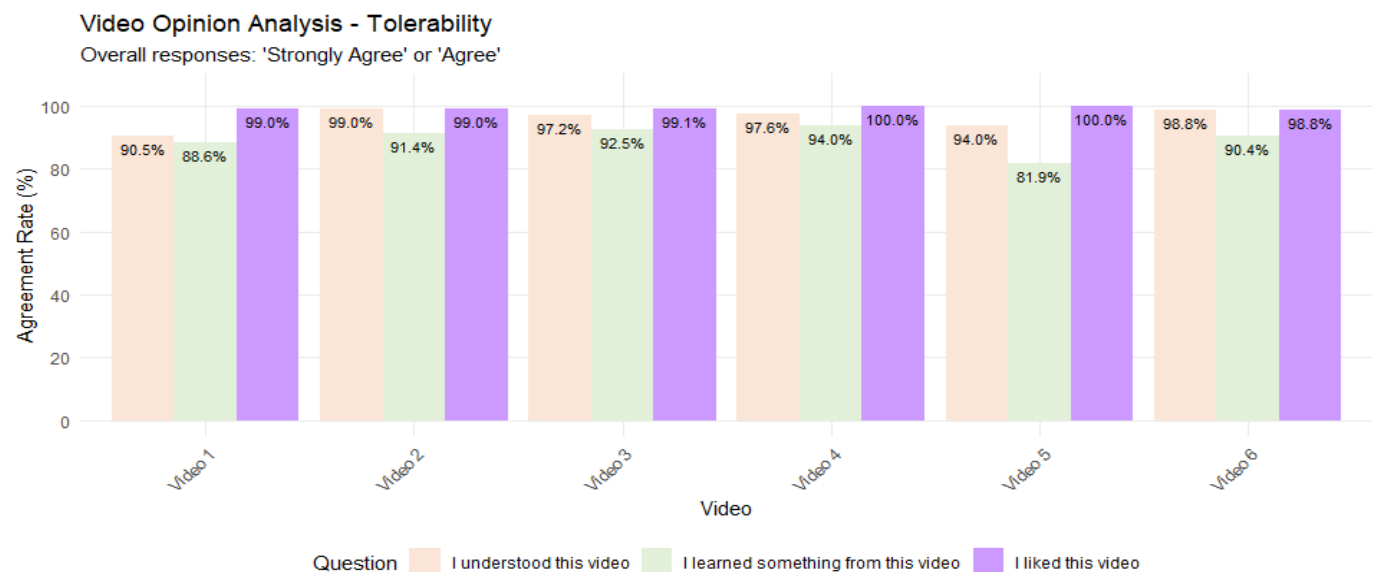
Study implementation



Supplementary Figure 1. Participants opinion on an oral health assessment as part of initial CEAP visit at each follow-up. Figure created in Microsoft Excel.



Supplementary Figure 2. Responses from CEAP nurses regarding the benefits of the RCT. Figure created in Microsoft Excel.



Supplementary Figure 3. Total video opinion show percentage of those who agree or strongly agree. Figure created in Microsoft Excel.

References

1. Posit team. RStudio: Integrated Development Environment for R [Internet]. Boston, MA: Posit Software, PBC; 2024. Available from: <http://www.posit.co/>
2. von Hippel PT. How Many Imputations Do You Need? A Two-stage Calculation Using a Quadratic Rule. *Sociol Methods Res.* 2020 Aug 1;49(3):699–718.