

Increasing Percentage Of Plaque Score Index (A) Among Preschool Children At Tadika Perpaduan Wakaf Tapai 1, Marang

Team Delta, PKPD Marang



Group Members

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- Dr Najihah Izzati Binti Kamaldin
- Dr Hanisah Binti Yusof



Problems Identification & Verification

Problems	Performance	Target
1. Increasing trend of dental technician failed to comply the deadline during denture making process in Marang	90% comply	100% comply
2. High rate of redo restoration in Marang	6%	0%
3. Low percentage of Plaque Score Index (A) in preschool children at Tadika Perpaduan Wakaf Tapai 1	74 %	100%
4. High rate of failed fissure sealant in Marang	4%	0%

Problems Prioritisation

PROBLEMS	S	M	A	R	T	VOTE
1. Increasing trend of dental technician failed to comply the deadline during denture making process in Marang	9	10	8	5	10	42
2. High rate of redo restoration in Marang	7	11	8	5	9	40
3. Low percentage of Plaque Score Index (A) in preschool children at Tadika Perpaduan Wakaf Tapai 1	15	15	14	10	10	64
4. High rate of failed fissure sealant in Marang	7	10	5	5	9	36

Nominal Group Technique

S=Seriousness, M=Measurable, A=Achievable,

R=Realistic, T=Timely

Score scale: 1-Low, 2-Moderate, 3-High



Problem Statement

In April 2022, a dental check-up revealed a low plaque score index (A) of 74% among preschool children at Tadika Perpaduan Wakaf Tapai 1.

Dental plaque, the main concern, can lead to dental issues such as caries and periodontal disease, negatively impacting children's health, growth, and self-esteem.





Problem Statement

The low plaque score was attributed to improper toothbrushing techniques and poor dietary habits.

This Quality Assurance (QA) study aims to identify these causes and develop solutions to improve the plaque score index in these children.





What is Dental Plaque?

Clinically as a structured, resilient yellow-greyish substance that adheres tenaciously to the intraoral hard surfaces, including removable and fixed restorations .

Carranza 11th Edition.



Plaque vs. Tartar Symptoms

Plaque:



Fuzziness on teeth



Bad breath



Gum redness and tenderness



Potential bleeding while brushing

Tartar:



Roughness on teeth



Swollen gums



Prone to bleeding



What is Plaque Score Index?

An index for estimating the status of oral hygiene by measuring dental plaque that occurs in the areas adjacent to the gingival margin. The plaque score index is classified into;

- A (good oral hygiene)
- C (moderate oral hygiene)
- E (poor oral hygiene)

O'Leary TJ et.al., 1972



Rationale Of Problem Selection

Criteria	Rationale
Seriousness	Dental plaque can lead to dental caries and periodontal disease
Measurable	Data taken from LP8
Appropriateness	Reduce risk of dental caries and periodontal disease
Remediable	By overcoming the causative factors
Time	The remedial actions and its effects will be evaluated after four months

Literature Review

- The percentage of 5-year-old children with visible plaque in the 2015 survey was high at 60%.

Che Salleh N et. al., NOHPS, 2017

Seneviratne et. al., 2011

- Dental plaque is the aetiological agent for major dental diseases such as dental caries and periodontal disease.

- The National Oral Health Survey of Preschool Children in 2005 and 2015 showed that caries prevalence among 5-year-old children in Malaysia were high at 76.2% and 71.3%, respectively

NOHPS, 2005 & 2017

Bilal et. al., 2021

- Children with dental caries have a negative impact on Health Related Quality of Life, this is an important indicator which can affect their growth, future self-esteem, and social life.

Children with **dental caries** have a **negative impact on Health Related Quality of Life**, this is an important indicator which can affect their growth, future self-esteem, and social life. (**Bilal et. al., 2021**).



Dental Caries



Periodontal Disease



Low self esteem

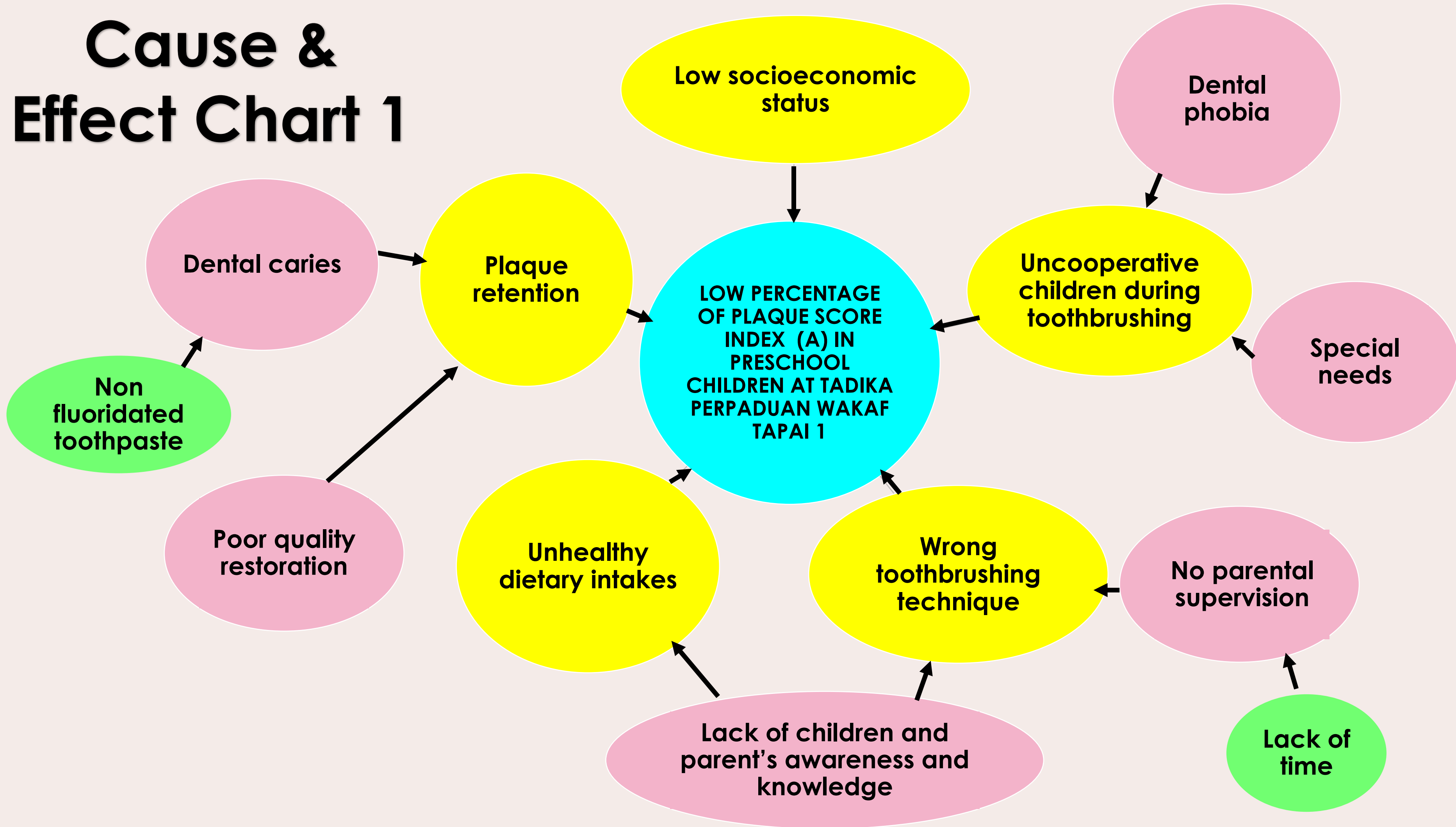


Nutritional
Deficiency

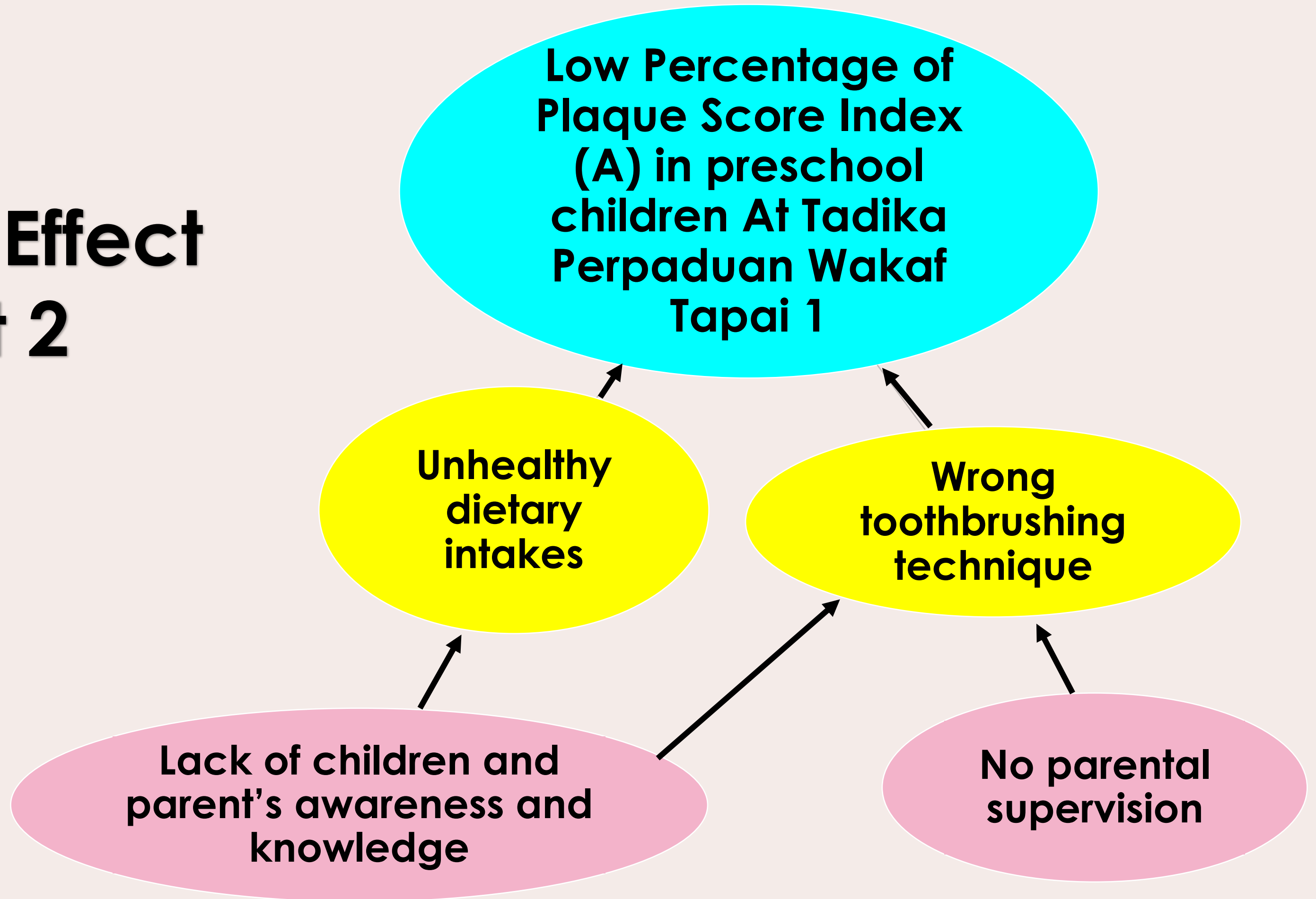


Children with **dental caries** have a **negative impact on Health Related Quality of Life**, this is an important indicator which can affect their growth, future self-esteem, and social life. (**Bilal et. al., 2021**).

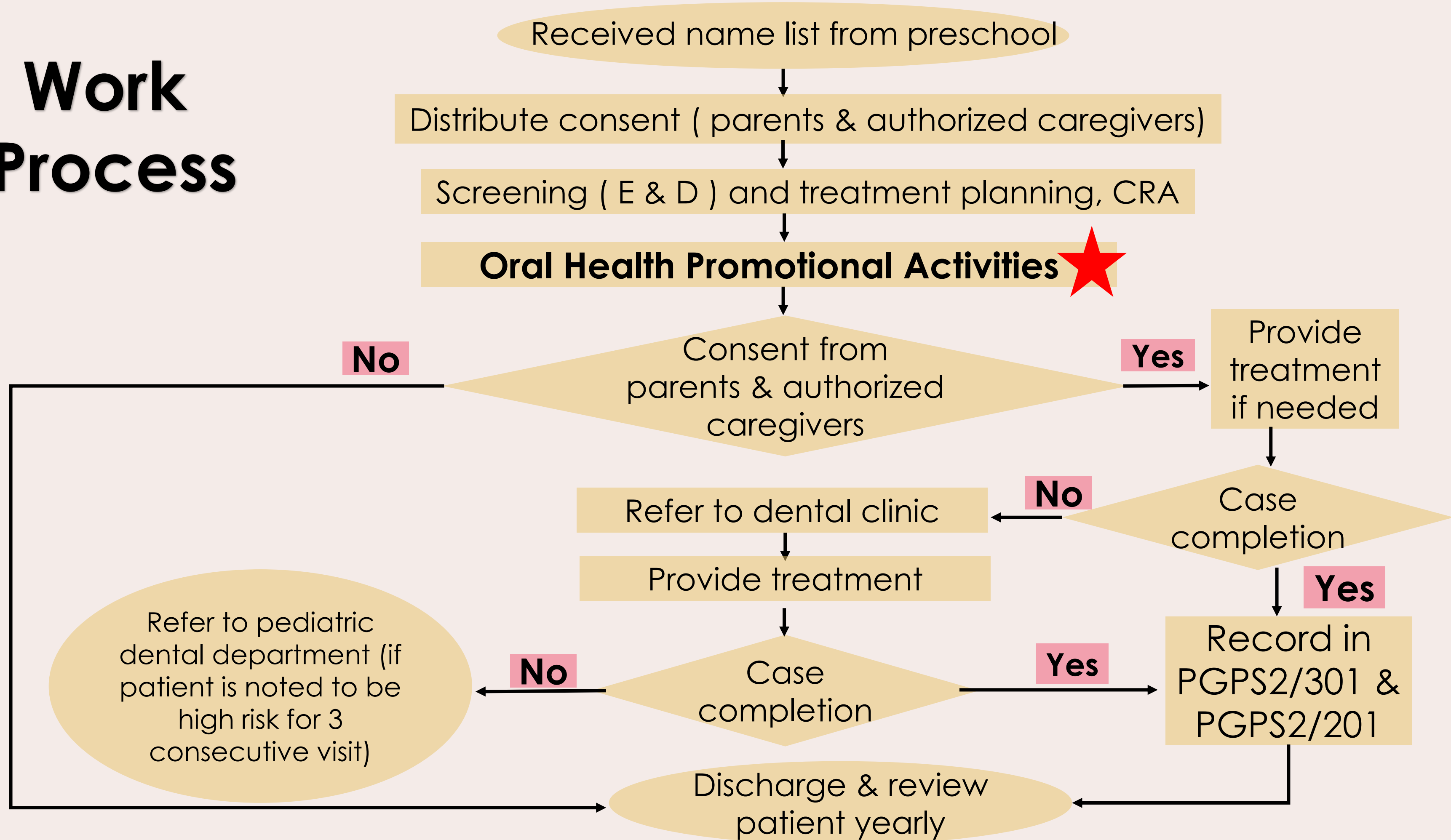
Cause & Effect Chart 1



Cause & Effect Chart 2



Work Process



Model Of Good Care

Process	Criteria	Standard
<u>Oral Health Promotional Activities</u>	To all student : - Dental Health Education - Latihan Memberus Gigi (LMG)	100%

Objectives

General objective:

- To increase percentage of plaque score index (A) in preschool children at Tadika Perpaduan Wakaf Tapai 1



Specific objectives:

- To determine the percentage of Plaque Score Index(A) in preschool children at Tadika Perpaduan Wakaf Tapai 1
- To identify the causing factors of low percentage of Plaque Score Index (A) in preschool children at Tadika Perpaduan Wakaf Tapai 1
- To propose and implement measures for improvement
- To evaluate the effectiveness of the remedial measures

Definition

Plaque Score	An index for estimating the status of oral hygiene by measuring dental plaque that occurs in the areas adjacent to the gingival margin. The plaque score index is classified into A (good oral hygiene), C (moderate oral hygiene) and E (poor oral hygiene).
Plaque Score (A)	The sum of the plaque scores of index teeth gives the total score ≤ 4
Preschool Children	Children aged 4 to 6 years old who attend an educational establishment offering early childhood education before compulsory education at primary school.

Indicator & Standard

Percentage of plaque score index (A) in preschool children at Tadika Perpaduan Wakaf Tapai 1

Indicator

$$\frac{\text{Number of preschool children with plaque score index (A)}}{\text{Total number of preschool children}} \times 100\%$$

Standard

100 % (By expert opinion : SDO Marang)

Methodology

Type of study	Cross sectional study
Duration of study	April 2022 – August 2022
Study sample	<ul style="list-style-type: none">▪ 4, 5 and 6 years old preschool children at Tadika Perpaduan Wakaf Tapai 1 (19 children)▪ Parents of the 19 children
Inclusion criteria	All preschool children at Tadika Perpaduan Wakaf Tapai 1
Exclusion criteria	All preschool children at Tadika Perpaduan Wakaf Tapai 1 with no consent from parents



Methodology

Verification study

Phase I
(Apr 2022)

Phase II
(Apr 2022-Aug 2022)

- Data collection
- Data analysis
- Remedial action

Evaluation study

Phase III
(Jul 2022-Aug 2022)

Phase IV
(Aug 2022 – now)

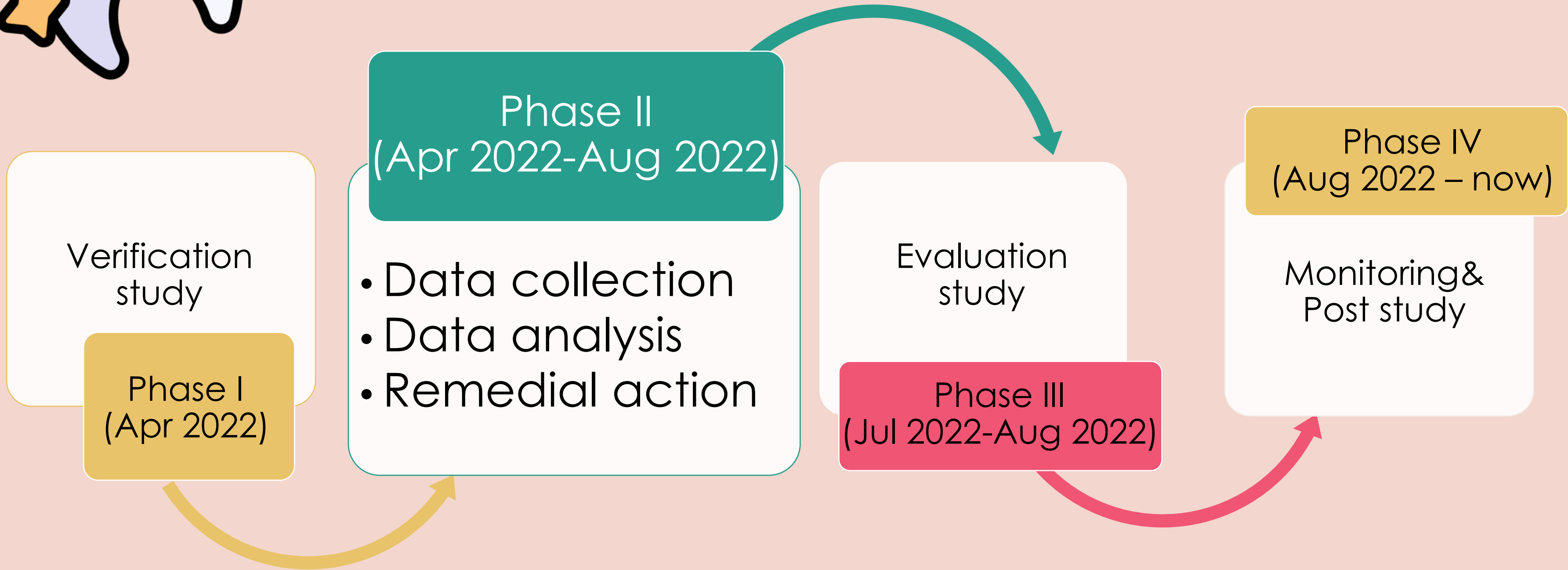
Monitoring & Post study

Process of Data Collection

	Type of Study	Type of Data	Data Source	Data Collected	Duration of Study	Data Collection	Data Analysis
1	Verification Study	Cross sectional	Kad Rawatan Pergigian LP8	<ul style="list-style-type: none"> • Number of preschool children • Plaque score index • Monitor toothbrushing technique during LMG 	1 day	Dummy Table	Excel



Methodology



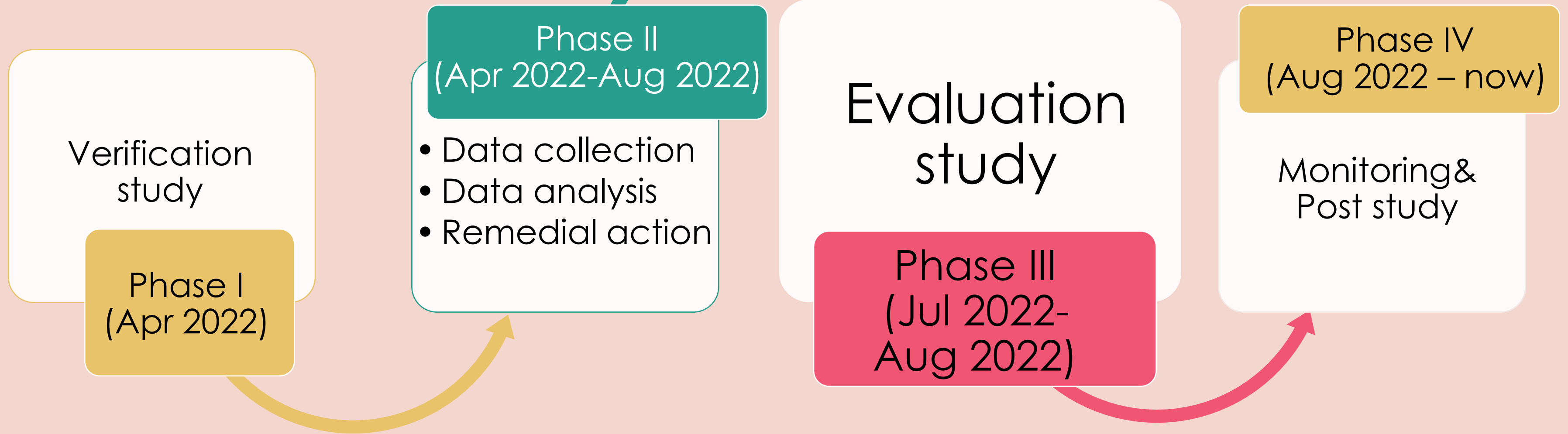
Process of Data Collection

	Type of Study	Type of Data	Data Source	Data Collected	Duration of Study	Data Collection	Data Analysis
2	Study of Factor: KAP of Parent	Cross sectional	Questionnaires & Diet Diary	<ul style="list-style-type: none"> • Parental supervision during toothbrushing • Dietary intake • Toothbrushing technique • Parents' awareness and knowledge regarding oral health status of children 	1 day	Google Form Response and Diet diary form	Google Form Response and Google Sheets

	Type of Study	Type of Data	Data Source	Data Collected	Duration of Study	Data Collection	Data Analysis
3.	Study of factor: Plaque score index of preschool children	Cross sectional	Plaque Score Assessment	<p>Plaque Score Index</p> <ul style="list-style-type: none"> To measure dental plaque, use a disclosing agent to highlight plaque-covered tooth surfaces. Then, use a periodontal probe to estimate the debris on these surfaces. The total debris score is the sum of the scores from all the index teeth. 	1 day	Printed sheet	Excel



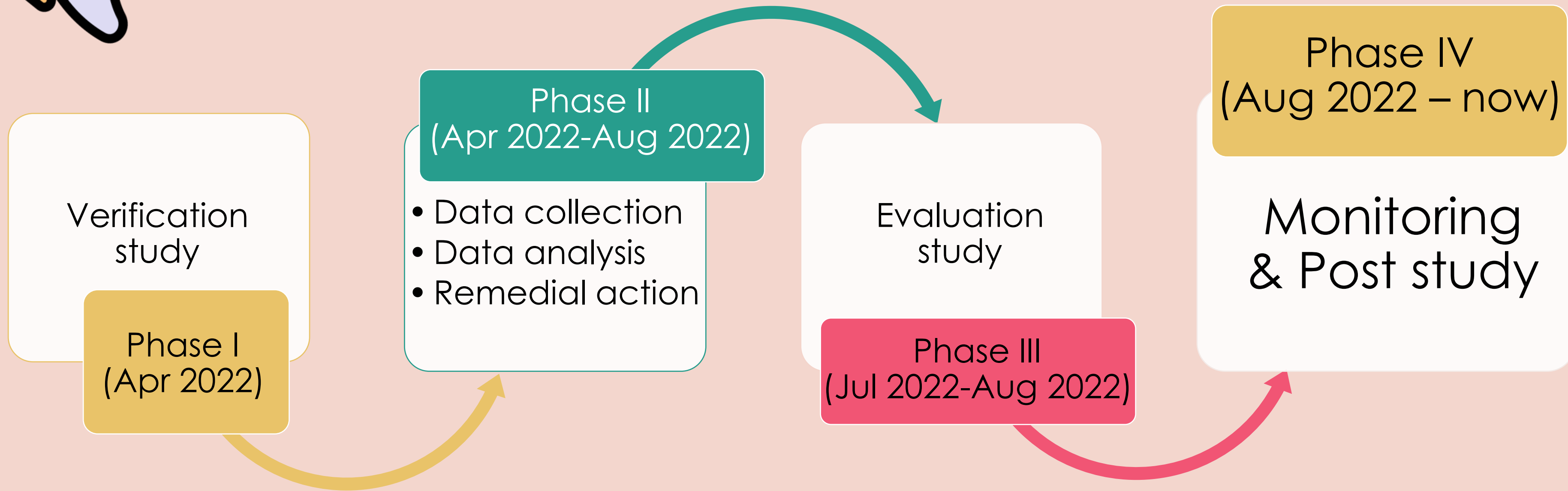
Methodology



	Type of Study	Type of Data	Data Source	Data Collected	Duration of Study	Data Collection	Data Analysis
4	Evaluation study	Cross sectional	Questionnaires & Diet Diary	KAP of parents <ul style="list-style-type: none"> Parental supervision during toothbrushing Dietary intakes Toothbrushing technique Parents' awareness and knowledge regarding oral health status of children 	1 day	Google Form Response, Diet Diary Form	Google Form Response and Google Sheets
		Cross sectional	Plaque Score Assessment	Plaque score index <ul style="list-style-type: none"> To measure dental plaque, use a disclosing agent to highlight plaque-covered tooth surfaces. Then, use a periodontal probe to estimate the debris on these surfaces. The total debris score is the sum of the scores from all the index teeth. 	1 day	Printed sheet	Excel
		Cross sectional	LP8	<ul style="list-style-type: none"> Number of preschool children Plaque score index Monitor toothbrushing technique during LMG 	1 day	Dummy Table	Excel



Methodology



LP8

C2 SKOR PLAK

0	1	2	3
0	<1/3	1/3 – 2/3	> 2/3

Gred Skor Plak

0 – 4	=	A	Rendah
5 – 9	=	C	Sederhana
10 - 18	=	E	Tinggi


(Catatkan Skor yang berkenaan)

<input type="text"/>	<input type="text"/>	<input type="text"/>	Skor Plak	
16/55(B)	11/51(Lab)	26/65(B)	Jumlah/Gred	
46/85(L)	31/71(Lab)	36/75(L)	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>


Pindaan 02/2011

NO. PENDAFTARAN:

(Cop Klinik)



REKOD KESIHATAN BAYI DAN KANAK-KANAK (0-6 TAHUN)



NAMA: ANAK
IBU

TARIKH LAHIR

NO. MY KID

ALAMAT

NO. TELEFON

Untuk diguna

BUKU REKOD KESIHATAN BAYI & KANAK- KANAK

Tarikh: Umur semasa lawatan:

BIL.	SOALAN-SOALAN	YA	TIDAK	CATATAN
1.	Ibubapa/penjaga menyelia anak semasa memberus gigi			
2.	Anak memberus gigi sebelum tidur			
3.	Menggunakan ubat gigi berfluorida semasa memberus gigi			
4.	Kerap mengambil makanan manis			
5.	Menambahkan gula semasa membancuh susu			
6.	Anak suka makanan manis			
7.	Anak menghisap jari/puting tiruan / botol			
8.	Ibubapa/ penjaga memeriksa gigi anak			
9.	Anak pernah mendapat pemeriksaan pergigian			

Diet Diary Form



DIARI DIET HARIAN

Nama ibu/bapa: [REDACTED]

Nama anak: [REDACTED]

Nama tadika: Tadika Perpaduan Wakaf Tapai 1

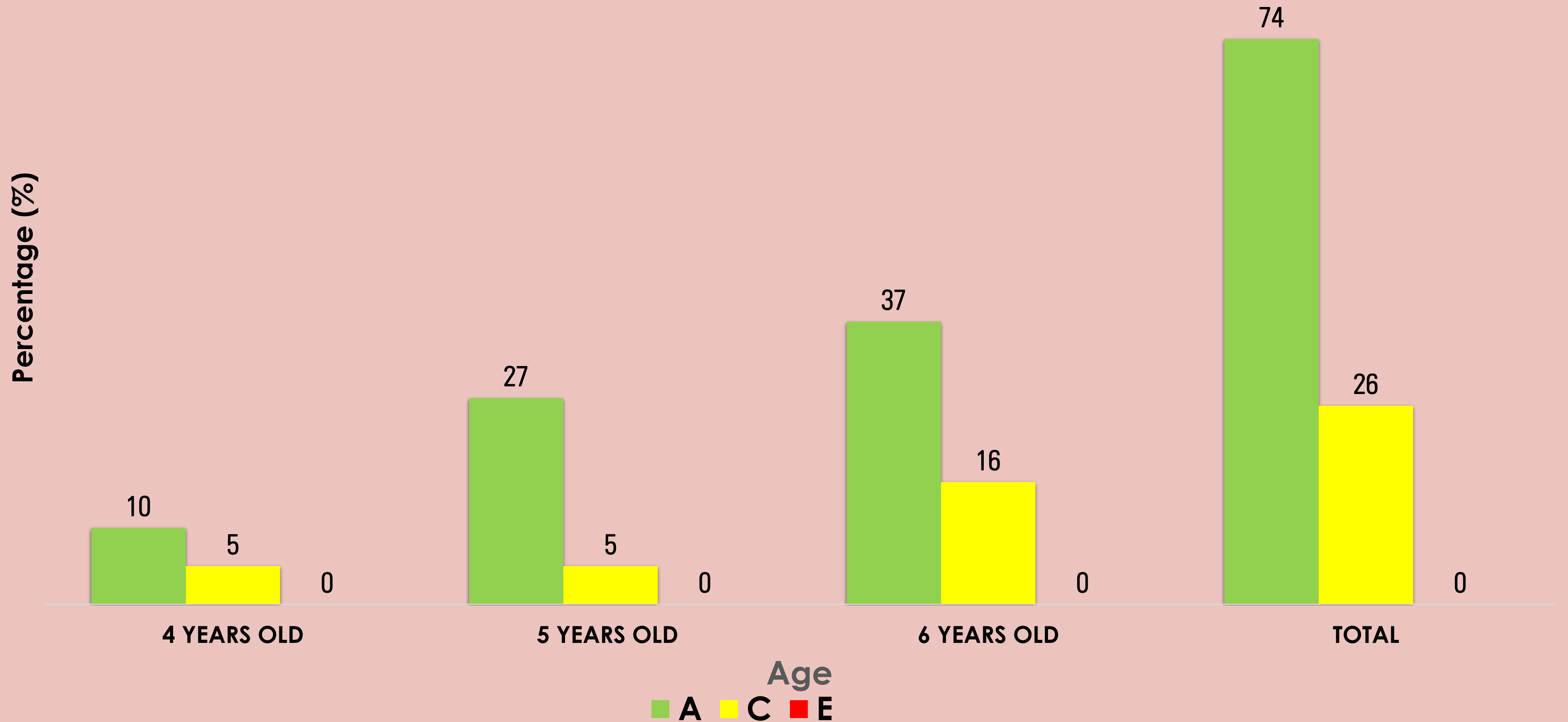
Nama kelas: -

Tarikh/Masa	Menu	Catatan
Contoh: Xx/xx/20xx	Nasi goreng Telur mata Susu formula	1 pinggan 1 botol
9am		1 cawan
10.20am	Air kosong	
11am	biskut	Biskut coklat 2 paket
1/4/2022 Jumaat 9.00am	Laksam Air Milo	1 mangkuk 1 cawan
11 am	Keropok ikan	Beberapa keping
2 pm	Nasi putih + kari ayam + sayur brokoli Air putih	1 pinggan
3 pm	Air kotak	
7 pm	Nasi goreng cendawan Air vibena	1 pinggan tak habis
9 pm	Sajian 2	

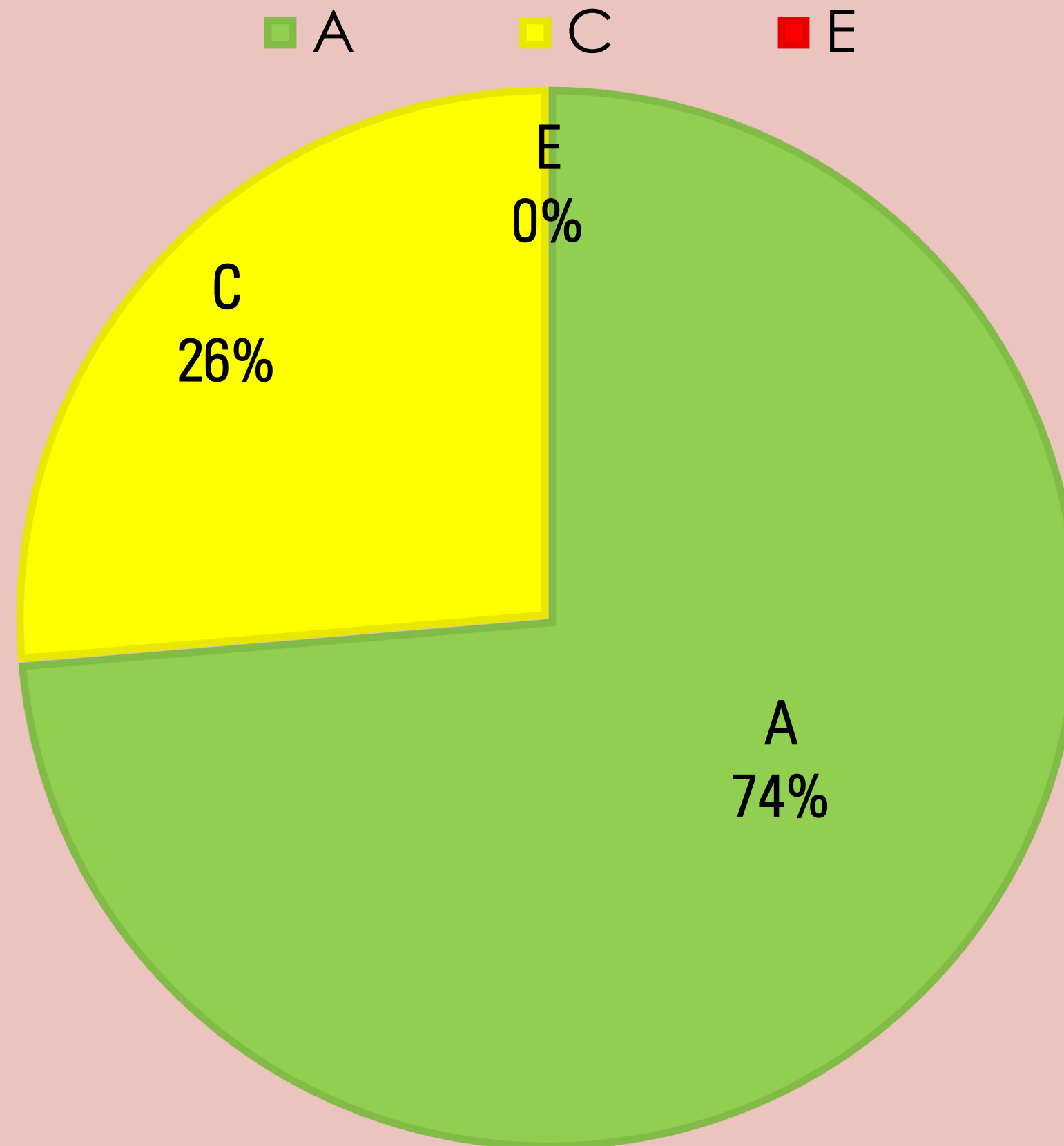
Sila tulis setiap masa dan jenis makanan yang anak tuan/puan makan untuk tempoh 3 hari (2 hari cuti dan 1 hari persekolahan).

Analysis & Interpretation of Verification Study

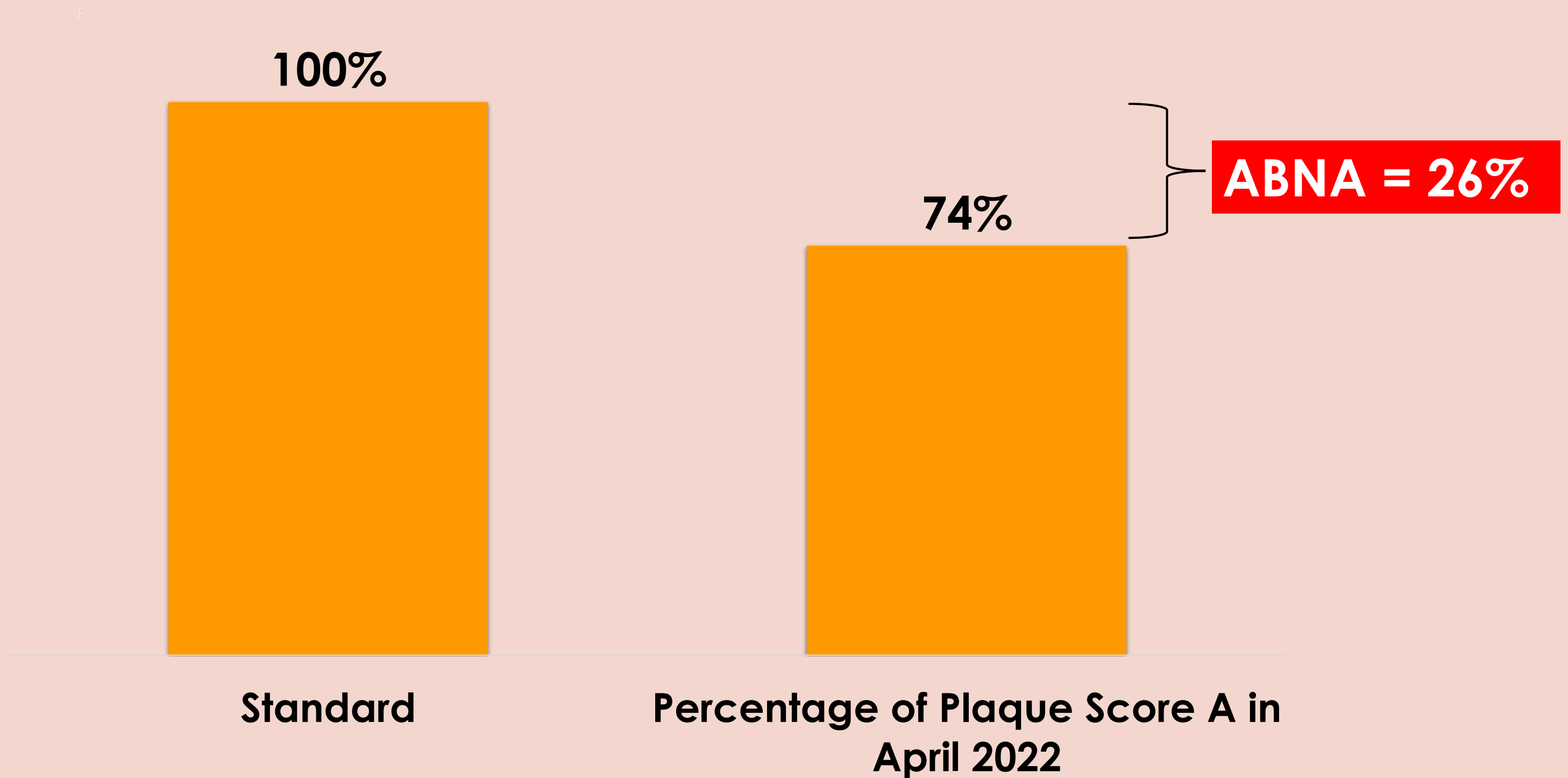
Percentage of preschool children at Tadika Perpaduan Wakaf Tapai 1 with Plaque Score A, C & E by age before intervention



Percentage Of Plaque Score A, C & E of preschool children at Tadika Perpaduan Wakaf Tapai 1 before intervention

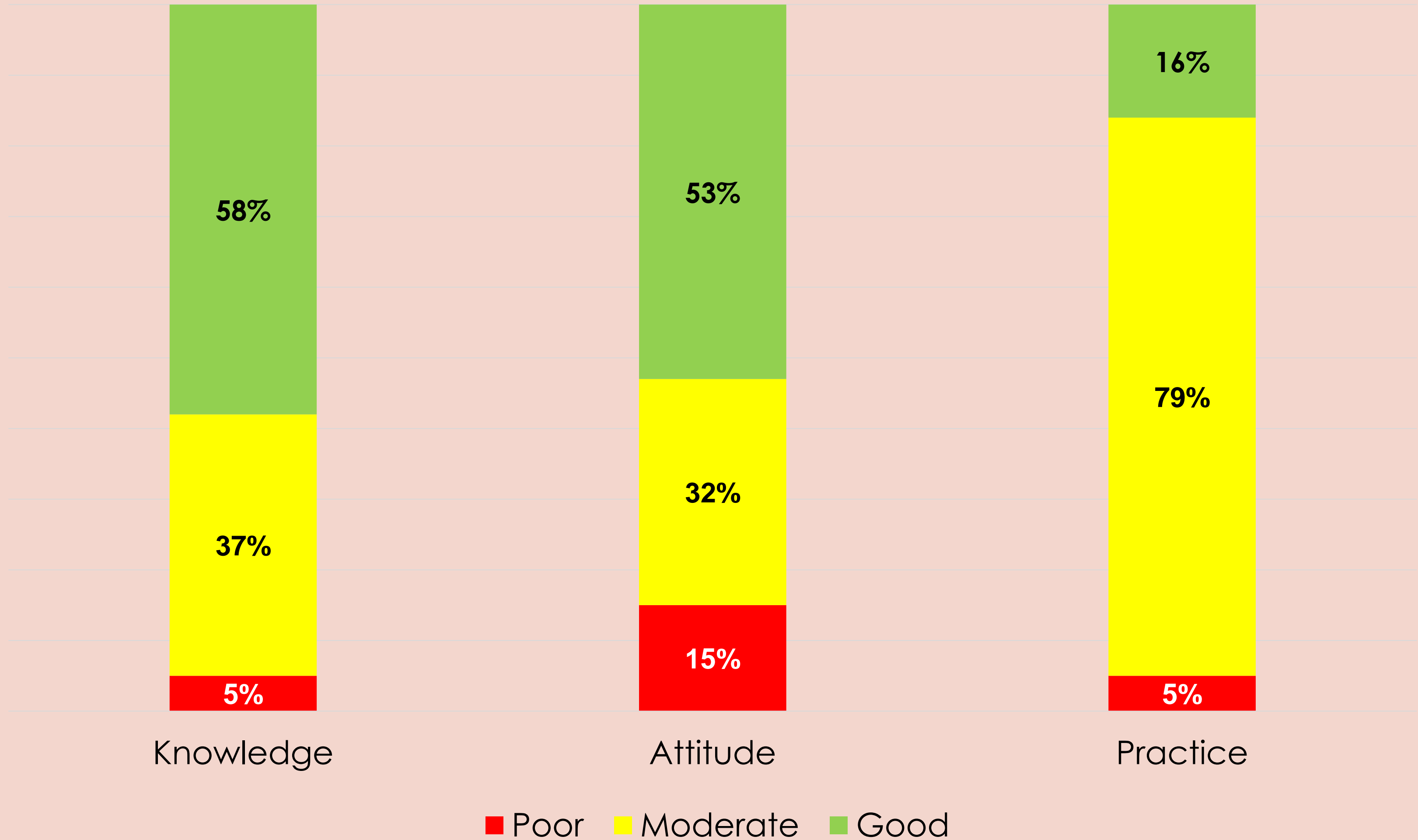


ABNA Graph Before Study



Analysis & Interpretation of Study Factor

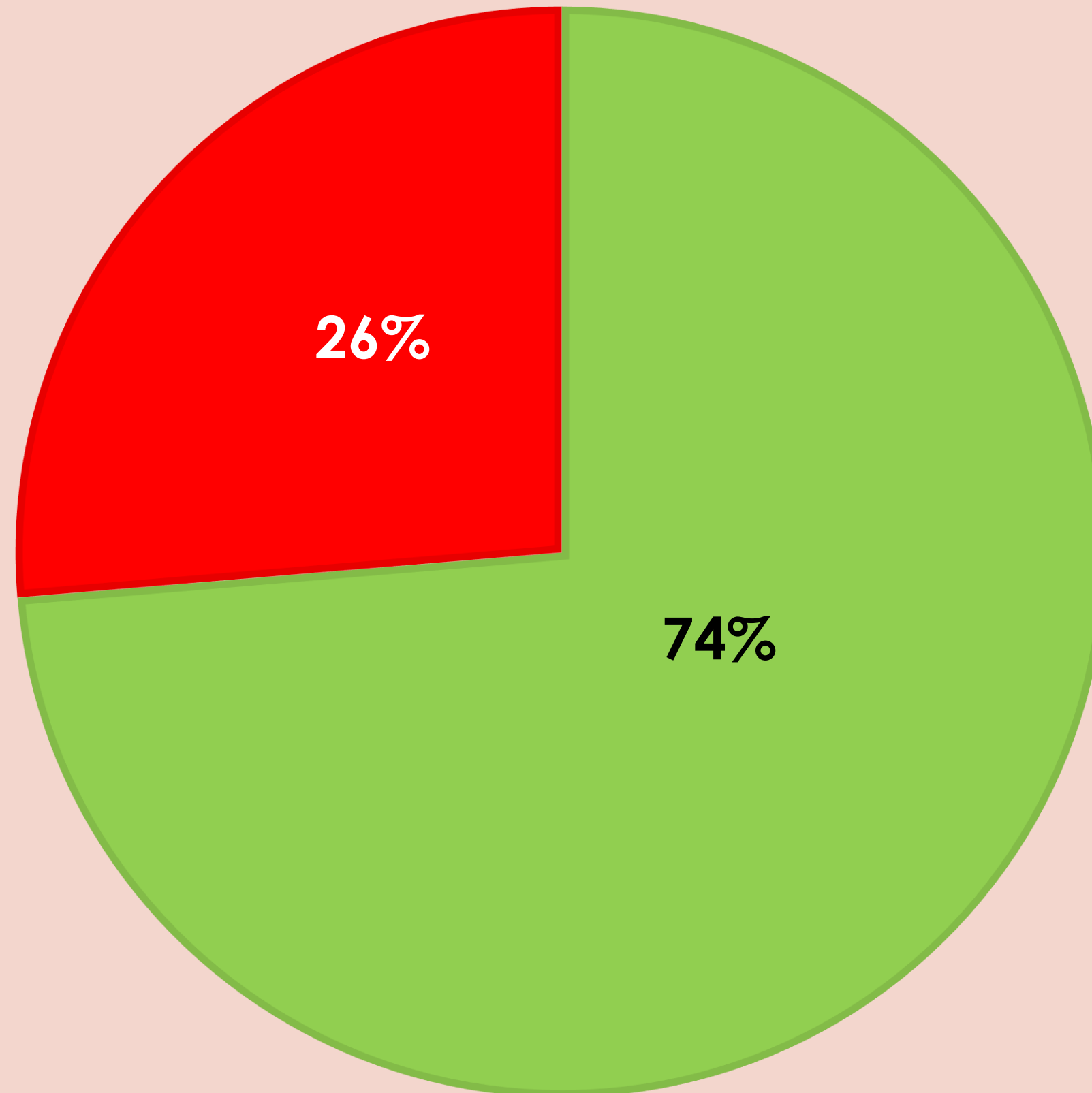
Parent's KAP before intervention



No Parental Supervision

Parental supervision during toothbrushing

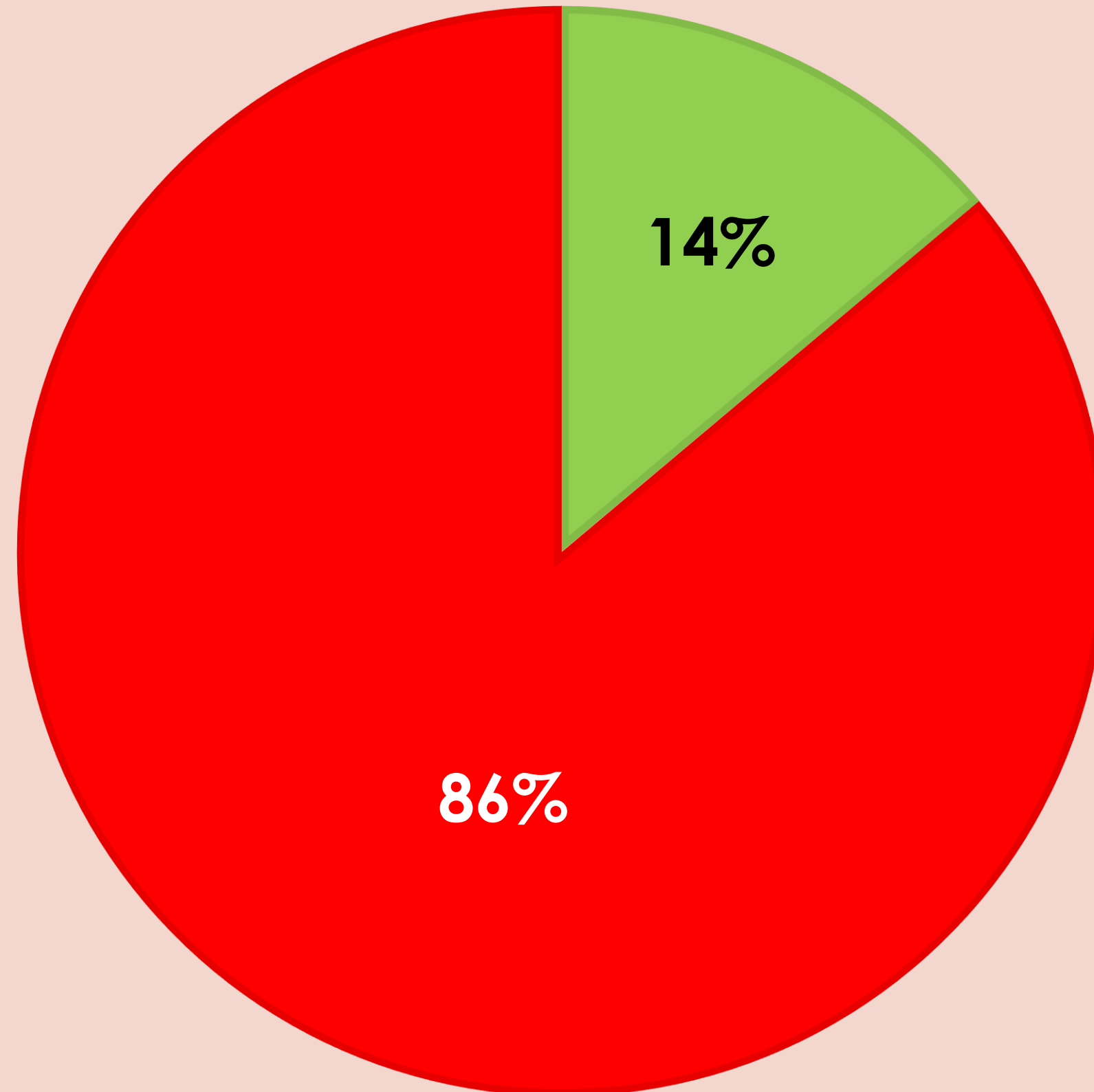
■ Supervised ■ Unsupervised



Unhealthy dietary intakes

Dietary intakes

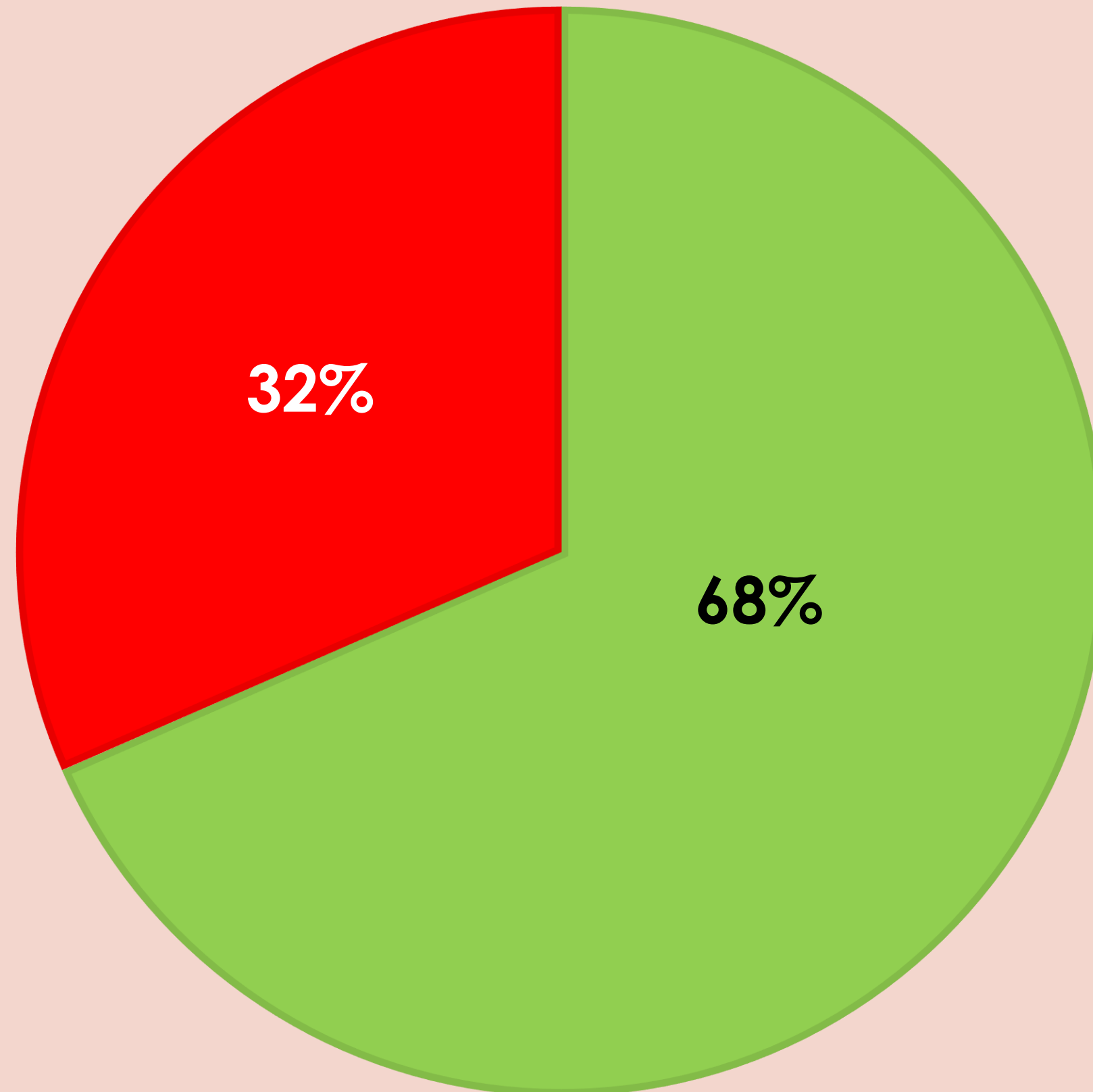
■ Healthy dietary intakes ■ Unhealthy dietary intakes



Wrong Toothbrushing Technique

Toothbrushing Technique

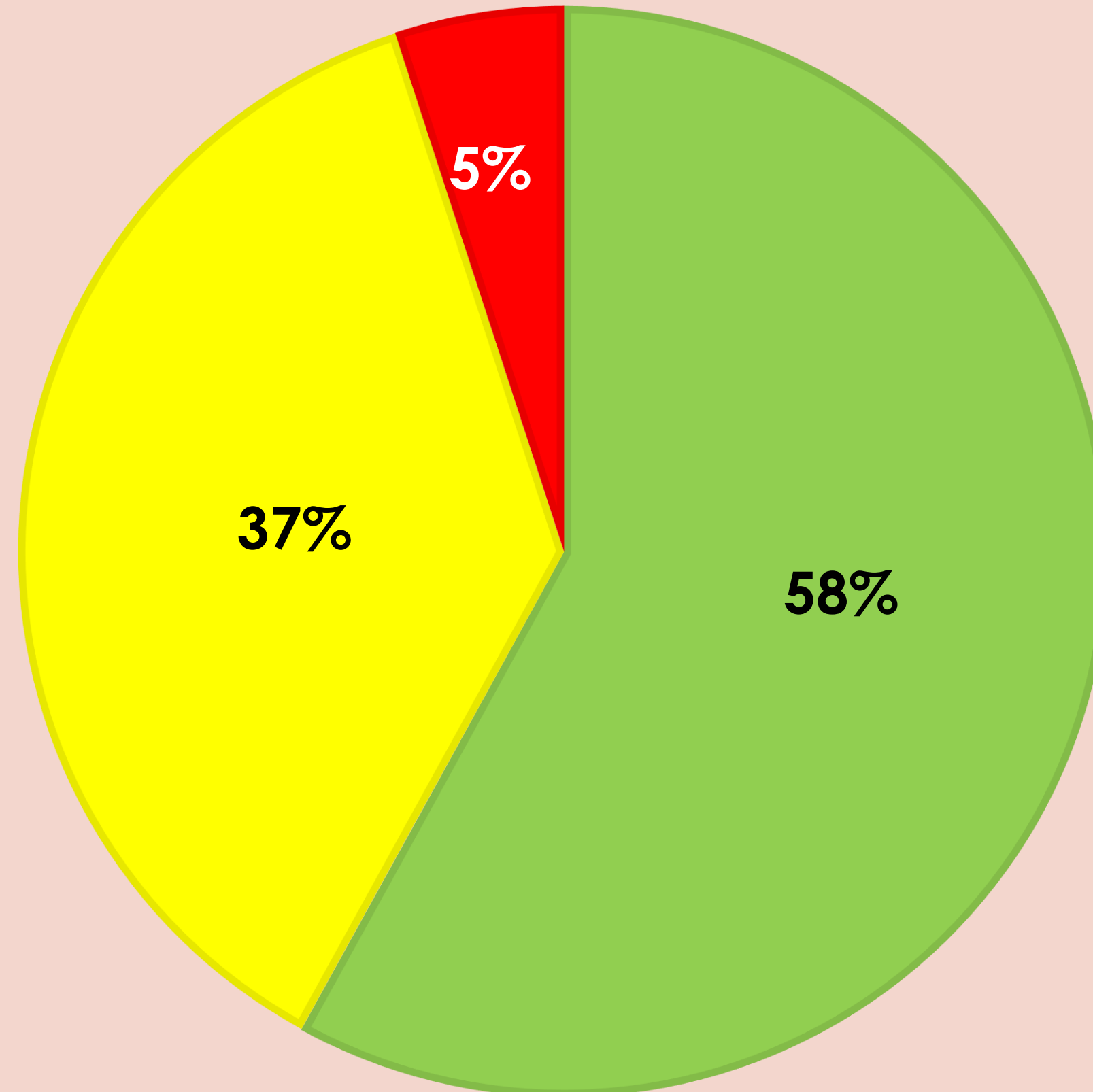
■ Circular technique (correct) ■ Horizontal technique (wrong)



Lack of Parent's Awareness and Knowledge

Parent's Knowledge Regarding Oral Health Before Intervention

■ Good ■ Moderate ■ Poor



Strategy For Change

Problem List

A. Unhealthy dietary intake

Remedial Measures

1. **Workshop** (Bengkel Pembuatan Bahan Promosi)
 - a) Pamphlet
 - b) Posters
 - c) Flipcharts
 - d) Mini interactive game



Problem List	Remedial Measures
<p>A. Unhealthy dietary intake</p>	<p>2. Dental exhibition day (Shiny Teeth Day) ★</p> <p>a. Dental health exhibition corner</p> <ul style="list-style-type: none"> • Infographic posters • Educational video presentation • Mini interactive games • Story telling session <p>b. Dental talk to parents, caregivers, teachers</p>



Problem List	Remedial Measures
A. Unhealthy dietary intake	3. Dental health education (DHE) a) to parents (one to one) b) to preschool children



Problem List	Remedial Measures
A. Unhealthy dietary intake	4. One to one parents' consultations regarding children's oral health status and diet counselling



Problem List	Remedial Measures
B. Wrong toothbrushing technique	1. Demonstration of proper toothbrushing technique <ul style="list-style-type: none">• To children• To parents



Problem List	Remedial Measures
<p>B. Wrong toothbrushing technique</p>	<p>2. Latihan Memberus Gigi Berkesan (BEGIN).</p> <p>Introduced by the Ministry of Health in 2020, BEGIN replaces Latihan Memberus Gigi (LMG) as an oral health initiative for school children.</p> <p>It encourages effective tooth brushing habits to manage dental plaque and foster positive oral health behaviors.</p> <p>BEGIN uses plaque disclosing agents to reveal plaque, helping children assess the effectiveness of their brushing technique.</p>



Guidelines BEGIN



Dental plaque disclosing gel



After application of disclosing gel

Problem List	Remedial Measures
B. Wrong toothbrushing technique	2. Latihan Memberus Gigi Berkesan (BEGIN) <ul style="list-style-type: none"> - use plaque disclosing agent to expose plaque & start toothbrushing - if plaque is still there, repeat toothbrushing until the plaque is completely removed



Use disclosing agent to expose plaque



Plaque exposed



After toothbrushing, minimal plaque can be seen

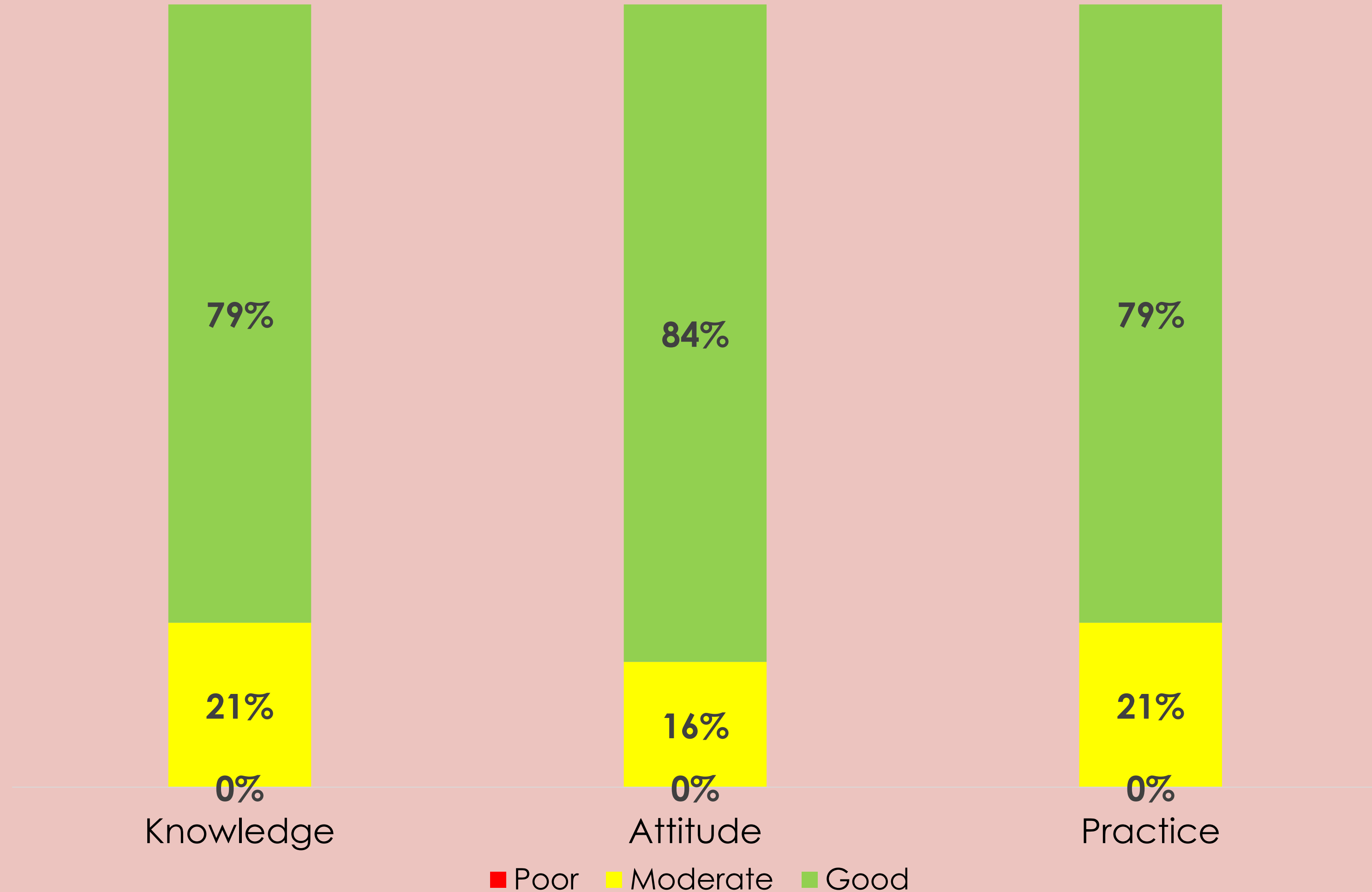


Teeth totally clean with no plaque can be seen after repeating toothbrushing

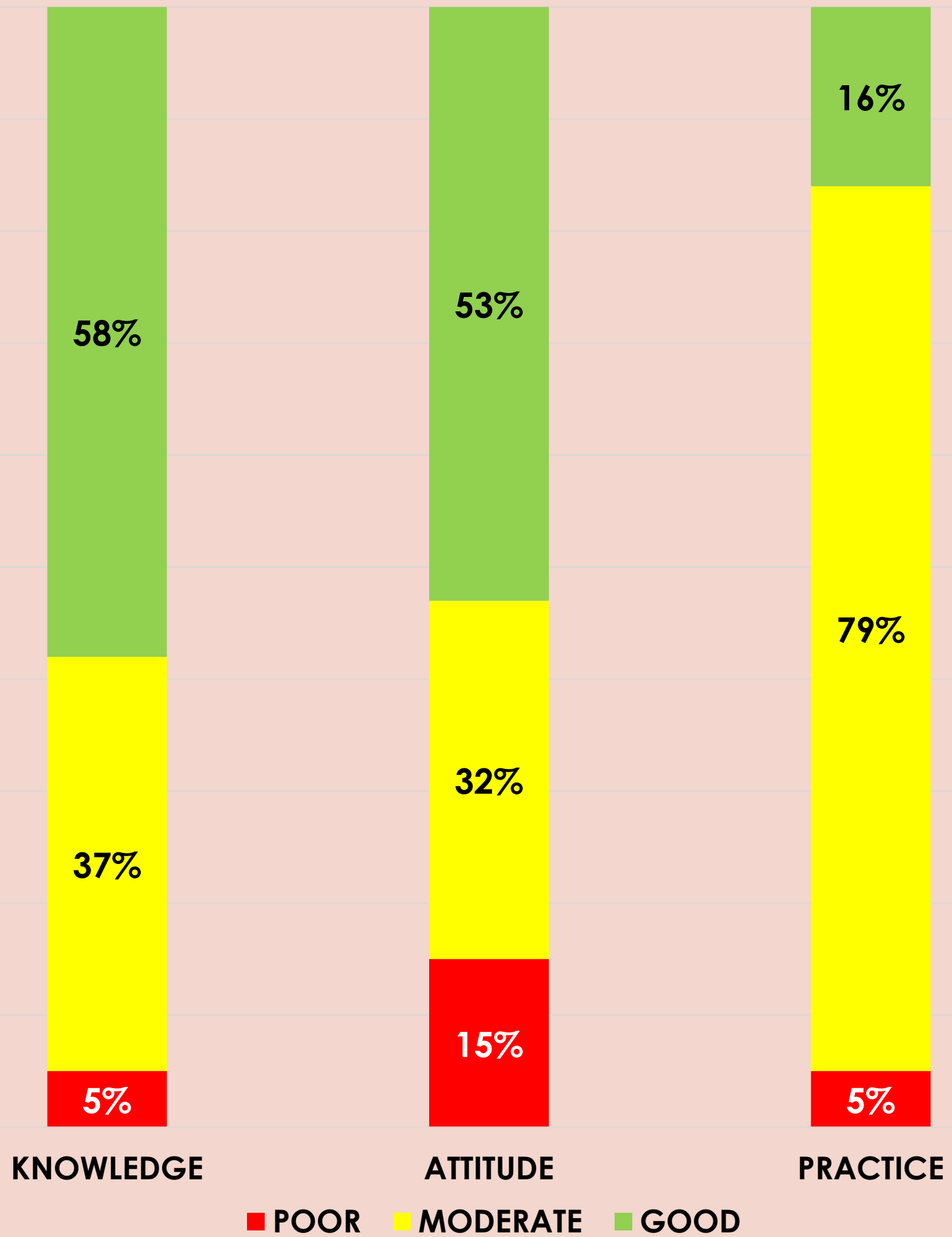
Problem List	Remedial Measures
<p>A. Unhealthy dietary habits</p> <p>B. Wrong toothbrushing technique</p>	<p>3. Monitoring dietary habits and toothbrushing technique of preschool children every 3 months.</p> <ul style="list-style-type: none"> • Dietary habits <ul style="list-style-type: none"> ✓ Google Form questionnaire and Diet Diary Form by parents to be discussed • Toothbrushing technique <ul style="list-style-type: none"> ✓ BEGIN (Latihan Memberus Gigi Berkesan by using disclosing agent)

Evaluation Study & Effect Of Change

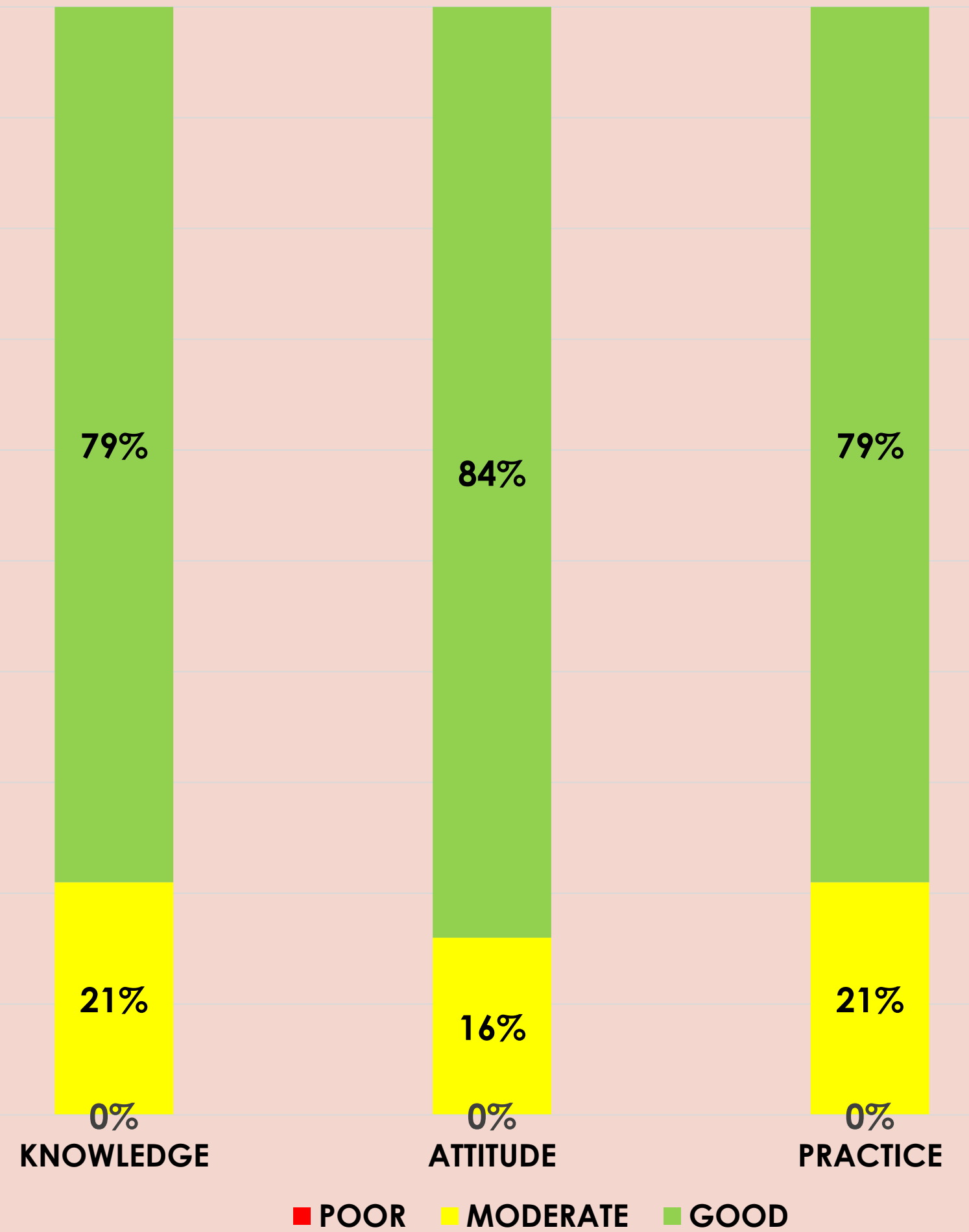
Parent's KAP After Intervention



Parent's KAP **Before** Intervention



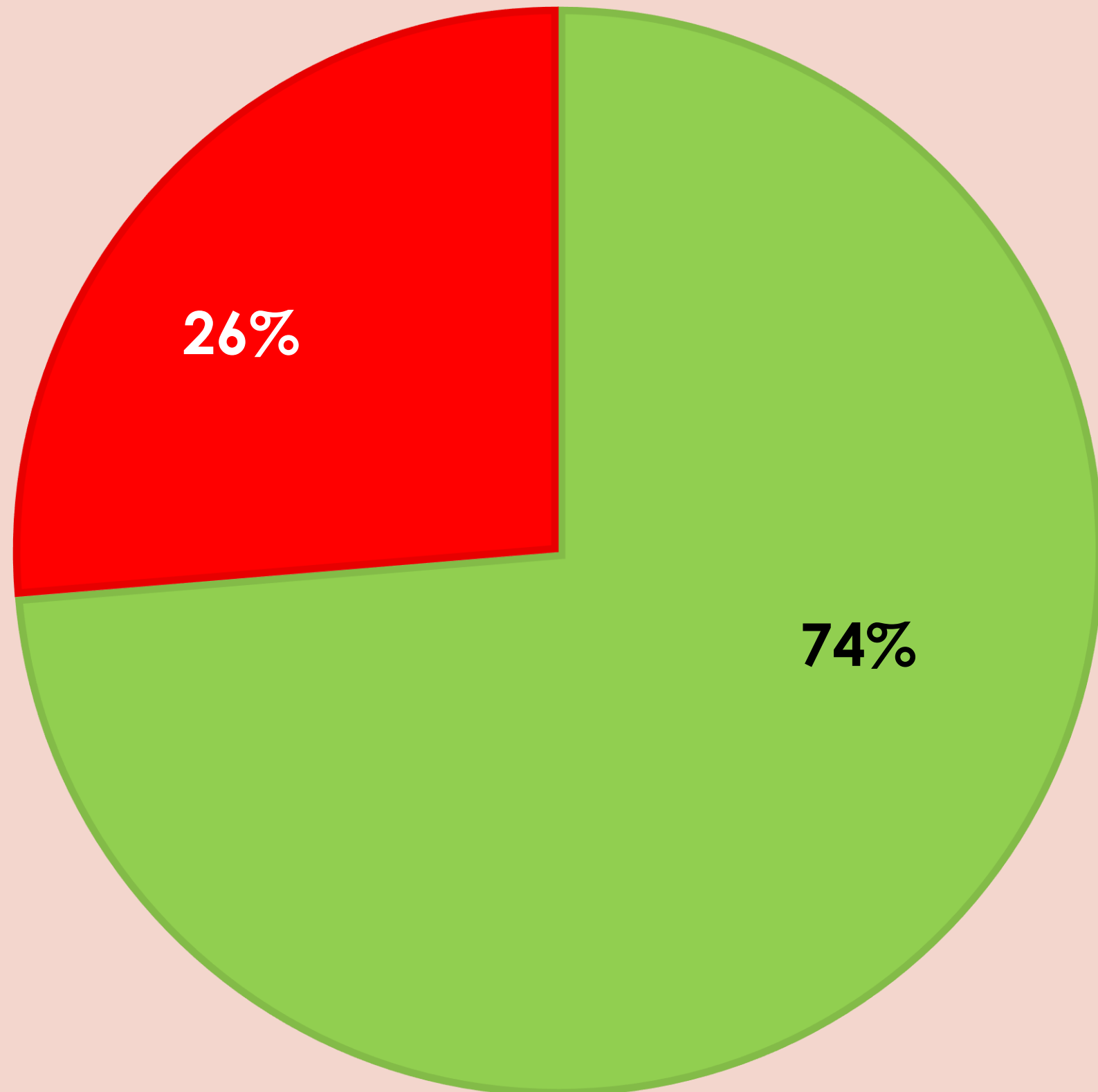
Parent's KAP **After** Intervention



Parental Supervision During Toothbrushing

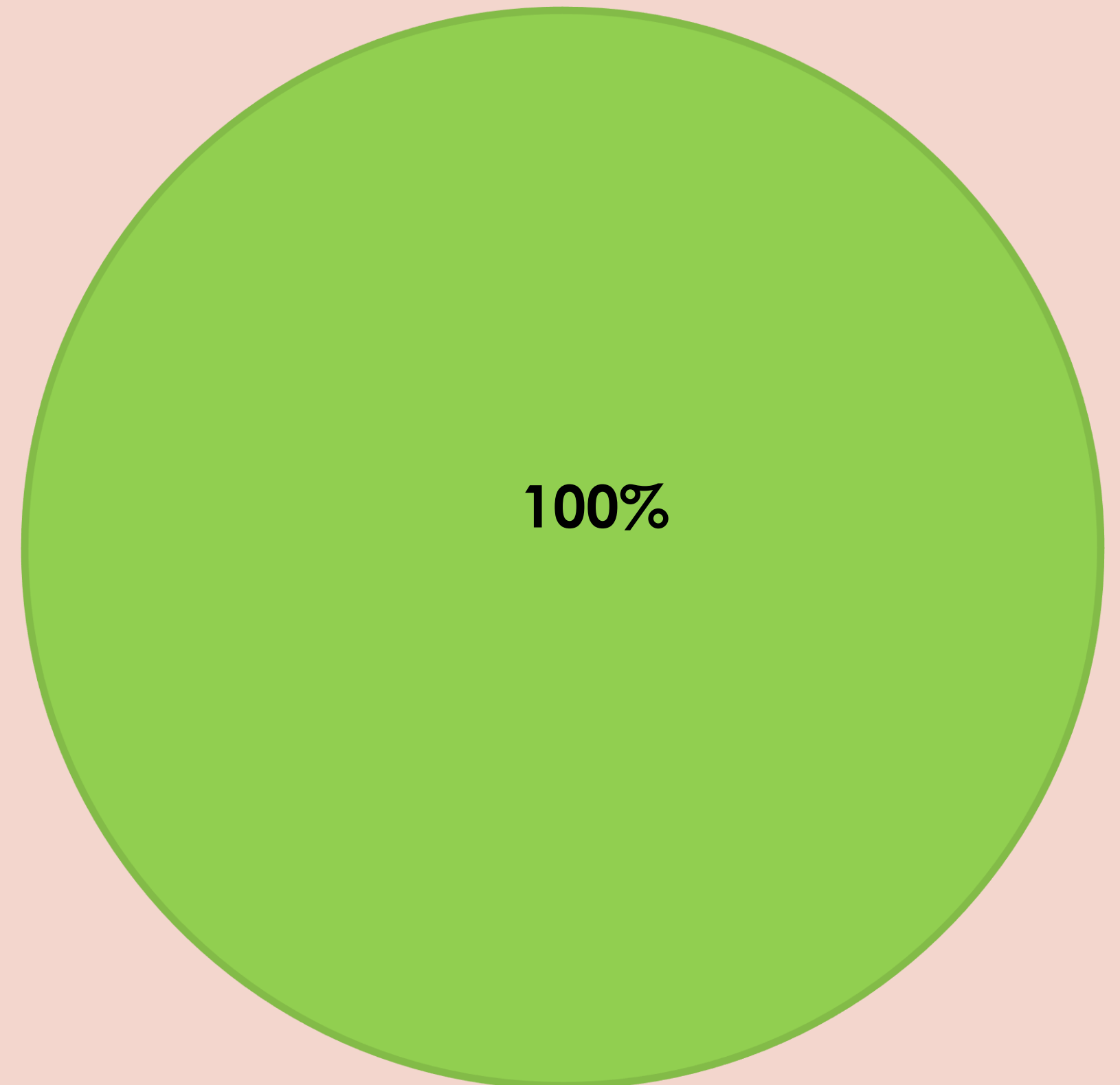
Before intervention

■ SUPERVISED ■ UNSUPERVISED



After intervention

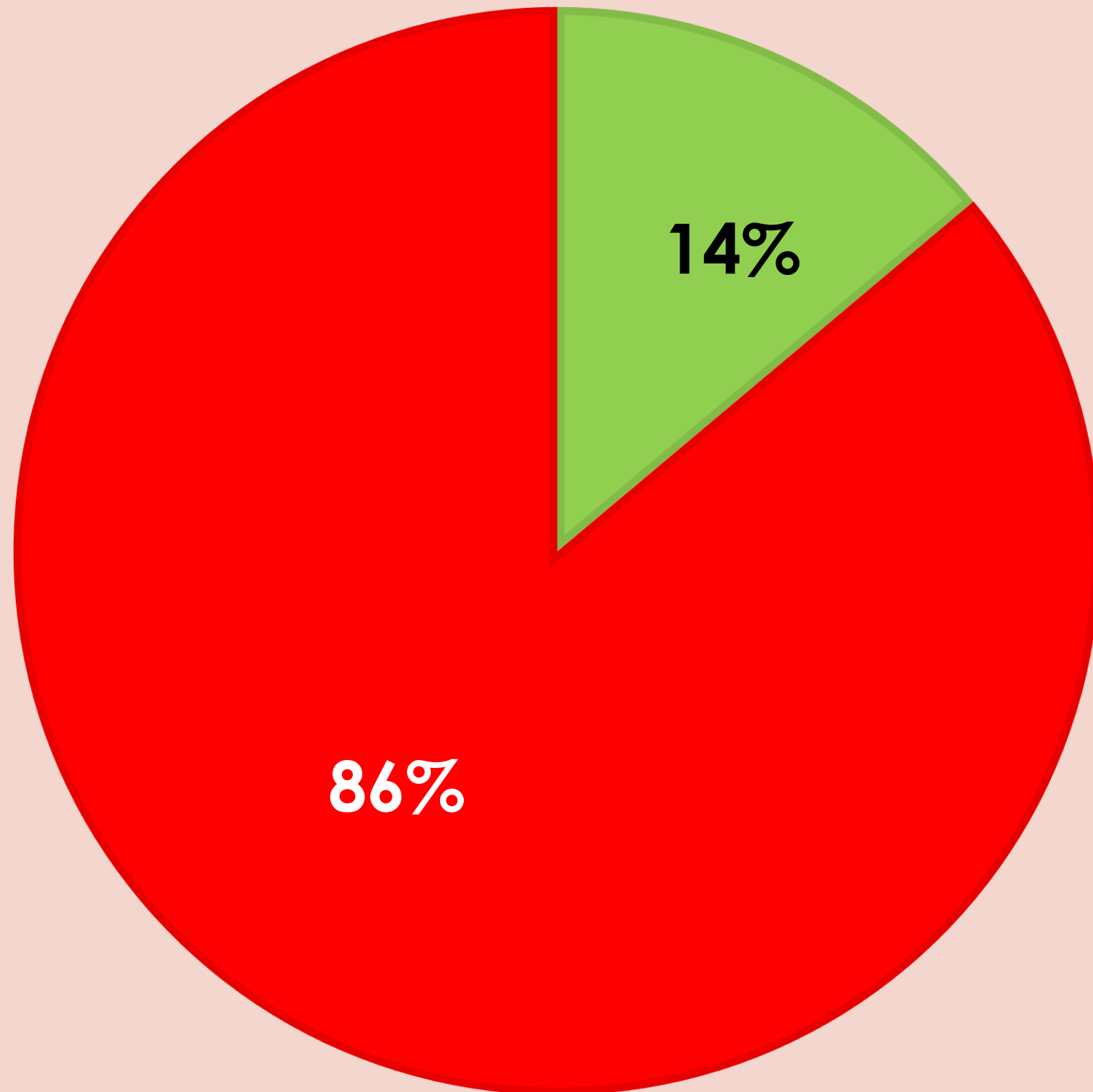
■ SUPERVISED ■ UNSUPERVISED



Dietary Intakes

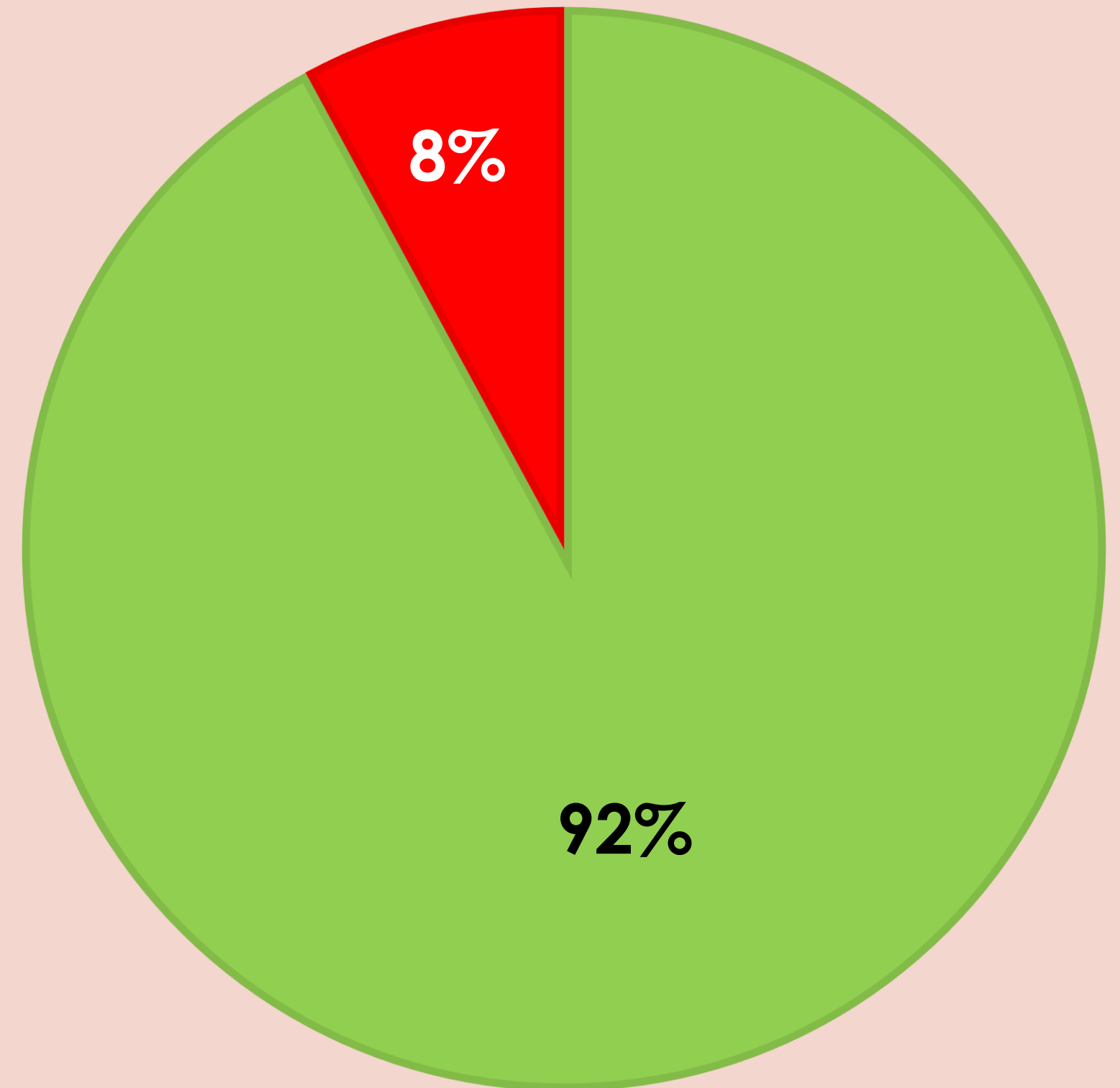
Before Intervention

- HEALTHY DIETARY INTAKES
- UNHEALTHY DIETARY INTAKES



After Intervention

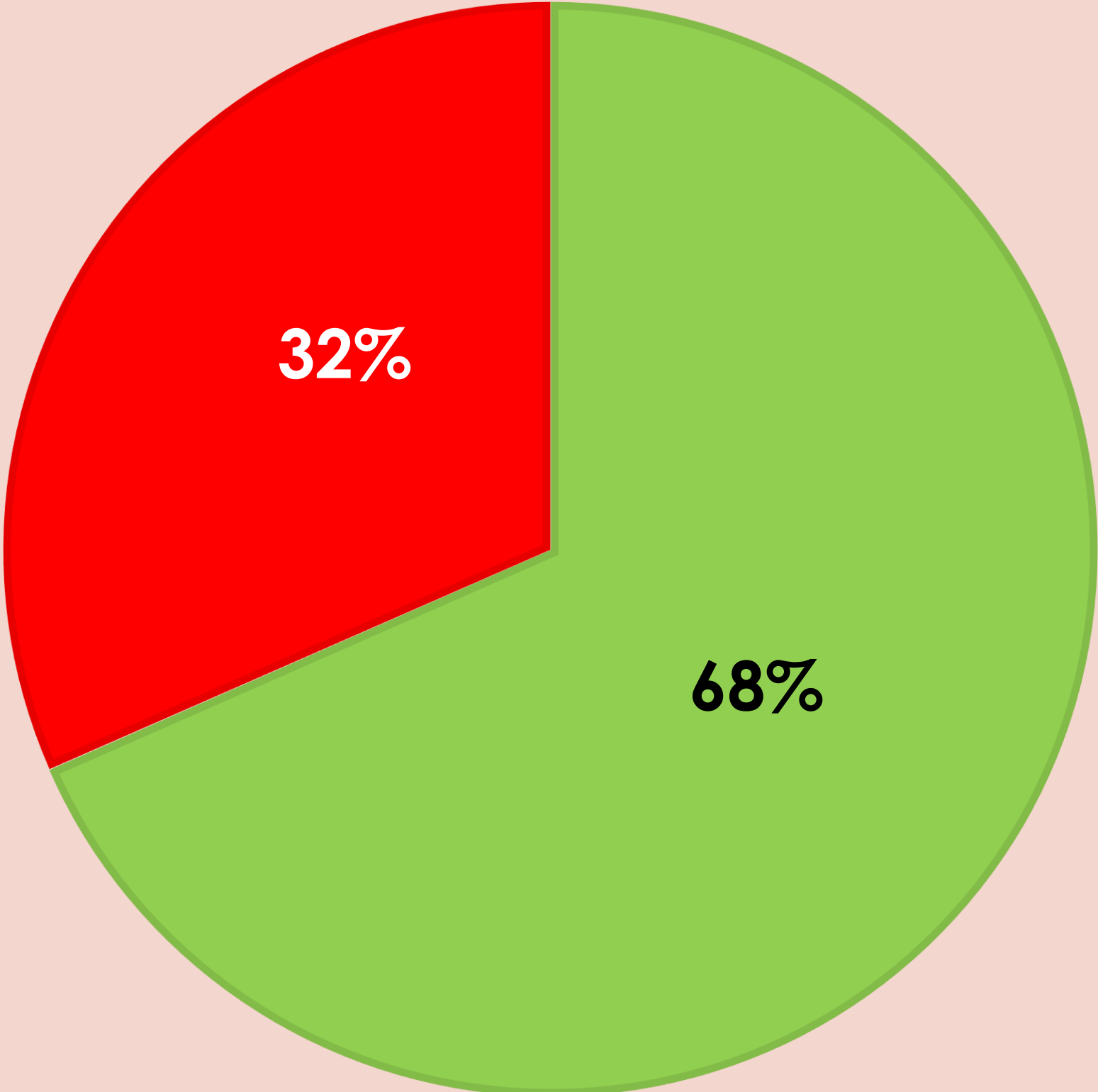
- HEALTHY DIETARY INTAKES
- UNHEALTHY DIETARY INTAKES



Toothbrushing Technique

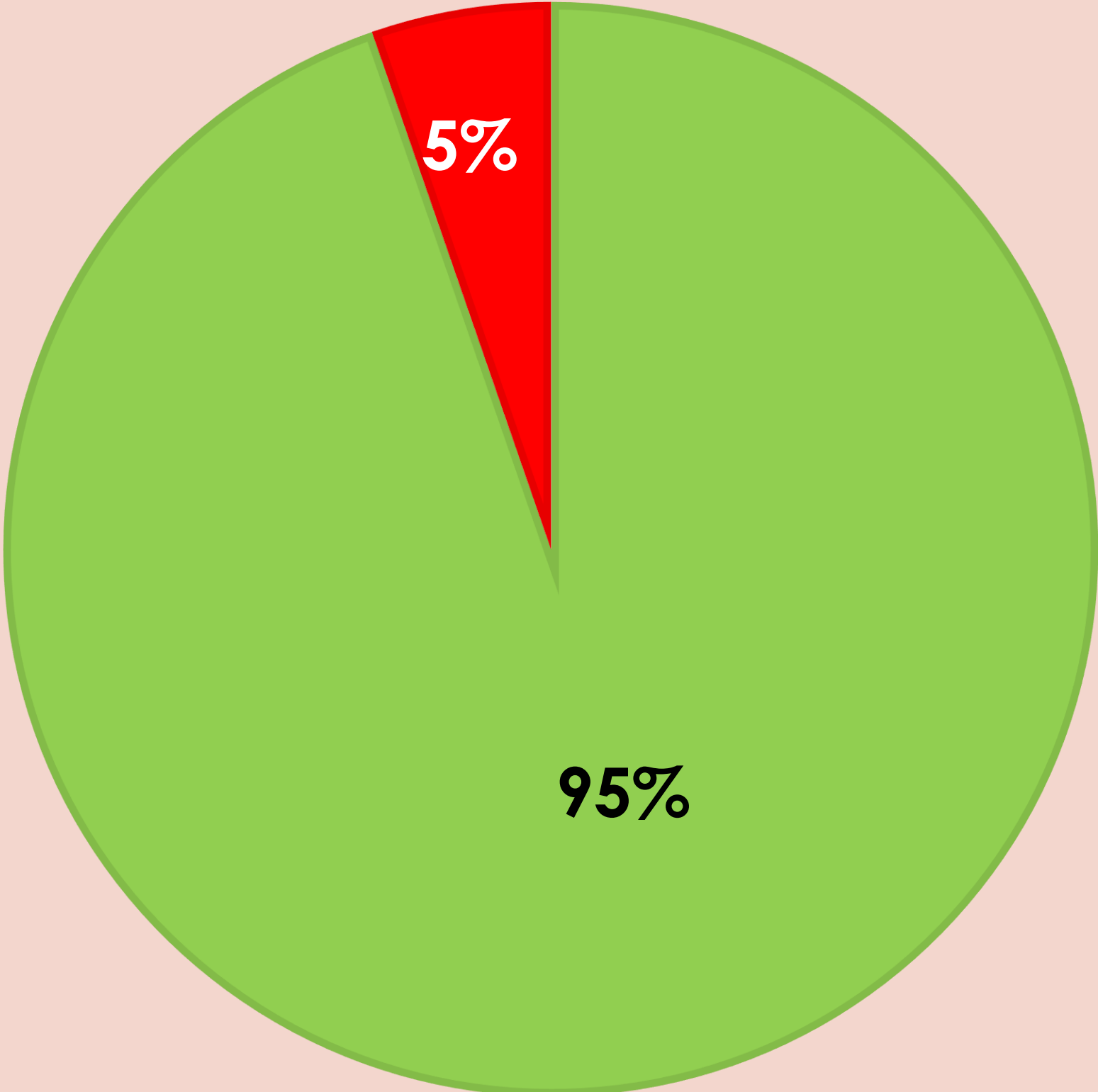
Before Intervention

- CIRCULAR TECHNIQUE (CORRECT)
- HORIZONTAL TECHNIQUE (WRONG)



After Intervention

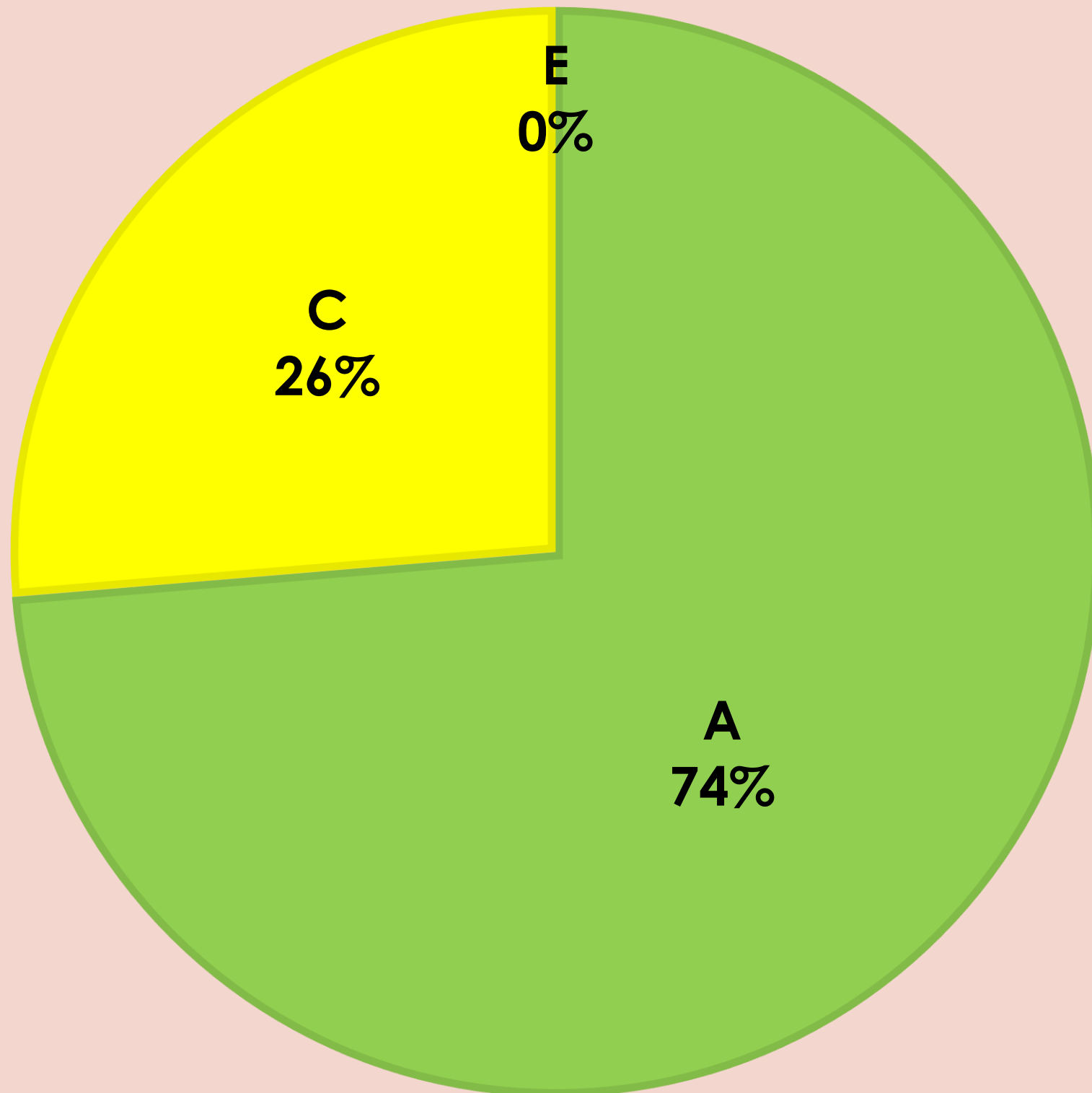
- CIRCULAR TECHNIQUE (CORRECT)
- HORIZONTAL TECHNIQUE (WRONG)



Percentage of Plaque Score A, C & E

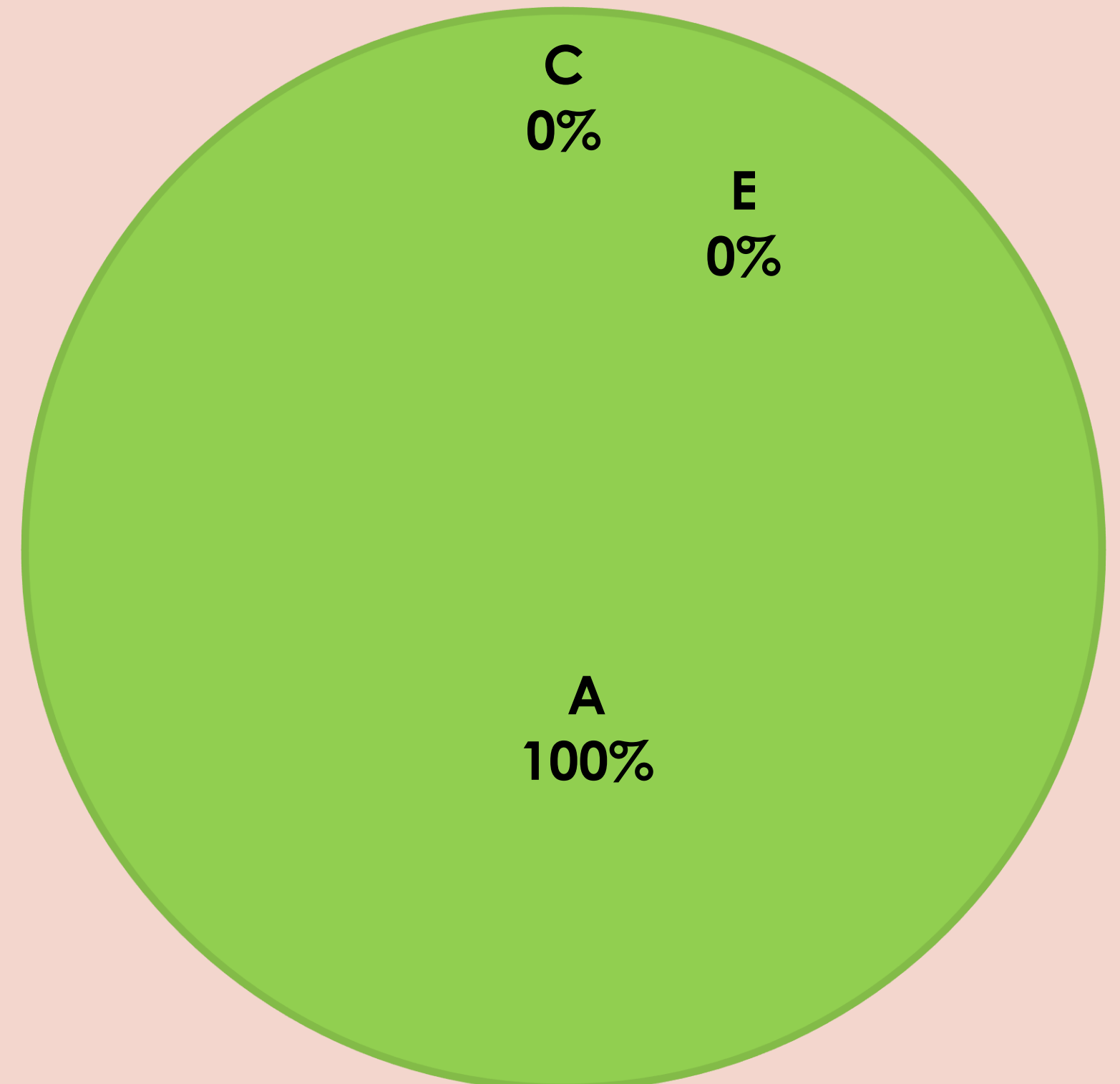
Before Intervention

■ A ■ C ■ E



After Intervention

■ A ■ C ■ E



Percentage of PSI (A) of Preschool Children Tadika Perpaduan Wakaf Tapai 1

100%



STANDARD

74%



Before Intervention

ABNA : 26%

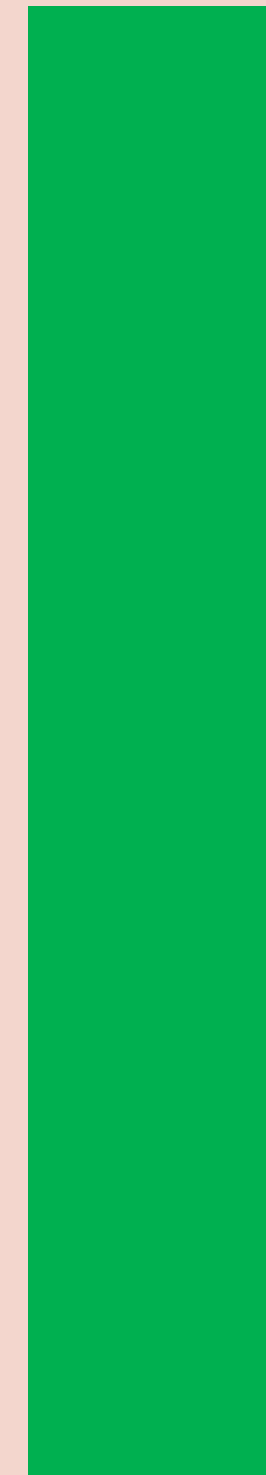
ABNA : 0%

100%

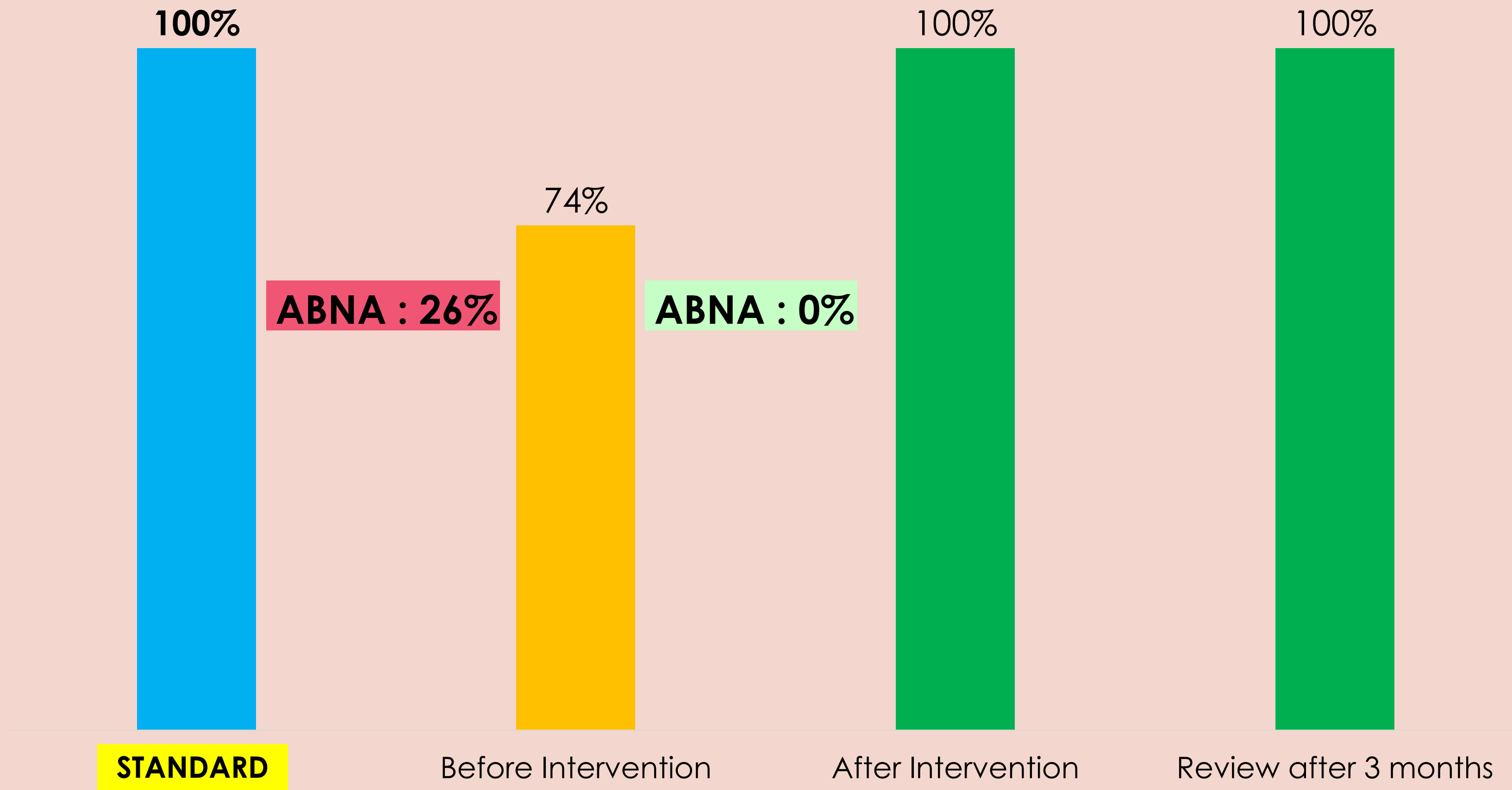


After Intervention

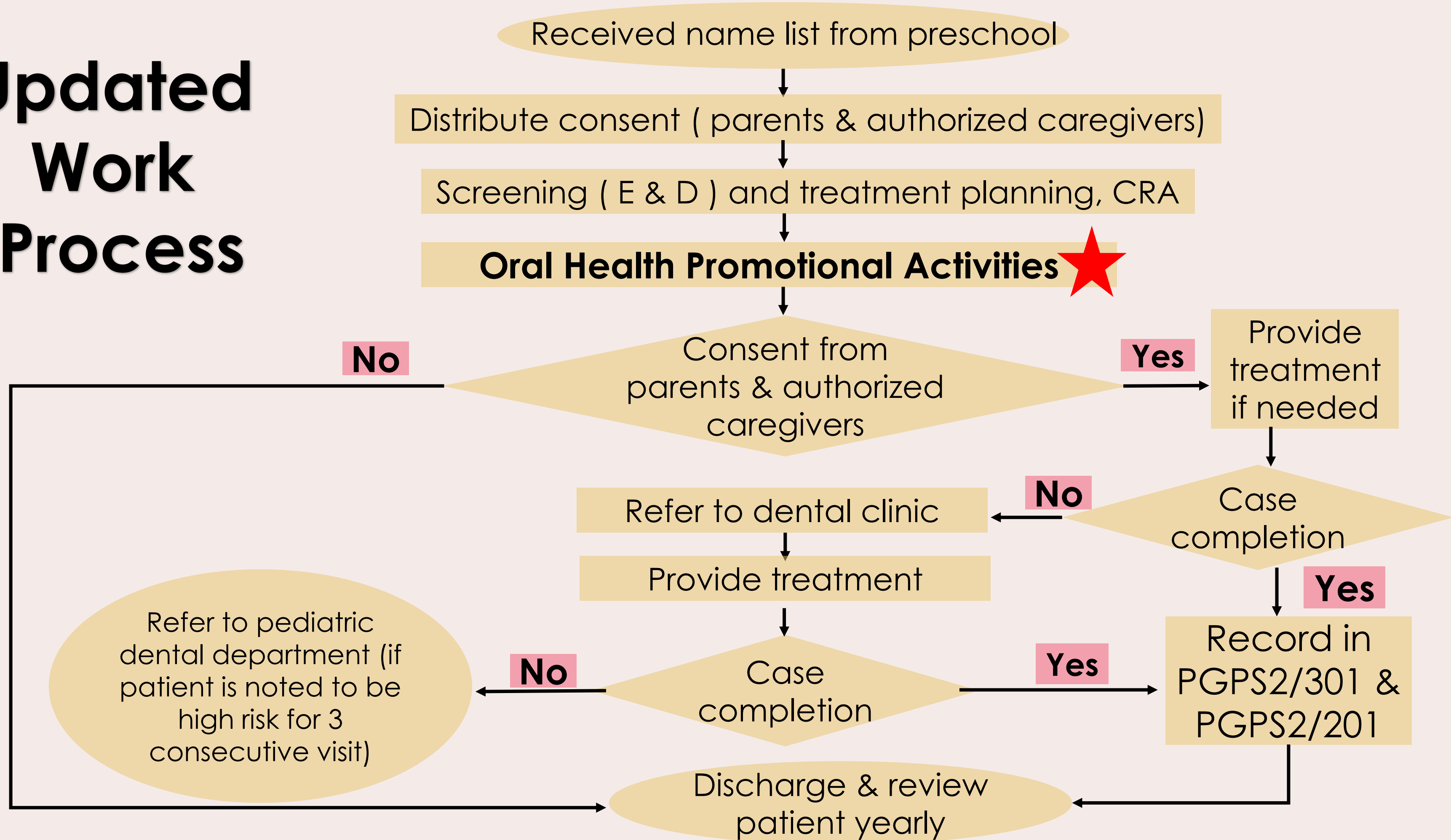
100%



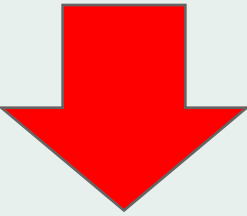
Review after 3 months



Updated Work Process



Updated Model Of Good Care

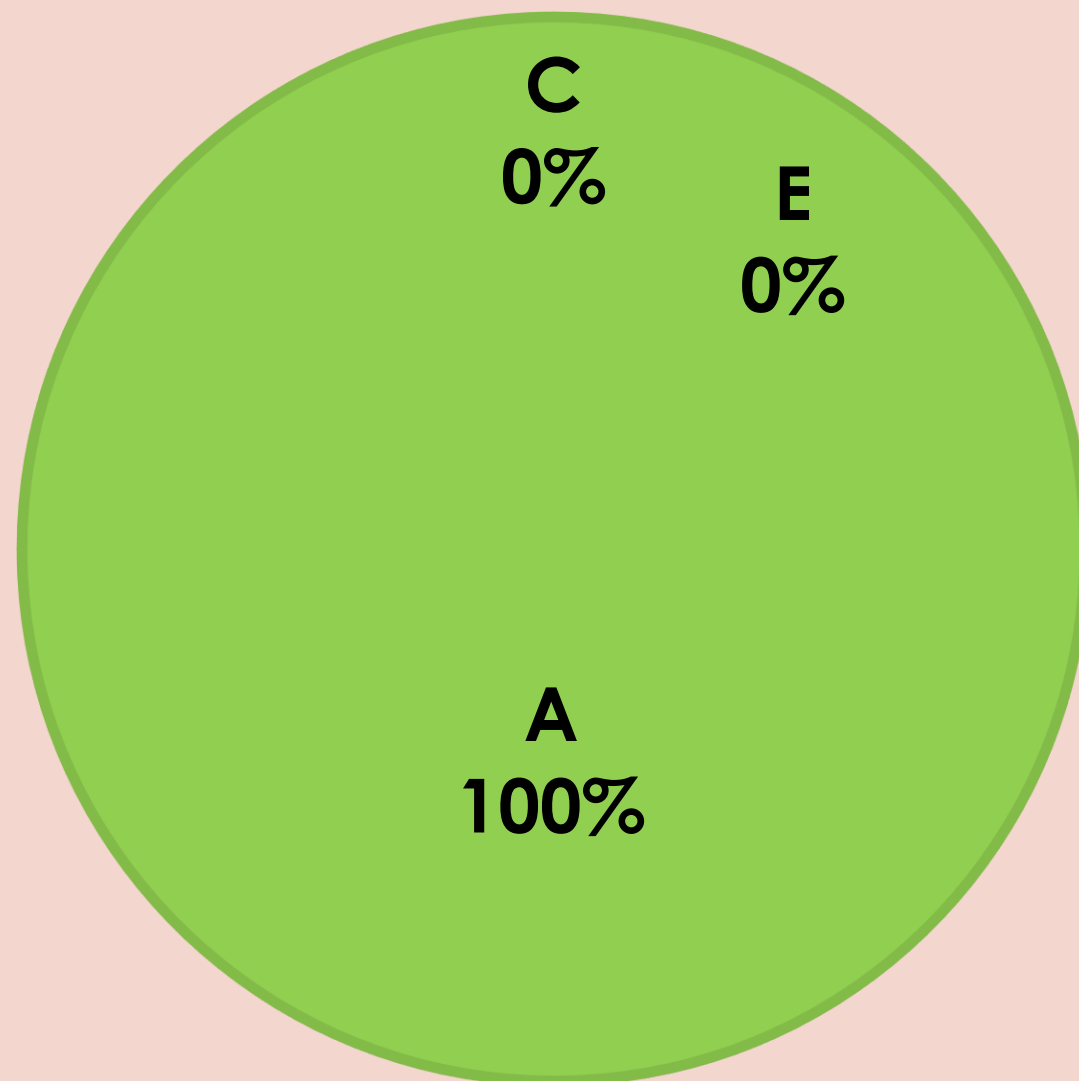
Process	Criteria	Standard
<u>Oral Health Promotional Activities</u>	<p>To all student :</p> <ul style="list-style-type: none">- Dental Health Education- Latihan Memberus Gigi (LMG) <p style="text-align: center;"> Updated</p> <p>Latihan Memberus Gigi Berkesan (BEGIN)</p>	100%
	<p>To parents :</p> <ul style="list-style-type: none">- One-to-one consultation- Diet Diary	100%

Monitoring & Post Study

The oral health status of the preschool children in Tadika Perpaduan Wakaf Tapai 1 has been monitored in November 2022.

PERCENTAGE OF PLAQUE SCORE A,C & E AT TPWT 1 IN NOVEMBER 2022

■ A ■ C ■ E



F. PEMERIKSAAN DAN CATATAN
(Tandakan ✓ Jika berkaitan)

No. Rujukan Fail: 5086
Tarikh: 14.11.2022

Catatan Perubatan dan Pergigian Terkini: -

Lesi: Luar Mulut Dalam Mulut Dentur: Sedia ada Penuh Atas Bawah Perlu Penuh Atas Bawah Separata Atas Bawah

(Catatkan Skor yang berkenaan)

Skor Plak Jumlah/Gred: A

Skor GIS Jumlah:

Perlu Penskaleran (Tandakan ✓):

KANAN: 55 54 53 52 51 61 62 63 64 65
6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
18 17 16 15 14 13 12 11 21 22 23 24 25 26 27 28

KIRI: 48 47 46 45 44 43 42 41 31 32 33 34 35 36 37 38
6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
85 84 83 82 81 71 72 73 74 75

G. TABIAT BERISIKO (Tandakan ✓ jika berkaitan)

Disaring

Sila isi Borang Saringan Kanser Mulut Jika Ada Satu atau Lebih Tabiat Berisiko Di bawah

Merokok / Shisa /Vape	-
Pengambilan Alkohol	-
Mengunyah Sireh/ Buah Pinang	-
Lain - lain	-

Bilangan Gigi: d D f M x F dfx X DMFX E X+M Jumlah gigi Kekal

Status (Tandakan ✓ Jika Berkaitan): MBK BK MBG TPR TSL

H. PENILAIAN RISIKO KARIES (Tandakan ✓ jika berkaitan)

Continuous implementation of remedial measures was done at Tadika Perpaduan Wakaf Tapai 1 to ensure 100% plaque score A is **maintained**.



Dental exhibition corners were provided in collaboration with the teachers at selected preschools in PKPD Marang.

- Tadika KEMAS Pekan Wakaf Tapai



Dental health day has been organized at other selected preschools in PKPD Marang. (*SHINY TEETH DAY* at Tadika Warisan Pintar 2023, 2024)



This program has been **expanded to other 4 selected preschools and PPDK** under PKPD Marang to increase the percentage of plaque score index (A) in 2023 :

- Tabika Kemas Kubang Palas
- Pusat Pemulihan Dalam Komuniti Wakaf Tapai
- Tabika Kemas Gong Kassim
- Tadika Rhu Muda



		% PSI (A) before intervention	% PSI (A) after intervention				% PSI (A) after intervention	
Name	Number of preschool children (n)	1 st visit	2 nd visit	3 rd visit	4 th visit	Number of preschool children (n)	1 st visit	2 nd visit
Year	2023					2024		
Tadika Perpaduan Wakaf Tapai 1	29	93	100	100	100	29	95	100
Tabika Kemas Kubang Palas	33	84	97	97	97	29	90	97
PPDK Wakaf Tapai	30	77	93	87	93	30	74	87
Tabika Kemas Gong Kassim	30	83	100	100	100	22	95	100
Tadika Rhu Muda	35	71	85	92	100	27	89	100

Cost of service at government dental clinic

(based on FEES (MEDICAL)(COST OF SERVICE) ORDER 2014)

Diagnostic assessment	Fee	Dental treatment	Fee	Medical treatment	Fee
Consultation	RM40	Scaling and polishing	RM214	Speech therapy	RM70
Extra oral radiograph	RM70	Restoration	RM30 – RM100	Medical nutrition intervention	RM70
Intra oral radiograph	RM70 – RM350	Fluoride varnish application	RM		
Nutrition assessment	RM70	Fissure sealant			
		Stainless			
		Procedure anaesthesia			
		Inhalation sedation			
		Extraction	RM25 – RM50		
		Pulpotomy/pulpectomy	RM150 – RM200		
		Root canal treatment	RM150 – RM300		
		COST	RM30 – RM2747		

**TOTAL COST SAVED
PER TOOTH**

RM30 – RM2747

Conclusion

Low plaque score index (A) of the preschool children in Tadika Perpaduan Wakaf Tapai 1 is attributed by:

- ✓ **improper toothbrushing technique**
- ✓ **unhealthy dietary habits**

In this study, comprehensive approach done:

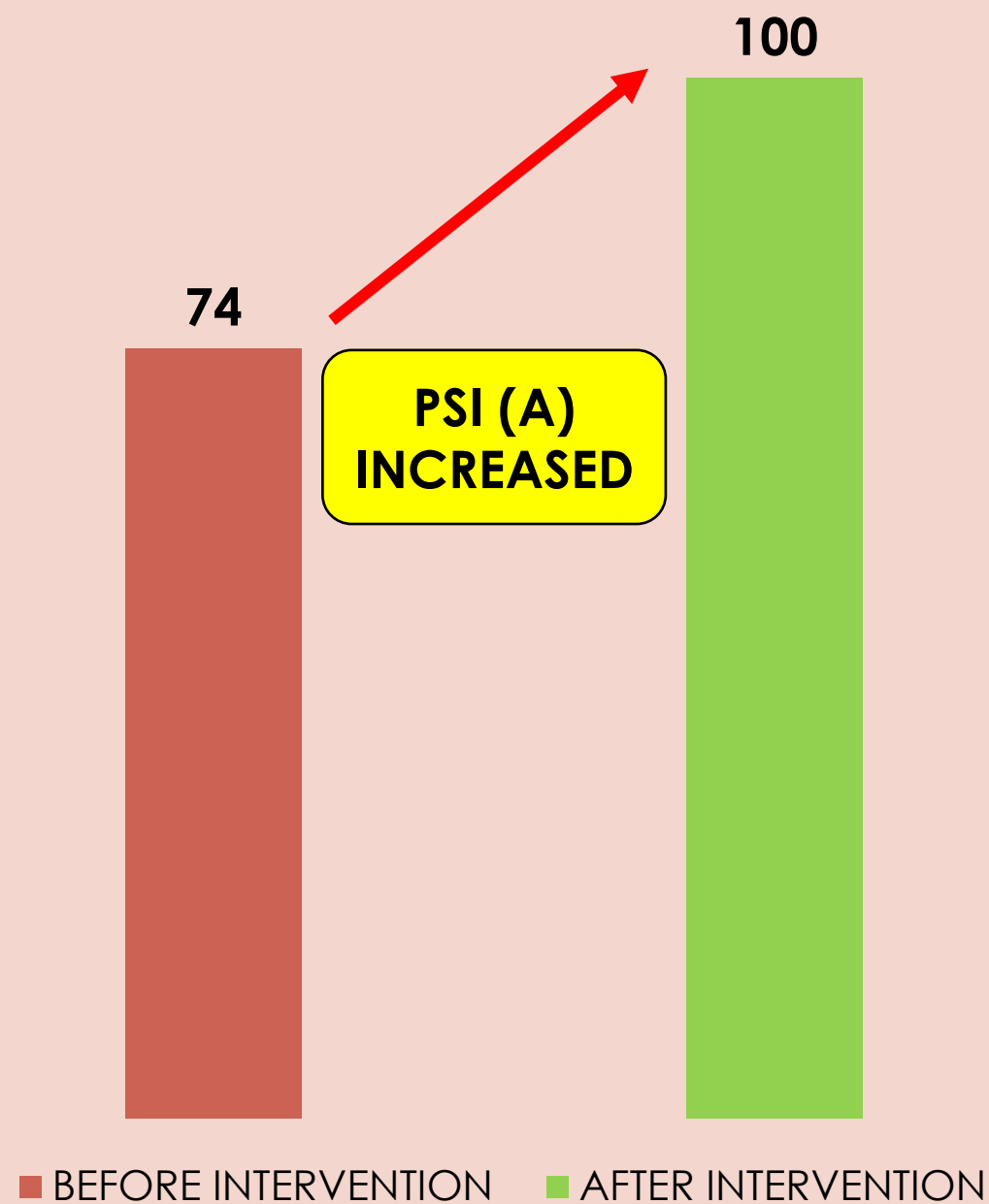
Parental education

One-on-one consultation

Use of educational tools and activities

BEGIN

% PSI (A) of Preschool Children at Tadika Perpaduan Wakaf Tapai 1



The success of this initiative not only improves the oral health of the children involved but also sets a **precedent** for similar programs in other preschools and primary schools within the Marang district

Next Step

Implement the remedial measures in **ALL preschools**

Expand the program to other PPDK & selected primary school **(PERSIS)**

Continuous monitoring every **three months**

Gantt chart

PLAN



EXECUTION



	MARCH 2022	APRIL 2022	MAY 2022	JUNE 2022	JULY 2022	AUGUST 2022	OCT 2022	2023-2024
Proposal and team briefing	PLAN							
	EXECUTION							
Verification Study		PLAN						
		EXECUTION						
Data Collection		PLAN						
		EXECUTION						
Data Analysis		PLAN	PLAN					
		EXECUTION	EXECUTION					
Remedial Action		PLAN	PLAN	PLAN	PLAN	PLAN		
		EXECUTION	EXECUTION	EXECUTION	EXECUTION	EXECUTION		
Evaluation and monitoring					PLAN	PLAN		
					EXECUTION	EXECUTION		
Report Preparation						PLAN		
						EXECUTION		
Post study							PLAN	PLAN
							EXECUTION	EXECUTION

Reference

- Seneviratne, C. J., Zhang, C. F., & Samaranayake, L. P. (2011). Dental plaque biofilm in oral health and disease. *The Chinese journal of dental research : the official journal of the Scientific Section of the Chinese Stomatological Association (CSA)*, 14(2), 87–94.
- Bilal, S., Abdulla, A. M., Andiesta, N. S., Babar, M. G., & Pau, A. (2021). Role of family functioning and health-related quality of life in pre-school children with dental caries: a cross-sectional study. *Health and quality of life outcomes*, 19(1), 192.
- Che Salleh N, Yaw SL, Abd Muttalib K, Ab RJ. National oral health survey of preschool children (NOHPS). Vol. 1: Oral health status and caries treatment needs of 5-year-old children. Putrajaya: The Oral Health Division, Ministry of Health Malaysia; 2017.
- Oral Health Division. The national oral health survey of preschool children 2005. Putrajaya: Oral health division, Ministry of Health Malaysia; 2005.
- Yusof, Z.Y.M., Anwar, N.H., Mohd Nor, N.A. et al. The effect of the SIMS Programme versus existing preschool oral healthcare programme on oral hygiene level of preschool children: study protocol for a cluster randomised controlled trial. *Trials* 22, 156 (2021).
- Khan, I.M., Mani, S.A., Doss, J.G. et al. Pre-schoolers' tooth brushing behaviour and association with their oral health: a cross sectional study. *BMC Oral Health* 21, 283 (2021).
- Oral Health Division Ministry of Health Malaysia. National Oral Health Survey of Preschool Children 2015 (NOHPS 2015), vol I: oral health status and caries treatment needs of 5-year-old children. Malaysia. 2015.
- Martin M, Rosales G, Sandoval A, Lee H, Pugach O, Avenetti D, et al. What really happens in the home: a comparison of parent-reported and observed tooth brushing behaviors for young children. *BMC Oral Health*. 2019;19(1):35.
- Collett BR, Huebner CE, Seminario AL, Wallace E, Gray KE, Speltz ML. Observed child and parent toothbrushing behaviors and child oral health. *Int J Paediatr Dent*. 2016;26(3):184–92.
- Mani SA, Aziz AA, John J, Ismail NM. Knowledge, attitude and practice of oral health promoting factors among caretakers of children attending day-care centers in Kubang Kerian, Malaysia: a preliminary study. *J Indian Soc Pedod Prev Dent*. 2010;28(2):78–83.

Thank You

