

I n c r e a s i n g **the Percentage of Patients** **Aged 60 Years Old & Above**

Receiving Removable Partial Dentures (RPD)
Within 8 Weeks in Klinik Pergigian (KP) Kulim

DR A'QILAH BINTI FIRDAUS
PEGAWAI PERGIGIAN UG41

PEJABAT KESIHATAN PERGIGIAN
DAERAH KULIM/BANDAR BAHARU
JABATAN KESIHATAN NEGERI KEDAH



TEAM MEMBERS

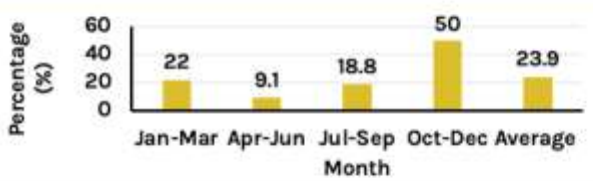

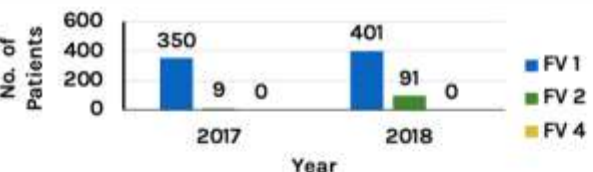
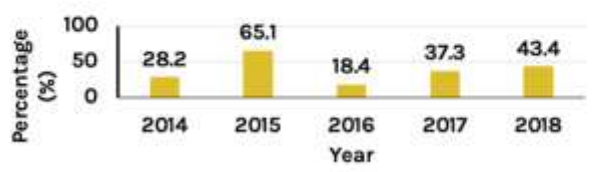
DR YONG ZHI PIN
DR MUNIRAH BINTI YAACOB
DR MUHAMMAD LUQMAN BIN
MUHAMMAD NAZMI
JT HARISON BINTI JAMALUDDIN

01

Selection
of
Opportunities

Quality Problem List

01

Quality problems in Oral Healthcare Services in Kulim	Data												
<p>1. Low % of patients ≥ 60 years old receiving RPD within 8 weeks in KP Kulim</p>	 <p>A bar chart showing the percentage of patients aged 60 and above receiving RPD within 8 weeks in KP Kulim. The y-axis is labeled 'Percentage (%)' and ranges from 0 to 60. The x-axis is labeled 'Month' and includes categories: Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec, and Average. The bars represent the following percentages: Jan-Mar (22%), Apr-Jun (9.1%), Jul-Sep (18.8%), Oct-Dec (50%), and Average (23.9%).</p> <table border="1"> <thead> <tr> <th>Month</th> <th>Percentage (%)</th> </tr> </thead> <tbody> <tr> <td>Jan-Mar</td> <td>22</td> </tr> <tr> <td>Apr-Jun</td> <td>9.1</td> </tr> <tr> <td>Jul-Sep</td> <td>18.8</td> </tr> <tr> <td>Oct-Dec</td> <td>50</td> </tr> <tr> <td>Average</td> <td>23.9</td> </tr> </tbody> </table>	Month	Percentage (%)	Jan-Mar	22	Apr-Jun	9.1	Jul-Sep	18.8	Oct-Dec	50	Average	23.9
Month	Percentage (%)												
Jan-Mar	22												
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Jul-Sep	18.8												
Oct-Dec	50												
Average	23.9												
<p>2. Long waiting time for appointments in KP Taman Selasih</p>	 <p>A bar chart showing the percentage of patients with long waiting times for appointments in KP Taman Selasih. The y-axis is labeled 'Percentage (%)' and ranges from 0 to 60. The x-axis is labeled 'Waiting Time (month)' and includes categories: <1, <2, <3, and >3. The bars represent the following percentages: <1 (7.4%), <2 (21.8%), <3 (28.2%), and >3 (42.6%).</p> <table border="1"> <thead> <tr> <th>Waiting Time (month)</th> <th>Percentage (%)</th> </tr> </thead> <tbody> <tr> <td><1</td> <td>7.4</td> </tr> <tr> <td><2</td> <td>21.8</td> </tr> <tr> <td><3</td> <td>28.2</td> </tr> <tr> <td>>3</td> <td>42.6</td> </tr> </tbody> </table>	Waiting Time (month)	Percentage (%)	<1	7.4	<2	21.8	<3	28.2	>3	42.6		
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<2	21.8												
<3	28.2												
>3	42.6												
<p>3. Low 2nd & 4th visit for topical fluoride application among toddlers</p>	 <p>A bar chart showing the number of patients for 1st, 2nd, and 4th visits for topical fluoride application among toddlers in 2017 and 2018. The y-axis is labeled 'No. of Patients' and ranges from 0 to 600. The x-axis is labeled 'Year' and includes categories: 2017 and 2018. The legend indicates: FV 1 (blue), FV 2 (green), and FV 4 (yellow). The data points are: 2017 (FV 1: 350, FV 2: 9, FV 4: 0), 2018 (FV 1: 401, FV 2: 91, FV 4: 0).</p> <table border="1"> <thead> <tr> <th>Year</th> <th>FV 1</th> <th>FV 2</th> <th>FV 4</th> </tr> </thead> <tbody> <tr> <td>2017</td> <td>350</td> <td>9</td> <td>0</td> </tr> <tr> <td>2018</td> <td>401</td> <td>91</td> <td>0</td> </tr> </tbody> </table>	Year	FV 1	FV 2	FV 4	2017	350	9	0	2018	401	91	0
Year	FV 1	FV 2	FV 4										
2017	350	9	0										
2018	401	91	0										
<p>4. Low % of NTR among students of SK Ladang Bukit Sidim</p>	 <p>A bar chart showing the percentage of NTR among students of SK Ladang Bukit Sidim from 2014 to 2018. The y-axis is labeled 'Percentage (%)' and ranges from 0 to 100. The x-axis is labeled 'Year' and includes categories: 2014, 2015, 2016, 2017, and 2018. The bars represent the following percentages: 2014 (28.2%), 2015 (65.1%), 2016 (18.4%), 2017 (37.3%), and 2018 (43.4%).</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Percentage (%)</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>28.2</td> </tr> <tr> <td>2015</td> <td>65.1</td> </tr> <tr> <td>2016</td> <td>18.4</td> </tr> <tr> <td>2017</td> <td>37.3</td> </tr> <tr> <td>2018</td> <td>43.4</td> </tr> </tbody> </table>	Year	Percentage (%)	2014	28.2	2015	65.1	2016	18.4	2017	37.3	2018	43.4
Year	Percentage (%)												
2014	28.2												
2015	65.1												
2016	18.4												
2017	37.3												
2018	43.4												

Problem Prioritisation

01

No	Quality Problems	Score					
		S	M	A	R	T	Total
1	Low % of patients \geq 60 years old receiving RPD within 8 weeks in KP Kulim	14	12	13	11	12	62
2	Long waiting time for appointments in KP Taman Selasih	11	8	8	6	8	41
3	Low 2 nd & 4 th visit for topical fluoride application among toddlers	12	6	8	5	5	36
4	Low % of NTR among students of SK Ladang Bukit Sidim	12	9	8	8	7	44

Weightage:
1 = Low
2 = Medium
3 = High

Voting
performed
by 5 group
members

01

Selected Quality Problem to be Studied

Increasing the Percentage of Patients
Aged 60 Years Old & Above
Receiving Removable Partial Dentures (RPD)
Within 8 Weeks in Klinik Pergigian (KP)
Kulim

Reasons for Selection

01

The SMART Criteria	
Seriousness	Only 23.9% (11 out of 46) patients received their RPD within 8 weeks. It is well below the standard of 65% as set by the Oral Health Division of Kedah.
Measurable	Duration for each step in the denture fabrication process can be measured and recorded.
Appropriateness	Denture fabrication is one of the primary dental services provided in the Ministry of Health. There is also a high need of treatment in the local population.
Remediable	Solutions are available and practical for certain aspects in the denture fabrication process.
Timeliness	This study can be carried out within a reasonable amount of time .

Literature Review

01

Definition of elderly for developing countries based on United Nations are those aged 60 years and above.

Guidelines on Oral Healthcare for the Elderly in Malaysia, OHD, MOH. Revised January 2014

The percentage of population aged 65 and over had increased to 7.3% in 2022 from 7.0% in 2021. Based on the United Nations definition, Malaysia has become an ageing society.

Current Population Estimates 2022, Department of Statistics Malaysia.

The elderly population is projected to increase to 14.5% in the year 2040.

Population Projection (Revised), Malaysia, 2010-2040

Literature Review

01

In the elderly, oral conditions can have substantial effect on their Oral health-related quality of life (OHRQoL).

Guidelines on Oral Healthcare for the Elderly in Malaysia, OHD, MOH. Revised January 2014

Denture wearers recorded better OHRQoL in 3 items, namely 'difficulty in chewing', 'uncomfortable to eat' and 'avoiding food' compared to non denture wearers.

S. Zainab et al.,2008

Brief Description of Context

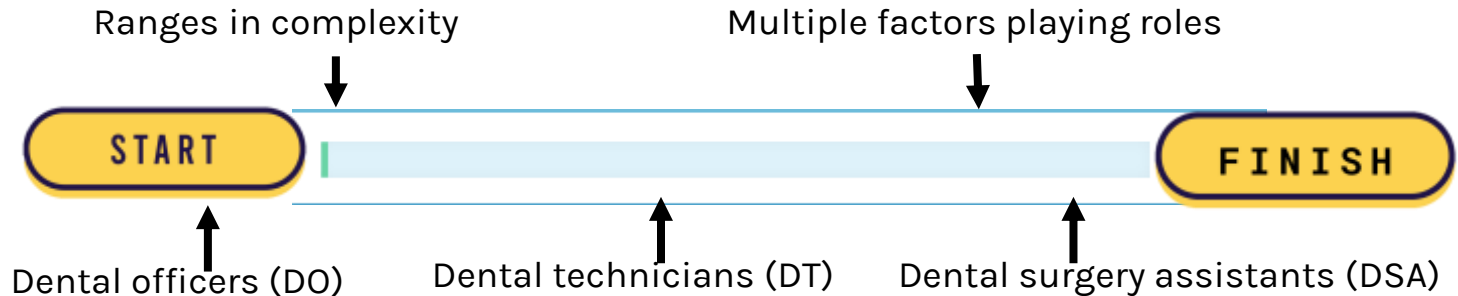
Glossary of Prosthodontic Terms (9th Edition)

Denture:

An artificial substitute for missing natural teeth and adjacent tissues

Removable partial denture (RPD):

A removable denture that replaces some teeth in the partially edentulous arch which can be readily inserted and removed from the mouth by the patient



Problem Statement

01

Monthly reten in KP Kulim in 2018 showed on average, only 23.9% of patients aged ≥ 60 years old received their RPD within 8 weeks.

The prolonged duration for delivery of dentures to this group of patients will negatively impact the functional and psychosocial aspect of their lives. It will also impact the performance of KP Kulim in this regard.

The problem is multifactorial, with factors such as reduced manpower, limited resources and technical errors that cumulated to cause this problem.

This study aims to improve the percentage of patients ≥ 60 years old receiving their RPD within 8 weeks.

02

Key Measures
for
Improvement

INDICATOR

Percentage of patients ≥ 60 years old who are suitable for & received their dentures within 8 weeks in KP Kulim

FORMULA

$$\frac{\text{No of patients } \geq 60 \text{ years old who requested and are suitable for RPD and received their dentures **within 8 weeks** in KP Kulim}}{\text{No of patients } \geq 60 \text{ years old who requested and are suitable for RPD and received their dentures in KP Kulim}} \times 100\%$$

STANDARD

At least 65% based on Oral Health Division of Kedah State

Objectives of Study

02

General objective:

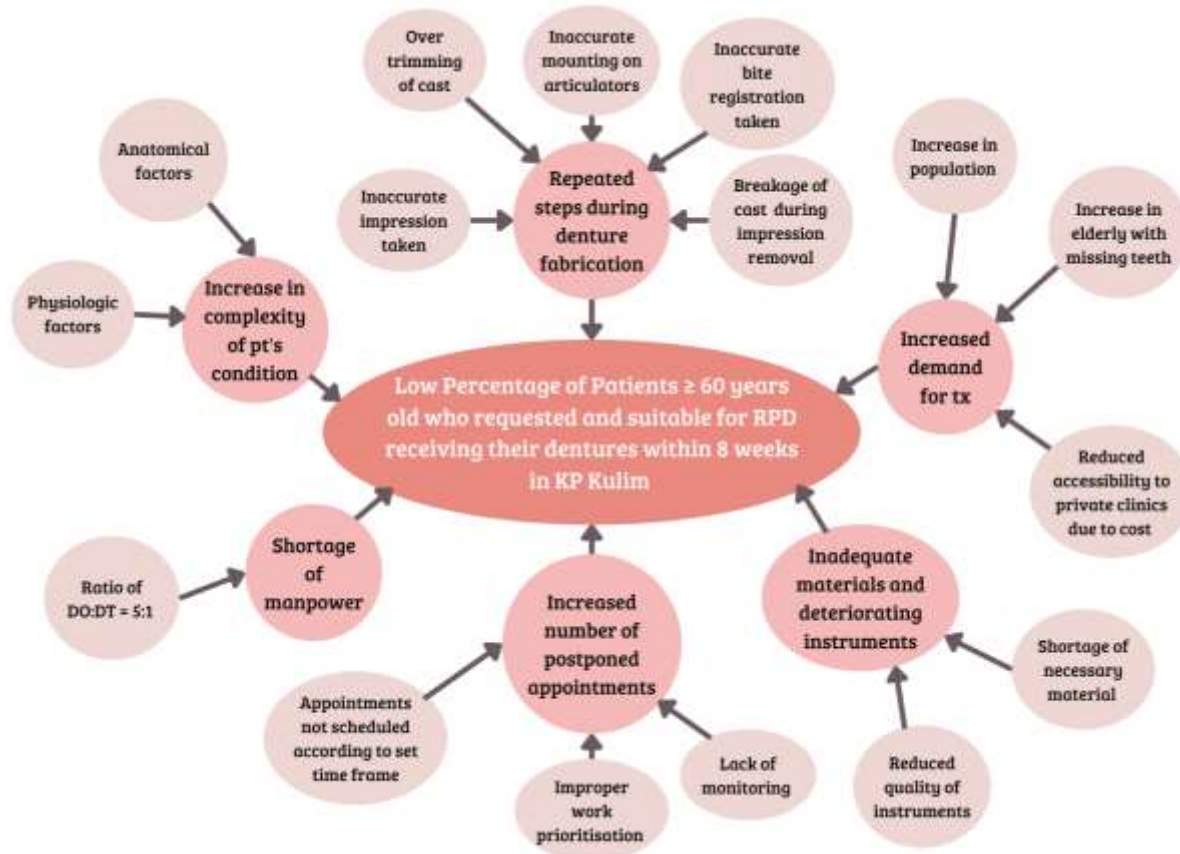
To increase the percentage of patients aged ≥ 60 years old who requested and are suitable for RPD receiving their dentures within 8 weeks in KP Kulim.

Specific objectives

1. To verify the percentage of patients aged ≥ 60 years old who requested and are suitable for RPD receiving their dentures within 8 weeks in KP Kulim.
2. To identify contributing factors of low percentage of patients aged ≥ 60 years old who requested and are suitable for RPD receiving their dentures within 8 weeks in KP Kulim.
3. To formulate and implement appropriate remedial measures.
4. To evaluate the effectiveness of remedial measures taken.

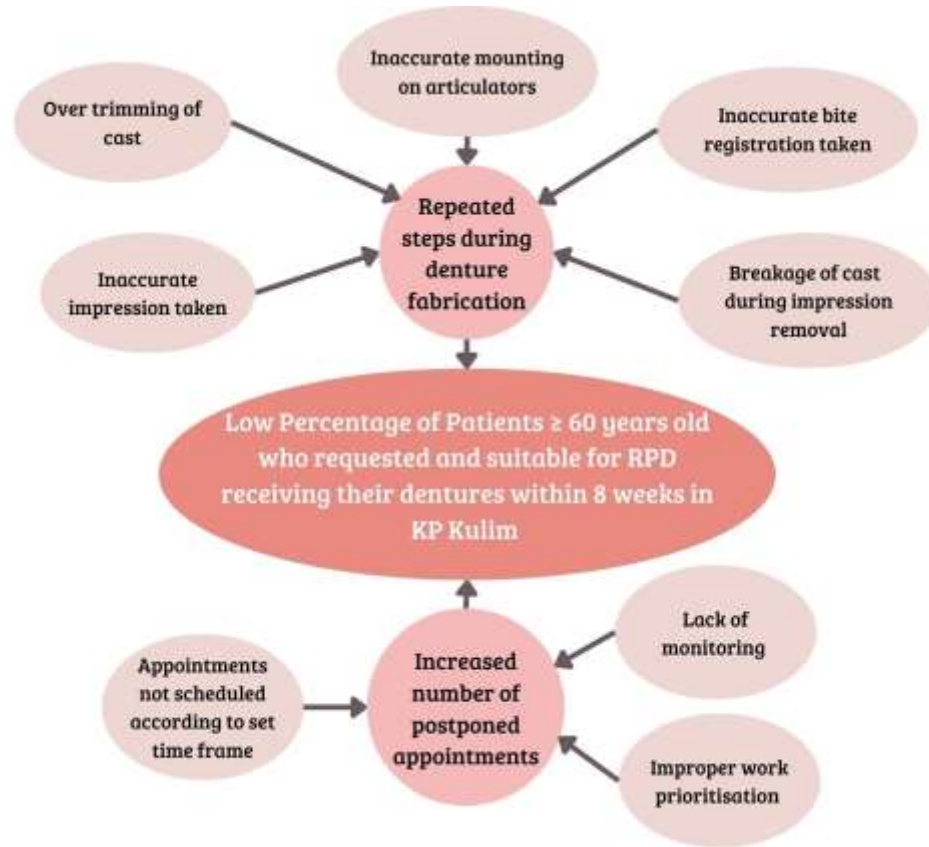
Problem Analysis Chart

02



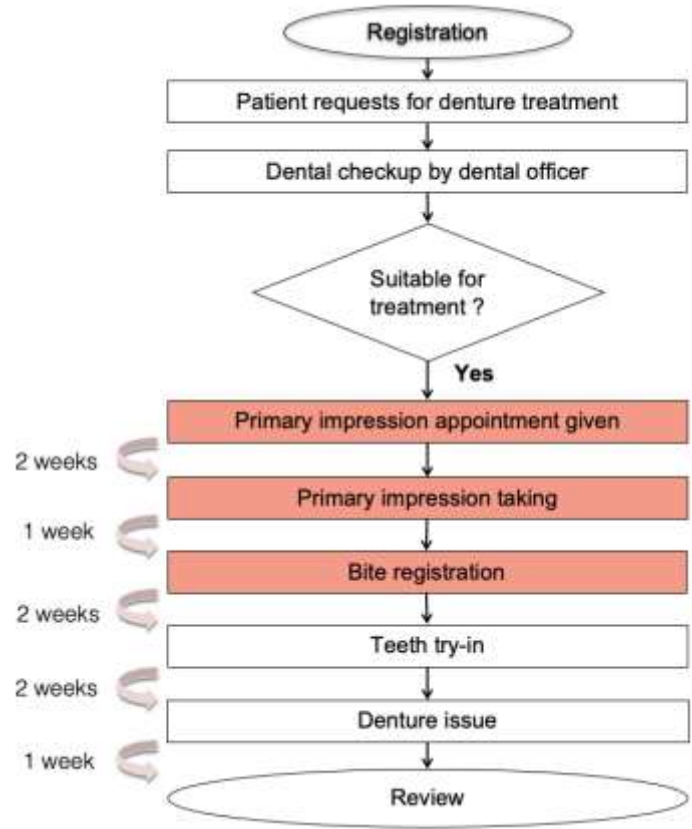
Finalized Problem Analysis Chart

02








Process of Care

02



Model of Good Care (MOGC)

No	Process of care	Criteria	Standard	
1	Check-up 	All patients 60 years old and above who requests and is suitable for denture are screened and impression taken.	100%	
2	First impression 	First impression taken using alginate impression material with proper recording of all anatomical landmarks.	100%	2 weeks
3	Bite registration 	Bite registration taken in centric bite relation. For patients with stable bite, bite registration is taken during first impression stage.	100%	1 week
4	Try-in 	Jaw and occlusal relationship and aesthetics of denture are confirmed.	100%	2 weeks
5	Issue 	Well polished dentures are issued to patients.	100%	2 weeks
6	Review	Patients are given appointment for review.	100%	1 week
Entire process		All patients ≥ 60 years old receiving RPD within 8 weeks	≥ 65%	

02

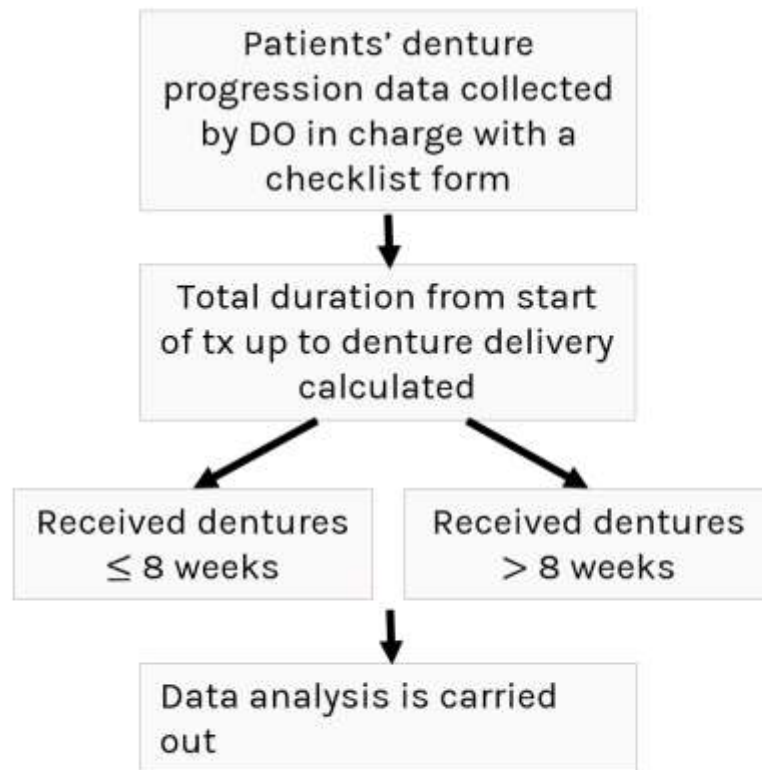
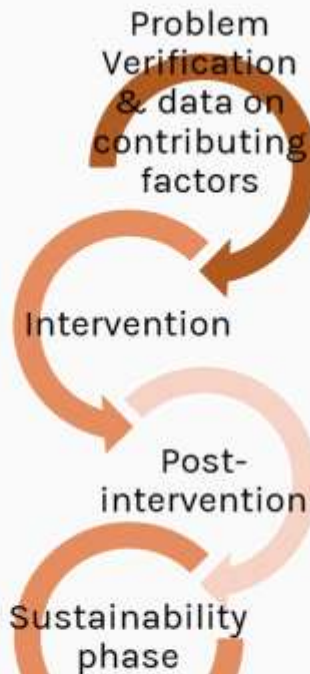
03

Process of
Gathering
Information

Methodology	Description	
Study design	Cross-sectional study	
Study population	Patients aged ≥ 60 years old who were suitable & requested for RPD in KP Kulim	
Sampling technique	Purposive sampling	
Sample size	46 patients (Problem verification) 43 patients (Post-intervention)	
Study period	Problem Verification	January 2018 - December 2018
	Intervention	January 2019 - March 2020
	Post-intervention	
	2 nd cycle	April - July 2022
Study tools	PG205, LP8, LP6 & Questionnaire	
Inclusion criteria	All patients aged ≥ 60 years old who were suitable for & received their RPD in KP Kulim	
Exclusion criteria	Patients who changed or missed appointments	

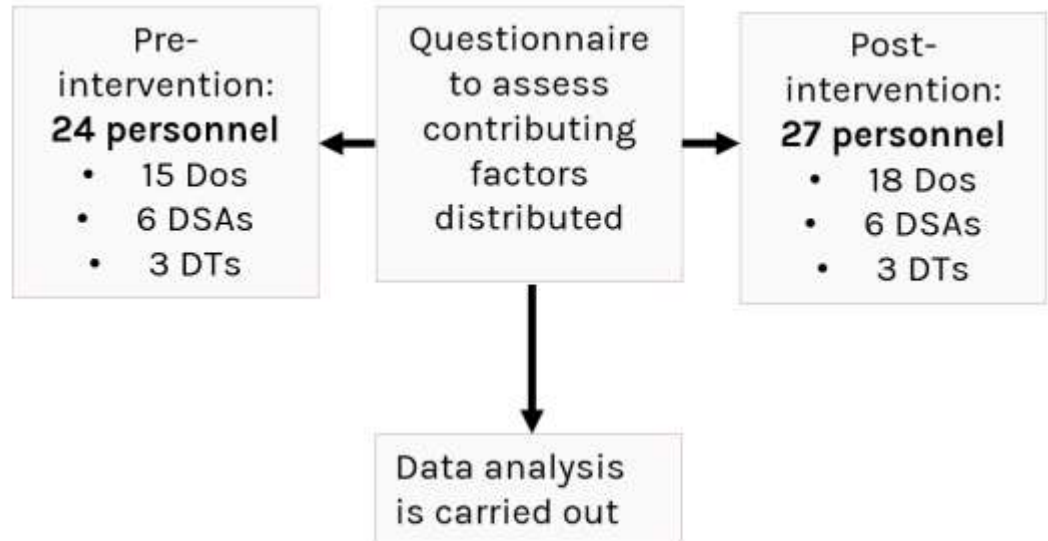
Process of Data Collection

03



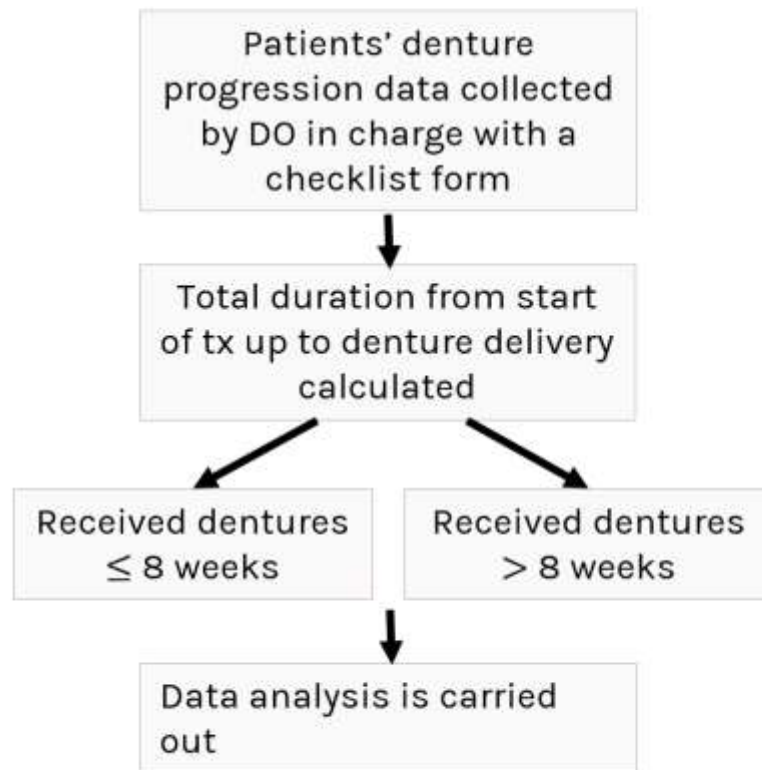
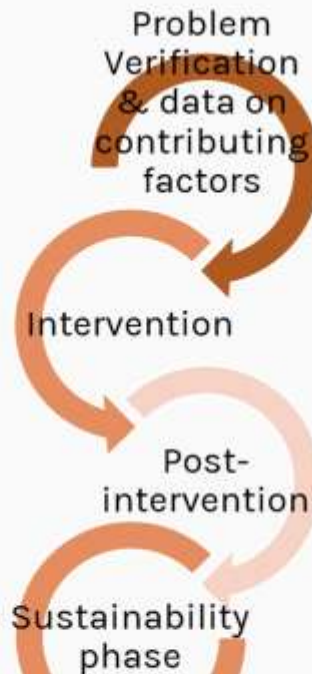
Process of Data Collection

03



Process of Data Collection

03



Process of Data Collection

03

Problem
Verification
& data on
contributing
factors

Intervention

Post-
intervention

Sustainability
phase

Pre-
intervention:
24 personnel

- 15 Dos
- 6 DSAs
- 3 DTs

Questionnaire
to assess
contributing
factors
distributed

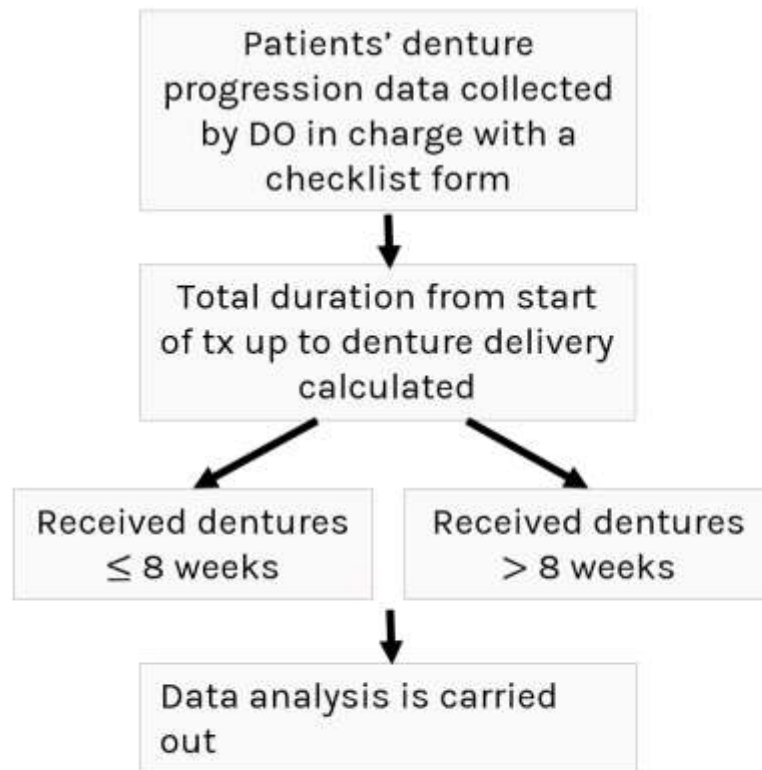
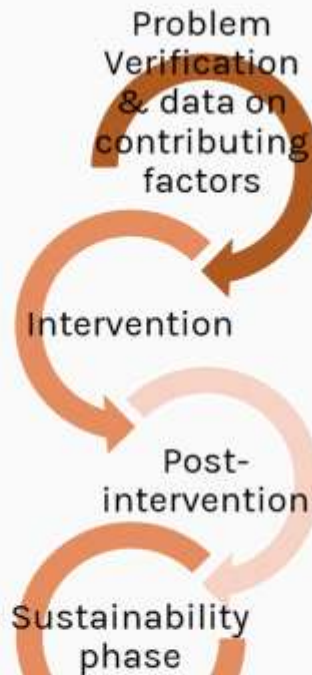
Post-
intervention:
27 personnel

- 18 Dos
- 6 DSAs
- 3 DTs

Data analysis
is carried out

Process of Data Collection

03



Verification Study

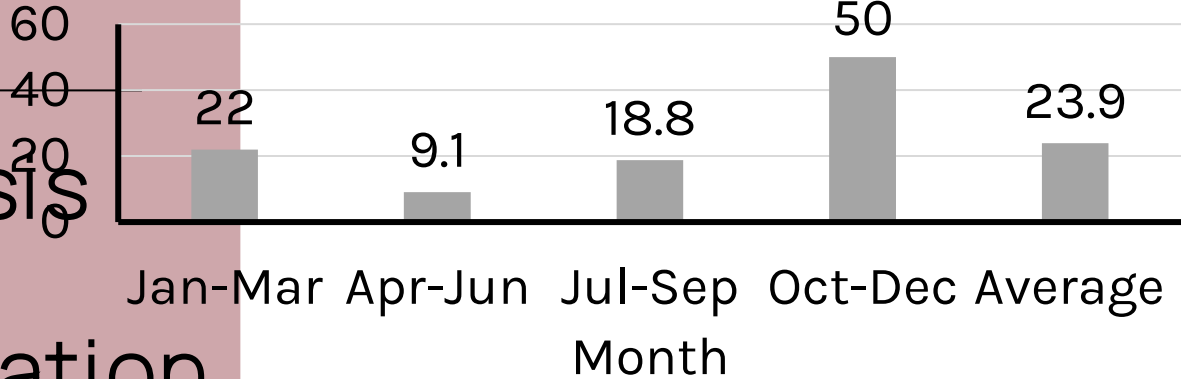
04

Percentage

Analysis

and

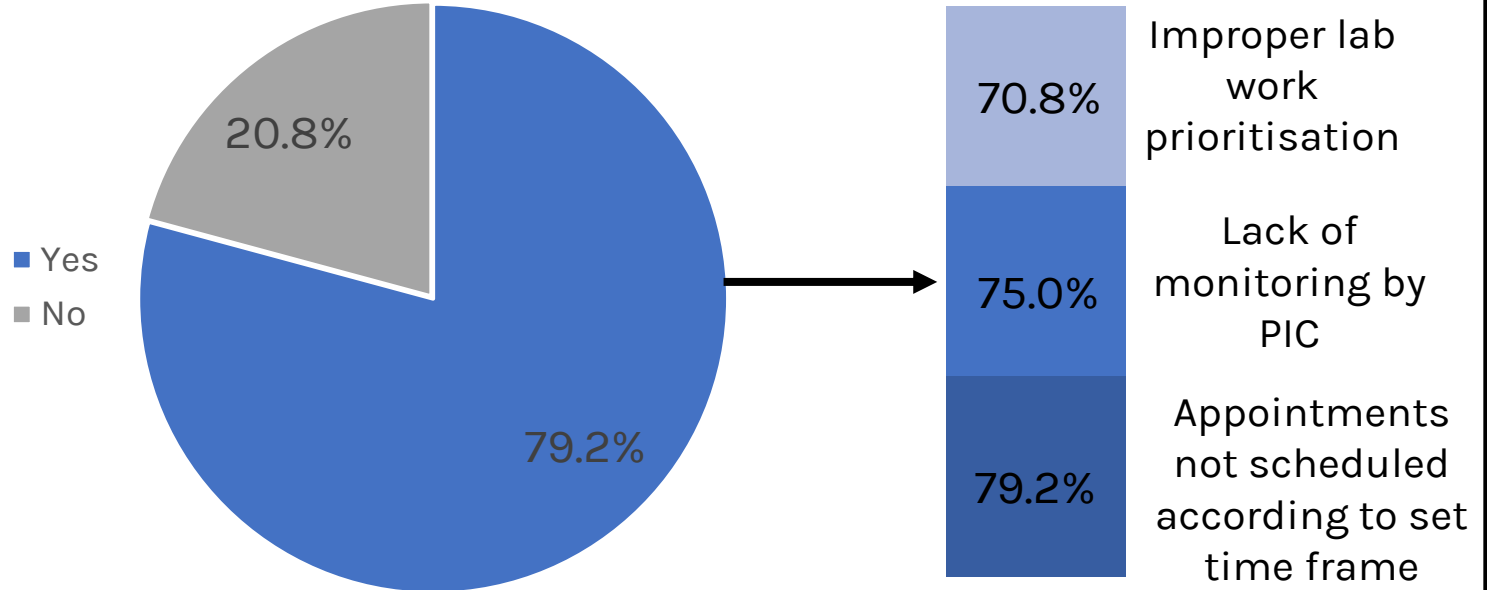
Interpretation



Contributing Factors (Pre-Intervention)

Primary Contributing Factor 1:
Increased number of postponed appointments

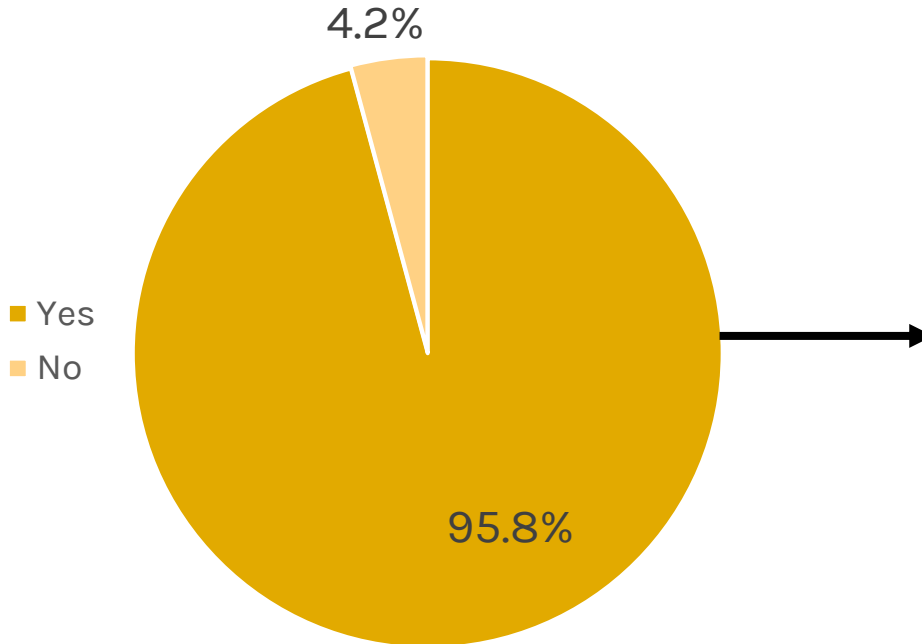
Secondary
Contributing
Factors:



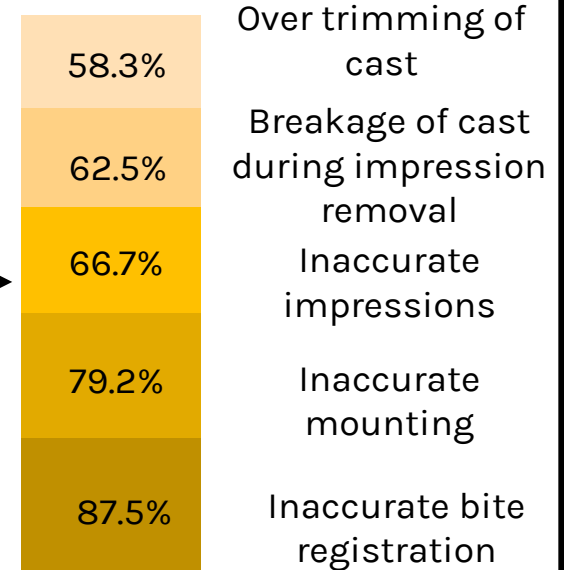
04

Contributing Factors (Pre-Intervention)

Primary Contributing Factor 2:
Repeated steps during denture fabrication



Secondary
Contributing
Factors:



04

Introduction of an organization system utilizing labelled denture storage boxes

Creation of a WhatsApp group as a medium of seamless communication

05

Creation and enforcement of a denture progression form for DOs

Organization of Continuing Dental Education (CDE) sessions

for
Change

Creation and enforcement of a denture registration and progression form for individual DTs

Modification in process of care involving combination of steps for selected cases

05

Strategy 1: Introduction of an organization system utilizing labelled denture storage boxes



- Each box contains an individual patient denture case
- Each box will be labelled with date the case was started, projected date to be completed (within 8 weeks) and upcoming appointment date
- Organized according to DT in charge using FIFO manner in descending order

Strategy 2: Creation & enforcement of a denture progression form for DOs

05

April 2018

DAFTAR PESAKIT DENTUR (UNTUK PESAKIT BERUMUR ≥ 60 TAHUN KE ATAS)
KPI 2 : Peratus pesakit berumur 60 tahun ke atas mendapat gigi palsu (dentur) dalam tempoh 8 minggu (56 hari)

Nama Pesakit	Umur	Jenis Kes	Tarikh pesakit meminta dentur dan dilapati sesuai untuk memulakan pemasangan dentur (aj)	1 st Imp.		2 nd Imp.		Bita		Try in	
				Tarikh	Selesai/Tidak (nyatakan alasan jika tidak)	Tarikh	Selesai/Tidak (nyatakan alasan jika tidak)	Tarikh	Selesai/Tidak (nyatakan alasan jika tidak)	Tarikh	Selesai/Tidak (nyatakan alasan jika tidak)
	63	P/-	2/4/18	19/5/18	Selesai	-	-	-	-	6/6/18	Selesai
	63	F/F	29/4/18	29/4/18	Selesai	-	-	19/5/18	Selesai	6/6/18	Selesai
	66	P/P	23/4/18	24/4/18	Selesai	-	-	19/5/18	Selesai	6/6/18	Selesai
	62	P/a	10/4/18	10/5/18	Selesai	-	-	19/5/18	Selesai	6/6/18	Selesai
	66	P/P	27/4/18	27/4/18	Selesai	-	-	19/5/18	Selesai	6/6/18	Selesai
	65	P/P	15/4/18	15/4/18	Selesai	-	-	19/5/18	Selesai	6/6/18	Selesai



- This form was endorsed by the Senior District Officer (SDO)
- Details of all new patients aged ≥ 60 years old who were starting their RPD treatment will be recorded here by the attending DO
- For each step in the denture fabrication process, DOs are required to record the date of appointment. If unable to be completed on the given date, justification must be recorded
- Subsequent appointment dates were adjusted so as not to exceed the total duration of 8 weeks
- One DO in charge supervised and monitored the utilization of this form

Strategy 4: Creation of a WhatsApp group as a medium of seamless communication



- This WhatsApp group enabled DOs and DTs to communicate synergistically regarding the progress of each patient
- Any difficulty from the DO or the DT side in ensuring the total time was met were also discussed
- It was convenient and removed the barrier of having to meet and discuss in person since every officer and technician were also pre-occupied with other responsibilities



Strategy 5: Organization of Continuing Dental Education (CDE) sessions



- Multiple CDE sessions were carried out involving DOs, DTs and DSAs with topics reinforcing basic and fundamental aspects for successful RPD fabrication
- Case discussion and experience sharing were also advocated and conducted to improve clinical handling of each case

Strategy 6: Modification in process of care involving combination of steps for selected cases

05

Type of Occlusion	Definition	Effect on Total Time Frame
Stable Occlusion 	At least 3 - 4 positive contacts between existing upper & lower posterior teeth	5 weeks
Unstable Occlusion 	Less than 3 - 4 positive contacts between existing upper & lower posterior teeth	6 weeks

- Patients with 'stable occlusion' were identified during intra-oral examination
- Bite registration stage (3rd stage) will be done at the same time during the first impression stage (2nd stage)

Summary of Strategies for Change

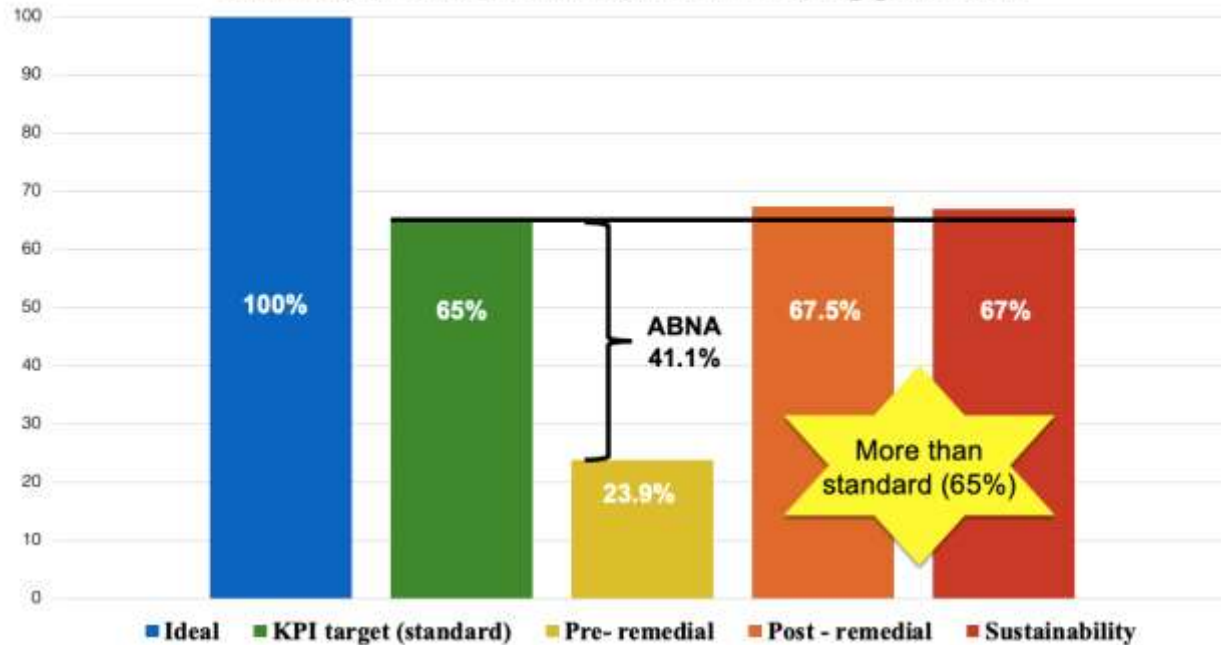
05

Primary Contributing factors	Secondary Contributing factors	Strategies
Increased number of postponed appointments	Improper lab work prioritisation	<ul style="list-style-type: none"> • Creation and enforcement of a new denture progression form for DO • Creation and enforcement of a new denture registration and progression form for DT • Creation of WhatsApp group to update work procedures
	Lack of monitoring by person-in-charge	
	Appointments are not scheduled according to set time frame	
Repeated steps during denture fabrication	Over trimming of cast	<ul style="list-style-type: none"> • Organisation of Continuous Dental Education (CDE) sessions • Case discussion and experience sharing • Modification in process of care in selected cases
	Breakage of cast following impression removal	
	Inaccurate impression	
	Inaccurate mounting of casts with bite registration done on articulators	
	Inaccurate bite registration by operator during chair side	

Post-Intervention

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Eff
Cha

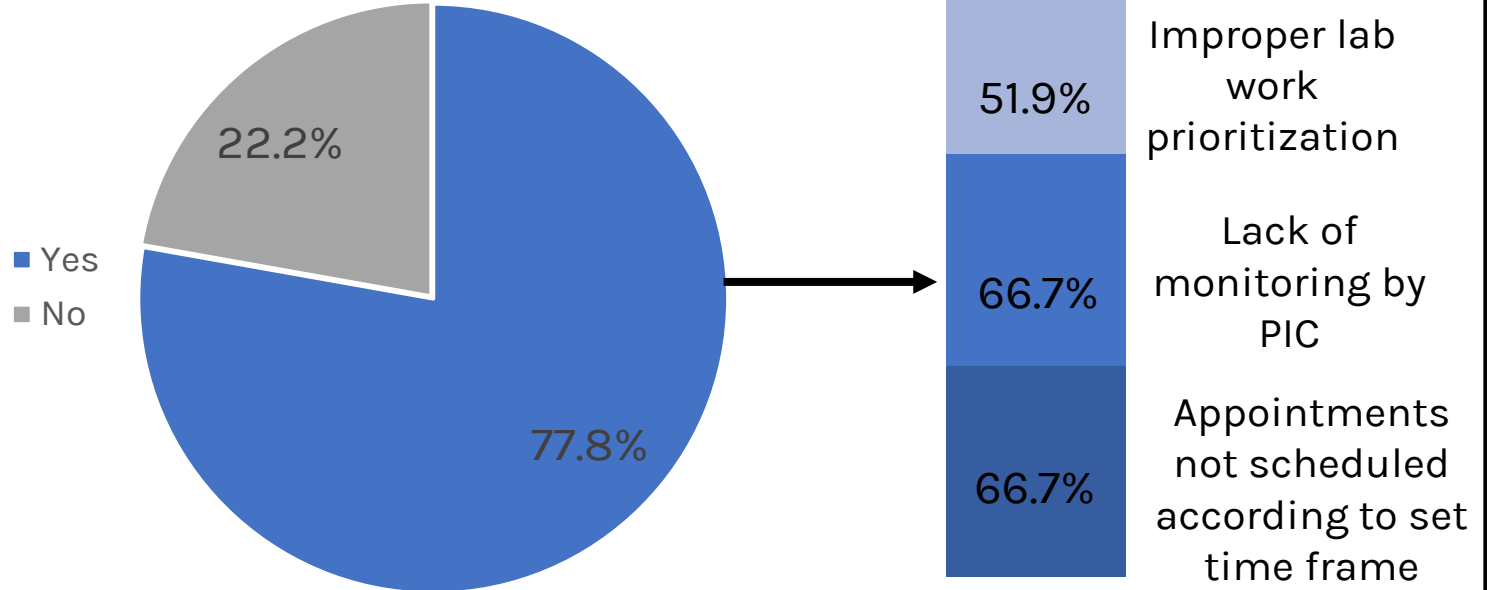
Percentage of Patients ≥ 60 Years Old Receiving Removable Partial Denture (RPD) Within 8 Weeks in Klinik Pergigian Kulim



Contributing Factors (Post-Intervention)

Primary Contributing Factor 1:
Increased number of postponed appointments

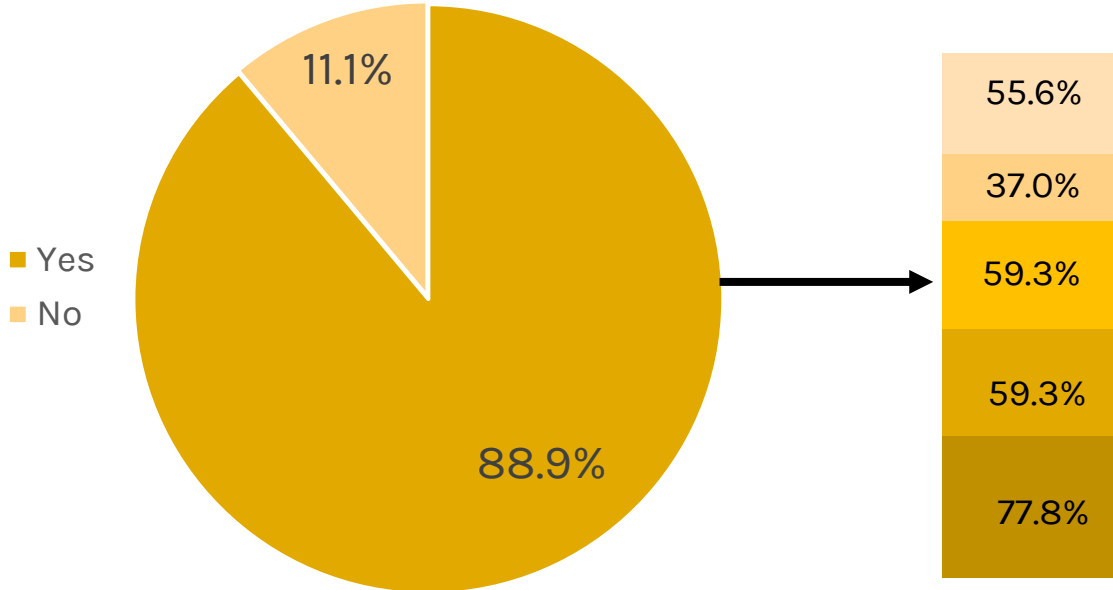
Secondary
Contributing
Factors:



06

Contributing Factors (Post-Intervention)

Primary Contributing Factor 2:
Repeated steps during denture fabrication



Secondary Contributing Factors:

- Over trimming of cast
- Breakage of cast during impression removal
- Inaccurate impressions
- Inaccurate mounting
- Incorrect bite registration

06

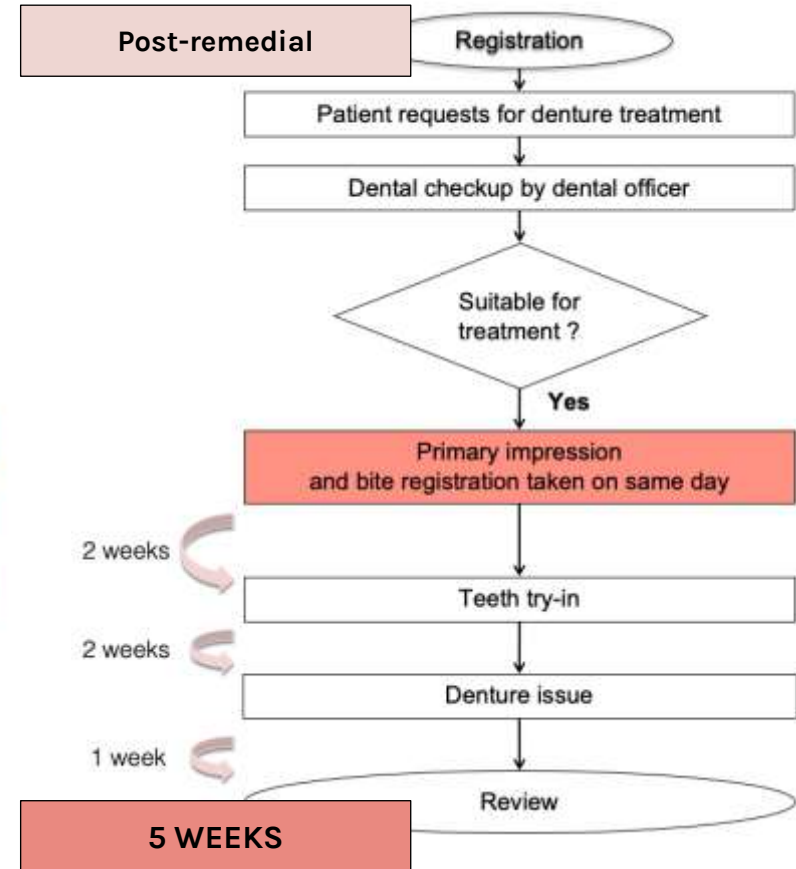
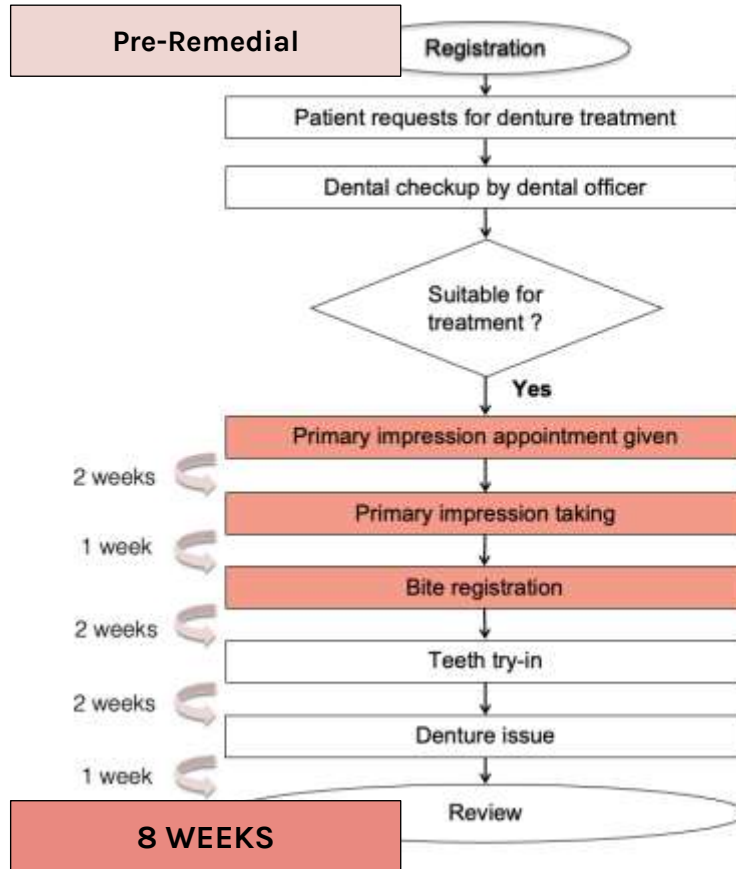
Comparison of Contributing Factors (Pre and Post-Intervention)

06






Primary contributing factors	Percentage (%)		Secondary contributing factors	Findings	Percentage (%)	
	Pre-remedial (n=24)	Post-remedial (n=27)			Pre-remedial (n=24)	Post-remedial (n=27)
Increase number of postponed appointments	79.2%	77.8%	1. Appointment not scheduled according to set time frame	Yes	19 (79.2%)	18 (66.7%)
				No	5 (20.8%)	9 (33.3%)
			2. Lack of monitoring by person-in-charge	Yes	18 (75%)	18 (66.7%)
				No	6 (25%)	9 (33.3%)
			3. Improper lab work prioritisation	Yes	17 (70.8%)	14 (51.9%)
				No	7 (29.2%)	13 (48.1%)
Repeated steps during denture fabrication	95.8%	88.9%	1. Incorrect bite registration	Yes	21(87.5%)	21 (77.8%)
				No	3 (12.5%)	6 (22.2%)
			2. Inaccurate mounting of casts on articulators	Yes	19 (79.2%)	16 (59.3%)
				No	5 (20.8%)	11 (40.7%)
			3. Inaccurate impression	Yes	16 (66.7%)	16 (59.3%)
				No	8(33.3%)	11 (40.7%)
			4. Breakage of cast during impression removal	Yes	15 (62.5%)	10 (37.0%)
				No	9 (37.5%)	17 (63.0%)
			5. Over trimming of cast	Yes	14 (58.3%)	15 (55.6%)
				No	10 (41.7%)	12 (44.4%)

Modification in Process of Care for Cases with Stable Occlusion

06



Model of Good Care (MOGC)

No	Process of care	Criteria	Standard	Pre intervention	Post intervention
1	Check-up 	All patients 60 years old and above who requests and is suitable for denture are screened and impression taken.	100%	100%	100%
2	First impression 	First impression taken using alginate impression material with proper recording of all anatomical landmarks.	100%	100%	100%
3	Bite registration 	Bite registration taken in centric bite relation. For patients with stable bite, bite registration is taken during first impression stage.	100%	23.9%	67.5%
4	Try-in 	Jaw and occlusal relationship and aesthetics of denture are confirmed.	100%	23.9%	67.5%
5	Issue 	Well polished dentures are issued to patients.	100%	23.9%	67.5%
6	Review	Patients are given appointment for review.	100%	100%	100%
Entire process			≥ 65%	23.9%	67.5%

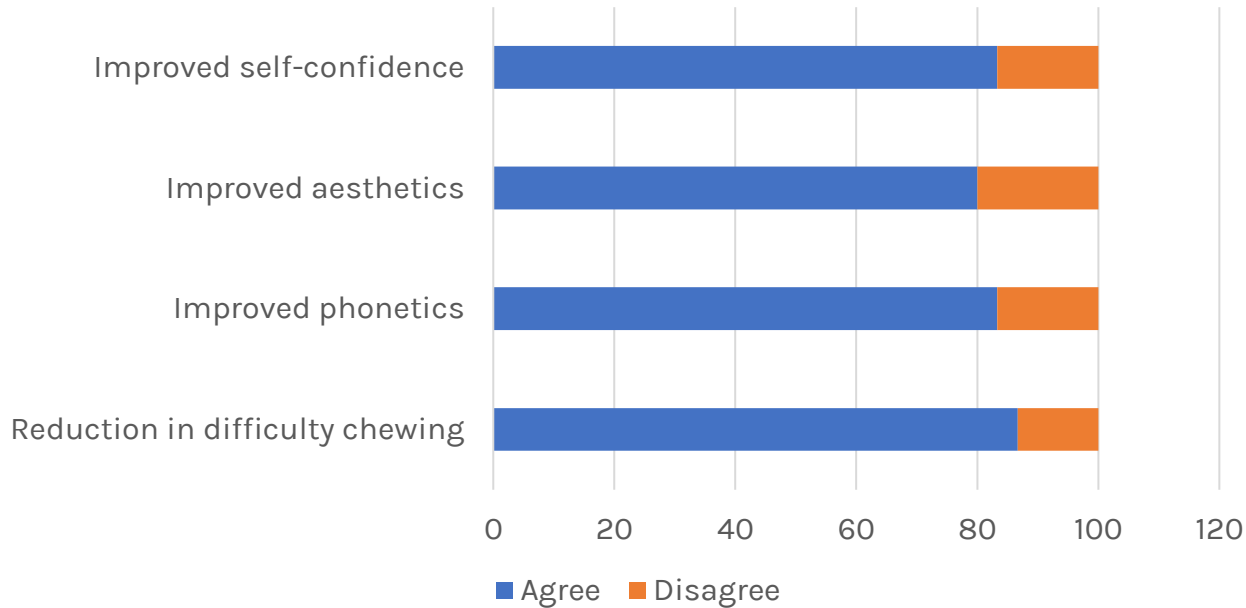
Timeline diagram showing intervals between steps:

- Step 1 to 2: 2 weeks
- Step 2 to 3: 1 week
- Step 3 to 4: 2 weeks
- Step 4 to 5: 2 weeks
- Step 5 to 6: 1 week
- Step 6 to End: 1 week
- Overall process: 8 weeks (Pre) and 6 weeks (Post)

06

Improvement in Patient's OHRQoL

Oral Health Related Quality of Life in Patients Aged ≥ 60 years old Who Received Their RPD Within 8 Weeks in KP Kulim



06

Remedial
measures
replicated to



KP Taman Selasih



KP Lunas

Initiated for
replication at
Kedah state level

Improvising
bite
registration
technique

Practice as a
new norm

Continuous
monitoring
and
improvements

Gantt's Chart

Gantt Chart	2018				2019				2020				2021			
	1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12
Study proposal	█															
Briefing and training	█	█														
Data collection		█	█	█	█	█	█	█	█							
Data analysis		█	█		█	█	█	█	█							
Remedial measures					█	█	█	█	█							
Re-evaluation study					█	█	█	█	█							
Data analysis					█	█	█	█	█	█	█	█				
Preparation of report											█	█	█			
Submission of report												█	█	█	█	
Monitoring												█	█	█	█	

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I n c r e a s i n g **the Percentage of Patients** **Aged 60 Years Old & Above**

Receiving Removable Partial Dentures (RPD)
Within 8 Weeks in Klinik Pergigian (KP) Kulim

THANK YOU!

PEJABAT KESIHATAN PERGIGIAN
DAERAH KULIM/BANDAR BAHARU
JABATAN KESIHATAN NEGERI KEDAH
