

Project Title

Denture Improvement Project in NDCS (DIPS) Improving the Quality of Dentures made in NDCS Dental Laboratory

Project Lead and Members

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Organisation(s) Involved

National Dental Centre Singapore

Healthcare Family Group Involved in this Project

Dentistry

Applicable Specialty or Discipline

Prosthodontics

Project Period

Start date: January 2021

Completed date: March 2022

Aims

To establish current baseline quality, identify root causes and implement interventions to improve the quality of in house laboratory produced dentures (both Partial and Complete dentures) to 75% by March 2022

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Conclusion

See poster appended/ below

Project Category

Care & Process Redesign

Quality Improvement, Clinical Practice Improvement

Keywords

Denture, Dental laboratory, Quality Improvement

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Denture Improvement Project in NDCS (DIPS) - Improving the Quality of Dentures made in NDCS Dental Laboratory

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BACKGROUND

NDCS in-house dental laboratory fabricates custom-made removable denture prostheses for patients. The current quality of dentures produced by the lab is inconsistent and affects clinical efficiency. Feedback from clinicians have highlighted the need to improve the quality and consistency of the work produced.

AIMS

To establish current baseline quality, identify root causes and implement interventions to improve the quality of in-house laboratory produced dentures (both Partial and Complete dentures) to 75% by March 2022

METHODOLOGY

The team collected baseline data on the quality of the dentures produced from Jan-Apr 21, which showed an average passing rate of 45%. The team engaged the removable prosthodontics technicians in the dental laboratory to find out the root causes for inconsistencies in denture quality. The reasons were primarily due to lack of standardization in fabrication protocol, no feedback mechanisms from clinicians and no validation of quality before leaving the lab (Fig 1).

The following interventions were implemented based on the Pareto chart (Fig 2):

1. A standardised checklist and was created and disseminated to the technicians. (May 2021)
2. QR code was created to obtain feedback from clinicians. Technicians were also briefed on areas for improvement with visual guides (Fig 3). (August 2021)
3. Senior technicians were assigned to be the quality inspectors (Nov 2021)

RESULTS

1. Denture passing rates increased from an average of 45% in Q1 to 63% in Q2, 71% in Q3 and Q4 (Fig 4).
2. The interventions resulted in improvement in the quality of dentures produced by the in house lab. This also resulted better feedback from clinicians and quality of dentures

CONCLUSION

Implementation of standardized protocols, visual guides, a feedback mechanism and introduction of quality inspectors has helped to improve communication between clinicians and technicians. This has resulted in better understanding of the clinical issues and allow the technicians to improve the quality of dentures produced. The team shall continue to work on improving the quality and maintaining of current standards.

S/N	Root Causes	Cumulative Percentage
1	Varying fabrication procedures in practices	20%
2	No feedback mechanism	35%
3	No quality awareness of sub-stages of denture making	47.5%
4	No quality inspection after each stage	57.5%
5	No sense of consequences in Dental Lab	67.5%
6	Completed close to issue date, no room of any remedy	77.5%
7	Manual work, lack automation	85%

Figure 1. Cumulative % of Pareto Chart

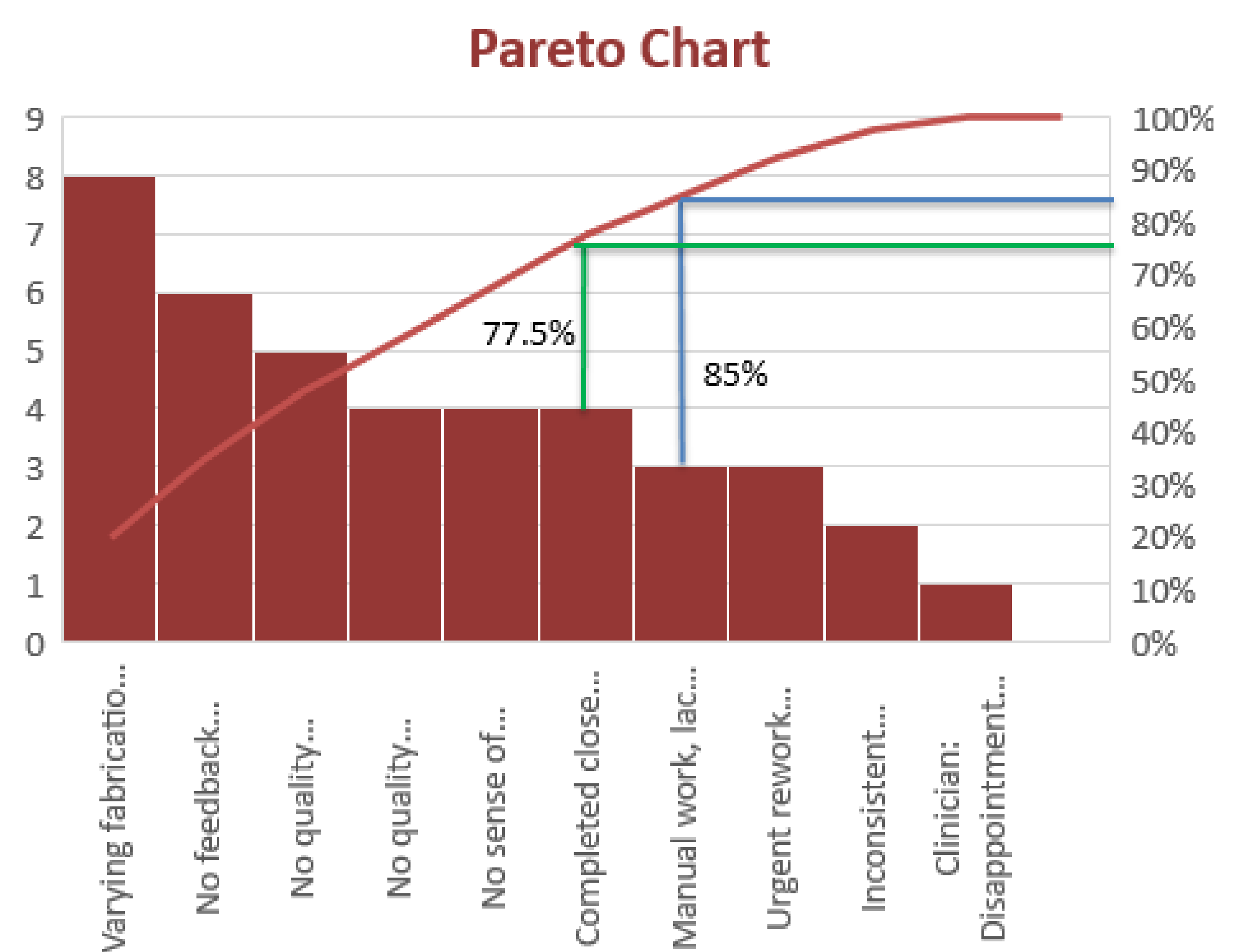


Figure 2. Pareto Chart



Figure 3. Common mistakes by technicians; open bite present

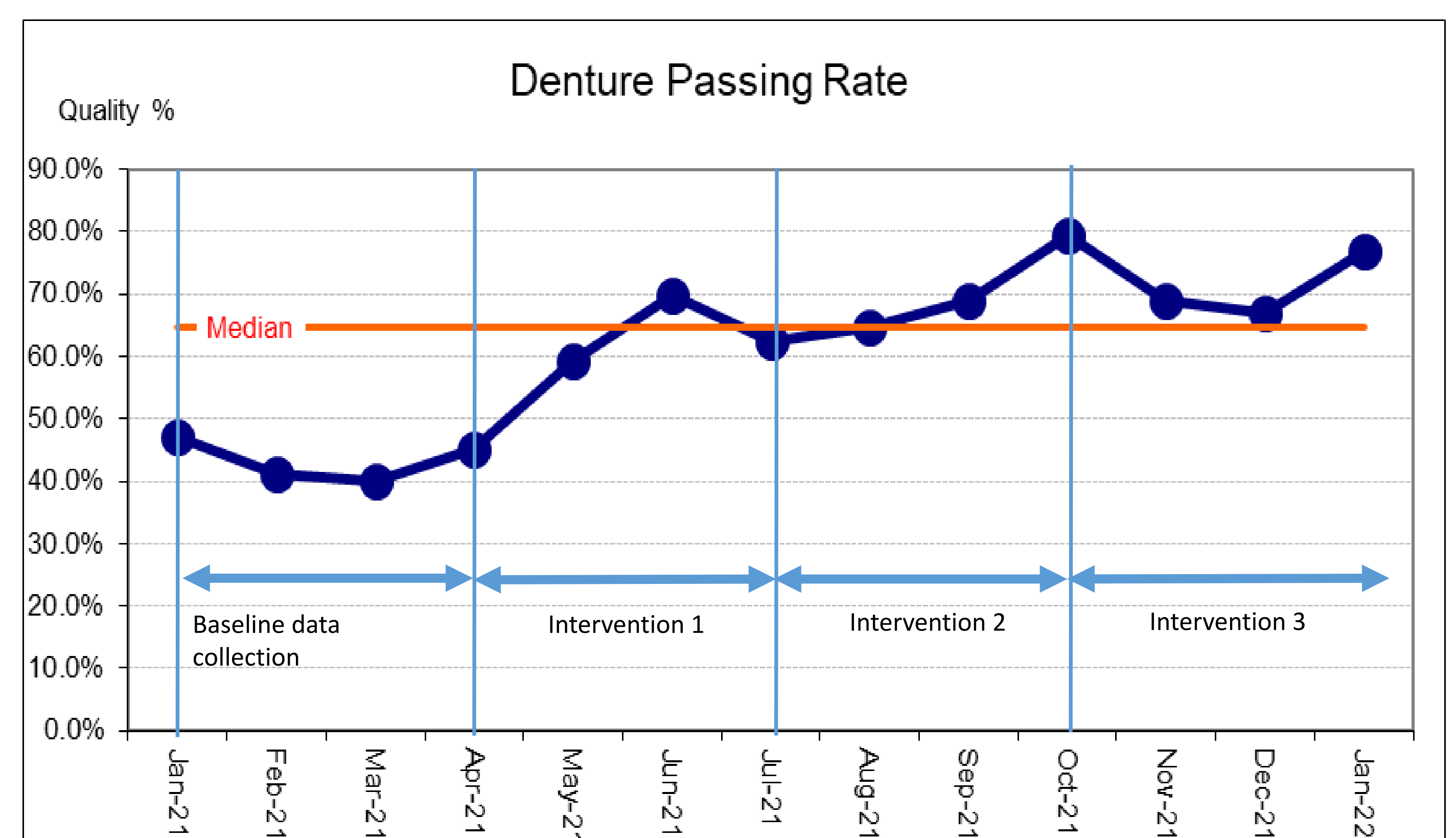


Figure 4. Run Chart of Denture Quality Passing Rate