

# ARE WE COMPREHENSIVELY TREATING PATIENTS FROM ASSESSMENT TO COMPLETION OF TREATMENT PLAN?- A RETROSPECTIVE ANALYSIS

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## Abstract

**Aim:** Any treatment is designed and performed to increase the quality of life of the patient. The success of any treatment depends on how far the patient is relieved from the disease. This will ultimately lead to the improvement in the health and well being of the patient. The formulation, the execution and the completion of a treatment plan requires the complete determination from the patient as well as the practitioner and this is dependent upon various factors. This study aims comprehensively analyse the assessment of the patient till the completion of treatment plan in a dental institution.

**Materials And Methods:** A retrospective cross sectional study was done by assessing 86000 patient records who visited as an outpatient in a dental institution in south India from June 2019 to March 2020. Data of 100 random patients were obtained by random sampling to prevent bias. Fields such as unique patient ID, treatment completed, treatment under progress and total treatment planned, type of case: emergency/normal, Type of Treatment plan: Interim/Cumulative were recorded in Microsoft Excel Software and then exported to IBM SPSS Statistics Software for further analysis where frequency, chi-Square & descriptive statistics were done.

**Results:** Average percentage of treatment completed 60.05% (SD 66.67), Number Of emergency cases :33, Number Of Normal cases:67, average percentage of treatment pending 39.95% (SD=33.33), Total number of treatment planned ranged from 1-31, 100 % of the treatment was completed majorly in cases with less than 5 treatment procedures (20%). At least one planned treatment was completed for most of the patients. (88%)

**Conclusion:** The process of diagnosis, planning and execution of a treatment plan for each patient is unique and significant usually in emergency cases and cases with aesthetic requirements, the patients are determined for relieving the pain & resolving their aesthetic needs and are not willing to complete the treatment plan. Hence proper knowledge, awareness and practice is required for both the patient as well as the practitioners.

**Keywords:** Comprehensive, patients, prognosis, treatment, treatment plan.

## Introduction

Oral health of a patient is one of the significant factors contributing to their overall health and well being. [1–3] Maintaining one's oral health is in the hands of the patients themselves as well as the practitioner. [4–6] It is the duty of the dental practitioner to completely assess, diagnose the patient's needs, formulate, execute and complete the treatment plan for a patient. [7–9] Any treatment is designed and performed to increase the quality of life of the patient. [10–12] The success of a treatment depends on how far the patient is relieved from the disease. This will ultimately lead to the improvement in the health and overall well being of the patient. [6,13,14]

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Dental practitioners are responsible for formulating the treatment plan. The clinician evaluates the oral cavity for the quality of its health. This requires years of theoretical, practical and clinical knowledge. [15–17] The evaluation is done with the help of various diagnostic tools, which is categorised into radiographics, non radiographic and there are many recent advances aiding in the proper diagnosis. [18–20]

The proper diagnosis involves detailed history taking, which is relevant to the patient's needs. [21–23] The formulation and completion of treatment plan involves various factors involving the patient as well as the clinician such as systemic health, financial capabilities, preference of the patients, knowledge of the dentist, experience of the practitioner, their training in their own field, laboratory support, functional, aesthetic and technical demands. [24–26] Treatment plan to each patient is unique just as a fingerprint. [24–26]

Comprehensive treatment planning involves resolving the chief complaint followed by regular recall and follow ups to complete the other disease manifestations the patient is unaware of. There are various methods in assessment, evaluation and formulating treatment plan followed in various dental schools all around the world (Tokede O et al.) did the first investigation to quantitatively report on student treatment planning performance in dentistry. [27–29] There has been limited studies on treatment planning, diagnosis and the outcomes of the treatment individually. This study aims to comprehensively study the completion of treatment plans, identify reasons for incomplete treatments, and overcome hurdles regarding the same.

## Materials And Methods

### Study Design And Study Setting

This retrospective cross-sectional study analysed the records of outpatients, visiting Saveetha Dental College, Chennai. Ethical approval was obtained from the institutional ethical review boards. The study population included 100 patients by random sampling in order to prevent bias.

### Data Collection

Data was obtained assessing 86000 patient records who visited as an outpatient in a dental institution in South India from June 2019 to March 2020. Data of 100 random patients were obtained by random sampling to prevent bias. Parameters such as Total treatment planned, Number of Treatments completed, Treatment under progress/pending, Type of case- Normal/emergency, Type of treatment Plan: Interim/cumulative were noted and recorded in Microsoft Excel 2004.

### Statistical Analysis

The data recorded in Microsoft Excel was exported to IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp. Software Descriptive statistics- frequencies, Chi-square tests were performed.  $p < 0.05$  was considered statistically significant.

## Results

A Total of 100 patients' treatment plan completion was included for analysis. Among which Emergency cases were 33% and Normal cases were 67%. [Figure :1] Total Number of treatments planned ranges from 1-31 procedures. Majority of the study population had less than 5 treatment procedures planned (56%) followed by 6-10 procedures (29%), 11-15 procedures (9%), 16-20 procedures (3%) and more than 20 procedures was only by (3%). Emergency cases had less number of treatment procedures planned compared to normal visit patients. However, this difference was found to be statistically not significant ( $p = 0.117$ ) [Figure:2,3]

Average percentage of treatment completed 66.91%(SD=72.73). [Table:2] At least one planned treatment was completed for most of the patients(88%).No treatment was initiated for 12% of the study population, 26% had completed their comprehensive treatment plan. [Figure:4]. Percentage of treatment completed in emergency cases (33%) was comparatively lesser than percentage of treatment completed in normal cases (67%). However, this difference was found to be statistically not significant (p=0.273)[Figure:5] 100 % of the treatment was completed majorly in cases with less than 5 treatment procedures(20%) . The more number of procedures in the treatment plan was inversely related to the percentage of treatment completion. This difference was however not statistically significant(p=0.099) [Figure:6]

Table 1: Table depicting the descriptive statistics of percentage of treatment completed and percentage of treatment pending.Majority of the treatments planned (60.05%) were completed followed by (39.95%) pending treatment yet to be completed.

	Percentage of treatment completed	Percentage of treatment pending
<b>Mean</b>	60.05	39.95
<b>Standard Error of Mean</b>	3.496	3.496
<b>Standard Deviation</b>	66.67	33.33

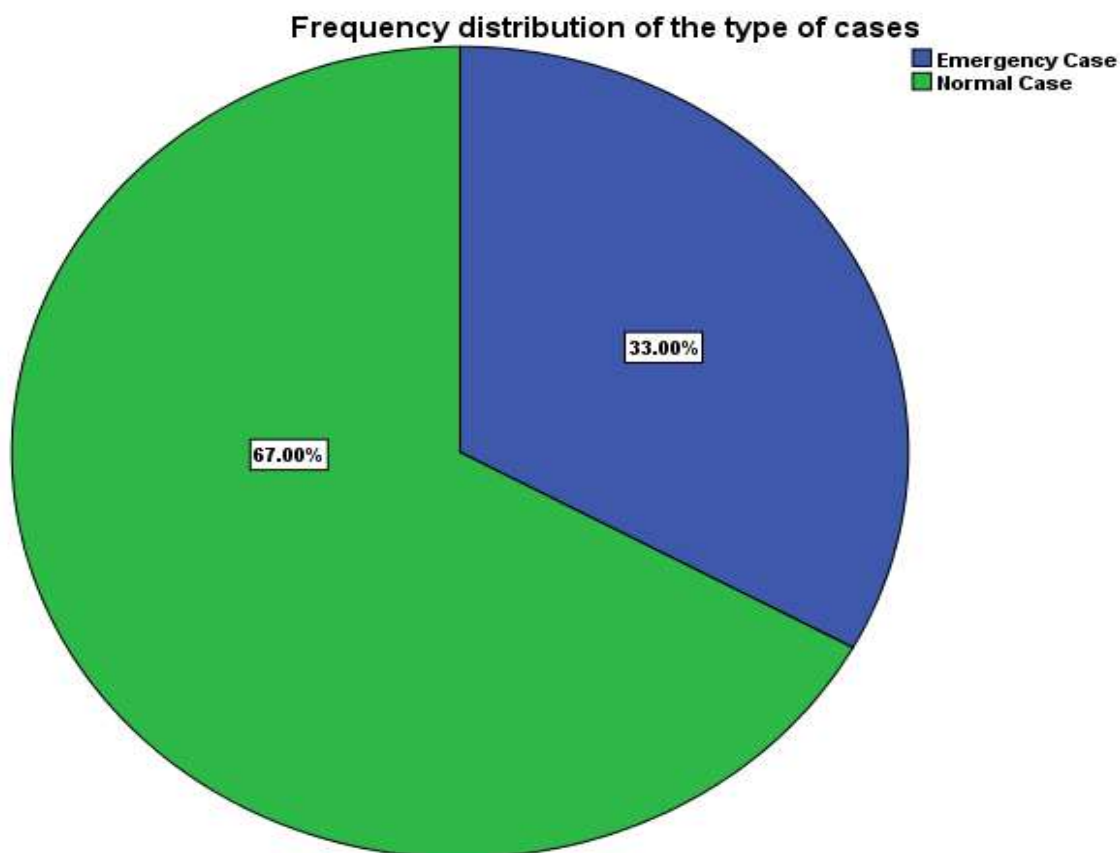


Figure 1: Pie chart depicting normal case and emergency case distribution among the study population. Blue represents emergency cases and green represents normal cases. Majority of the cases were normal cases (67%) followed by (33%) emergency cases which required immediate treatment.

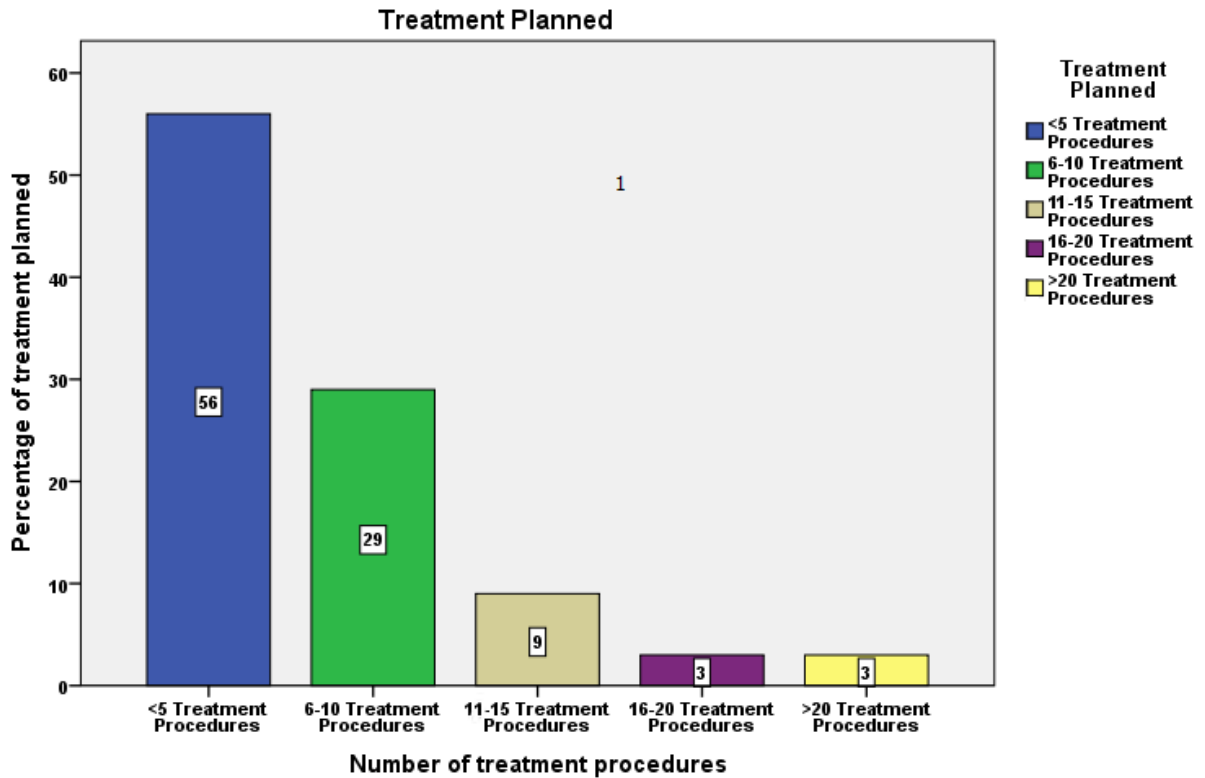


Figure 2: Bar graph depicting the percentage of total treatment planned. X axis represents the total number of treatment procedures. Y axis represents the percentage of treatment planned. Blue represents less than 5 treatment procedures, green represents 6-10 treatment procedures, beige represents 10-15 procedures, purple represents 16-20 procedures and yellow represents more than 20 procedures. The association was done using chi square analysis  $p=.117$  (statistically not significant). Majority of the study population had less than 5 treatment procedures planned (56%) followed by 6-10 procedures (29%), 10-15 procedures (9%), 16-20 procedures (3%) and more than 20 procedures was only by (3%) of the study population.

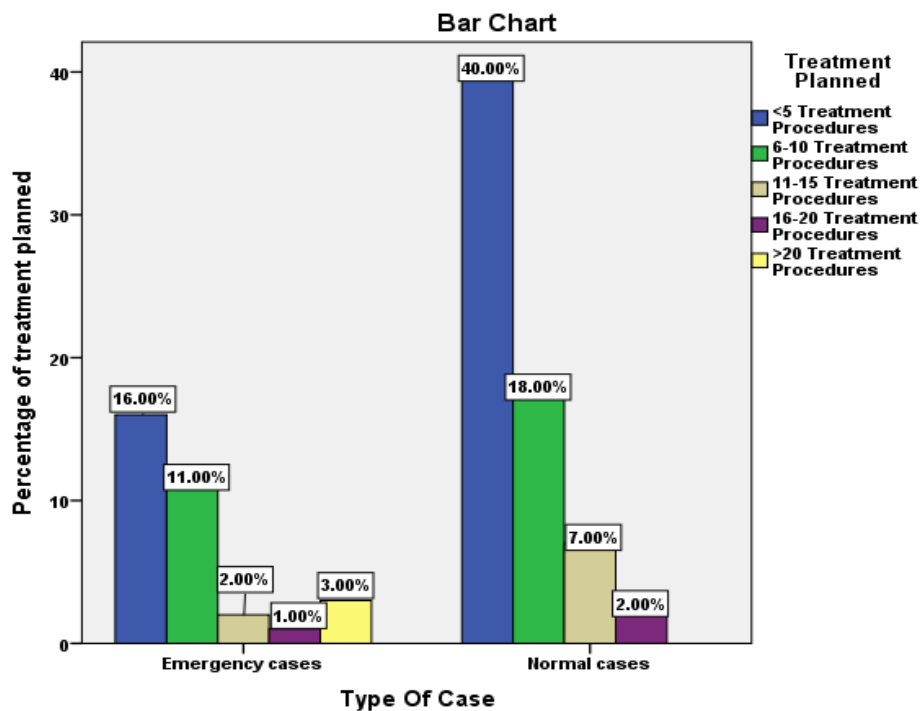


Figure 3: Bar graph depicting the association between number of treatment procedures planned with emergency and normal cases. X axis represents the type of cases. Y axis represents the percentage of treatment planned. Blue represents less than 5 treatment procedures, green represents 6-10 treatment procedures, beige represents 10-15 procedures, purple represents 16-20 procedures and yellow represents more than 20 procedures. Though the majority of the normal visit patients had <5 procedures planned (40%), there was no statistically significant difference in the number of planned procedures between normal visit and emergency patients. Pearson chi square,  $p=.117(p>0.05)$ .

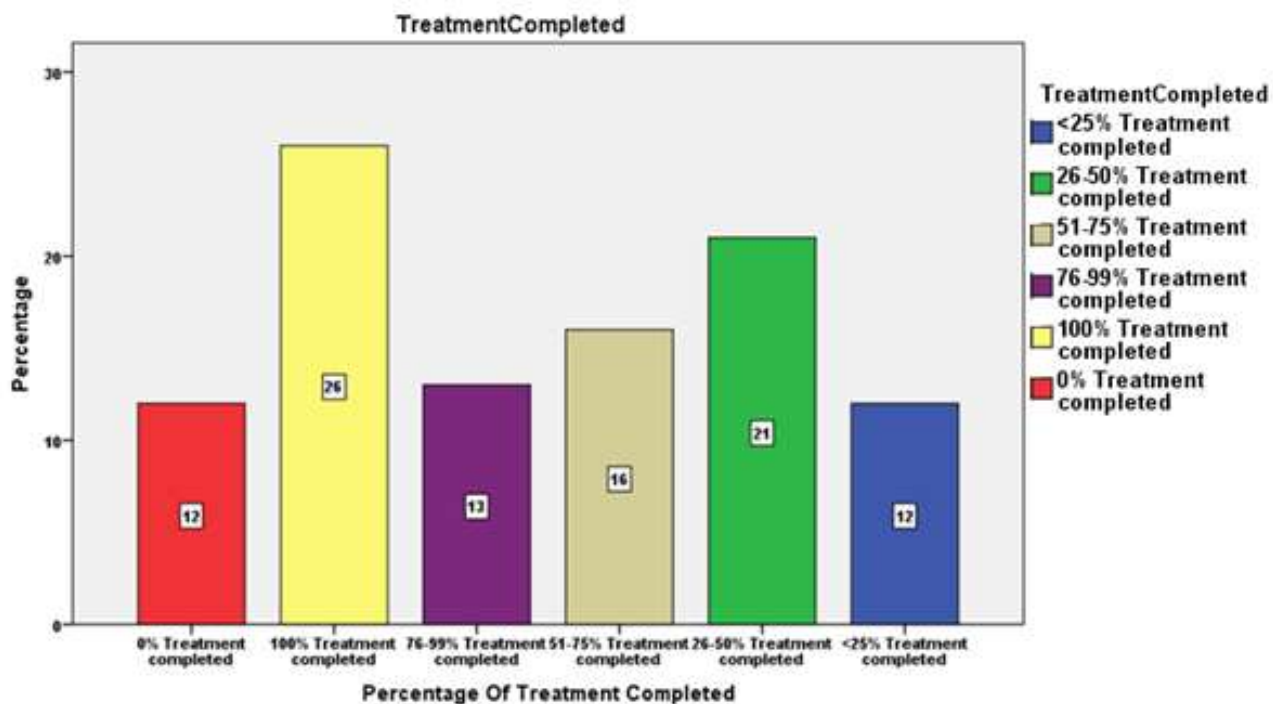


Figure 4: Bar graph depicting percentage of total treatment completed. X axis represents the Percentage of treatment completed. Y axis represents the corresponding percentage. Blue represents less than 25% treatment completed, green represents 26-50% treatment completed, beige represents 51-75% treatment completed, purple represents 76-99% treatment completed, yellow represents 100% treatment completed and red represents 0% treatment completed. The association was done using chi square analysis  $p=.273$  (statistically not significant). majority of the study population (26%) had 100 percent treatment completed and (12%) of the study population had 0% treatment completed.

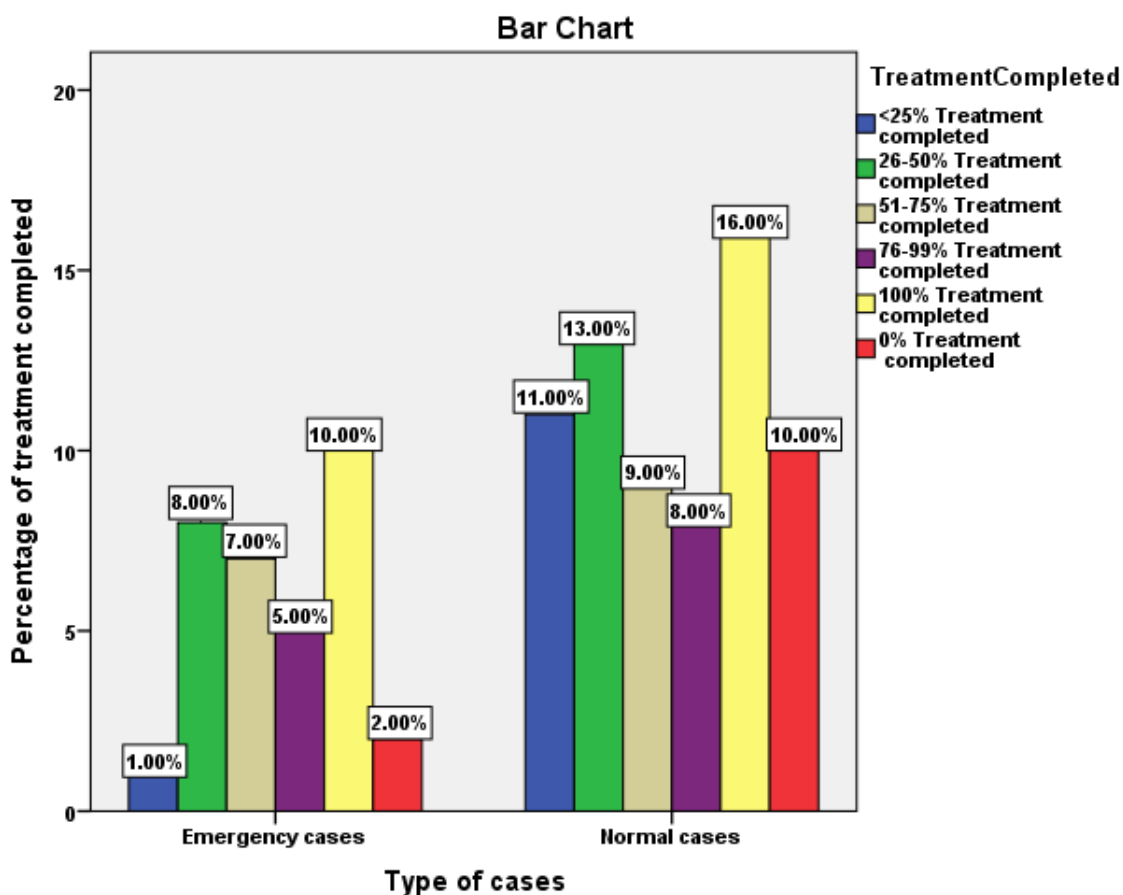


Figure 5: Bar graph depicting the association of percentage of treatment completed with emergency and normal cases. X axis represents the percentage of treatment completed . Y axis represents the count of emergency and normal cases. Blue represents less than 25% treatment completed, green represents 26-50% treatment completed, beige represents 51-75% treatment completed, purple represents 76-99% treatment completed, yellow represents 100% treatment completed and red represents 0% treatment completed. Percentage of treatment completed in emergency cases (33%) was comparatively lesser than percentage of treatment completed in normal cases (67%). This was however statistically not significant. Pearson Chi square ,  $p=0.273(p>0.05)$ .

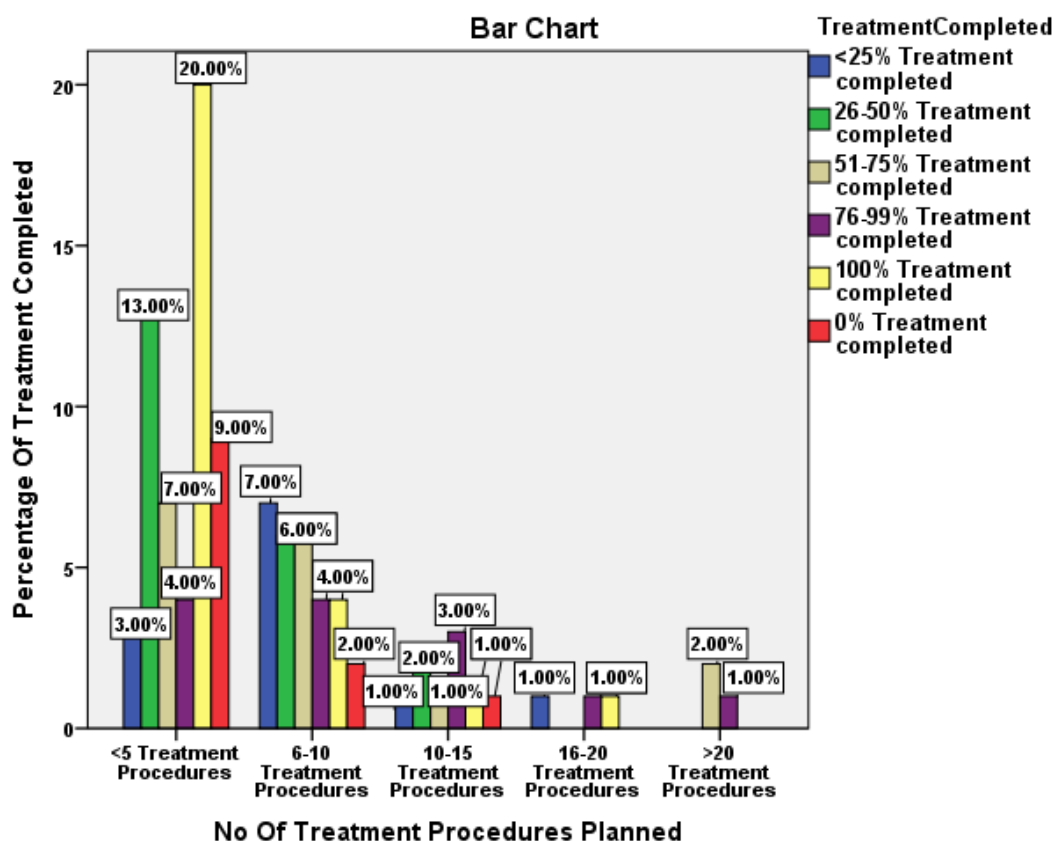


Figure 6: Bar graph depicting the association of percentage of treatment completed with total treatment planned. X axis represents the number of treatments planned . Y axis represents the percentage of treatment completed. Blue represents less than 25% treatment completed, green represents 26-50% treatment completed, beige represents 51-75% treatment completed, purple represents 76-99% treatment completed, yellow represents 100% treatment completed and red represents 0% treatment completed. The association was done using chi square analysis 100 % of the planned treatment was completed majorly in cases with less than 5 treatment procedures(20%) . However, this was statistically not significant. Pearson’s Chi square,  $p=0.099(p>0.05)$ .

## Discussion

A treatment plan is a carefully planned out sequence of treatments designed to eliminate the etiological factor of disease. A comprehensive treatment is built by proper history taking with logical progression to the diagnosis of the disease.[30] Comprehensive treatment plan is defined as a treatment plan which satisfies the main four domains such as the function, symptomatology, pathology, aesthetics. [32] Function refers to the restoration of the function to the maximum extent, but no restoration can restore the complete functioning of a natural tooth.[33] Symptomatology refers to the symptoms exhibited by the patient and the complete relief from the symptoms.[34] Pathology refers to resolving the main root cause of the disease and analysing how it progressed.[35] Aesthetics which is often not taken into concern in general medicinal treatment, dentistry can be compared to that of surgery but aesthetics is of much importance in dentistry as, the teeth remains the most noted aspect of an individual's face and must be aligned and restored according to the patient's wishes as aesthetics is subjective to each and every individual.[36,37] (Sorin T et al.) state that in a comprehensive approach to a individual patient, The profile of the patient should be updated & provided regularly. This requires frequent recalls and reviews.[31]

The need for a comprehensive to any dental ailment is high because, treating the symptoms such as pain in a short term will only be a temporary relief and has high chances of recurrence, hence proper diagnosis and the



analysis of the root cause of the ailment is required to completely eradicate the problems faced by the patients.[38]

In this retrospective study it is reported that 67% of the cases are normal elective procedures, and 33 % of the cases are emergency procedures.[Figure:1]The main motive of emergency procedure is to relieve the pain and other symptoms in the short term.[39]

The total number of treatments ranges from 1-31 and it can vary from person to person depending upon the oral health[Figure:2,3],their habits and various other factors. Average percentage of treatment completed is 66.91%(SD=72.73)[Table:2] . It is appreciable, however 100% treatment completion will be most appreciated ,steps should be taken to attain it and will ultimately be attributed to the patient as well as the practicing clinician.

Average percentage of treatment pending 45.09%(SD=65.89)[Table:2] and no treatment has been done for 12% of the study population[Figure:4], percentage of treatment completed in emergency cases (33%) was comparatively lesser than percentage of treatment completed in normal cases (67%)[Figure:5] the reason for this could be due to emotional factors, financial factors,willingness of the patient,availability of the doctor,availability of the lab equipment.

A treatment or a treatment plan could fail due to various reasons clinical errors such as improper diagnosis,errors in the interpretation of the lab investigations,iatrogenic errors.[40] The success of a treatment and a treatment plan not only involves on the clinician and their skills,but also on the patient , it is the duty of the patient to immediately aid the help of a dental practitioner as soon as they start to feel any difficulty in their oro facial region,the more the patient delays to consult a dental practitioner the severity of the ailment will increase will be difficult to the patient and as well as the practitioner.[41] Other psychological factors such as dental anxiety and fear are also some of the factors resulting in the delaying of a dental treatment.[42] These psychological factors can be reduced by conducting campaigns in schools,awareness programmes by the local dental association can also be conducted to raise the knowledge and awareness among the general population.[40,43]

It also the duty of the patient to coordinate with their practitioner to abide to the treatments,the prognosis of a treatment is mainly dependent on the patient to properly maintain the restoration ,oral health and oral hygiene. In a study done by (Mettes D) Insufficient data,inability to recall patients,improper follow ups were some of the the difficulties faced in the completion of a treatment plan.[44]

Attitude of the patient and the dental practitioner towards the treatment also plays a major role in a successful treatment ,this can be improved by having a well communicable interactional relationship between the patient,so that both the patient and as well as the doctor can share their difficulties,ideas in terms of the treatment which is to be or had been executed. 100 % of the treatment was completed majorly in cases with less than 5 treatment procedures(20%) .[Figure:6] A proper communication can also help in planning the treatment,appointments and recalls ultimately leading to the success of a treatment.[45] (Patel S et al.) concluded that there is not enough evidence to conclude that one type of recall protocol can be followed for every patient. Each treatment plan should be regarded and treated uniquely.[46,47] Despite the limitation of the previous studies,our study serves as the first study to analyse a comprehensive treatment plan in an institution. Our study has few limitations such as a smaller sample has only been analysed,financial & emotional status of the patient was not taken into account.General awareness not known to the specific cohort. This study serves as a pilot study and further studies may be carried out with a larger population,better control groups and include other variables like emotion,education,and patient motivation.

## Conclusion

It is evident that completion of the treatment plan is essential for both the practicing clinicians as well as the patient getting the treatment. The process of diagnosis,planning and execution of a treatment plan for each patient is unique and significant,usually in emergency cases and cases with aesthetic requirements,the patients are determined for relieving the pain,symptoms & resolving their aesthetics needs and are not willing to complete the treatment plan. Also, more number of planned procedures result in poor patient compliance and inability to complete treatment procedures. Hence proper knowledge awareness and practice is required for both

patients as well as practitioners to support the patients and reinforce the importance of completion of planned treatments for the benefit of the patient.

### **Acknowledgment**

Nil.

### **Conflict of interest**

The authors declare no conflict of interest.

### **Authors contribution**

Author 1(Ranjith Raj VPRB) carried out the retrospective study by collecting the data and prepared the draft of the manuscript after performing the required statistical analysis. Author 2(Gifrina Jayaraj) helped in the conception of the topic, and contributed in the study design, statistical analysis and aided in the drafting of the manuscript. Author 3(Murugan Thamaraiselvan) contributed in developing and formatting the manuscript. All the above mentioned authors have discussed among themselves and have contributed to this study.

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