



A Qualitative Analysis about the Documentation Procedure During the Orthodontic Treatment: The Patient's Perspective

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ABSTRACT: Introduction: Documentation is an essential and important procedure in the orthodontic treatment. Diagnosis and treatment planning are dependent on accurate and reliable orthodontic documentation. Till date there are only a few existing surveys on orthodontic documentation procedure from a patient's perspective.

Material And Method: A cross sectional study was conducted on 98 patients who were willing to undergo the fixed orthodontic treatment. Data collection was done using a self-structured questionnaire consisting of 15 questions.

Result: 79.6% patients were uncomfortable while recording intraoral photography. Among the instruments used while taking photographs, check retractor was rated as the most uncomfortable instrument (54.1%). 27.6 % patients were unhappy due to the increased number of visits due to the documentation procedure.

Conclusion: There is a significant influence of patient's perspective in the documentation procedure. The most important practice to be focused during documentation is to reduce patient complaints and to improve patient comfort.

KEYWORDS: Psychometrics, Patient's perspective, orthodontic documentation, documentation procedure, photography, impression making, documentation, record taking procedure.

I. INTRODUCTION

Documentation is a fundamental procedure in the orthodontic treatment.¹ Diagnosis and treatment planning is determined by precise and definitive orthodontic documentation. The imperative information obligatory to diagnose a malocclusion and develop an orthodontic treatment plan consists of lateral cephalometric and panoramic radiographs, photographs, models; along with a detailed case history and clinical examination to authenticate the condition

of the malocclusion before treatment and to document the development of the treatment.²

"Impression" is defined as "a negative likeness or copy in reverse of the surface of an object; an imprint of the teeth and adjacent structures for use in dentistry."³ Diagnostic cast is "a life-size likeness of some desired form; it is formed from a material poured into a matrix or impression."³ It has been an integral part of orthodontic record taking procedure ever since the beginning. There are two types of radiography involved in the orthodontic documentation procedure, intra oral and extra oral radiography. Extra oral radiograph includes a panoramic radiograph which helps in establishing the position of teeth, their root inclinations, and their periodontal status. Orthopantomogram tells us the overall status of the dentition.⁴

Lateral cephalometric radiographs are useful in cephalometric analysis which helps in treatment planning and is also beneficial in scrutinizing the changes that are either due to growth or due to a combination of growth and treatment by superimposing the lateral cephalometric radiographs. Cephalometry is a crucial tool in orthodontic for appraisal of diagnosis of anomalies forecasting future relationship, craniofacial complex, determination of morphology and growth, treatment planning and assessing the results of growth and treatment effects. Cephalometric persists to be the only quantitative method that facilitates investigation and examination of the spatial relationship between both dental and cranial structures. The lateral cephalogram provides information regarding soft tissue morphology, skeletal and dental as well as relationship between these structures.² Orthodontists deduce that Lateral Cephalometric Radiography is critical for yielding a treatment plan. Although, it alone does not seem to have an impact on orthodontic treatment planning.⁴ Intra oral radiograph of anterior segments are



advantageous as they are not clearly visible in the orthopantomogram.

Clinical Photography is a focal prerequisite for better case documentation, clinical diagnosis and treatment planning in modern Orthodontics. The prime focus of dental photography is clinical recording of extraoral and intraoral manifestations. Other subordinate applications may be communication, education, marketing and dento-legal records. Dental photography furthermore augments the overall status of a dental practice and the quality of care provided. Key rationale of dental photography in orthodontics is documentation for explaining and demonstrating various stages involved in a treatment and to analyze the treatment progress⁶. Photographs are the best means of visual education and patient motivation. Photography is recorded extra orally and intra orally. The extra oral photography helps in monitoring the profile and soft tissue changes of the patient. The intra oral photographs facilitate in evaluating the dental changes in the oral cavity. It is of fundamental importance in diagnosis, formulating treatment plan, to estimate the progress of the treatment, for lecture classes and teaching presentations, for the purpose of research and publications. It may also be used in patient education, motivation and also as a communication between dentists and technician. Pre- and post-operative photographs can also be of vital importance in medico legal issues⁶.

Identifying patients' standpoints on their health condition and treatments offers an opportunity for critical discussion of differences of opinions and promotes communication exchange and agreement about the appropriate course of action^{7,8}.

Till date there are only a few prevailing studies on orthodontic documentation procedure from a patient's perspective.

II. AIM AND OBJECTIVES

AIM: To evaluate and analyze the patient's perspective about various documentation procedures during the orthodontic treatment

OBJECTIVES:

- To evaluate and analyze the patient's perspective about the radiograph technique used in documentation procedure during the orthodontic treatment
- To evaluate and analyze the patient's perspective about the impression making technique used in documentation procedure during the orthodontic treatment
- To evaluate and analyze the patient's perspective about the photography used in documentation procedure during the orthodontic treatment.

III. SCOPE OF THE STUDY

Documentation plays a very important role in orthodontic treatment planning of an individual. Analyzing patient's perspective about the whole procedure helps in reducing the patient discomfort and increasing the patient satisfaction. Hence it is very important for an orthodontist to know how the documentation procedure can be made more patient friendly. With the help of the questionnaire, we will be able to assess the patient's experience about the documentation procedure and a mean to improve the experience if required.

IV. MATERIALS AND METHODS

STUDY DESIGN: A cross sectional study was conducted on 98 patients who visited the department of Orthodontics and Dentofacial Orthopedics. The patients who were willing to undergo the fixed orthodontic treatment and voluntarily participated in the study were included.

DATA COLLECTION: All patients who were willing to undergo fixed orthodontic treatment and volunteer to participate were included in the study. Data collection was done using a self-structured questionnaire consisting of 15 questions (Annexure 1). The questionnaire was in English and was also translated in the regional language, Marathi for easier understanding of the patients. Printed forms were used to circulate among the patients and collect the data. Demographic data such as gender and age were also collected. Questions were based on patient's experience about radiograph recording, impression making, photography and case history procedure. Questions were also included on the opinion and whether it is useful for documentation of the orthodontic treatment.

V. RESULTS

A total of 98 patients who were willing to undergo fixed orthodontic therapy and volunteer to participate were involved in the study. Out of which majority of the patients involved in the study were females (51%) compared to males (49%) (figure 1). The majority of the patients belonged to the age group of 10-20 years (49%) and patients in the age group of 20-30 years (49%) followed by patients in the age group of 30-40 years (2%).

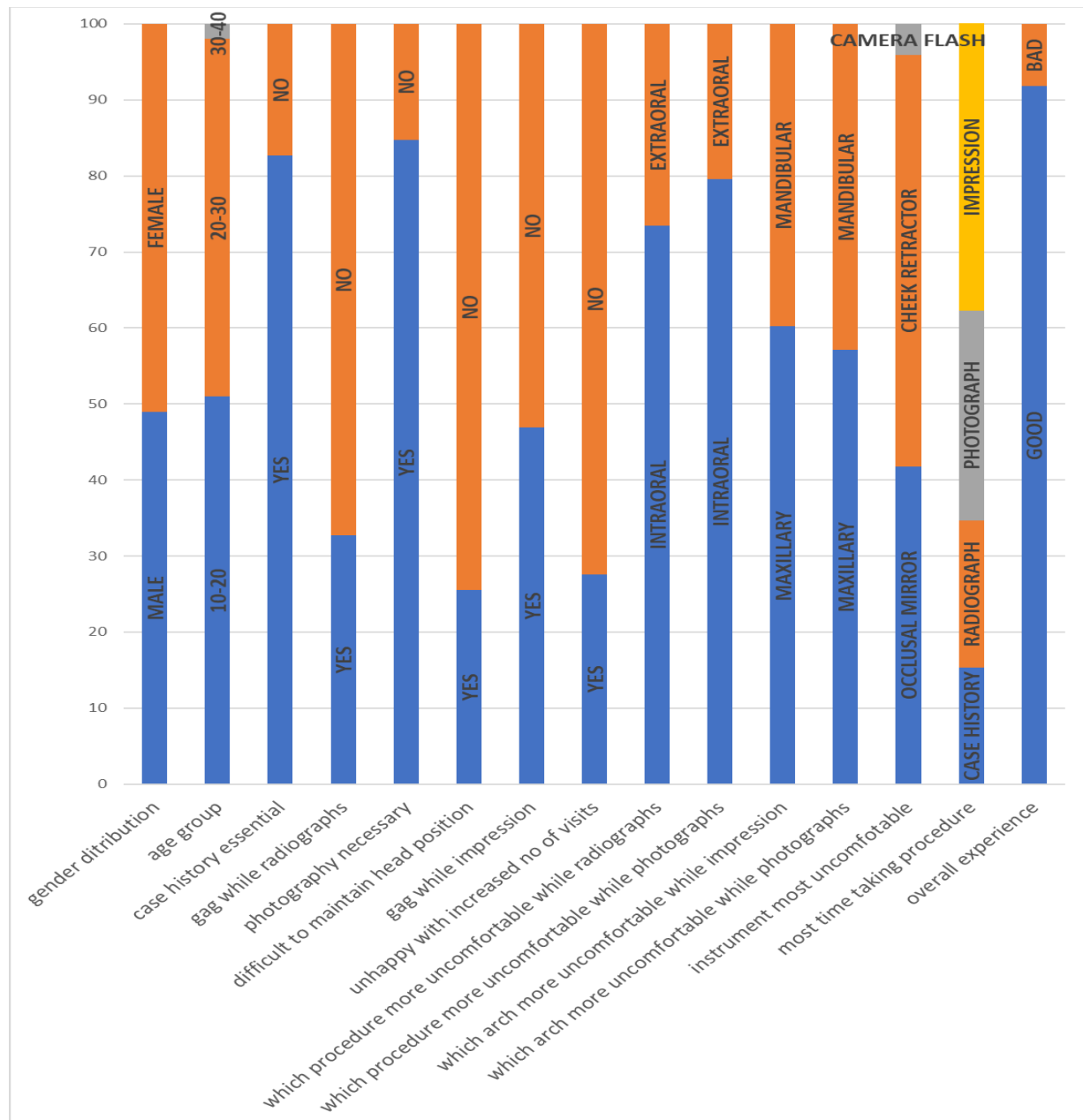
Among the patients 82.7% responded that case history procedure is essential in orthodontics and the remaining 17.3% felt otherwise. Majority of the patients (84.7%) confirmed that they found photography procedure necessary. Among the



responses 25.5% of the patients were uncomfortable to camera. Similarly, 79.6% patients were uncomfortable while recording intraoral photography. Majority of patients (57.1%) were uncomfortable during maxillary arch photography. Among the instruments used while taking photographs, cheek retractor was rated as the most uncomfortable instrument (54.1%).

During dental photography various equipment were used and most patients complained of retractors and mirrors. 73.5% patients were uncomfortable while recording intraoral radiographs. 32.7% patients experienced gag while taking radiograph while 67.3%

maintain correct head position and smile in front of patients did not have such experience. Most of the patients (60.2%) were uncomfortable while maxillary arch impression. 46.9 % patients experienced gag while recording impression while 53.1% patients did not have such experience. Impression technique was rated as the most time taking procedure of all documentation procedures by majority of patients (37.8%). 27.6 % patients were unhappy due to the increased number of visits due to the documentation procedure. 91.8% patients among the total study population claimed the overall documentation experience as good.





VI. DISCUSSION

Orthodontic records are one of the main milestones in orthodontic therapy¹³. Proper documentation is essential for orthodontic treatment, and it is a fundamental and widely preferred component of clinical documentation.¹⁻⁶ This study deduced that 51% of the total study population were female belonging to the 10-20 years age group since females are more concerned about their esthetics as compared to males. These results were homogenous with the earlier studies conducted by Manohar et al⁶ and Tang et al¹⁰. It is found that orthodontic treatment helps in growing confidence, improving the esthetics and function of the teeth¹⁰. 82.7 % patients find the case history and photography procedure essential. These results were analogous to the earlier studies conducted by Cifer et al¹ and Manoharan et al⁶.

Gag reflex is our body's natural defense mechanism intended to keep foreign objects out of our upper respiratory tract¹¹. 32.7% patients experienced gag reflex while taking intraoral radiographs while 46.9 % patients experienced gag reflex while recording impression and 60.2% patients found maxillary arch more uncomfortable.

Gagging turns out to be a clinical problem, especially while recording maxillary impressions. Various techniques to reduce gag have been proposed, including distracting patient's attention from the dental procedure, relaxation, hypnosis and drugs (sedatives, antihistamine, or parasympathetic depressants)^{11,12}

Photography is progressively significant tool for Orthodontists. Orthodontic documentation with pretreatment and posttreatment photographs can be deceptive if features on one or both photographs are distorted. The dental photographer must be conscious of the significance of standardizing photographic variables as documentation of change is important^{14,15}.

79.6% patients were more uncomfortable in intraoral photography as compared to extraoral procedure. 57.1 % experienced difficulty recording maxillary arch. Several instruments are used such as retractors, mirrors and suction. Patients had diverse opinions regarding the usage of these equipment.

These instruments cannot be avoided as full-face intraoral smile with full visibility and occlusal photos are of key importance for documentation. However, the designs of the mirrors and retractors must be comforting to patients, and must also be designed to fit or adapt to as many patients as possible. Sharp edges on instruments should be avoided which aids in easing the distress of the patient^{1,6}. 74.5% patients experienced no discomfort while maintaining correct head position during extraoral photographs.

91% patients reported their overall experience to be good. 27.6 % patients were unhappy

with the increase in the number of visits due to the record taking procedure and 37.8% stated impression taking to be the most time taking procedure of documentation. Documentation is a long process, however trying to complete it in minimum number of visits increases patient motivation and satisfaction⁶.

VII. CONCLUSION

The result of the study shows that there was overall positive experience among the patients regarding documentation for orthodontic purposes. The most important practice to be focused during documentation is to reduce patient complaints and to improve patient comfort. Hence changes in the technique, design of retractors, mirrors and by effective time management during documentation can be helpful for better patient satisfaction.

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ANNEXURE 1

1. Gender / लिंग
 - a. Male/ पुरुष
 - b. Female/ महिला
 - c. Other/ इतर
2. Age group / वय
 - a. 10-20
 - b. 21-30
 - c. 31-40
3. Did you find case history procedure essential? / तुम्हालाकेसहिस्ट्रीप्रक्रियाआवश्यकवाटलीका?
 - a. Yes/ होय
 - b. No/ नाही
4. Did you experience gag while taking radiographs? / रेडिओग्राफघेतानातुम्हालाओकारीहोतआहेअसेअनुभवआलाका?
 - a. Yes/ होय
 - b. No/ नाही
5. Which procedure was more uncomfortable while recording radiographs? X ray घेतानाकोणतीप्रक्रियाअधिकत्रासदायकहोती
 - a. Intraoral/ आंतरमौखिक
 - b. Extraoral/ बाह्यमौखिक
6. Did you find photography necessary? / तुलाफोटोग्राफीआवश्यकवाटलीका?
 - a. Yes/ होय
 - b. No/ नाही
7. Which instrument was most uncomfortable? / कोणतंउपकरणसर्वातत्रासदायकवाटतहोतं?
 - a. Occlusal mirrors/ तोंडातवापरलाजाणाराआरसा
 - b. Cheek retractors/ गालमागेघेणारा
 - c. Camera flash/ कॅमेराफ्लॅश
8. Which arch was more uncomfortable while photography? / फोटोग्राफीकरतानाकोणताजबडाअधिकत्रासदायकहोता?
 - a. Upper/ वरचा
 - b. Lower/ खालचा
9. Which photography was more uncomfortable? / कोणतीफोटोग्राफीअधिकत्रासदायकहोती?
 - a. Intraoral/ आंतरमौखिक
 - b. Extraoral/ बाह्यमौखिक
10. Was it uncomfortable to maintain correct head position and smile in front of camera will record taking procedure? / डोक्याचीयोग्यस्थितीराखणेआणि कॅमेऱ्यासमोरहसणेत्रासदायकहोतेका?
 - a. Yes/ होय
 - b. No/ नाही
11. Did you experience gag while impression technique? / मापघेत असतानातुम्हालाओकारीहोतआहेअसेअनुभवआलाका?
 - a. Yes/ होय
 - b. No/ नाही
12. Which arch was more uncomfortable while impression? / मापघेतानाकोणताजबडाअधिकत्रासदायकहोता?
 - a. Upper/ वरचा
 - b. Lower/ खालचा
13. Which procedure was most time taking? / कोणतीप्रक्रियासर्वाधिकवेळघेतहोती?
 - a. Case history/ केसहिस्ट्री
 - b. Radiograph/ रेडिओग्राफ
 - c. Photography/ फोटो
 - d. Impression technique/ माप
14. Are you unhappy with the increase in number of visits due to record taking procedure? / रेकॉर्डघेण्याच्याप्रक्रियेमुळेभेटींचीसंख्यावाढल्यानेतुम्हीनाखूषआहातका?
 - a. Yes/ होय
 - b. No/ नाही
15. Overall experience / एकूणअनुभव
 - a. Good/ चांगला
 - b. Bad/ वाईट