



Original article

Quality of Orthodontic Records Keeping: A clinical audit

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ABSTRACT

Objectives: To assess the quality of keeping orthodontic records. A further aim was to raise awareness of undertaking clinical audits to improve the quality of patient care.

Methods: Retrospective records of 50 patients undergoing orthodontic treatment at the Faculty of Dentistry, University of Benghazi, were collected to assess the quality of clinical record keeping in practice. The assessment was done by one orthodontist, by measuring 11 different criteria. Furthermore, to decide on any future changes to be done. Statistical analysis was done by descriptive analysis.

Results: The personal information were taken by 100%. Medical history was consistently checked but not updated or signed. 64% of cases came to the clinic with referral letters. The oral examination showed that 42% of patients had good oral hygiene, with 50% had fair oral hygiene, while, 8% with poor oral hygiene. 38% of patients had carious lesions. A form for treatment plan consent was not used, it had been taken verbally by 98%. The skeletal pattern showed, class I by 42%, class II was 52%, while class III accounted for 6%. On the other hand, dental malocclusion showed the following: 30% of class I, 56% class II division 1, 6% class II division 2 and class III 8%.

Conclusion: This self-audit highlights the shortcomings in the collected records. Furthermore, this procedure shows how an audit can be performed in any area of orthodontics to improve the quality of patient care.

Keywords: orthodontic records, clinical audits, quality, patient care.

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INTRODUCTION

The World Health Organization recognizes that being healthy is not limited to the absence of disease or infirmity. Their definition expands to encompass entire physical, mental and social well-being.^{1,2} Professional dentists and oral physicians adhere to a patient-centred approach to delivering a state of art treatment, considering their patient's well-being. As clinicians, we are aware of the inconsistent quality of dental care that may lead to dwindling of public trust in dental practitioners.¹ Therefore, there is an obligation to adhere to best practice guidelines and clinical governance to lessen malpractice.³ Clinical efficiency ought to be vital to the culture and quality of dental services

provided by dental teams, whether in academic or small clinical units settings.³ Surrounded by progressively critical circumstances, undertaking clinical audits is an imperative transparent and evidence-based strategy to validate and demonstrate the quality of service delivered. Furthermore, data utilized by clinical audits allows objective comparison with the 'gold standards' and become a source of information required to make positive adjustments.³⁻⁵

Historically, an audit is an old concept recorded in the Domesday Book as early as 1066, along with the development of national statistics of births and deaths.⁶ Recently, the United Kingdom introduced the concept of clinical audit. Principles for best practice in the clinical audit was one of several studies issued by the National Institute for Health and Clinical Excellence (NICE).⁵ That publications define clinical audit as a quality improvement procedure that strives to enhance patient outcomes and care through a systematic review of care compared to predetermined criteria and the

application of change. Selected characteristics of the care structure, procedures, and results are systematically assessed against predetermined standards.⁵ When appropriate, individual, team or service level modifications are made, and additional monitoring is employed to verify improvement in healthcare delivery (Figure 1).

Therefore, the present clinical audit aimed to assess the quality of clinical record keeping at clinical practice of the Orthodontic Department at Faculty of Dentistry, University of Benghazi.

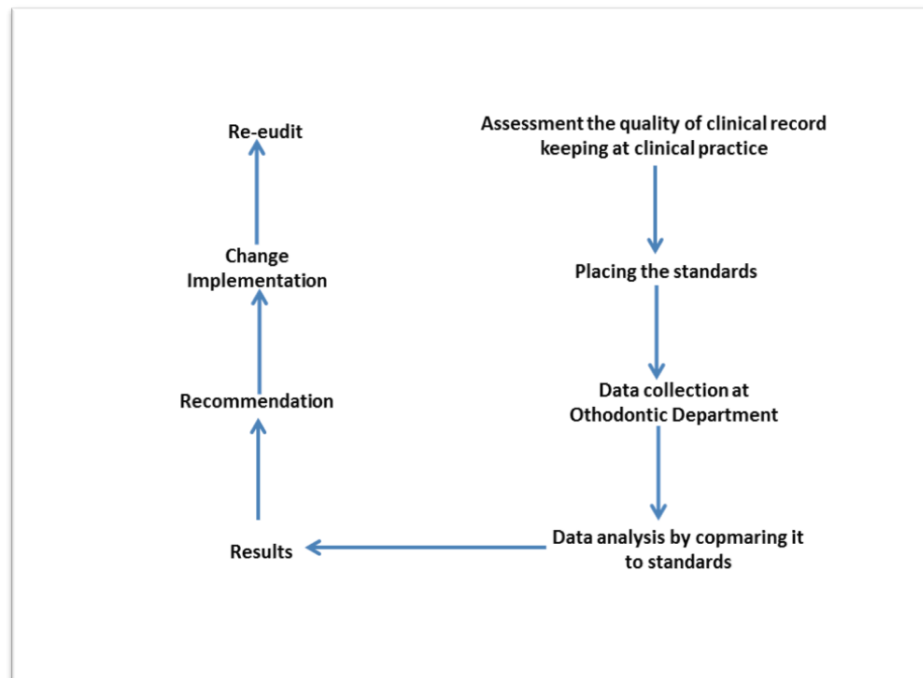


Figure1: Steps of audit procedure

METHODS:

This was a retrospective clinical audit to assess the standards of clinical record keeping of 50 patients who attended the orthodontic department clinic at the Faculty of Dentistry, University of Benghazi, with the objective of improving the quality of clinical record keeping in practice. Ethical approval was granted by the Dental faculty and consent form was obtained from the included patients. One orthodontist undertook the records assessment. Eleven criteria were explored,^{7,8} including; patient's identification information, medical history, referral details, oral health, radiographs, consent, skeletal pattern, occlusion classification,

Index of Orthodontic Treatment Need (IOTN), laboratory work, extra and intraoral photographs. Table 1 provides the details of these criteria. The collected data was analyzed using descriptive statistics to compute means and standard deviations of the variables using SPSS version 23 (SPSS, IBM, Armonk, NY, USA) and compared to the golden standard that is based on the trust's health record-keeping policy⁹ to identify any problems and decide on any future changes to be made.

Table 1: Details of the patients' clinical records.

No.	Explored criteria
1	Patient's identification information (Full name, Date of birth, Gender, Full contact details of patient and parents)
2	Medical history (Updated and signed medical history form)
3	Referral details (Referring from a general dental practitioner, Referral date, Date of patient contact)
4	Oral health (Good/Fair/Poor, and carious lesions)
5	Radiographs (Type of radiographs undertaken, Justification and reports)
6	Consent (Treatment options recorded, Treatment plan with written informed consent, Written cost estimate form, Orthodontic charting)
7	Skeletal pattern (Class I, Class II and class III)
8	Occlusion classification (Class I, ClassII division 1, Class II division 2 and ClassIII)
9	Index of Orthodontic Treatment Need (IOTN)
10	Laboratory request form (Laboratory receipts, study models)
11	Extra and intraoral photographs

RESULTS

In this retrospective audit 50 files of orthodontic patients, from the orthodontic department, at university of Benghazi were analyzed to determine whether the diagnostic data and records were sufficiently collected and kept or they required some changes. For personal information, the full name of patients, date of birth, and contact details were taken from all patients by 100%. Medical history was consistently checked but not updated or signed. 64% of the examined cases came to the orthodontic clinic with referral letters, they were referred from general dentists, as well as Pedodontic and Oral Diagnosis Departments, on the other hand 36% of patients came to the clinic without referral reports. In diagnostic sheet form the referral date and the patient contact date were written for all patients by 100%. The clinical examination that checks the oral health showed

that 42% of patients had a good oral hygiene, with 50% had fair oral hygiene, while, a poor oral hygiene had been noted in 8% of patients. Carious lesions were found in 38% of the patients. Lateral cephalograms and orthopantomographs (OPG) were taken as a routine diagnostic records in 92% of patients. 8% of patients were asked either for lateral cephalograms or OPG. A verbal consent for treatment plan were taken from patients by 98%. A form for treatment plan agreement consent was not used, the treatment plan was discussed with all patients or their parents verbally. Also, a written cost estimate form and orthodontic charting were not applicable. In this sample the skeletal pattern according to radiographic analysis showed that skeletal class I was present by 42%, class II scored the highest prevalence class by 52%, while class III accounted only for 6%. On the other hand, dental malocclusion showed the following: 30% of class I, 56% class II division 1, and 6% class II division 2, in the meantime class III scored 8%. Subjective assessment using IOTN was not part of the present implemented protocol. Laboratory request forms were present and filled for 94% of patients, and 90% of laboratory work was received. Study models were taken for 94% of patients, other 6% of patients still waiting to complete diagnostic and collecting records. Extra and intra-oral photographs were taken for 74%. While 4% of patients refused the extra-oral photographs, on the other hand, 22% of patients are still waiting to take photographs.

DISCUSSION

Using an audit to increase the quality of patient care is not a new concept and people should receive all needed healthcare with acceptable quality.⁴ The audit gradually becomes an important tool to develop and improve the quality of physical, mental and social wellbeing. There is a great debate in defining the terms audit and clinical research. Clinical research aims to study a clinical practice to discover new information and knowledge, and generate evidence to support a hypothesis. It could be observational, interventional, non-interventional or prospective, retrospective, qualitative, and quantitative.¹⁰⁻¹³ On the other hand, audit seeks to enhance and improve health care. Audit has no end, it could be repeated to confirm that the change and improvement are continuing.¹⁰⁻¹³ Thus, the aim of this audit was to assess the quality of clinical record keeping in clinical practice of the Orthodontic Department at the Faculty of Dentistry, University of Benghazi.

The results of this retrospective audit, noted that the patient identification form (full name, date of birth and contact details) was taken by 100%. On the other hand, it was observed that recording medical history was not sufficient. This lacking of details could be overcome by adding the medical history questionnaire for each patient to fill and sign. Afterwards the orthodontist could revise the questionnaire and request any further clarification from the patients. Although 64% of patients referred to orthodontic department from different polyclinics, still 36% of patients came to the clinic without referral reports, this reflects the patients' awareness regarding orthodontic treatment.

The clinical examination gives an idea about how future orthodontic patients will maintain their oral hygiene. Whereas, 50% of patients have fair oral hygiene, and 38% with carious lesions. Accordingly, oral hygiene instructions should be intensively given to orthodontic patients with full explanation about the complications that could result from orthodontic appliances. This can be achieved through leaflets, posters and videos given to the patient while he waits in the waiting room.

Radiographs (lateral cephalogram and OPG) are used as routine diagnostic records, meanwhile, 8% of patients were asked to take either OPG or lateral cephalogram to ensure a certain diagnosis that does not justify the use of both, for example in case of serial extraction with class I malocclusion, commonly it needs OPG only in the early diagnosis, and this reflects the care that the orthodontist can provide to the patient. In some cases as impacted canines or central incisors, in addition to cleft lip and palate, it is recommended to use three dimensional radiograph (Cone beam computed tomography) which will reveal accurate information regarding the position and angulation of the impacted tooth. Furthermore, evaluate the quality of bone and ankylosis if present. These information will help in developing case specific treatment planning.

The results clarify that there was no use of written informed consent about the treatment plan and a cost estimate form, there was use of a verbal consent only which should be substituted with written consent as it is important for legal consideration if required. On the other hand, as the Dental Faculty is a government institution, using the cost estimate form was not allowable because it offers free public services.

This audit gives an idea about the percentage of skeletal and dental malocclusions. The diagnosis and data collection showed class II malocclusion is the most frequently observed. This finding is in

agreement with the reported percentage of class II malocclusion among school children in Benghazi.¹⁴ This sample of Libyan subjects showed that the Orthodontic Department was not implying the IOTN to justify the treatment of the patient at the orthodontic clinic.

Laboratory request forms were found in the records of 94% of patients, while the laboratory work was received in 90% of the cases, which reflects the ineptitude of offering the requested appliances. Although taking an impression is considered an important step for orthodontic patients, it is recommended to fund the department to provide an intra-oral scanner that assists in making digital intra-oral impressions. This will save storage space of the study models, working in a cleaner, less chaotic environment, and facilitate communication between the department and the laboratory. Furthermore, using the oral scanner can be used in explaining the type of malocclusion and treatment plan.

A partial collection of photos existed because 22% of the patients had not yet had their pictures taken. As a result, instructions should be provided to collect patients' photos during clinical examinations while collecting the whole patient data.

A recommendations' document has been submitted to the department of Orthodontics for further discussion and implementation when required. Re-auditing of the collected data is proposed to be performed after six months.

Recommendations

- Medical history questionnaire for each patient.
- Oral hygiene instructions should be given to orthodontic patients.
- Written informed consent should be obtained from each patient.
- Fund the dental faculty to provide three dimensional diagnostic aids such as intra-oral scanner and cone beam computed tomography.

CONCLUSION: This self-audit highlights the shortcomings in the collected records. Therefore, extra effort should be applied to improve the quality of clinical records keeping in the clinical practice of orthodontics through the implementation of the changes that were recommended.

Furthermore, this procedure showed how an audit can be performed in any area of orthodontics and dentistry to improve the quality of patient care.

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