## **Review Article**

## Clinical audit in dentistry: From a concept to an initiation

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### ABSTRACT

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Address for correspondence: Dr. Suchetha N Malleshi, No. 210, Bogadhi 2<sup>nd</sup> stage, CFTRI HBCS, Mysore - 570 026, Karnataka, India. E-mail: smalleshi@yahoo. com Clinical audit is a quality improvement process that aims to improve patient care through a systematic review of care against explicit criteria. It is a cyclic and multidisciplinary process which involves a series of steps from planning the audit through measuring the performance to implementing and sustaining the change. Although audit contains some facets of research, it is essential to understand the difference between the two. Auditing can be done right from the record maintaining, diagnosis and treatment and postoperative evaluation and follow-up. The immense potential of clinical audit can be utilized only when open-mindedness and innovativeness are encouraged and evidence-based work culture is cultivated.

Key Words: Audit, dental audit, healthcare improvement

### **INTRODUCTION**

"Health is a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity" as defined by the World Health Organization.<sup>[1]</sup> As oral physicians all of us are concerned about this wellbeing of our patients and strive hard to achieve this state. However, recent times have been turbulent and public and professional conviction in the quality of clinical care has been hit hard with increasing public grievances, scrutiny and legal redressal. Doctrines have proven expendable; yet respect and faith in the competence of healthcare professionals persists. Nevertheless, this legacy cannot be taken for granted nor can efficiency of care be considered as a separate professional issue. Amidst such an increasingly critical environment, clinical audit is an indispensable tool to retain and validate this trust and respect. As a quality improvement

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mechanism audit can demonstrate that genuine and substantial efforts are being made by staff to deliver high-quality professional care to all their patients.<sup>[2]</sup>

Audit can be defined as a hearing; especially a judicial examination of complaints or an official examination of accounts with verification by reference to witnesses and vouchers, or a critical evaluation. <sup>[3]</sup> It has been defined as "the systematic appraisal of the implementation and outcome of any process in the context of prescribed targets and standards".<sup>[4]</sup> Auditing patient care is a centuries' old concept, that is progressively acquiring importance as a potential device to reduce morbidity and mortality, and thus improve quality of life. Historically, audit has been recorded as early as in 1066 in Domesday Book with the development of national statistics of births and deaths.<sup>[3]</sup> In 1750 BC, King Hammurabi of Babylon penalized clinicians on poor performance in order to ensure adequate patient care.<sup>[5,6]</sup> However, Florence Nightingale is considered as the pioneer of clinical audit, as her assessment of the effectiveness of cleanliness and its enforcement resulted in tremendous reduction in mortality rates of hospitalized patients during the Crimean war of 1853-5. Ernest Codman is recognized as being the first true medical auditor for his work in 1912 on monitoring surgical outcomes of his patients.<sup>[5-8]</sup> In recent years, the concept saw

light when the United Kingdom pioneered the move to integrate clinical audit in professional healthcare with the introduction of the white paper.<sup>[5,7]</sup> This paper defined medical audit as "the systematic critical analysis of the quality of medical care including the procedures used for diagnosis and treatment, the use of resources and the resulting outcome and quality of life for the patient".<sup>[3,7]</sup> The practice originally established as the medical audit subsequently evolved into a clinical audit and was redefined as a "quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the review of change. Aspects of the structure, process and outcome of care are selected and systematically evaluated against explicit criteria. Where indicated changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery".<sup>[5,8,9]</sup> It is different from other types of audit that may be conducted in the clinical workplace, such as a financial or organizational audit.[8]

Often, patients with identical clinical problems receive diverse care as determined by their clinician, hospital or locale.<sup>[10]</sup> In such instances, clinical audit and guidelines can prove remedial and beneficial to both patients and physicians, ensuring similar patient care, regardless of the care provider. Clinical audit requires the synergistic and synchronized amalgamation of a number of disciplines such organizational development, statistics, and as information management, besides imbibing and instilling a work culture where creativity and candidness are supported and, deficiencies and failures are reported and investigated without apprehensions or misgivings.<sup>[2]</sup> Thus, an efficiently executed clinical audit presents with a channel where the quality of the care can be reviewed objectively, encompassing an approach that is both supportive and developmental.<sup>[2]</sup> Auditing can also highlight the lesser advertised diseases and bring them into the limelight and ensure a good and standardized care for the distressed <sup>[11]</sup>

## THERE ARE DIFFERENT CLASSIFICATIONS OF AUDITS

### According to Lokuarachchi SK<sup>[5]</sup>

### Standard-based audits

A cycle involving defining standards, collecting data

to corroborate prevailing practice with these standards and bringing into practice the necessary changes.

### Adverse occurrence screening and critical incident monitoring

Frequently this is employed to evaluate occurrences with special concern or unanticipated results. This serves as a reflection of the teams' functioning and provides with knowledge for future application.

### Peer-review

To some extent similar to Type 2, but might include interesting or rare cases rather than critical ones and involves discussion of cases by peers to decide whether best care was given. Due to lack of systematic methodology recommendations in this audit variant are frequently not carried out.

Patient surveys and focus groups: Here patients' opinions regarding the care received are obtained.

According to Copeland G it can be divided into:<sup>[6]</sup> Prospective clinical audit

## This permits accurate real-time buildup of data which mirrors current and prevalent practice rather than the historical ones.

### Retrospective clinical audit

Serves as a historical yardstick but is of crucial use if a complaint, litigation or serious adverse outcome arises and a review of practice is required urgently.

### European Society of Radiology subcommittee on audit and standards audit states two kinds of audits<sup>[12,13]</sup>

#### Internal audits

Where the objectives of audits are to be decided by the management of the department.

### External audits

The objectives here are an agreement between the auditing organization and the healthcare unit to be audited.

## Frostick SP, Radford PJ, Wallace WA and ESR also consider<sup>[3,12]</sup>

### Structure audit

Which denotes resources found within the operatory and hospital and also management of structure and equipment, technology, staff, training, investigations and administration of these resources.

### Process audit

Which incorporates the efficient functioning of the staff and involves *in-toto* evaluation of all the

processes involved in the delivery of care from the time of referral through diagnosis to treatment and handing over of a report and the employment of capacities towards this. Thus it is a quality management of the processes, justifying waiting times and examination practices and protocols.

### Outcome audit

Which concerns the patient. It involves the patient's perspectives, the doctor's as well as the patient's expectation and the community's expectation through community health councils and legal channels. However, outcome does crucially involve the patient's inclination, psyche, determination, education and beliefs; how they can articulate the outcome and how they perceive it.

# Academy of Royal Colleges categorizes audit into<sup>[9]</sup>

### Local clinical audit

Focuses on aspects of care that have been prioritized by the individual clinician, clinical team or service provider

### Non-local clinical audit

Focuses on those aspects of care that have been prioritized at a regional, national or specialty level and encompasses clinicians and clinical teams from multiple service providers.

Clinical audit can be conducted at all levels of healthcare. These include:<sup>[9]</sup>

- 1. At clinical level of an individual doctor
- 2. At care provided by a clinical unit of which a doctor is a member
- 3. At care provided by a directorate or a complete service provider
- 4. At care provided by many separate clinical providers across a region or a country.

## THE VARIOUS STAGES IN CLINICAL AUDITING ARE<sup>[2]</sup>

### Stage one

### *Preparing the audit*

A topic is selected and the purpose is defined based on a systematic prioritization of clinical needs. This step includes involving multi-users inclusive of patients, other service users and care givers, and associates of groups and organizations that represent their interests. It also involves providing the necessary structures and manpower, and imparting training and skills to the staff and encouraging them to participate.

## Stage two

### Selecting criteria

Clinical audit can include assessment of the process and/or outcome of care. This criteria and protocols should determine the required resources, actions and decisions taken by practitioners together with users and, include outcome measures/markers of quality.

### **Stage three**

### Measuring performance

Outcomes are considered to be the most relevant assessment of a patient's care. Health service professionals must be conscious of their responsibilities when collecting data and presenting results bearing in mind the ethical implications of audit. This step involves sampling according to inclusion and exclusion criteria and recording, analysis and assessing data. Data collection tools must be validated.

### **Stage four**

#### Implementing improvements

A systematic, multifaceted intervention and implementation is more apt. The areas requiring attention and those with good compliance are noted, recommendations to effectively address the identified issues and the methodology to sort them are carried out in this stage. This step involves recognition of local obstacles that need to change and is synergistic utilization of teamwork and a variety of specific methods. These alterations can occur at organizational, group or individual levels.

### Stage five

### Sustaining improvements

Clinical audit is a cyclic procedure which demonstrates that improvement has been accomplished and sustained. A planned starter must be put into place with organizational and structural modification to assimilate improvements. If required the topic can be reaudited to complete the audit cycle.

Clinical audit may contain many components of clinical research. Hence there is a great deal of controversy in delineating the terms audit and clinical research. Research seeks to discover new information and is defined as "the attempt to derive generalisable new knowledge by addressing clearly defined questions with systematic and rigorous methods."<sup>[6]</sup> Research aims to investigate in a systematic way a clinical practice or manipulation of the same that generates evidence to refute or support or develop



a hypothesis. It may only be just observation or interventional/non-interventional or prospective/ retrospective and qualitative/quantitative or syngeristic of these processes in approach. Research is designed so that it can be replicated. Audit seeks to improve healthcare and contrary to research, audit data are not calculated to prove a hypothesis. Participants are never randomized and their allocation to various groups is through standard clinical decision-making processes. Further, though methodologies like interviews and statistics may be involved, results are unique to that particular setting. Audit has no end — the same audit may be rechecked or repeated to ensure that the improvement is sustained. Data for audit should ideally therefore be perennially available as part of the process of care. Clinical audit results in enhanced quality of care as compared to clinical research which results in improved knowledge and comprehension.<sup>[6,14]</sup>

## Clinical audit in dentistry

The scope for clinical audit in the vast and burgeoning field of dentistry is endless. Distinct to other areas of healthcare, dentists generally get to examine ambulant and asymptomatic patients at varying intervals, who just consult for a periodic review of their oral health. Thus, dentists are blessed with an exclusive opportunity to assess and record the normal and establish the baseline measurements and document the location and profile of lesions by means of diagrams or photography. With increasing global travel and migrations, oral conditions and diseases and their treatment are no longer restricted within certain geographic boundaries. Therefore, monitoring will enable in establishing a standard and prevent inadvertent mistaking of a normal feature with epidemiological variations for an abnormality and thus prevent unnecessary intervention. The key to monitoring oral health is the capability to evaluate the difference in its manifestation from one visit to the subsequent one and to provide evidence-based therapeutics. It must be recognized that in a dental setup, care of the patient is not restricted just to the oral problem but also includes assisting and empowering the patients in their healthcare by instituting a regimen that is best provided by a multidisciplinary team including the oral healthcare provider.

Variability in patient care is confounding and varies dramatically with doctors, specialties and geographic

region. This has been observed even within the same institution where identical problems may have been addressed with different therapeutics.<sup>[15]</sup> Just to state an example, the ability to recognize the etiopathogenesis and diagnose the various forms of oral ulcers and their treatment varies vastly from dentist to dentist, mainly guided by their knowledge and clinical acumen. While accurate diagnosis and evidence-based treatment gives relief to the patient, a misdiagnosis results in unpredictable, inappropriate and at times catastrophic outcomes and engulfs unnecessary resources. Thus clinical audit is the need of the hour to enable us to arrive at a consensus with regards to the various clinical and treatment aspects of orofacial diseases and disorders.

Auditing is being carried out on a small scale in various facets of dentistry. Auditing can be done right from the area of record maintenance through the diagnosis and treatment and till the postoperative evaluation and follow-up. An audit to assess the standard of clinical record-keeping by undergraduate dental students reported that constructive changes can be achieved by creating an understanding amongst them on the importance of keeping records.<sup>[16]</sup> Audits involving the general dental practitioners' experiences and practices of antibiotic prescription highlighted the need for clinical audit, in conjunction with continuing education in the prescribing of antibiotics.<sup>[17,18]</sup> A prospective oral mucositis audit assessed the various facets of severe oral mucositis in patients receiving high-dose conditioning chemotherapy and concluded that severe mucositis is a more common problem than previously reported, thus justifying effective preventative and therapeutic measures.<sup>[19]</sup> A study conducted to audit and monitor the uptake of national mouth care guidelines for children and young people undergoing treatment for cancer stressed upon ensuring effectual use of oral assessment scales and aids for them to receive suitable dental care throughout and after their treatment.<sup>[20]</sup> The value of patient feedback in the audit of Temporomandibular Joint (TMJ) arthroscopy was assessed and a disparity between the clinical evaluation and the patients' perception of effectiveness was noticed thus emphasizing the importance of patient feedback.<sup>[21]</sup> Another auditing recommended arthrocentesis as an effective, minimally invasive alternative technique for TMJ pain not responding to conservative management.<sup>[22]</sup> An audit of the time of initial treatment in avulsion injuries opined that improving public knowledge about tooth storage in avulsion injuries is critical to long-term prognosis

of the teeth.<sup>[23]</sup> An multi-centre audit conducted to assess the best method for achieving a functional and aesthetically acceptable appearance after unilateral cleft lip repairs suggested the need for an internationally agreed objective method of assessment for this facial deformity.<sup>[24]</sup> An audit to determine the need of postoperative radiographs after repair of facial fractures on immediate postoperative management advised against routine, unnecessary postoperative radiographs. Audits have been carried out in manifold areas, such as to determine the success rate of inferior alveolar nerve block, patient indication for third molar surgery, to assess the computer software audit program, evaluate the periapical radiographs, determine the success rate of mineral trioxide aggregates in apexification, recording final working length during apexification, to assess the skills required at the end of the undergraduate dental curriculum, examine the records for profiling facets of maxillofacial trauma in children.<sup>[4,25-33]</sup> Nonetheless dental clinical auditing is still in an infantile stage in many parts of the world with vast areas awaiting discovery and documentation.

Clinical audit, the cornerstone of clinical governance, ensures that the strategy is executed as planned, and in the process provides a framework to highlight and enable changes to be incorporated ensuring improved patient care.<sup>[2]</sup> For its successful outcome it is critical to accept the worthiness of the clinical audit project. Often, clinicians disregard audit and consider it as a poor substitute for research. This can be attributed to the lack of appropriate support, poor understanding of the objectives and methodology and failure to recognize the inherent potential of audit in improving healthcare. It must be reiterated that research needs the word 'investigate' and audit needs the word 'improve'.<sup>[14]</sup> Nevertheless, attitude transition requires perseverance and determination. The immense potential of clinical audit can be utilized only when open-mindedness and innovativeness are encouraged and evidence-based work culture is cultivated. Motivated and logically carried out clinical audit not only results in efficient and enhanced clinical practice, perceptible and more economical clinical service, but also enhances the knowledge of all the staff involved. Short-term gains may be attributed to the Hawthorne effect, therefore it is imperative that the projects be constantly and regularly rejuvenated and recapitulated to nurture and advance upon the gains.<sup>[3,34]</sup>

Clinical audit is a universal and multidisciplinary phenomenon. An inquisitive and informed mind;

rigorous, vigilant and thoughtful planning; investigation and documentation; positive and resourceful organization are the lifeline of a clinical audit. When utilized effectively, audit results in wide-ranging benefits for both patients and practitioners, by ensuring the best use of limited resources and constantly evaluating and improving the quality of care.

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