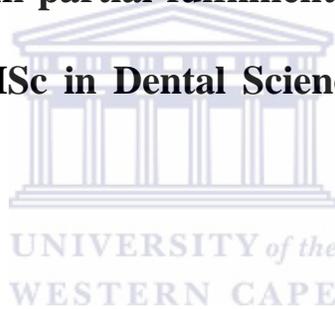


**KNOWLEDGE AND ATTITUDES OF DENTISTS  
TOWARDS EVIDENCE-BASED DENTISTRY IN  
LAGOS, NIGERIA**

**By**

**O. T. Adeoye**

**A thesis submitted in partial fulfilment of the requirements  
for the degree of MSc in Dental Science, University of the  
Western Cape**



**November 2008**

**Supervisor: Prof Sudeshni Naidoo**

## DECLARATION

I, the undersigned, hereby declare that the work contained in this dissertation is my original work and has not been previously in its entirety or in part been submitted at any university for a degree.



---

Dr Olusola Titilayo Adeoye      UNIVERSITY *of the* WESTERN CAPE      Date

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Doing this whole course work and dissertation has been a journey I will never forget. It opened me up to a whole world of community health.

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And finally, to **Baba God**, thank you, thank you, and thank you.

## DEDICATION

This first dissertation of mine is dedicated to all the dentists who willingly and cheerfully participated in this project.



## **ABSTRACT**

This was a cross-sectional study done in Lagos, Nigeria on 114 dentists. The aim of the study was to describe the knowledge and attitudes of dentists towards the concept of evidence-based dentistry (EBD). This study also attempted to create an awareness of this concept in the minds of previously uninformed dentists as well as demonstrate its need in continuous professional education via seminars, updates, lectures and short-term courses in Lagos, Nigeria.

Majority of the respondents were female aged between 25 and 40 years. Seventy-three percent of these respondents were in general practice with about two-thirds of all respondents having been in practice for less than 10 years. Although more than two thirds of these respondents reported being aware of the concept of evidence-based dentistry (EBD), only about half chose the correct definition. However, more than half of the respondents agreed that this was an important concept in practice. In addition, more than two-thirds of the respondents that were aware of this concept reported changing their practice at one time or the other as a result of reading evidence based research articles.

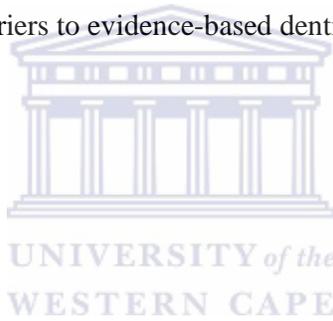
Perceived barriers by respondents to the use of evidence-based dentistry include having inadequate knowledge or awareness on its concepts, lack of relevant materials and equipment, inadequate training opportunities and having insufficient time due to busy clinical practices. The conclusion is that most of these dentists were actually unaware of the concept of evidence-based dentistry.

**Keywords:** evidence-based dentistry, attitudes, knowledge

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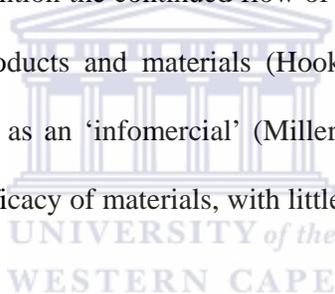
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## CHAPTER ONE: INTRODUCTION

All health care workers would like to believe that what they do for their patients is for their own good and in their best interests. However, most clinicians can recall instances where a clinical intervention has been more detrimental than beneficial to a patient, and several procedures in dentistry are now considered to do more harm than good (Clarkson et al, 1999). One of the problems facing clinicians and patients who want to reduce harm and maximize benefit from dental care is finding relevant, reliable research evidence. It is increasingly difficult for clinicians to locate and assimilate information from the large volume of scientific papers published in peer reviewed journals, not to mention the continued flow of unsolicited journals extolling the virtues of the latest products and materials (Hook, 1999). This latter type of journal has been referred to as an 'infomercial' (Miller, 2002) and usually contains case reports related to the efficacy of materials, with little or no supporting research.



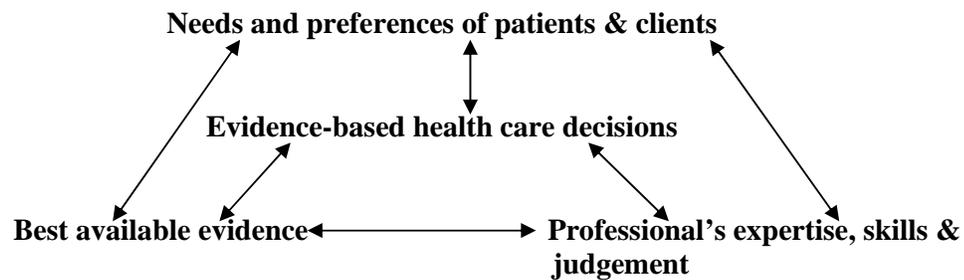
In dentistry, as in other specialties, the traditionally favoured sources of evidence, such as past experience, prevailing practice, professional training as well as expert opinion are becoming less and less reliable. Faced with these problems, some practitioners have turned to review articles as the most accessible source of practical advice (Clarkson et al, 1999). Unfortunately, review articles are often based on an unsystematic search with inadequate evaluation of relevant research evidence that often leads to biased conclusions. Information accessible to patients is perhaps even more biased and usually comes from sensational press coverage of new developments in the dental or medical field or the internet.

Many clinicians have experienced a patient arriving with a press clipping or print out from the internet, asking for more information and sometimes requesting a particular treatment. Thus, for the practicing clinicians, there are challenges in coping with both increasing public demand for a better care, an overwhelming array of science and technological innovations as well as increasing treatment costs. With the exponential growth of the volume and complexity of health care information and the increased awareness of the gaps between scientific evidence and health care practice, more reliable sources of evidence should be used (Humphrey and McCutcheon, 1994).

Evidence based practice (EBP), whose philosophical origins extend back to the mid-nineteenth century Paris and earlier, is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients (Muir Gray, 1997). It involves having the ability to efficiently identify the best information available, (getting the wrong information being important to avoid), evaluating that information and then, actually applying this information into routine procedures in patient care. Research evidence must be found and appraised and as such, individuals, professionals and organisations must be taught on how to use this research evidence with a view to its implementation and use in practice.

Evidence-based practice should influence the decision making of clinicians, dentists and other health care workers; of managers (health services planners and purchasers); of politicians dealing with health care of the nation and in fact, anyone who needs to make decisions about health care.

The elements of evidence-based practice are shown below:

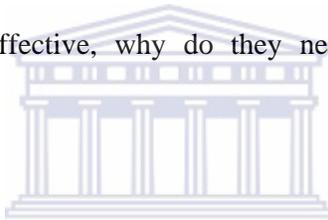


Evidence-based health care is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients and "...this means integrating individual clinical expertise and patients' preferences with the best available external evidence from systematic research" (Sackett et al, 1996). Thus, an evidence-based approach to dental care and oral health promotion involves directly incorporating the best available research findings in decision making instead of relying exclusively on the traditionally used, but insufficient sources of evidence, which may not reflect the best evidence available. It is also seen as an approach to oral healthcare that requires the judicious integration of systematic assessments of clinically relevant scientific evidence, relating the patient's oral/medical condition and history with the dentist's clinical expertise, and the patient's treatment needs and preferences (American Dental Association, 2003). Evidence-based dentistry relies on clinical expertise and aims to provide guidelines which facilitate the clinician in making intelligent choices on behalf of the patients.

There are three types of treatments and their impacts on patients according to Muir Gray, (1997);

- (i) Those that do more good than harm
- (ii) Those that do more harm than good and
- (iii) Those of unknown effect.

Senior members of the profession acknowledged that “there was little health gain from some of the dental services provided and lack of evidence-based treatment decisions” (BDA 1996). “The number of treatments that have good evidence that do more good than harm is limited and the majority currently fall into the category of unknown effect” (Richards, 2000). Most clinical dental treatments and prevention are ineffective. If they were effective, why do they need repeating throughout the lifetimes of most patients?



A striking feature of dentistry is that there is rather limited solid evidence for the majority of therapeutic interventions, and much of what has been presented to dentists as “progress” can hardly be labelled scientific. For example, despite the existence of a general consensus accepting the randomized controlled trial as the most appropriate study design to evaluate the effectiveness of health care interventions (that is, the gold standard), there is a clear preponderance of publications of retrospective studies (such as case control /case series) in the majority of dental journals.

It is also obvious in dentistry that the approach has been on doing the procedures right rather than on doing the right procedure, resulting in a reduced quality of treatment (Evidence-based medicine, 1995). Both doing the right procedures as well as doing

the procedures right should be taken cognizance of. Success should be rewarded in terms of positive health outcomes and not on the number of procedures done.

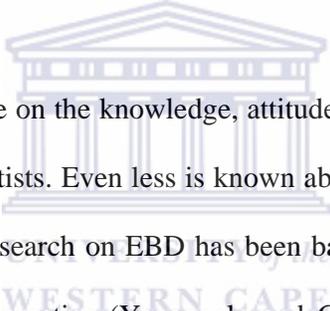
There are certain dental procedures which have been shown not to give significant health gain, though they are still widely used. These include:

- Chair-side dental health education (Kay and Locker, 1998)
- Unsupervised brushing and flossing to improve gingival health (Kay and Locker, 1998)
- Prophylaxis including the scaling and polishing of teeth (Frandsen, 1986; Brothwell et al, 1998)
- Combinations of topical fluorides (Marinho et al, 2002; 2003)
- Six-monthly dental recalls (Sheiham, 1977)
- Replacing missing molars (Song et al, 1997)
- Many orthodontic treatments (Song et al, 1997)
- Extraction of asymptomatic impacted third molars (Song et al, 1997)

However, this is not to say that there are no dental practices that do not have an evidence based background. A good example of this is the Cochrane Review on topical fluorides (Marinho et al, 2004). The conclusions from this review were that:

- Fluoride toothpastes used everyday can protect children and adolescents against dental caries as much as fluoride mouth rinses and gels.
- Young people were more likely to persist with using toothpastes than with using fluoride mouth rinses or having gels or varnishes applied.
- Topical fluorides (mouth rinses, gels, or varnishes) used in addition to fluoride toothpastes achieves a non-substantial reduction (10%) in caries compared to toothpaste alone.

In addition, water fluoridation has been effective in the prevention of dental caries. Oral health promotion has also been useful in the improvement of the individuals' knowledge of oral health. There is also moderate evidence to support scaling of disease sites at 3-4 months interval in moderate-severe gingivitis. There is good evidence to recommend scaling for initial therapy in patients with active periodontitis when combined with maintenance therapy as well as good evidence to recommend against subgingival scaling in sites with no signs of disease. Moreover, there is good evidence to support the non-treatment of asymptomatic impacted third molars (Song et al, 1997).



Little information is available on the knowledge, attitudes, acceptance and practice of the EBD concept among dentists. Even less is known about EBD in Africa in general and Nigeria in particular. Research on EBD has been based on the effectiveness and benefits of specific clinical practice (Yengopal and Chikte, 2003; Truman et al, 2002; Davies, 2003; Van der Weijden et al, 2002; Coulthard et al, 2003).

Barriers to the uptake and acceptance of EBD have included the knowledge and attitudes of practitioners (McGlone et al, 2001). Other barriers included lack of available time, financial constraints, poor availability of evidence, the educational and social environments, the wider health system as well as barriers related to patient factors. Iqbal and Glenn (2002) and Lalloo (2003) have shown that although dentists are familiar with the *concept* of EBD and thought it was important to general dental practice, they were unable to choose the correct definition of EBD.

## **CHAPTER TWO: LITERATURE REVIEW**

This chapter provides a review of the literature that is directly or indirectly related to this topic of study. Terms commonly encountered in the concept of evidence-based practice are also defined.

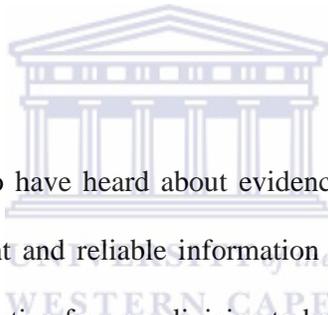
### **2.1 Introduction**

The focus of teaching in many dental schools is based on the medical model or the bio-mechanical model. It refers to the traditional/scientific mode of thinking in health care provision. It keeps health in the biological context which immediately narrows down the perspective through which health and disease are viewed. Its basic assumptions include that the nature and cause of all diseases can be traced to a specific aetiology; treatment focuses on the patient's body and the assumption that it can be treated like a machine and the nature of the intervention focuses on the belief that medical knowledge and skills ('engineering') is sufficient to make the patient's body better. The use of the medical model based on the germ theory is seen as being a sufficient guide for clinical practice. It is also assumed that tradition and common sense are enough to evaluate new theories.

It has been observed that clinicians respond to clinical problems in four main ways (Evidence-Based Medicine Working Group, 1992). These were:

- The use of their clinical expertise
- The use of their knowledge of underlying biology
- The use of a textbook
- Seeking the opinion of experts

However, evidence-based healthcare is directed at reversing an unsystematic clinical practice that is often based on intuition and patho-physiologic basis and replacing it with one that is evidence-based and scientifically proven. This is especially important in today's world of great scientific breakthroughs and achievements (Arndt, 1992). The world is no longer seen as a large unknown expanse, but is increasingly referred to as a global village. Information to patients is now available on practically any subject and obtainable at the touch of a fingertip. However, this information is not always valid and dependable, especially when it is acquired via the internet. There is no way of refereeing information posted on the internet as opposed to peer-reviewed scientific journals. Yet though peer-reviewed journals are not readily accessible to the patients, the internet is.



It is likely that patients who have heard about evidence-based clinical practice will increasingly demand relevant and reliable information before deciding on treatment options. This makes it imperative for any clinician to be aware of and have evidence-based information readily available. As dentistry continues to advance, it is imperative that dentists continue to develop their knowledge and skills (Dawes, 1996). Dentists should participate in continuing education activities that provide information, strengthen clinical competencies, and enhance professional judgment. While it is not possible for any dentist to be abreast of all advancements, dentists should make every effort to at least be familiar with clinical developments that may potentially affect their practices, including the general scientific basis of such developments and related issues and problems.

Dentists should maintain basic levels of competency and restrict patient care to areas in which they are competent. Therefore, they must know the boundaries of their

competence, both abilities and limitations. Maintaining competence requires a commitment to lifelong learning and requires both an acceptable standard of care as well as appropriateness of that care. Competence also requires continual self-assessment about outcomes of patient care. Judgment is always involved when we apply our knowledge, skills, and experience to treatment. Even the best clinical abilities are misused if employed with unsound judgment (Shin et al, 1993). Sound judgment is critical to the provision of quality oral health care.

In the "best interest" of patients means that professional decisions of proposed treatments and any reasonable alternatives proposed by the dentist must consider patients' values and their personal preferences. Thus, the patient must become involved. This requires an approach of careful communication with their patients. It is sometimes possible that the desires of the patients may conflict with professional recommendations. When this occurs, the patients must be informed of possible complications, alternative treatments, advantages and disadvantages of each, costs of each, and expected outcomes. Both patient and doctor working in unity for the good of the patient will result in the risks, benefits and burdens being balanced. It is only after such considerations that the "best interests" of patients can be assured. It is crucial to note that it is the right of the patient to expect his/her clinician to provide a high standard of health care that is relevant and up-to-date.

It is therefore becoming essential for the clinician to have information backed by evidence available at his or her fingertips as well and this is where evidence-based practice has a role - the clinician being able to consult scientific literature regularly to ensure he/she is up to date with the latest information (Richards, 2003). According to Neilson (1998), the reasons which call for evidence based practice include:

- the increasing litigiousness of the societies we live in;
- the increasing numbers of well-informed patients as opposed to the past when the ‘mystery’ encompassing the works and methods of the healthcare practitioner was accepted and sometimes, even expected;
- the economic situations of most countries which have resulted in reductions in the costs of the health systems;
- the increasing uses of alternative medicine, pseudoscience and quackery in societies.

In view of the above, the role of the clinician would consist of the use of current research evidence in clinical decision making (clinical guidelines – treatment plans); obtaining informed consent from the patients showing participation in decision making; and using a tailored guideline for each specific patient to show individuality.

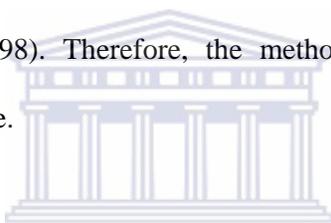


## **2.2 Relevant terms in evidence-based dentistry**

There are certain terms that are used in evidence-based healthcare and are necessary for healthcare professionals using evidence as a base in clinical practice to become familiar with. They include:

- Systematic review
- Clinical governance
- Clinical effectiveness
- Critical appraisal
- The Cochrane Collaboration

**Systematic review** – this is a summary of literature in which the evidence has been systematically identified, appraised and summarized according to predetermined criteria. It is defined as the statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings. It is also referred to as meta-analysis. It is a key tool in evidence based practice and is quite different from a narrative review. Narrative reviews, though broad in scope and written by experts, are often subjective and informal and tend to support the writer's view point. They are also subject to bias and the overall conclusion may not be very accurate. On the other hand, the systematic reviews use definite standards for retrieval, assessment and use of evidence (Browman, 1998). Therefore, the methodology becomes thoroughly documented and reproducible.



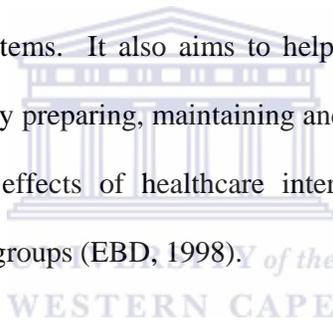
**Clinical governance** – this is a term used to describe an approach to maintaining and improving the quality of patient care within a health system. This approach must be systematic in order to be effective.

**Clinical effectiveness** – this is a measure of the extent to which a particular intervention - treatment, procedure or service - works. That is, one is assessing how much good rather than harm the intervention is to the patient. It should be based ideally on the results of a randomized controlled trial (RCT).

**Critical appraisal** – this is a process of systematically examining research evidence to assess its validity, results and relevance before using it to inform a decision. It helps to close the gap between research and practice. Learning to appraise literature

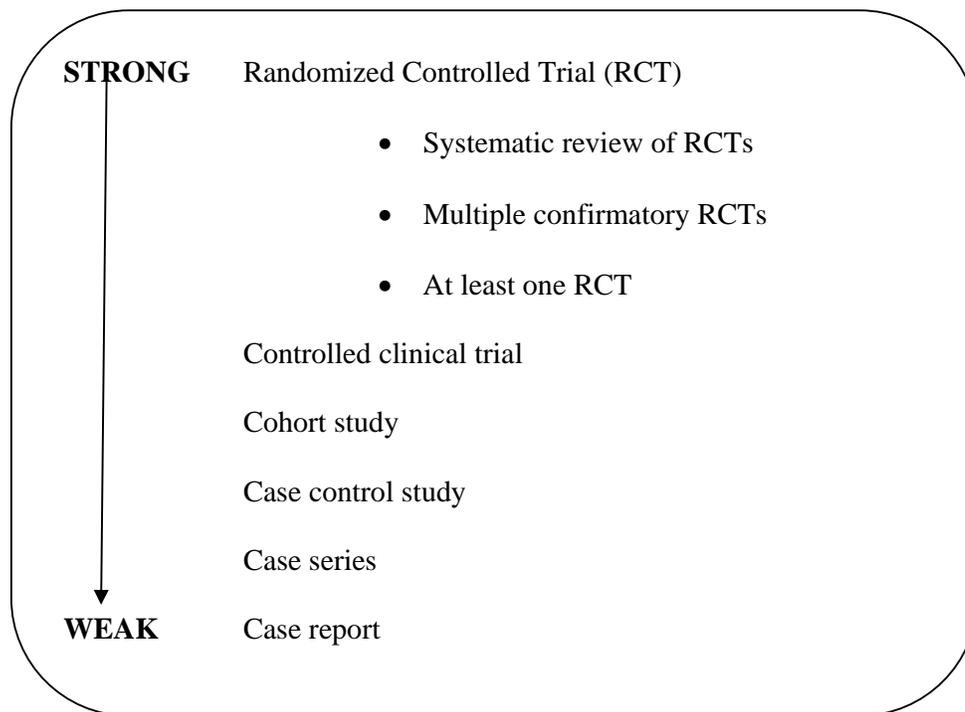
critically is fundamental to the practice of evidence-based dentistry (Sackett and Rosenberg, 1995).

**Cochrane Collaboration** – this is an international endeavour in which people from many different countries systematically find, appraise and review available evidence from randomized controlled trials (Jadad et al, 1998). It was actually developed in response to a British epidemiologist called Archie Cochrane who drew attention to the fact that it was crucial to have ready access to reliable reviews of available evidence (Cochrane, 1972). This collaboration aims at developing and maintaining a systematic current review of literature and studies, providing this information to professionals at all levels of health care systems. It also aims to help people make well informed decisions about health care by preparing, maintaining and ensuring the accessibility of systematic reviews of the effects of healthcare interventions. It is made up of Cochrane methods working groups (EBD, 1998).



### **2.3 Steps in Evidence Based Dentistry**

Evidence based dentistry is a systematic process. The stronger the evidence provided in a given research report, the more weight it is given (Newman, 1996). The report with the strongest evidence is the double-blind, placebo-controlled clinical trial. This is followed by the trial which provides clinical data though its research design does not involve the double-blind approach. Next are the longitudinal studies which follow groups of patients over a time. The cross-sectional studies then follow. These refer to the assessment of a group of subjects at a single point in time. Last on this hierarchy is the case report which describes a particular case (Robbins, 1998).



**Figure 1: hierarchy of evidence**



There are 5 basic steps in evidence-based dentistry (Goldstein, 2002). These steps are relatively straight forward, easy to follow and unbiased (Brink et al, 2006). A study done by Rosenberg et al (1995) has shown that evidence-based methods can be learned by clinicians of different backgrounds at any stage in their careers.

The first step consists of asking specific questions (hypothesis formulation) concerning the care of the patient(s). Here, answerable questions should be framed from clinical problems (Richardson et al, 1995; Sackett et al, 1997). Questions must first be chosen from the patient's perspective. Thereafter the questions should be those which help the clinician to stay current and to prepare for another occasion when such a question can arise again. Lastly, questions chosen should be those which

are most likely to yield a clear answer. One should also note that commoner problems are more likely to have a better body of literature than the rarer problems.

Secondly, search for the current best evidence to answer the question (Rosenberg et al, 1998) this can be done by using websites of Medline, Cochrane Database, Index Medicus and others. In searching for evidence, there are four ways one could do it:

- One could ask someone else especially a senior colleague
- Refer to a textbook (preferably up to date)
- Refer to a relevant article
- Tap into a database.

Thirdly, critically appraise the information (Parkes et al, 2001). That is, is the information valid and important? This is very important and should involve a systematic review of the structure of the study. This involves asking certain questions like, is the study prospective or retrospective? Is it descriptive or analytical? Is it a case control study or a cohort study? Is it based on an intervention or on the comparisons of different studies? A guide to use is the hierarchy of evidence as seen in figure 1, which starts with the randomized controlled trials (analytical prospective study) and ends with the case report.

Fourthly, apply this information to your patient's problems or questions (Epling et al, 2002). This could be in the areas of diagnosis, prognosis, treatment, potential harm.

Finally, the fifth step is to evaluate the outcome of the intervention (Jamvedt et al, 2003). The professional should not just stop at the implementation of the information but must also evaluate to be sure that the implementation was accurate enough.

These are basic guidelines which help the professional to make an intelligent decision in the care of patients.

#### **2.4 Advantages and disadvantages of EBD**

There are far more studies done in evidence-based practice or evidence-based medicine than in dentistry. This has resulted in little information on the acceptance and use of evidence-based dentistry among dentists. Most of the information on evidence-based dentistry relates to the efficacy and effectiveness of specific clinical procedures (Yengopal et al, 2003; Truman et al, 2002; Davies, 2003; Van der Weijden et al, 2002; and Coulthard et al, 2003). However, evidence-based practice does seem to have some grey areas – advantages as well as disadvantages (Naylor, 1995; Risdale, 1996).

Evidence-based dentistry has some significant advantages (Richards and Lawrence, 1998). It has been seen to improve the effective use of research evidence in clinical practice (Egerod and Hansen, 2005; Sheriff et al, 2007; Jette et al, 2003; Al-Ansary and Khoja, 2002; Veness et al, 2003; Rabe et al, 2007). This results in an earlier uptake of new interventions as well as rejection of ineffective/unfavourable interventions. Using evidence-based dentistry also results in a greater effective use of resources, due to a reduction in the replacement levels of treatments and materials.

Evidence-based dentistry relies on evidence rather than on authority, textbooks or anecdotes for clinical decision making. It also relies on clinical expertise which is

very important in dentistry where randomized clinical trials are very few. The literature is used only as a guide, thus enabling the clinicians to make their own decisions. They can also monitor their own clinical performance. It is important to note that new skills of identifying clinical problems, literature reviews and other steps in evidence-based dentistry will be mastered. Furthermore, it helps to reduce variations in patient care (Goldstein, 2002).

Despite the fact that evidence-based dentistry practice is expected of all practicing dentists, it has not been taken up by many practitioners for various reasons. Olatunbosun et al (1998) reported that the practice of evidence-based dentistry is time consuming and ignores clinical experience. Richards and Lawrence (1996) also argue that not all articles in scientific journals are relevant to areas of dentistry and one cannot read more than a small minority of these journals. An additional disadvantage is that the quality of the evidence in scientific articles is often compromised. This could be as a result of these articles not being subjected to peer review and even when they are, bias could occur. This bias could originate from the editors, researchers or both (Dickerson et al, 1992).

Dissemination of evidence-based information is also a problem - it can take many years for particular interventions to become accepted when information is not properly dispersed. This could be due to the lack of good functional computer-network infrastructure as is common in many (developing) countries.

A computer is often required to access and sort through data and being computer literate is imperative. In a study on the perceptions of Malaysian primary care doctors

towards evidence-based medicine it was reported that only 6.7% of the respondents had ever conducted a Medline search (Chan and Tenq, 2005). When evidence-based dentistry is not utilized, clinical practice is based on authority, anecdotes and experiences. Inevitably, incorrect and poor treatment choices could result.

## **2.5 Knowledge and attitudes to EBD**

There is a paucity of information on the knowledge and attitudes of dentists to evidence-based dentistry. A study done in South Africa reported that majority of the respondents considered evidence-based dentistry to be very important in general dental practice though few were able to provide the correct definition of EBD (Lalloo, 2003). However, more than half of the respondents knew the correct definition of a systematic review and critical appraisal. Most reported that evidence-based practice was very important in general dental practice, and were interested in finding out more about it. However, very few had ever attended an evidence-based practice course. A similar study on general dental practitioners done in the North West area of England by Iqbal and Glennly (2002) showed that only 29% of the respondents could correctly define the term evidence-based practice.

A questionnaire survey done on Swedish dental professionals reported that most of the respondents considered evidence-based dentistry useful in daily dental practice and felt that it would improve the care of their patients (Rabe et al, 2007). Another study done in Bahrain, Saudi Arabia, on the knowledge and attitudes of primary healthcare physicians to evidence-based medicine showed that while two thirds claimed to use evidence-based practices, most did not consider patient values as a component (Amin et al, 2006). However, a similar study done on primary care

professionals in Belgium, observed positive attitudes at every level of the healthcare system towards evidence-based practice (De Smedt, et al, 2006).

A study on attitudes and knowledge of healthcare practitioners in primary care in Scotland showed that all professionals supported the concept of evidence-based practice (O'Donnell, 2004). In Malaysia, though most of the primary care doctors were aware of the term evidence-based medicine, only 6.7% had ever conducted a Medline search (Chan and Tenq, 2005). In Canada, the knowledge of practicing interns on evidence-based medicine was found to be very high and the attitude very positive towards the concept (McAllister et al, 1999).

In another study done on Danish doctors with regards to the use of evidence-based medicine, only 4.4% of the respondents could explain all the terms associated with it (Oliver et al, 2004). In a study done on the attitudes and knowledge of physical therapists towards evidence-based practice, it was found that most were positive towards its use, and it was reported that the quality of patient care was better when evidence was used (Jette et al, 2003). A study on New Zealand and Australia on radiation oncologists and registrars revealed that most respondents had involved evidence-based medicine in their practice leading to a positive view of themselves in their practices.

Almost half of them felt that evidence-based practice had positively influenced their practice in some way (Veness et al, 2003). Melnyk et al (2004) also showed that knowledge of nurses towards evidence-based practice in New York was high, though their attitudes did not correlate with their knowledge.

## **2.6 Concluding remarks**

In conclusion, this chapter has described the current literature on the concept of evidence-based dentistry. It highlighted commonly used terms like systematic review, clinical governance, clinical effectiveness, critical appraisal and the Cochrane Collaboration. The advantages, disadvantages and steps employed in the use of EBD were also considered. Finally, the attitudes and knowledge of healthcare professionals to evidence-based practice were discussed.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter discusses the aims and objectives of the study as well as its research design and methodology. It discusses the study population and sampling and gives consideration to the methodology used by other researchers that had done similar studies. It also describes the development of the research instrument as well as the research method utilized.

### **3.2 Aims and Objectives**

The aim of the present study was to assess the knowledge and attitudes of dentists practicing in Lagos, Nigeria towards evidence based dentistry.

Its objectives were:

- To determine the knowledge of dentists in Lagos, Nigeria towards evidence based practice
- To determine their attitudes towards evidence based dentistry
- To determine if these dentists had ever utilized evidence based dentistry in their clinical practice as well as possibly including its use routinely in clinical practice
- To make recommendations to the Medical and Dental Council of Nigeria as regards possible further education of both undergraduates and postgraduates especially with the view of the incorporation of the concept of evidence based dentistry into the educational curriculum.

### 3.3 Study site

Lagos is one of the states of Nigeria, a West African country (Figure 2) with a land mass of 3345 square kilometres (about 0.4% of the total land mass Nigeria). It is the most populous city in the country, though physically the smallest. It has a population of over 17 million people and is reputed to be one of the fastest growing cities in the world. Eighty per cent of the population reside in urban areas of the state. The distribution of the population is shown in Table 1.



**Figure 2: Map of Nigeria**

(Courtesy: [www.ncaalumni.org/news](http://www.ncaalumni.org/news))

**Table 1: Population distribution**

<b>CATEGORY</b>	<b>NUMBER</b>	<b>PERCENTAGE</b>
Male	9116023	52%
Female	8437901	48%
<b>Total</b>	<b>17,553,924</b>	<b>100</b>
Children<5yrs	3563447	20.3%
Children 5-14yrs	3861863	20%
15-64yrs	9584442	54.6%
>65yrs	544172	3.1%
<b>Total</b>	<b>17,553,924</b>	<b>100%</b>

**(Courtesy: Lagos Ministry of Health, 2006 Census Results)**

Lagos is the nation's commercial centre due to the numerous banks and financial institutions situated there. There are 158 primary health care centres, 19 public secondary and 2 tertiary health facilities in Lagos. In the private sector, there are 706 hospitals, 987 clinics, 343 maternity homes, 174 nursing homes, 44 dental clinics, 1 physiotherapy clinic, 60 medical labs, 219 ophthalmic/optic centres, 12 radio diagnostic centres and 3 ambulance services (Lagos Ministry of Health). Dental care is available in all government health facilities except the primary health care centres. However, there are only about 83 dentists practicing in the government hospitals as opposed to the 177 doctors. Other dentists are in the tertiary and private clinics/hospitals.

### **3.4 Study design**

A cross-sectional study was utilized. The use of the algorithm (Appendix IV) by Burns and Grove (2003) was employed in the determination of the research methodology. A cross-sectional study design focuses on collecting information from a representation of the population (the sample) at a point in time. Choosing this design

was based on the aims and objectives of the study; the advantages of the quantitative methodology; and the acceptability of the research method to the participants.

### **3.5 Research strategy**

A structured approach was adopted. Both the sampling method and the questionnaire design were conducted prior to the collection of the data. A standardised approach was employed so as to increase the chances of getting data that could be replicated at different times and on different populations to make the results comparable. The possibilities of having sampling errors like non-response and information bias was recognised, as this is possible in a descriptive study utilising a structured questionnaire.



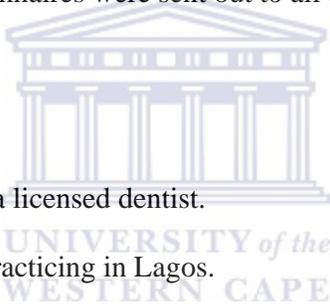
### **3.6 Instrument used**

Questionnaires were used to collect the data in this study. A questionnaire is a quick way to obtain data from a large sample population and they are less expensive in terms of time and money. They are easy to use as a test for validity and reliability and the participants usually feel a sense of anonymity and provide honest answers. There is less risk of getting a performance bias as is common in an interview. However, care was taken to ensure that this questionnaire was easy for the participants to respond to and that the terms used were unambiguous and clear. The main advantage employed in this instance was that a large geographical area was covered. However, the main disadvantage of a questionnaire is that it is limited to those respondents with a fixed contactable address. Also, there is a generally low response rate of less than thirty percent when used in a postal survey.

### **3.7 Selection of study population**

The study population consisted of all dentists practicing in the city of Lagos in both private and public establishments. A list of this population of dentists was obtained from the National Medical and Dental Council of Nigeria (NMDCN) and consisted of a total of three hundred and seventeen dentists. Of the three hundred and seventeen on the register, thirty nine had moved out of the country, fifty seven had moved location within the country out of Lagos and twenty one had invalid addresses that could not be traced. This left a sample population of two hundred dentists practicing in Lagos with valid addresses. Questionnaires were sent out to all two hundred.

#### **Inclusion criteria** were:

- 
- Participant had to be a licensed dentist.
  - Participant must be practicing in Lagos.
  - Participant must have signed the informed consent form.

#### **Exclusion criteria** were:

- The dentists, who though registered to practice in Lagos, had invalid addresses.
- The dentists, who though registered with addresses in Lagos, were not resident in the city.

### **3.8 Measurement**

This study employed the use of a cross-sectional postal survey using a structured questionnaire. It collected demographic information and used both open-ended as well as close-ended questions to assess the knowledge and attitudes of the participants. It tried to ensure that it suited the aim and objectives of the study and was simple, clearly understood and unambiguous. Planning of the questionnaire began in July 2007. It was designed following group discussions with academics and other dental professionals working in the field.

These respondents were based in a developing country and the questionnaire tried to take this into consideration. It was hoped that the subject of the questionnaire would be of interest to the respondents and hopefully, be able to elicit their full co-operation in supplying truthful answers. Questions which might possibly alienate the respondents and researcher were also avoided. The use of well-worded questions was utilized and 'double-barrelled questions' avoided. The total focus of this was to ensure that efficient and meaningful analysis of the acquired data would be possible.

The questionnaire data was grouped into the following categories:

#### ***Demographic information***

The demographic information was subdivided into groups that included the age and gender of the practitioners, length of training period, duration of practice and university haven graduated from.

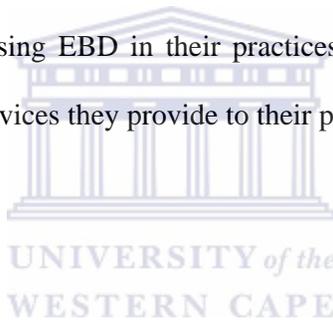
#### ***Evidence-based knowledge, understanding and practices***

The participants were asked to identify common EBD terms. Knowledge was assessed by asking respondents their perceived levels of knowledge on six evidence-based

practice terms, and then, choosing the correct definition of three of those terms. Questions were asked on the sources of information for making treatment choices. The importance of evidence-based dentistry was rated on a five-point Likert Scale, from very important to not important. Questions were also asked on their assessment of a need for evidence-based dentistry information, if they had ever changed their clinical practices as a result of a scientific research article and the reasons for changing the practice. Finally, a free text section was given for the dentists to ascertain the perceived barriers to implementing evidence-based dentistry in clinical practice.

### ***Perceived benefits***

Participants who reported using EBD in their practices were interviewed regarding their satisfaction with the services they provide to their patients.



### **3.9 Pilot study**

A pilot study was done on seven dentists working at the Lagos State University Teaching Hospital (LASUTH) in Lagos, in order to ascertain the acceptability, validity and clarity of the questionnaires. This also helped the examiner to ascertain that the questions posed were unambiguous and clear. A question on good quality randomized control trial was excluded as all the respondents claimed not to understand it at all and found it very difficult to answer. Question four on the age in years was changed to a range of age groups as it was discovered that majority of Nigerians do not like to make their ages known to others and so avoided answering that question. Changes were made before the questionnaires were finally dispatched to the participants.

Structured self-administered questionnaires were sent out to all participants via both individual and courier service delivery depending on the proximity of location to the investigator. The postal services in the country did not have a good reputation and could not be reliably employed. The questionnaires were accompanied by a covering information letter giving an explanation of the study. Most questionnaires were immediately filled and handed back.

### **3.10 Data analysis**

Questionnaire data were categorized, coded and entered into the computer. Epi-info, Microsoft Excel and SPSS were employed in the analysis of the data. Descriptive statistics were used to describe the demographic data.

### **3.11 Ethical considerations**

This research was approved by the Senate Research Ethics Committee of the University of The Western Cape. Each questionnaire sent out was accompanied by an information letter as well as a letter used to obtain informed consent (Appendix II). Participation was voluntary and participants were at no time forced, coerced or tricked into participating in this study. They were also told that they could leave the study at any point if they wished to. The names of the participants were not used on the questionnaires in order to preserve anonymity and to maintain confidentiality. The questionnaires were recorded using serial numbers.

### **3.12 Conclusions**

The study was a descriptive cross-sectional study on dentists in Lagos. It aimed at a population sample of 200 dentists and utilized a self-administered questionnaire

which was analyzed using Epi-info and Microsoft Excel. Some of the cross-tabulations were also done with the use of SPSS 16 statistical package.



## CHAPTER FOUR: RESULTS

### 4.1 Introduction

This chapter presents the results of this study. The use of tables and charts/graphs is employed to ensure ease of reference. The findings of the study will be discussed under the following headings:

- Response rate;
- Demographic details: age range, gender, years in practice;
- Perceived knowledge on six terms associated with EBP, definitions of three of these terms;
- Attitudes of the dentists
- Barriers associated with prevention of the use of EBP in the practice

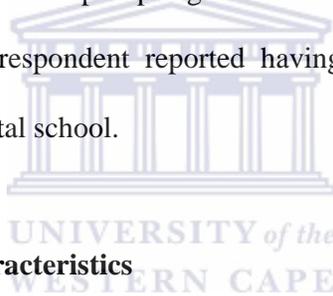


### 4.2 Response rate

A sample size of two hundred was used as this was the proportion of practicing dentists in Lagos that still had a valid address in the National Medical and Dental Council of Nigeria (NMDCN) registry. Two hundred questionnaires were sent out; sixty four were not returned and twenty two were returned either improperly completed or incomplete. A total number of one hundred and fourteen survey questionnaires were used in the data analysis, giving a response rate of 57%.

### 4.3 Demographic characteristics

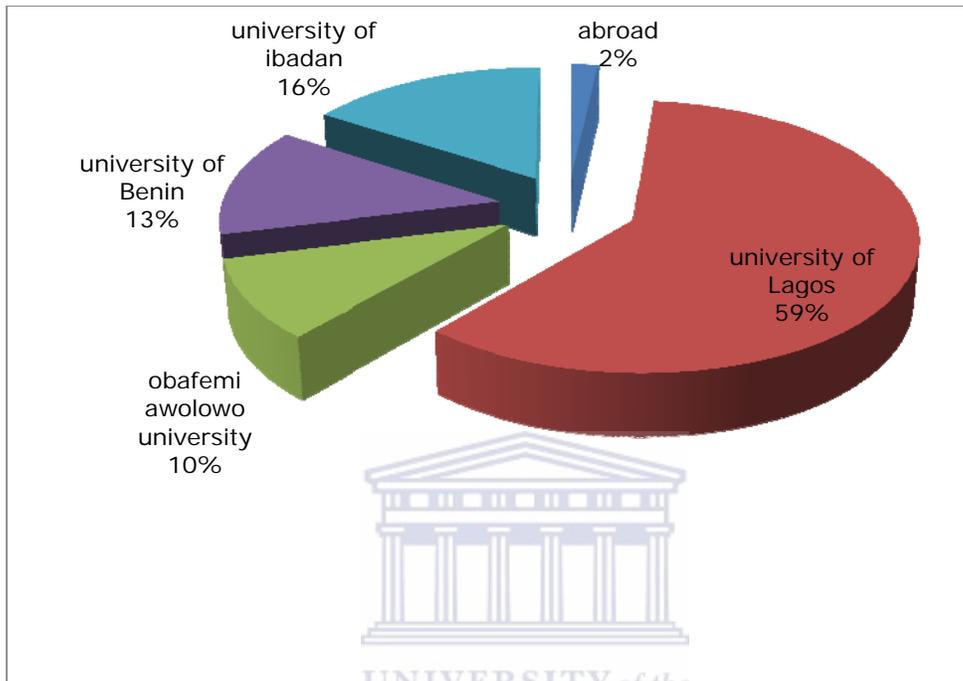
Of the one hundred and fourteen respondents, 54% were female. The majority were aged between 25 and 40 years. More than two thirds (73%) of the respondents were in general practice and 27% in specialist practice, the majority in oral and maxillofacial surgery. Just under 20% were in academia (16.7%), 8.8% were in research, and 9.6% were in administration with 2.6% being in a combination of these fields. Two thirds had been practicing for less than 10 years and the remainder for more than 10 years (Table 2). Most of the respondents reported that they were not given any teaching or instructions on EBD while at dental school. Out of the ten who reported otherwise, 9 had attended a seminar or workshop at postgraduate level where the concept of EBP was mentioned. Only one respondent reported having had prior teaching on the concept of EBP while in dental school.



**Table 2: Demographic characteristics**

<b>GENDER</b>	<b>n</b>	<b>%</b>
Female	62	54
Male	52	46
Total	114	100
<b>AGE</b>		
Less than 25 years	7	6.1
25 – 40 years	79	69.3
41 – 55 years	28	24.6
Total	114	100
<b>YEARS IN PRACTICE</b>		
Less than 2 years	20	17.5
2 – 5 years	20	17.5
5 – 10 years	29	25.4
10 – 15 years	18	15.8
More than 15 years	27	23.7
Total	114	100

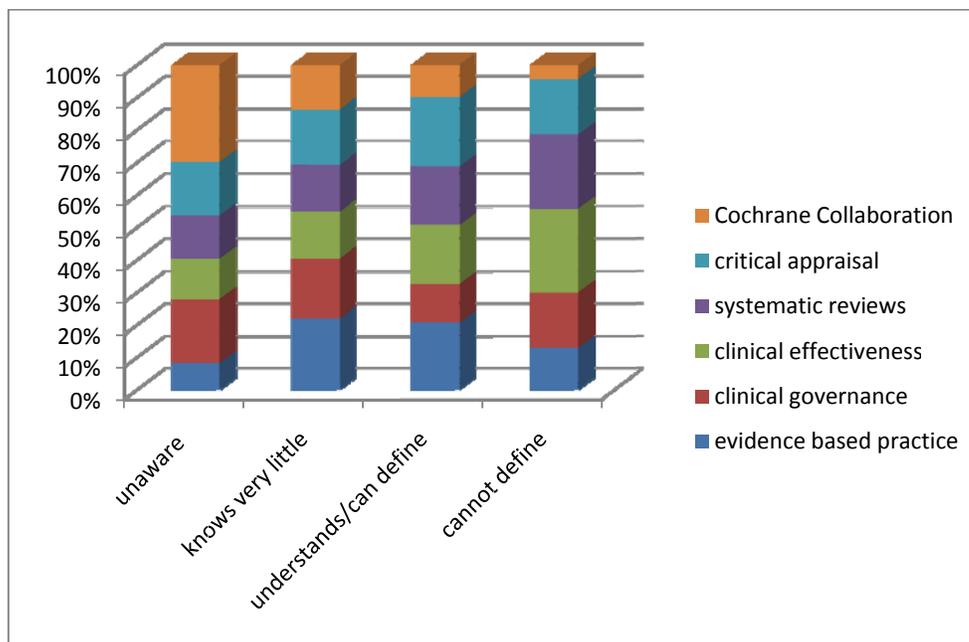
The majority of respondents qualified from a total of 4 dental schools in Nigeria and 2 respondents qualified from schools abroad (Figure 3).



**Figure 3: Universities attended**

#### **4.4 Perceived knowledge of Evidence-based practice**

The perceived knowledge of the following terms was also scored by the respondents: Evidence-based practice, clinical governance, clinical effectiveness, systematic reviews, critical appraisal and The Cochrane Collaboration. The results are displayed in the bar chart below (figure 4).



**Fig 4: Perceived knowledge on terms**

Almost half (48.2%) of the respondents reported that they could define or understand the concept of evidence-based practice; 7.9% reported that they could not define this concept at all; and over half of the respondents (53.9%) reported knowing very little of the concept as well as being aware that there was such a concept at all. Over half (57%) of the respondents reported being unaware of The Cochrane Collaboration; 17.5% reported knowing very little; and only 22.8% of the respondents reported that they had previous knowledge of this collaboration. In addition, while 42.1% of these respondents reported that they could define systematic reviews; about a quarter (25.4%) reported that they were unaware of this terminology at all. As regards critical appraisal, about half of the respondents reported that they understood or could define this concept but 31.6% of the respondents reported being unaware of this concept.

In choosing definitions for the terms evidence-based practice, critical appraisal and systematic review, only 30.7%, 31.6% and 21.1% of the respondents selected the correct terms respectively. The chosen definitions were then compared to the

demographic variables of gender, years of experience and prior teachings on EBP, critical appraisal and systematic review but there was no statistical significance observed (Tables 3, 4 and 5).

**Table 3: comparisons for EBP**

	Evidence based practice	
	Wrong response	Right response
Gender		
Female	39	23
Male	38	14
Total	77	37
	Chi-square test p-value = 0.412	
Years of practice		
<10 years	50	19
>10 years	27	18
Total	97	37
	Chi-square test p-value = 0.236	
Previous teaching		
Had teaching	6	4
Nil teaching	71	33
Total	77	37
	Chi-square test p-value = 0.857	

**Table 4: comparisons for Critical appraisal**

	Critical appraisal	
	Wrong response	Right response
Gender		
Female	32	30
Male	20	32
Total	52	62
	Chi-square test p-value = 0.224	
Years of practice		
<10 years	31	38
>10 years	21	24
Total	42	62
	Chi-square test p-value = 1.00	
Previous teaching		
Had teaching	3	7
Nil teaching	49	55
Total	52	62
	Chi-square test p-value = 0.480	

**Table 5: comparisons for systematic reviews**

	Systematic review	
	Wrong response	Right response
Gender		
Female	39	23
Male	29	23
Total	68	46
	Chi-square test p-value = 0.561	
Years of practice		
<10 years	40	29
>10 years	28	17
Total	68	46
	Chi-square test p-value = 0.797	
Previous teaching		
Had teaching	3	7
Nil teaching	65	39
Total	68	46
	Chi-square test p-value = 0.096	

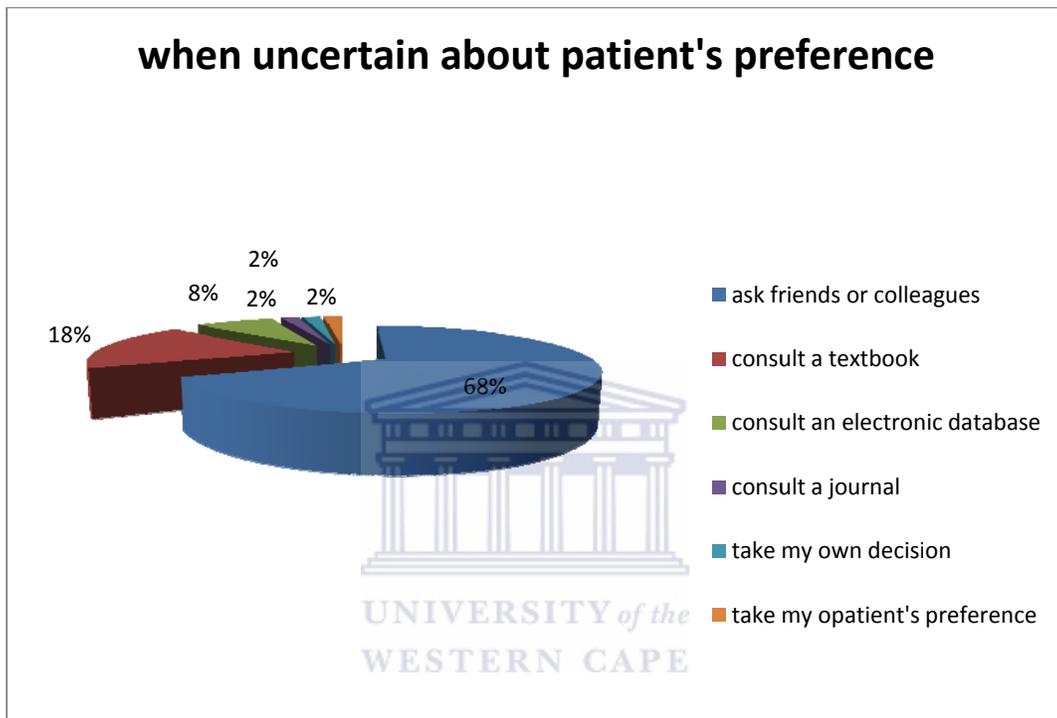
Of the respondents who claimed knowledge of the terms, further statistical tests were used to ascertain those who knew the correct answers of the definitions for EBP, systematic review and critical appraisal; as opposed to those that thought they knew, but gave the incorrect response. It was observed that 32.5% chose the correct definition for EBP, 40.4% for systematic review and 54.4% for critical appraisal. These were statistically significant with a p-value less than 0.01 (Table 6).

**Table 6: Perceptions against correct definitions**

Perceived knowledge	EBP		Critical appraisal		Systemic review	
	Right n	Wrong n	Right n	Wrong n	Right n	Wrong N
Unaware	5	16	24	16	14	22
Cannot define	2	7	9	2	7	9
Knows little	13	18	13	11	5	14
Defines/understands	17	36	13	11	5	14
<b>Total</b>	<b>37</b>	<b>77</b>	<b>62</b>	<b>52</b>	<b>46</b>	<b>68</b>
	p-value < 0.01		p-value < 0.01		p-value = 0.01	

#### 4.5 Attitudes towards EBP

When uncertain about treatment choices, most of the dentists (68.4%), asked friends or colleagues for advice, 18.4% reported having consulted a textbook and 7.9% consulted an electronic database for appropriate and relevant information (Figure 5).



**Figure 5: reactions when unsure**

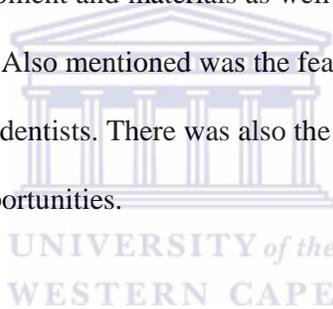
About 46.9% of the respondents who were at least aware of the concept of evidence-based dentistry felt that it was very important. Only 17.7% felt that this concept was not important at all. However, 97.4% of all respondents were interested in finding out more information on evidence-based dentistry with about 42.1% preferring to get this information in the form of a short course.

About 82.3% of these respondents that were aware of this concept also claimed to have changed their practice as a result of reading a research/scientific article at some

time. The highest reason for this change was attributed to the hugely significant results that were reported in the read article. Other reasons given for changing their practices included the quality of the paper, the journal in which the articles were published and the well known authors in the articles. Only 10 respondents reported having ever attended an evidence-based practice course at any time.

#### **4.6 Perceived barriers to EBP**

In listing perceived barriers to the implementation of the concept of EBP in daily clinical practice, most cited a lack of adequate knowledge and awareness of EBP, limited finance, lack of equipment and materials as well as lack of sufficient time due to the large volume of work. Also mentioned was the fear that this concept might have a slow rate of acceptance by dentists. There was also the fact that there seemed to be a lack of adequate training opportunities.

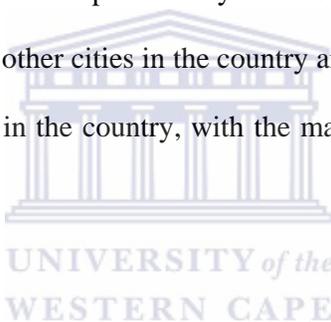


## **CHAPTER FIVE: Discussion**

### **5.1 Introduction**

In this chapter, the findings of this study are highlighted. It begins by discussing the demographic characteristics, and then focuses on the perceived knowledge and attitudes of the dentists towards EBP, as well as mentioning the barriers reported by the participants. References are made to the literature where necessary to compare this study with others in the aspects of similarities and differences.

Lagos is the commercial centre of Nigeria, the most populous country in Africa. The population of dentists in this metropolitan city is mostly concentrated in the urban areas. This is similar to most other cities in the country and the participants came from nearly all the dental schools in the country, with the majority having graduated from the University of Lagos.



Although there are numerous scientific papers on evidence-based practice in relation to the various fields in medicine; very few studies have investigated evidence-based dentistry and the attitudes and knowledge of dentists towards this concept. Research in the medical field has investigated EBP from the perspective of Primary Health Care physicians (Al-Ansary and Khoja, 2002; Amin et al, 2003; Chan and Tenq, 2005; O'Donnell, 2004); Oncologists (Bowman, 1999; Van der Weijden and Timmerman, 2002; Veness et al, 2003); Nurses (Egerod and Hansen, 2005; Melnyk et al, 2004; Sheriff et al, 2007) and Physical therapists (Jette et al, 2003).

Three papers have investigated dental professionals (Rabe, 2007), general dental practitioners (Iqbal and Kenny, 2003) and dentists in both the private and public sector (Laloo, 2003).

## **5.2 Response Rate**

There was a reasonable response to the questionnaires sent out to the various dentists working in Lagos (57%). This average response rate could be as a result of unfamiliarity with the topic and general disinterest/apathy in completing questionnaires. Some of the non-responders that were followed up expressed a lack of knowledge of the concept of EBD and did not want to disclose their ignorance despite assurances from the researcher that all information given would remain anonymous and would be kept strictly confidential. One should also consider the possibility of the questionnaire appearing ambiguous to the dentists as well. However, this response rate was much higher than that of Lalloo (8.4%) but closer to that of Iqbal and Glennly (69.6%).



## **5.3 Socio-Demographic Data**

The demographic characteristics of the responders are similar to that of the results of the list at the Registry of The National Medical and Dental Council of Nigeria. There were more female dentists than male dentists. The age range of 25-40 years was also expected as most practicing dentists are known to fall into this age range. The majority of the participants were graduates of the only dental school in Lagos and this was also an expected result, as most dentists tend to practice in the city of their training.

## **5.4 Attitudes and Knowledge**

The results indicate that the dentists surveyed have little understanding of the terminologies involved in EBP as only about a third of the dentists were able to

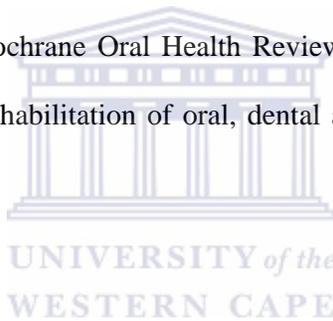
choose the correct definitions for evidence-based practice, critical appraisal and systematic review. The most correctly defined concept was critical appraisal (31.6%), then evidence-based practice (30.7%), followed by systematic review (21.1%). However these results could be said to be unimpressive. Being unable to choose the correct definitions for these terms is a clear indication that the concept of evidence-based dentistry is not well-understood and suggests that it is not practiced as well.

Knowledge was assessed by delineating those respondents who were unaware of the concept of evidence-based dentistry/practice and its associated terminologies; those respondents who could be aware but were unable to define this concept and terminologies; those respondents who were not able to define this concept yet knew a little about it; and those respondents who could adequately understand and define this concept and terminologies. The attitude of the respondents was then determined by assessing the relative importance and possible implementation of this concept to clinical practice for those respondents that were aware of evidence-based dentistry at any level of knowledge, that is those that were not aware of this concept were taken out of the denominator.

A lot more dentists were able to correctly define critical appraisal (fifty-four percent) as opposed to evidence based practice and systematic review. This seemingly greater knowledge of critical appraisal as compared to those other two terminologies could be as a result of most of the respondents working in teaching hospitals where critical appraisal of articles would have been taught at a postgraduate level as part of research methodology. However, though more respondents were able to choose the correct definition of critical appraisal than the other terms, the number of respondents that did not know the correct definition remains significant. Moreover, although systematic

review is considered the gold standard for evidence, majority of the respondents in this study chose the incorrect definition for this term while some reported not having any idea at all of this terminology.

More than a third did not incorporate patient preference in the definition of evidence-based dentistry and a few were unable to choose a definition. Most of the respondents expressed the idea that evidence-based dentistry was merely the practice of evidence and clinical experience without the need to incorporate the preferences of the patient. The majority of the dentists in the study population were also unaware of the Cochrane Collaboration. This is a fundamental issue in the use of evidence-based practice and includes the Cochrane Oral Health Review Group which addresses the prevention, treatment and rehabilitation of oral, dental and craniofacial diseases and disorders.



Conversely, a similar study done in South Africa showed that while 36% of the respondents were able to choose the correct definitions for evidence-based practice, over half of the respondents did for systematic review while more than two-thirds could for critical appraisal (Lalloo, 2003). The study on general dental practitioners in North West England also showed that while only 29% defined evidence-based practice correctly, 49% defined systematic reviews correctly while 68% defined critical appraisal correctly (Iqbal and Glenny, 2002). This indicates that there is a much lower knowledge of this concept among the dentists in Lagos than in South Africa or England. This could be due, in part, to the fact that teaching institutions in those countries have been able to incorporate evidence-based practice into the school curricula, thus, ensuring that students are taught how to inculcate this into clinical

practice right from the undergraduate period. This is yet to be done in the dental schools in Nigeria.

More than half of the respondents asked friends or colleagues when uncertain about a treatment choice. Experts and colleagues have proven to be a quick, cheap and easy-to-use source of information as well as providing guidance, support, affirmation and other psychological benefits that computerized sources cannot provide (Slawson et al, 1997). Textbooks were also consulted by some of the respondents which could be problematic as textbooks are often already out-of-date by the time they are published. Only two participants reported using an electronic database which is usually accurate and up-to-date.

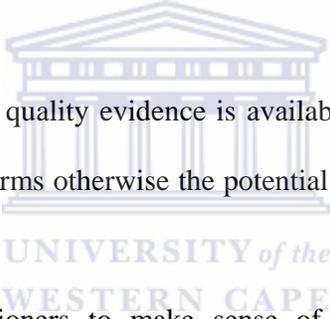
## **5.5 Summary**

The findings of the present study show that there is a need to provide a forum for education on the concept of evidence-based practice as well as to increase access to this concept. The introduction of evidence-based practice/dentistry is certain to bring about significant changes in the current clinical practices employed by majority of the dentists in Lagos, Nigeria. Most of the respondents felt that evidence-based dentistry is important in dental practice and were quite interested in finding out more information on it. In addition, only a very small minority of the respondents had ever gone on a course on evidence-based dentistry/practice.

Most of the dentists, who changed their practices as a result of reading an article, did so as a result of the reporting of significant results, and not on the quality of the paper. It is obvious that critical appraisal skills have to be taught to dentists at both under-

graduate and post-graduate levels in order to teach dentists how to manage information overload, as research must be critically appraised for its scientific merit as regards the study design, sample size, sampling procedures, group comparisons, statistical analyses and validity of conclusions drawn (Shin et al, 1993; Rosenberg and Donald, 1995; Iqbal and Glenny, 2002).

Evidence-based dentistry/practice is a necessary and useful tool in decision making and dentists will require the relevant skills and attitudes to assess quality of information and implement in practice (Dawes, 1996). However, to move the dental profession to a position where routine clinical decisions are evidence-based, there is a need to look at ways to:

- 
- Ensure existing good quality evidence is available to dental practitioners and presented in useful forms otherwise the potential value of that knowledge will never be realised.
  - Assist dental practitioners to make sense of, as well as use up-to-date evidence.
  - Assist dental practitioners to generate new evidence, mainly from patient-based demand.

## CHAPTER SIX: Conclusions and recommendations

### 6.1 Recommendations

In view of the finding of this study, the following recommendations are suggested to educate dentists in Nigeria on the concept of EBP - this can be done by:

1. Formation of evidence-based study clubs can be encouraged at work places between different specialties of healthcare (Sackett et al, 1991). It provides a practical approach for the dissemination of evidence based practice awareness and also helps to facilitate its use in the community (Merijohn, 2008).
2. Ensuring that libraries are kept up-to-date and relevant especially in healthcare. Keeping of libraries can be encouraged in the hospitals as well.
3. Organising workshops and courses on this concept and its significance to general clinical practice should be encouraged.
4. The Nigerian Medical and Dental Council should be try to make it compulsory for practicing medical/dental practitioners to regularly attend courses on EBP as well as to incorporate it into their daily clinical practice.
5. Including EBP teachings and its allied concepts into the curricula of the medical and dental schools should be emphasized so that students are taught the concepts at an undergraduate level as well as how to put this application into daily clinical practice.

6. All teaching hospitals in the country should be encouraged to provide internet access to the hospital and the teaching/clinical staff to encourage better access and easier searches of electronic database and in addition, they should subscribe to relevant current EBP journals.

## **6.2 Conclusions**

Evidence based practice is a process of life-long, self-directed learning in which caring for patients creates the need for clinically important information about diagnosis, therapy and other clinical and health issues and in which practitioners can convert these information needs into answerable questions; can track down with minimum efficiency the best evidence to answer them; clinically appraise that evidence for its validity and usefulness and then be able to integrate the results of this appraisal with their clinical expertise and apply the result in clinical practice.

In conclusion, this study found that while dentists in Lagos, Nigeria seem to be generally aware of the concept of evidence-based dentistry, most of these dentists cannot actually choose the correct definitions for evidence-based dentistry or associated terms. There also seems to be very little use of this concept in clinical practice by majority of the dentists. However, the reflected attitudes towards evidence-based dentistry were good with most of the respondents expressing an interest in having further education in this concept.

Good practitioners' use of both individual clinical expertise and the best available evidence are equally important, and neither alone is enough. Without clinical expertise, practice risks becoming tyrannized by evidence, for even excellent external evidence may be inapplicable to or inappropriate for an individual patient. Without current evidence, practice risks becoming rapidly out of date, to the detriment of patients. Therefore, the importance of evidence-based dentistry as well as the skills needed to apply it in practice need to be developed in Lagos dental community.



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## APPENDIX I

### QUESTIONNAIRE: EVIDENCE BASED DENTISTRY

1. Gender (please cross):

Male	
Female	

2. How old are you?

Less than 25 years	
25-40 years	
41-55 years	
More than 55 years	

3. Which type of work are you generally involved in on a daily basis? (Please tick all the appropriate categories)

General dental practice	
Specialist dental practice, specify .....	
Academic	
Research	
Administration	
Other, Specify.....	

4. How long have you been working in the dental field? (Please tick one)

Less than 2 years	
2 - 5 years	
5 - 10 years	
10 - 15 years	
More than 15 years	

5. At which university did you study dentistry? Year of qualification?

.....

6. Did you get any instruction/teaching on evidence based dentistry while at dental school?

Yes	
No	

If yes, please describe:

.....

7. To assess your current knowledge on evidence based practice, using the key below, please tick honestly one letter for each of the following terms:

<b>Term</b>	<b>Tick one (A, B, C, D, or E) box per term</b>				
	I am unaware of term	I know very little about the term	I would understand the term when it is used in its correct context	I understand the term and may use it myself but I cannot define it	I understand the term and can define it now
Evidence-based practice	A	B	C	D	E
Clinical governance	A	B	C	D	E
Clinical effectiveness	A	B	C	D	E
Systematic reviews	A	B	C	D	E
Critical appraisal	A	B	C	D	E
Cochrane Collaboration	A	B	C	D	E

8. Which of the following do you think is the most appropriate definition for each term (please tick only one for each term):

**Evidence based practice:**

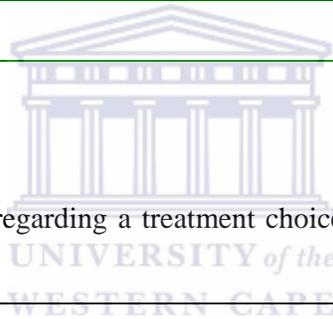
Practice based entirely on good quality research evidence	
Practice based entirely on good quality clinical experience	
Practice that incorporates evidence, clinical experience and patient preference	
Practice that incorporates research evidence and clinical expertise	
Don't know	

**Systematic review:**

A review that uses meta-analytical techniques to pool data from a number of studies	
A review that uses explicit methods to identify, select and appraise relevant research	
A review looking at the effectiveness of an intervention	
A review of randomized control trials in a particular field	
Don't know	

**Critical appraisal:**

Process of assessing and interpreting evidence by systematically considering validity, results and relevance	
Process of determining bias in the results of a published paper	
Peer review of a clinical procedure	
The assessment of the statistical techniques used within a study	
Don't know	



9. When you are uncertain regarding a treatment choice, what do you do? (tick one only please):

Consult a textbook	
Consult a journal	
Consult an electronic database (please specify) .....	
Ask friends or colleagues	
Take patient's preference	
Make decision on your own	
Other .....	

10. On a scale of 1-5, how important do you think evidence based dentistry is in general dental practice (place circle at your choice):

**VERY IMPORTANT**      1   2      3   4      5      **NOT IMPORTANT**

11. Are you interested in finding out more information on evidence based practice?

Yes	
No	

12. Have you ever changed your practice as a result of reading a research/scientific article?

Yes	
No	

13. If yes, what was it about the article that made you change your practice? (Please tick one or more):

Hugely significant results	
Quality of the paper	
The journal in which it was published	
Well known authors	
Other (please specify) ..... ..... ..... .....	

14. Have you ever attended an evidence based practice course?

Yes	
No	

15. Please note any barriers that you feel would prevent you from using evidence based practice in your clinical practice:

.....  
....

.....  
....  
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.....  
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## APPENDIX II

### INFORMATION LETTER

Dear Colleague,

I am a Masters student from the Department of Community Oral Dentistry, Faculty of Dentistry, University of The Western Cape, South Africa. I am currently investigating the knowledge and attitudes of dentists towards evidence based dentistry.

Evidence based practice (EBP) is a concept which is accepted worldwide and has become important in clinical practice. I am hoping that this research will enable us to know the amount of knowledge and attitudes that dentists have towards it with a view to causing an increase in its awareness and use.

You have been chosen to represent the population of dentists in Lagos State so it is important that you fully collaborate answering the enclosed questionnaire and return it to us.

The probability of using this study to influence future dental and medical schools curricula is high; therefore, your participation is essential for the success of this research and to the improvement of the clinical practice of dentists in this country as a whole.

I would like to thank you in advance for your forthcoming co-operation.

Yours Sincerely,

.....

Dr (Mrs.) Olusola Adeoye

**APPENDIX III**

**INFORMED CONSENT FORM**

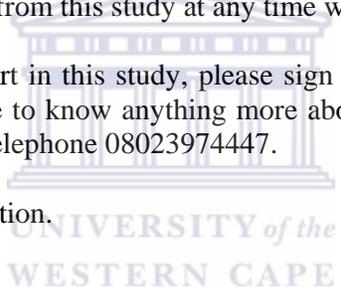
Dear Dr .....

I am from the Department of Community Dentistry at The University of Western Cape, South Africa. As you know from the information letter sent to you, I am doing a study to ascertain the knowledge and attitudes of dentists towards Evidence based dentistry in Lagos, Nigeria. I need you to fill out the enclosed questionnaire and return to us.

All information gathered in this study will be treated as strictly confidential. No one will have access to this information except the researcher. Neither your name nor anything that identifies you will be used in any reports of this study. All information collected will be maintained and stored in such a way as to keep it as confidential as possible. You can withdraw from this study at any time without any penalties.

If you would like to take part in this study, please sign the underwritten part of this letter. If you would also like to know anything more about this study, please contact Dr Sola Adeoye on mobile telephone 08023974447.

Thank you for your co-operation.



Yours sincerely,

.....  
Dr Sola Adeoye

.....  
.....  
I understand what will be required of me to take part in this study. I understand that I can withdraw from this study without a reason at any time.

Name:.....

(Print in block letters)

(Signature)

Telephone number: .....

Date: .....

Witness: .....

APPENDIX IV

ALGORITHM IN STUDY DESIGN TYPES

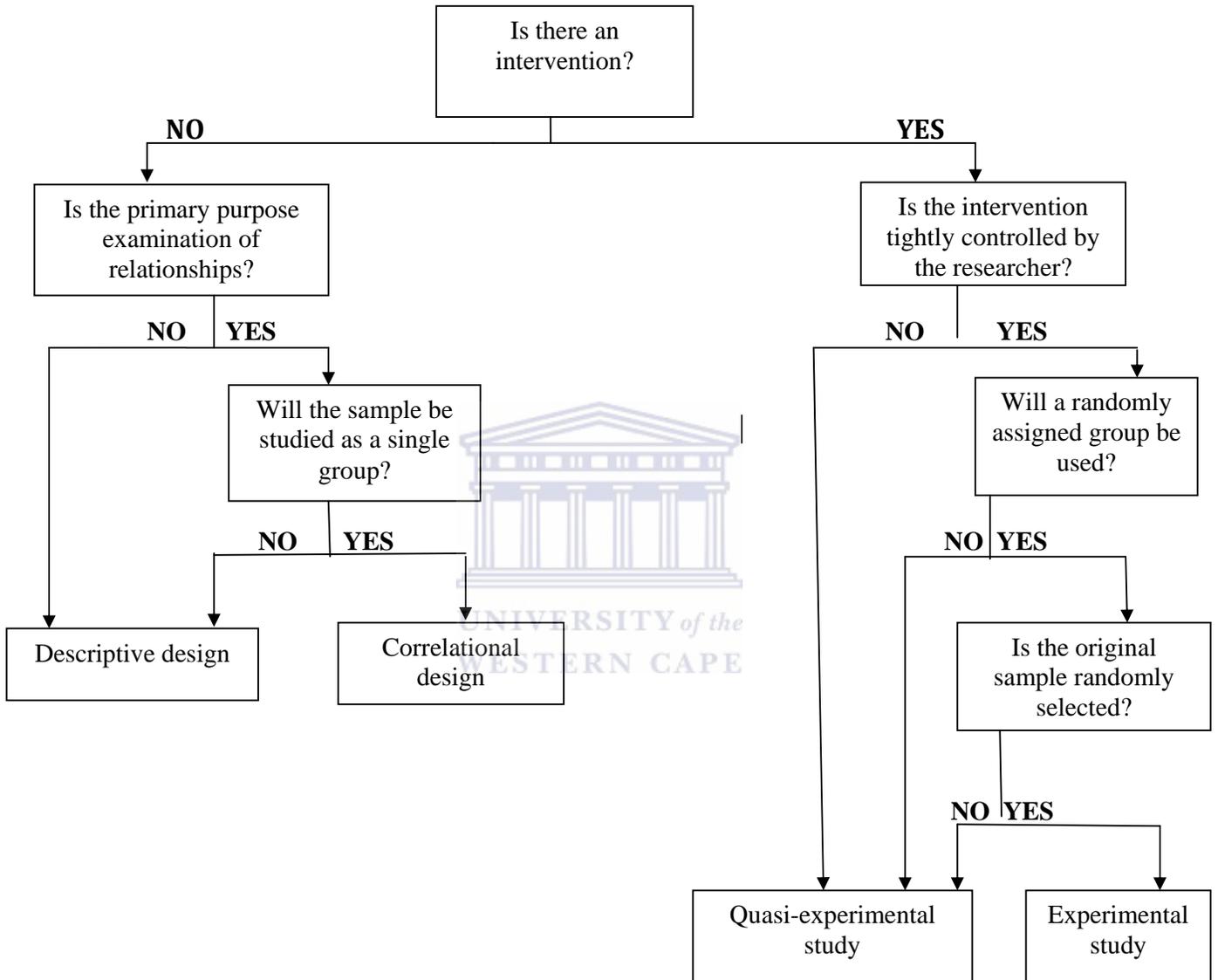


Figure 2: Algorithm used for determining the type of study design (adapted from Burns and Grove, 2003:201)