

**KNOWLEDGE, ATTITUDE AND PRACTICE FOR
MANAGEMENT OF DENTINE HYPERSENSITIVITY
AMONG EGYPTIAN AND NIGERIAN DENTISTS: A CROSS-
SECTIONAL COMPARATIVE STUDY**

Protocol submitted to
Faculty of Dentistry, Cairo University for partial fulfilment of the requirements
for **Masters Degree in Restorative and Aesthetic Dentistry**

By

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2024

CONS 1-3-5 Evaluate and compare different preventive approaches in
managing dental non-carious lesions.

Supervisors Signature

Head of Department's Signature

1- Prof. Dr. Iman ElSayad

Iman ElSayad

2- Dr. Alaa Fathi Abdelsalam

Alaa Fathi

Submitted: 29th June, 2024

Approved: 4th July, 2024

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<u>Scientific Committee</u>		
Primary Reviewer	Signature	Date
Secondary Reviewer	Signature	Date
1. Prof. Elham Fawzi		
2. Prof. Asmaa Yasin		

I. ADMINISTRATIVE INFORMATION

1. Title:

Knowledge, attitude and practice for management of dentine hypersensitivity among Egyptian and Nigerian dentist: a cross-sectional comparative study

2. Protocol Registration:

Yet to be registered

3. Protocol Version

Version 1

4. Funding

The research will be self-funded.

5. Roles and Responsibilities:

A. Muhammad Adam Modu

Affiliations: BDS (University of Maiduguri, Borno State, Nigeria. 2012)
Dental Officer, Borno State Dental Hospital, Maiduguri Borno State. Nigeria

Role: Principal Researcher / Master's Degree Candidate

Responsibilities:

- Propose potential research topics to supervisors
- Conduct Literature review
- Develop PICO for the study
- Develop Research Protocol
- Conduct research (Data collection)
- Present collected data to statistician for analysis
- Present completed work to supervisors
- Submit completed work to Faculty Scientific Committee
- Submit completed and approved work for publication in academic journal

B. Prof. Dr. Iman ElSayad

Affiliations: Professor of Conservative Dentistry, Faculty of Dentistry
Cairo University

Role: Main Supervisor

Responsibilities:

- Guiding the candidate throughout the thesis
- Mentoring

- Critiquing work
- Identifying best practices and options for the research

C. Dr. Alaa Fathi Abdelsalam

Affiliations: Lecturer of Conservative Dentistry, Faculty of Dentistry
Cairo University

Role: Co Supervisor

Responsibilities:

- Guiding the candidate throughout the thesis
- Mentoring
- Critiquing work
- Identifying best practices and options for the research

D. Scientific Committee

Affiliations: Conservative Dentistry Department, Faculty of Dentistry
Cairo University

Role: Steering Committee

Responsibilities:

- Ensures that the research idea follows the research plan of the department.
- Review and Approve PICO
- Review and Approve Protocol
- Review completed thesis

E. Medical Biostatistics Unit (MBU)

Affiliations: Conservative Dentistry Department, Faculty of Dentistry
Cairo University

Role: Steering Committee

Responsibilities:

- Sample Size Calculation

F. Research Ethics Committee (REC)

Affiliations: Conservative Dentistry Department, Faculty of Dentistry
Cairo University

Role: Steering Committee

Responsibilities:

- Ensures the study/trial meets ethical requirements prior start
- Approves secondary protocol

G. Department Council Board

Affiliations: Conservative Dentistry Department, Faculty of Dentistry
Cairo University

Role: Steering Committee

Responsibilities:

- Approves secondary protocol prior to start of study/trial
- Approves completed thesis after review by Scientific Committee

II. INTRODUCTION

6a. Scientific Background

Dentine Hypersensitivity (DH) was described as an “enigma” in 1980 because it is readily observed yet quite puzzling to understand (**Johnson, Zulqar-Nain et al. 1982**). Pashley defined Dentine Hypersensitivity as “a sharp, transient, well-localized pain in response to tactile, thermal, evaporative, or osmotic stimuli, which does not occur spontaneously and does not persist after removal of the stimuli” (**Pashley 1994**). This definition was modified at a conference of The Canadian advisory on Dentine Hypersensitivity to “a distinctive short sharp pain arising from exposed dentine characteristically in response to an array of stimuli including thermal, tactile, evaporative, osmotic or chemical which cannot be attributed to any other form of dental defect or disease”(Gillam 2013). Diagnosis of DH is usually reached through exclusion of conditions that present with similar symptoms(Davari, Ataei et al. 2013).

6b. Review of Literature

Several recent studies report that dentists around the world are unsure about the etiology, diagnosis, and management of dentine hypersensitivity(DH)(Pereira, Gillam et al. 2018, Exarchou, Betsani et al. 2019). DH is associated with dentine exposure, as open dentinal tubules expose the pulp to external stimuli(Absi, Addy et al. 1987). The specifics of pathogenesis especially pain transduction has not been clearly elucidated. Although the hydrodynamic theory, which states that fluids within the exposed dentinal tubules move in response to stimuli to activate a baroreceptor, proposed by Branslohm(**Brännström 1964**) has been the most widely accepted, other theories include The Odontoblast Transduction Theory (Frank, 1968) and The Neural Theory (Frank & Steuer, 1988). These theories have recently been challenged by novel evidence suggesting the involvement of odontoblasts in mechanism of pain transduction(**Sole-Magdalena, Martinez-Alonso et al. 2018**).

The DH has a prevalence of 3 – 98% with a global distribution. It is mostly found among young people and female gender (Dam et al., 2022). However, Doubts have been reported in the actual prevalence of dentine hypersensitivity with method of investigation, sample selection, location and clinical environment observed as potential factors that have an influence.(Pereira, Gillam et al. 2018)

The management of DH is equally shrouded in complexities due to various Over-The - Counter (OTC) and In-Office products and procedures claiming effectiveness. Published guidelines suggests 3 major strategies for the management of DH, patient education and behaviour modification; non-invasive treatments for occluding dentin tubules and relieving pain associated with DH; and restorative or surgical treatments for the management of DH along with restoration of associated tooth structure and soft tissue loss (Liu et al., 2020)

Despite published guidelines for DH management, dentists around the world are reported to use varying methods, occasionally combining different methods in the management of DH (**Gillam 2017**). A Senegalese publication reported the use of desensitizing toothpaste, In-Office fluoride application and endodontic treatment (Benoist et al., 2014). In India, Pereira et al reported the use of desensitizing toothpaste, patient education and dental restorations (**Pereira, Gillam et al. 2018**) while in USA, desensitizing toothpaste, fluoride varnish application and patient education (**Kopycka-Kedzierawski, Meyerowitz et al. 2017**) and in Greece, dentists favoured patient education, desensitizing toothpaste, in-office fluoride application and dental restoration (**Exarchou, Betsani et al. 2019**)

6c. Specific Objectives

Aims of the Study:

The study aims to assess and compare the knowledge, attitudes, and practices of Egyptian and Nigerian dentists on etiology, diagnosis, and management of DH. Also to identify if the level of education, culture and environment have influences on the diagnosis and management of DH.

Rationale

Diagnosis of dentin hypersensitivity is a challenge faced by dentists with different educational levels and the condition might be overlooked and not properly managed leading to persistent pain and poor quality of life for patients. Till now, the literature lacks rigorous guidelines for systematic diagnosis, prevention, categorization of severity and management of dentin hypersensitivity. This study intends to spot the light on the current approaches adopted by dentists in Egypt and Nigeria towards diagnosis and management of Dentine Hypersensitivity. It also intends to compare the findings and identify the influence of geographic location, different educational levels, and degree of dental education in the management of Dentine Hypersensitivity.

III. METHODS

A. Study Design and Setting

7. Study Design:

Comparative Cross Sectional study

8. Setting:

An electronic Self-administered questionnaire using Google forms to be administered over a period of 3 months with the 2024/2025 academic year.

B. Participants

9. Eligibility Criteria and Selection Method

Dentists (at various levels of education and years of practice) practicing in Egypt and Nigeria who will choose to participate in the study.

10. Matching Criteria and Allocation Ratio:

Not applicable in Cross Sectional Study

C. Variables

11. Details about variables:

POTS

- **Population (P):** Dentists (at various levels of education and years of practice) practicing in Egypt and Nigeria
- **Outcomes (O):**
 - **Primary Outcome:** Awareness of appropriate diagnosis and management of DH among practicing dentists in Egypt and Nigeria
 - **Secondary Outcome:** Comparison of Knowledge Attitudes and Practices of dentists in Egypt and Nigeria in the management of DH
 - **Tertiary Outcome:** In Each geographic location, comparison of Knowledge, Attitude and Practices among dentists of different educational levels.

Prioritization of Outcome	Outcome	Measurement Method
Primary Outcome	Awareness of appropriate diagnosis and management of DH among practicing dentists in Egypt and Nigeria	Validated Questionnaire used in the study by (Gillam et al., 2019.)
Secondary Outcome	Comparison of Knowledge Attitudes and Practices of dentists in Egypt and Nigeria in the management of DH	Statistical analysis using Chi Square or McNamara Test
Tertiary Outcome	Comparison of Knowledge, Attitude and Practices among dentists of different educational levels	

12. Data Source and Management:

Data would be sourced from willing participants via and electronic self-administered questionnaire utilizing Google forms platform. This service is equipped with cloud storage and data security as only authorized persons have access to complied data.

13. Address Potential Source of Bias:

1. Selection Bias:

Participants would be approached via specific platforms for practicing dentists in Egypt and Nigeria.

2. Information Bias:

The questionnaire utilises easily understood language and avoids the use or jargons or other complicated terms.

D. Study Size

14. Study Size

To be determined after Primary Protocol Review

E. Quantitative Variables

15. Handling of Quantitative Variables in The Analysis:

1. Continuous Variables would be expressed in Mean and Standard Deviation (SD)
2. Categorical Variables would be expressed in Percentages (%)

F. Statistical Methods

16. Statistical analysis of data would be carried out by Statistical Package for Social Sciences (SPSS) IBM. Categorical data would be compared between groups and subgroups using ChiSquare or McNemara tests.

IV. ETHICS AND DISSEMINATION

17a. Research Ethics Approval:

Protocol would be reviewed by the Research Ethics Committee of the department for approval prior to start of study.

17b. Protocol Amendments:

All modifications to the protocol in part or whole, which may have an impact on the conduct of the study, study design, sample sizes, study procedures, or significant administrative aspects will be agreed upon by the scientific committee prior to starting the study.

17c. Informed Consent:

Informed consent would be sought in the first page of the electronic questionnaire. Willing participants would proceed to the questionnaire while those who choose not to participate would exit the questionnaire.

17d. Confidentiality:

Information would be sought anonymously. However, email or IP address would be limited to one access to the questionnaire to limit multiple data entry.

17e. Declaration of Interest:

There is no conflict of interest in this study.

17f. Access to Data:

Only principal researcher, supervisors and statistician would have access to collected data unless otherwise advised or requested by Steering Committees.

17g. Dissemination Policy:

1. Results of the study will be available in the department database
2. Copies of the thesis will be available at the department library and at the official site of The Egyptian Universities Libraries Consortium.
3. Final report of the trial will be published in international journals.

V. BUDGET

18. Estimated Research Budget:

This research is estimated to cost EGP 10,000 – 15,000.

VI. APPENDICES

19. Informed Consent:

KNOWLEDGE, ATTITUDE AND PRACTICE FOR MANAGEMENT OF DENTINE HYPERSENSITIVITY AMONG EGYPTIAN AND NIGERIAN DENTIST: A CROSS-SECTIONAL COMPARATIVE STUDY

Study Number:
Consent Form

* Indicates required question

1. Sir/Ma *

You are requested to participate in the above named study conducted between Conservative Dentistry Department of Cairo University Egypt and Borno State Dental Hospital Nigeria.

This study aims to assess and compare the knowledge, attitudes, and practices of Egyptian and Nigerian dentists on etiology, diagnosis, and management of DH. Also to identify if level of education, culture and environment have influence in the diagnosis and management of Dentine Hypersensitivity.

Your participation is voluntary and you reserve the right not to complete this survey without giving any reason. be assured that your responses would be kept anonymous.

if you have any queries please contact
Dr. Muhammad Adam Modu
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Mark only one oval.

- ☐ Agree to participate
☐ Disagree to participate

VII. REFERENCES

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