

**Comparing the effect of the online oral health education to the conventional method on the knowledge and practice of personal oral hygiene in a group of primary school children in Egypt.**

**A randomized controlled trial**

**Thesis Protocol**

Submitted to the Department of Paediatric Dentistry and Dental Public Health Faculty of Dentistry, Ain Shams University

**NCT number: NCT05570500**

**Date of document: November 21st, 2020**

## **1. Background:**

Caries is one of the greatest challenges facing the health system in Egypt, and as of the past few years studies have shown that Egyptian children have many dental problems, including: untreated dental caries, forms of periodontal diseases and even irregular tooth brushing habits. The latter being mainly due to the ignorance of children of understanding the correct technique of tooth brushing, which may have been due to the lack of dental awareness that these children receive, either by dental professionals who should offer this service regularly [1] or due to poor parental awareness of the factors that affect the oral health status of their children [2].

Oral health (OH) education has proven to play a significant role in improving the knowledge, attitude and behaviour of children [3]. Implementing Oral health education in schools tend to improve the children's OH-related quality of life because engaging children at younger age regarding their habits, practices or knowledge tends to stay with them till adolescence then to adulthood [4].

In the year 2019 the Covid crisis has globally struck, being recognised by the WHO as a pandemic on March 11<sup>th</sup>, 2020 [5] the world was set in motion for various changes in the daily life of every man, woman and child. Covid 19, as defined by the WHO, is an infectious disease that spreads through droplets of saliva or discharge from the nose when the infected person sneezes or coughs, and thus the best way to avoid being infected by this disease is through some precautions that include social distancing of at least 1-2 meters between each person [6]. In Egypt, 75% of school children are usually very crowded in classrooms, which sometimes might reach 40 students per classroom or even more in certain schools [7]. Such numbers pose a great challenge to fulfilling the Covid precautions set by the WHO.

Luckily, we are in an era of technological advancement and the need for the electronic communication has risen to its peak. Recently, Egyptian ministry of education had applied the online education system as a must have in all schools and even released an online governmental portal which provides E-learning service, which in turn, would allow the students to remain at home while receiving their education [8]. Oral health education, which is considered as a part of the health promoting schools according to the WHO [9], has been known to be effective at

direct contact between the educator and the recipients [10], and many modifications in the way of delivering knowledge to children has been improved to include games, drama scenes and flash cards [11]. The challenge nowadays is that with the Covid outbreak the need for more distancing and less direct contact between people has increased, and the conventional methods of health education might deem unfit towards the global direction to control the Covid outbreak.

The online methods of delivering oral health education has been shown to be effective using Motivational Interviewing (MI) [12]. MI, defined by Miller & Rollnick (2002) as a technique based on evidence, centred on the individual, and individually-tailored. This technique is meant to prepare the participant for change by motivating and promoting the participant's solutions to the inconsistency of decisions towards self-improvement [13]. Few studies have engaged young adolescents through MI [14], yet with young children the MI results are still under investigation [15]. With the Covid outbreak still on the loose, oral health educators must follow the guidelines presented by the WHO to prevent its spreading all the while providing oral health education service to school children. Hence finding ways to implement the oral health education into the online education system is challenging yet an important step to address young children in these hard times, in order to help them understand how to take care of their oral hygiene while keeping them, their families and their environment safe from harm.

2. **Research question:** is the online method of delivering oral health knowledge to primary school children is as effective as the conventional methods regarding their knowledge and practice towards personal oral hygiene?

**Framing the research question - PICOTS:**

P (participants): Primary school children of ages 7-9 years old in Egypt.

I (intervention): Online oral health education.

C (comparator): Conventional oral health education.

O (primary outcome): Improving the oral hygiene knowledge and practice in primary school children.

T (Time of follow up): Every 3 months interval for one academic year.

S (Study settings): 2 schools will be chosen (Al Rehab city and Al-Sherook city). The rationale behind choosing those two schools is to increase the sample size. Classrooms of grade two and grade three stages inside each school will be divided blindly into two groups; one receives the online oral health education while the other receives the conventional oral health education. Both schools had received simplified conventional oral health education service two years ago. The participants were of 5-6 years of age by then.

**3. Aim:**

The aim of this study is to compare the results of the comparison between the online oral health education and conventional oral health education methods in terms of their effectiveness towards improving the knowledge and practice of oral hygiene in primary school children in Egypt.

**Objectives:**

➤ **Primary objective :**

- To compare the online oral health education to the conventional oral health education regarding :
  1. Oral health knowledge of primary school children of 7-9 years old.
  2. Assessing oral hygiene measures practice in primary school children of 7-9 years old.

➤ **Secondary objective :**

Is to evaluate the efficacy of a new oral health education method to deliver health information to target population

**Study hypothesis:****▪ Null hypothesis:**

No difference between the effectiveness of online oral health education and conventional oral health education methods on oral health knowledge and oral hygiene practice of primary school children

**4. Methods:**

- **Study design:** Randomized controlled trial (RCT)
- **Study settings:** 2 schools will be chosen (Al Rehab city and Al-Sherook city). The rationale behind choosing those two schools is to increase the sample size. Classrooms of grade three and grade four stages inside each school will be divided blindly into two groups; one receives the online oral health education while the other receives the conventional oral health education. Both schools had received simplified conventional oral health education service two years ago. The participants were of 5-6 years of age by then.
- **Study population:** Grade three and grade four Egyptian students aged 7-9 years old situated in 2 different schools related to Futures Educational Systems in Egypt.

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> <li>• 2<sup>nd</sup> and 3<sup>rd</sup> grade Egyptian students.</li> <li>• Average of age 7-9 years old.</li> <li>• Currently residing in Egypt.</li> <li>• Both male and female students.</li> </ul>	<ul style="list-style-type: none"> <li>• Those who do not consent to participate in the study.</li> <li>• Those who cannot speak English or Arabic.</li> <li>• Non-Egyptians.</li> </ul>

**Sampling:****Type of sample:**

A convenient sample will be recruited to participate in the study.

**Recruitment:**

Recruitment will start in September 2022 through sending the children's parents papers of consent via their channel books during the school day.

### **Sample size calculation:**

Sample size estimation was based on testing the change in KAP before and after each educational intervention. The predicted sample size was found to be 265 children for each intervention, by assuming an  $\alpha$  level of 0.05,  $\beta$  level of 0.1 (power = 90%), allocation ratio of 1:1, to detect an effect size  $d$  of 0.2. After adding a 20% increase to adjust for dropout, the final sample size was 318 children for each intervention (total sample size = 636 children). Sample size calculation was performed using G\*Power software version 3.1.9.4 for MS Windows, Franz Faul, Kiel University, Germany.

### **Study procedures:**

- 1) A literature review was conducted using electronic search engines like PubMed and Google scholar to identify studies assessing the effect of online and conventional oral health education on improving the oral health knowledge and practice in school children regarding their oral hygiene.
- 2) After reviewing many articles, a questionnaire was selected to assess the above outcomes. The questionnaire was chosen according to availability and effectiveness, and it was modified by simplifying and deselecting some of the questions that aren't related to the age group to better suit the age group of question.
- 3) A piloting session will be done on two separate classes, one from each educational stage to assess the modified questionnaire in terms of ease of understanding and comprehension to the participants. Those two classes will not be included in the final results of the study.
- 4) The questionnaire will be distributed before conducting the oral health education sessions (both online and conventional) to assess the pre-session knowledge and practice of the participants.
- 5) All questionnaires are self-administered but a well-trained interviewer will be available offering assistance in understanding the questionnaires if needed.
- 6) 3<sup>rd</sup> and 4<sup>th</sup> grade classrooms in each school will be randomly and evenly allocated to the interventions included in the study using computer-generated randomization application.
- 7) The researcher will be blinded of the classrooms of each school during the randomization process.
- 8) The researcher will be blinded of the names of the participants or their personal data during and after the questionnaire session.
- 9) After the questionnaire is finished, the researcher will then begin his educational lesson using electronic aids like a projector inside the classrooms or using Microsoft teams during the online session.
- 10) Another questionnaire will be distributed after the educational lesson for both session types to assess the post-session knowledge and practice in the participants.
- 11) A comparison will be carried out for the results of each question in both questionnaires and for the final results of both questionnaires to determine the statistical significance of both results.
- 12) These statistical results will be done by a separate statistician outside the study field and blinded from all the procedures.

**Ethical consideration:**

All participants' parents will be briefed about the nature of the study and an **informed consent form** will be delivered to them both in Arabic and English languages for their approval to include their children's data in the study. This informed consent will be available and approved by the Ethical Committee of Faculty of Dentistry, Ain Shams University. There will also be an assent from each child to freely accept or decline joining the study prior to the questionnaire. Parents and/or children will be given the complete freedom to complete or quit the study whenever they want. Also, they will be assured of the confidentiality of their personal information and anonymity. The participants who won't participate in the study or are excluded will receive the oral health education in both methods (online and conventional) nonetheless as it is ethically not appropriate for one person to receive the health education service while the other doesn't in the same working / studying space.

**5. Data management:**

Data for each classroom will be collected through laptops (Google forms) or printed questionnaires, according to the nature of the session delivered. Results will be monitored and inserted into an excel sheet.

**6. Statistical analysis:**

Statistical analysis will be done by a professional statistician after the gathering of all data is complete.

## 7. Timeline:

	Oct. 20	Nov 20	Dec 20	Jan 21	Feb 21	March 21	April 21	May 21	June 21	July 21	Aug 21	Sep 21	Oct 21	Nov 21
Literature review	Red	Red	Red											
Protocol writing		Light Purple	Light Purple											
Submission to Ethics Committee			Orange	Orange	Orange									
Data collection and data entry				Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue			
Statistical analysis												Light Tan	Light Tan	
Writing manuscript and editing												Dark Red	Dark Red	
Submission for Publication														Orange

## 8. Funding of the study:

Until the time of the submission of the proposal no Funds were available.

## References

- 1- WHO, EMRO (2014, September 3). WHO EMRO | Egypt releases results of epidemiological study on oral health status. Available from: <http://www.emro.who.int/egy/egypt-events/results-of-epidemiological-study-on-oral-health-status-released.html>
- 2- Mohamed, yomna. (2020). Assessment of the Knowledge and Awareness Among Egyptian Parents in Relation To Oral Health Status of Their Children. *Egyptian Dental Journal*, 66(2), 737–746. <https://doi.org/10.21608/edj.2020.25196.1058>
- 3- Gambhir RS, Sohi RK, Nanda T, Sawhney GS, Setia S. Impact of school based oral health education programmes in India: a systematic review. *J Clin Diagn Res*. 2013;7(12):3107-3110. doi:10.7860/JCDR/2013/6212.3718
- 4- Alsumait A, ElSalhy M, Amin M. Long-Term Effects of School-Based Oral Health Program on Oral Health Knowledge and Practices and Oral Health-Related Quality of Life. *Med Princ Pract*. 2015;24(4):362-368. doi:10.1159/000430096
- 5- WHO (2020) Timeline: WHO's COVID-19 response. Available from: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline?gclid=Cj0KCQjwufn8BRCwARIsAKzP6964UmFJZqWX9mc0tE7Fu5DVDnlzOskefX9AJAtBy8zOdgnZqtCPK3gaAoUhEALw\\_wcB](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/interactive-timeline?gclid=Cj0KCQjwufn8BRCwARIsAKzP6964UmFJZqWX9mc0tE7Fu5DVDnlzOskefX9AJAtBy8zOdgnZqtCPK3gaAoUhEALw_wcB)
- 6- WHO (2020) health topics / coronavirus. Available from: [https://www.who.int/health-topics/coronavirus#tab=tab\\_1](https://www.who.int/health-topics/coronavirus#tab=tab_1)
- 7- Ayoub, G. M. (2019). *Teachers' experiences in overcrowded classrooms in Egyptian public schools*.
- 8- Egyptian ministry of education online portal. Available from: <http://portal.moe.gov.eg/eng/Pages/default.aspx#>
- 9- Kwan, S. Y. L., Petersen, P. E., Pine, C. M., & Borutta, A. (2005). Bull World Health Organ. *Health-Promoting Schools: An Opportunity for Oral Health Promotion*, 83(9), 677–685.
- 10- Angelopoulou, M. V., Kavvadia, K., Taoufik, K., & Oulis, C. J. (2015). Comparative clinical study testing the effectiveness of school based oral health education using experiential learning or traditional lecturing in 10year-old children. *BMC Oral Health*, 15(1), 1–7. <https://doi.org/10.1186/s12903-015-0036-4>
- 11- GeethaPriya, P. R., Asokan, S., Kandaswamy, D., & Shyam, S. (2020). Impact of different modes of school dental health education on oral health-related knowledge, attitude and practice behaviour: an interventional study. *European Archives of Paediatric Dentistry*, 21(3), 347–354. <https://doi.org/10.1007/s40368-019-00489-7>
- 12- Cascaes, A. M., Bielemann, R. M., Clark, V. L., & Barros, A. J. D. (2014). Effectiveness of motivational interviewing at improving oral health: A systematic review. *Revista de Saude Publica*, 48(1), 142–153. <https://doi.org/10.1590/S0034-8910.2014048004616>
- 13- Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change* (2nd ed.). The Guilford Press.
- 14- Gao X, Lo EC, McGrath C, Ho SM. Face-to-face individual counseling and online group motivational interviewing in improving oral health: study protocol for a randomized controlled trial. *Trials*. 2015;16:416. Published 2015 Sep 18. doi:10.1186/s13063-015-0946-0
- 15- Acharya, Sonu. (2019). Motivational Interviewing in Pediatric Dentistry: Role in Behavior Management. *Journal of South Asian Association of Pediatric Dentistry*. 2. 69-72. 10.5005/jp-journals-10077-3030.