

# **Xylitol Use during Pregnancy and Lactation to Prevent Early Childhood Caries**

Thesis

Systematic review

Submitted to The Department of Pediatric Dentistry and

Dental Public Health

Faculty of Dentistry

Ain shams University

In

Partial fulfillment of the requirements of the Master Degree

In Pediatric Dentistry

By

**Reem Mahmoud Abdel-Kader Awad**

B.D.S, Faculty of Dentistry, Ain shams University 2011

**2017**



# **SUPERVISORS**

## **Prof. Noha Samir Kabil**

Professor of Pediatric Dentistry  
Pediatric Dentistry and Dental Public Health  
Faculty of Dentistry  
Ain Shams University

## **Prof. Ashraf Fawzy Nabhan**

Professor of Obstetrics & Gynecology, Faculty of Medicine,  
Ain Shams University  
  
Vice Chairman, Regional Research Committee for Africa and &  
Eastern Mediterranean, WHO  
  
Associate Editor at Cochrane Pregnancy & Childbirth



بسم الله الرحمن الرحيم

﴿يَرْفَعُ اللَّهُ الَّذِينَ آمَنُوا مِنْكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ﴾

صدق الله العظيم

(سورة المجادلة 11 )

**In the name of God, the Merciful, the Compassionate**

**“Allah will raise up to (suitable)ranks and degrees,  
those of you who believe and who have been granted  
knowledge. “**

**God Almighty has spoken the truth**

**Al-Mujadilah verse 58:11**



## *Dedicated to*

*The memory of my father,*

*Who was chosen by GOD before witnessing this  
important event. Hopefully I am making him  
proud by fulfilling his dream.*

*My mother*

*for her constant, unconditional love and support,  
it is because of her guidance and example that I  
am who I am today.*

*My brother*

*who continued to support me through words and  
actions. I value all your input and appreciate  
your confidence.*

*My beautiful niece*

*for the joy, she brings to my life.*





# *Acknowledgement*

The completion of this thesis would not have been possible without the support and encouragement of several special people. Hence, I would like to take this opportunity to show my gratitude to those who have assisted me in a myriad of ways.

First, I would first like to express my heartfelt thanks and my deepest gratitude to my supervisors:

*Professor Dr. Noha Samír Kabil*, for sharing her expertise, continuous motivation, support, sincere and valuable guidance.

*Professor Dr. Ashraf Nabhan*, for his willingness to offer me so much of his time, and intellect which is the major reason this thesis was completed.

This acknowledgement would be incomplete without expressing my deepest appreciation to assistant researchers: *Sandra Dímitrí*, MBChB, Faculty of Medicine, Ain Shams University, *Marwah Anas El-Wegoud* MSc Prosthodontics, Author at Cochrane Oral Health for helping in the relevance assessment of retrieved articles. Both were very reliable collaborates and our group discussions led to valuable refinements of the review's criteria for in- and exclusion.

Endless gratitude to all my friends especially my best friend **Maie Magdy** for her endurance and support throughout all my hard times, and all my colleagues at Ain Shams University and the British University in Egypt.



# **Table of Contents**

DEDICATION.....	
ACKNOLDEGMENT.....	
LIST OF ABBREVIATIONS.....	i
List OF TABLES.....	ii
LIST OF FIGURES.....	iii
1.BACKGROUND.....	2
2.REVIEW Of LITERATURE.....	7
3.OBJECTIVE.....	24
4.METHODS.....	26
4.1. Criteria for considering studies for this review	
4.1.1. Types of studies	
4.1.2. Types of participants	
4.1.3. Types of interventions	
4.1.4. Types of outcome measures	
4.1.4.1.Primary outcomes	
4.1.4.2.Secondary outcomes	
4.2. Search methods for identification of studies	
4.3. Data collection and analysis	
4.3.1. Selection of studies	
4.3.2. Data extraction and management	
4.3.3. Assessment of risk of bias in included studies	
a) Sequence generation (Selection bias)	
b) Allocation concealment (Selection bias)	
c) Performance bias	
d) Detection bias	
e) Attrition bias	
f) Selective reporting bias	

g) Other bias	
h) Overall risk of bias	
4.3.4. Measures of treatment effect	
4.3.5. Unit of analysis issues	
4.3.6. Dealing with missing data	
4.3.7. Assessment of heterogeneity	
4.3.8. Assessment of reporting biases	
4.3.9. Data synthesis	
4.3.10. Subgroup analysis and investigation of heterogeneity	
4.3.11. Sensitivity analysis	
5.RESULTS.....	37
5.1 Description of studies	
5.1.1. Results of the search	
5.1.2. Included studies	
5.1.3. Excluded studies	
5.2 Risk of bias in included studies	
5.3 Effects of interventions	
6.DISCUSSION.....	72
7.SUMMARY.....	79
8.CONCLUSIONS.....	83
9.RECOMMENDATIONS.....	85
10.DECLARATION OF INTEREST.....	85
11.DIFFERENCE BETWEEN PROTOCOL AND REVIEW.....	85
12.APPENDIX 1.....	87
13.REFERENCES.....	89
14.ARABIC SUMMARY .....	

## **List of Abbreviations**

AAPD	American Academy of Pediatric Dentistry
AP-PCRs	Arbitrarily Primed PCRs
CENTRAL	Cochrane Central Register of Controlled trials
CI	Confidence Interval
CONSORT	Consolidated Standards of Reporting trials
defs	Decayed-extracted-filed surfaces
dmf	Decayed-missed-filled
DNA	Deoxyribonucleic acid
ECC	Early childhood caries
GRADE	Grades of Recommendations, Assessment, Development, and Evaluation
MDSMD	Maternally derived Streptococcus Mutans disease
mos	months
PCR	Polymerase Chain Reaction
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta Analysis
PROSPERO	International Prospective Register of Systematic Reviews
pH	Potential of Hydrogen
RevMan	Review Manager software
RCT	Randomized Controlled Trials
RR	Risk Ratio
S-ECC	Severe Early childhood caries
SES	Socioeconomic status
SM	Streptococcus Mutans
TMJ	Temporo-mandibular joint

## **List of abbreviations of Appendix 1**

Ab	abstract		
exp	exploded		
mp	Multi-purpose		
pt	Publication type		
Sh	(medical) subject heading	/	ti Title



## **List of Tables**

<b>Table 1.A:</b> Characteristics of included studies “Nakai 2010”.....	41-42
<b>Table 1.B:</b> Characteristics of included studies” Soderling 2000..	43-44
<b>Table 1.C:</b> Characteristics of included studies” Thorild 2003”...	45-46
<b>Table 2:</b> Characteristics of excluded studies.....	47
<b>Table 3.A:</b> Risk of Bias table “Nakai 2010” .....	49-50
<b>Table 3.B:</b> Risk of Bias table “Soderling 2000” .....	50-51
<b>Table 3.C:</b> Risk of Bias table “Thorild 2003” .....	52-53
<b>Table 4:</b> Comparison #1 “Xylitol versus (Chlorhexidine and Fluoride) during Pregnancy” .....	56
<b>Table 5:</b> Comparison #2 “Xylitol versus (Chlorehexidine and Fluoride) during Lactation” .....	60
<b>Table 6:</b> GRADE Summary of findings of Comparison#1.....	68
<b>Table 7:</b> GRADE Summary of findings of Comparison#2....	69-70