



# QUALITY IMPROVEMENT IN DENTAL AND MEDICAL KNOWLEDGE, RESEARCH, SKILLS AND ETHICS FACING GLOBAL CHALLENGES

Edited by

Armelia Sari Widyarman, Muhammad Ihsan Rizal,  
Moehammad Orliando Roeslan & Carolina Damayanti Marpaung



 CRC Press  
Taylor & Francis Group

## QUALITY IMPROVEMENT IN DENTAL AND MEDICAL KNOWLEDGE, RESEARCH, SKILLS AND ETHICS FACING GLOBAL CHALLENGES

The proceedings of FORIL XIII 2022 Scientific Forum Usakti conjunction with International Conference on Technology of Dental and Medical Sciences (ICTDMS) include selected full papers that have been peer-reviewed and satisfy the conference's criteria. All studies on health, ethics, and social issues in the field of dentistry and medicine have been presented at the conference alongside clinical and technical presentations. The twelve primary themes that make up its framework include the following: behavioral epidemiologic, and health services, conservative dentistry, dental materials, dento-maxillofacial radiology, medical sciences and technology, oral and maxillofacial surgery, oral biology, oral medicine and pathology, orthodontics, pediatrics dentistry, periodontology, and prosthodontics. This proceeding will be beneficial in keeping dental and medical professionals apprised of the most recent scientific developments.



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON TECHNOLOGY OF DENTAL  
AND MEDICAL SCIENCES (ICTDMS 2022), JAKARTA, INDONESIA, 8–10 DECEMBER 2022

# Quality Improvement in Dental and Medical Knowledge, Research, Skills and Ethics Facing Global Challenges

*Edited by*

Armelia Sari Widyarman, Muhammad Ihsan Rizal,  
Moehammad Orliando Roeslan and Carolina  
Damayanti Marpaung  
*Universitas Trisakti, Indonesia*



**CRC Press**

Taylor & Francis Group

Boca Raton London New York Leiden

---

CRC Press is an imprint of the  
Taylor & Francis Group, an **informa** business

A BALKEMA BOOK

First published 2023  
by CRC Press/Balkema  
4 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

and by CRC Press/Balkema  
2385 NW Executive Center Drive, Suite 320, Boca Raton FL 33431

*CRC Press/Balkema is an imprint of the Taylor & Francis Group, an informa business*

© 2024 selection and editorial matter Armelia Sari Widyarman, Muhammad Ihsan Rizal, Moehammad Orliando Roeslan & Carolina Damayanti Marpaung; individual chapters, the contributors

The right of Armelia Sari Widyarman, Muhammad Ihsan Rizal, Moehammad Orliando Roeslan & Carolina Damayanti Marpaung to be identified as the author[s] of the editorial material, and of the authors for their individual chapters, has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

Although all care is taken to ensure integrity and the quality of this publication and the information herein, no responsibility is assumed by the publishers nor the author for any damage to the property or persons as a result of operation or use of this publication and/or the information contained herein.

*British Library Cataloguing-in-Publication Data*  
*A catalogue record for this book is available from the British Library*

*Library of Congress Cataloging-in-Publication Data*  
*A catalog record has been requested for this book*

ISBN: 978-1-032-51441-3 (hbk)

ISBN: 978-1-032-51466-6 (pbk)

ISBN: 978-1-003-40237-4 (ebk)

DOI: 10.1201/9781003402374

Typeset in Times New Roman  
by MPS Limited, Chennai, India

## Table of Contents

<i>Preface</i>	xiii
<i>Acknowledgements</i>	xv
<i>Committee Members</i>	xvii

### *Behavioral, epidemiologic and health services*

Characteristics of knowledge and attitude of Indonesian professional healthcare students toward Basic Life Support (BLS) courses <i>I. Gunardi, A. Subrata, A.J. Sidharta, L.H. Andayani, W. Poedjiastoeti &amp; S. Suebnukarn</i>	3
---	---

Bibliometric analysis of <i>imperata cylindrica</i> papers in Scopus database (2012–2021) <i>M.O. Roeslan, S. Wulansari &amp; P. Monthanapisut</i>	9
---	---

Development and validation of Indonesian version of OHIP-49 questionnaire using Rasch model <i>F.K. Hartanto, I. Gunardi, A. Kurniawan, A.J. Sidharta &amp; W.M.N. Ghani</i>	17
---	----

Knowledge regarding dental and oral health among pregnant women (study at Palmerah Community Health Center, West Jakarta) <i>P.A. Salsabila, L.H. Andayani &amp; A.G. Soulissa</i>	24
---	----

The xerostomia's effect on methadone therapy program patients' oral-health-related quality of life <i>T.T. Theresia, A.N. Fitri &amp; W. Sudhana</i>	31
---	----

The differences in work strategy and work fatigue between female and male dentists during the COVID-19 pandemic in Indonesia <i>D. Ranggaini, W. Anggraini, A.P. Ariyani, I. Sulistyowati &amp; M.F.C. Musa</i>	42
--	----

Dental students' perceptions and behaviors concerning oral hygiene and eating habits during the COVID-19 pandemic in Indonesia <i>A. Asia, L. Astuti, T.E. Astoeti, A.S. Widyarman &amp; W. Sudhana</i>	49
--	----

Analyzing teledentistry consultation during the pandemic Covid-19: A challenge of images in online consultation <i>M. Chandra &amp; R. Tjandrawinata</i>	56
---	----

### *Conservative dentistry*

Mandibular first molar with radix entomolaris: An endodontic case report <i>F. Farasdhita, W. Widyastuti &amp; E. Fibryanto</i>	67
--	----

Walking bleach technique on endodontically treated caninus with tetracycline discoloration <i>J.D. Susanto, A.P. Dwisaptarini &amp; S. Wulansari</i>	73
---	----

Successful management of primary periodontal lesion with secondary endodontic involvement: A case report <i>F. Katrini, W. Widyastuti &amp; Aryadi</i>	77
Non-surgical treatment for extensive perapical lesion: A case report <i>M.P. Darmawanti, A.P. Dwisaptarini &amp; D. Ratnasari</i>	84
Monolithic zirconia endocrown: Indirect restoration for endodontically treated teeth <i>W. Wulandari, T. Suwartini &amp; E. Fibryanto</i>	90
Effect of air-abrasive particle and universal bonding to shear bond strength of zirconia <i>F. Witoko, M.F. Amin, D. Ratnasari &amp; R. Tjandrawinata</i>	95
Composite as a post-obturation restorative material on a non-vital tooth with endodontically treatment: A case report <i>R. Landy, W. Widyastuti &amp; S. Wulansari</i>	101
Caries detection effectiveness of two techniques assessed using FACE method <i>Y. Winardi &amp; A.P. Dwisaptarini</i>	112
<i>Pluchea indica</i> less leaves extract as a root canal irrigant against <i>Enterococcus faecalis</i> Colonies: <i>Ex vivo</i> study <i>E. Fibryanto, A. Tio, J.A. Gunawan, A. Hidayat &amp; N.Z.M. Noh</i>	116
Differences in resin polishing technique of nanofiller and nanohybrid composites <i>E.A.W. Yanti, A.P. Dwisaptarini, Elline &amp; M.S. Jamil</i>	124
Differences in the effect of two Nickel Titanium rotary files preparation toward the changes on root canal curvature <i>A. Darkim, W. Widyastuti, S. Wulansari &amp; E.A. Budiyaniti</i>	129
Effect of high refractive index composite resin thickness on CIELAB value <i>A.P. Dwisaptarini, D. Ratnasari, I. Hadiutomo, R. Tjandrawinata &amp; R. Trushkowsky</i>	136
Single-visit retreatment in underfilled root canal of mandible second premolar: A case report <i>G. Jesslyn, B.O. Iskandar &amp; T. Suwartini</i>	141
Antibiofilm effect of avocado ( <i>Persea Americana</i> ) seed ethanol extract on <i>Streptococcus mutans</i> and <i>Enterococcus faecalis</i> ( <i>ex vivo</i> ) <i>S. Wulansari, A.S. Widyarman, R.U. Nadhifa &amp; M.J. Fatya</i>	146
Three-dimensional obturation in maxillary first molar with MB2: A case report <i>A. Sutanto, E. Fibryanto &amp; A.E. Prahasti</i>	154
Semi-direct composite overlay restoration as an alternative restoration for endodontically treated tooth: A case report <i>N. Brians, J.A. Gunawan, A.E. Prahasti, E. Istanto &amp; S.M. Khazin</i>	160
Comprehensive treatment of immature necrotic permanent teeth: A case report <i>A.E. Prahasti, E. Fibryanto, E. Elline &amp; W. Widyastuti</i>	166
Diastemas management using direct composite resin restoration: The digital smile design approach <i>E. Elline, D. Ratnasari, E. Fibryanto, A.E. Prahasti &amp; R. Iffendi</i>	173

Removal of broken file using ultrasonics at one-third apical second molar distal: A case report <i>Y. Sutjiono, B.O. Iskandar, A.E. Prahasti, A. Subrata &amp; S.M. Khazin</i>	178
<i>Apis mellifera</i> honey and miswak ( <i>Salvadora persica</i> ) effect on tooth color changes <i>N.D. Iskandar, D. Ratnasari &amp; R. Stefani</i>	182
Fiber reinforced composite in endodontically treated tooth: A case report <i>J. Setiawan, T. Ariwibowo &amp; M.F. Amin</i>	188
The management of post-endodontic treatment using fiber-reinforced composite: A case report <i>R. Lambertus, T. Suwartini, E. Elline, A.E. Prahasti &amp; S.A. Asman</i>	195
Management of crown-root fracture with pulp exposure: A case report <i>Y. Susanti, B. Iskandar &amp; T. Ariwibowo</i>	201
Management of molar with C-shape root canal configuration: Case reports <i>F. Antonius, T. Suwartini &amp; J.A. Gunawan</i>	207
Endodontic treatment on young age molar with pulp polyp and diffuse calcification finding in a radiograph <i>P. Andriani, A.P. Dwisaptarini &amp; J.A. Gunawan</i>	214
Cyclic fatigue of three heat-treated NiTi rotary instruments after multiple autoclave sterilization: An <i>in-vitro</i> study <i>S.A. Putri, W. Widyastuti, A. Aryadi &amp; R. Amtha</i>	221
Endodontic management of S-shaped root canal on mandibular first molar: A case report <i>N. Tanuri, M.F. Amin &amp; S. Wulansari</i>	226
Root canal treatment on the complex case using ultrasonics: A case report <i>L.H. Wibowo, E. Elline, E. Fibryanto, A.E. Prahasti &amp; D. Qurratuani</i>	231
Management of iatrogenic problems during root canal treatment <i>Y.N. Argosurio, M.F. Amin &amp; E. Elline</i>	236
Non-surgical endodontic retreatment of maxillary first premolar with direct composite restoration: A case report <i>A.R. Pradhista, B.O. Iskandar &amp; Aryadi</i>	243
 <i>Dental materials</i>	
The effect of soft drinks containing citric and phosphoric acid toward enamel hardness <i>A. Aryadi, D. Pratiwi &amp; C. Cindy</i>	249
Microhardness of a flowable bulk-fill resin composite in immediate and 24-hour storage <i>R. Tjandrawinata, D. Pratiwi, F.L. Kurniawan &amp; A. Cahyanto</i>	255
The effect of halogen mouthwash on the stretch distance of the synthetic elastomeric chain <i>M. Wijaya, R. Tjandrawinata &amp; A. Cahyanto</i>	261



Synthesis and characterization of $\beta$ -tricalcium phosphate from green mussel shells with sintering temperature variation <i>M.R. Kresnatri, E. Eddy, H.A. Santoso, D. Pratiwi, D.L. Margaretta &amp; T. Suwandi</i>	267
The effect of immersion in 75% concentration tomato juice on the mechanical properties of nanohybrid composites resin <i>J. Kamad, D. Liliany &amp; E. Eddy</i>	277
Evaluation of setting time of glass ionomer cement mixed with ethanolic extracts of propolis <i>T.S. Putri, D. Pratiwi &amp; A.E.Z. Hasan</i>	285
The knowledge level of dental students on adequate composite resin polymerization in the COVID-19 pandemic era <i>O. Octarina &amp; L.A.L. Ongkaruna</i>	290
 <i>Dento-maxillofacial radiology</i>	
The role of dental record data in the mass disaster identification process: A case report of the Sriwijaya SJ-182 airplane crash <i>V. Utama, R. Tanjung, A. Quendangen, A. Fauzi, A. Widagdo, M.S. Haris &amp; A.S. Hartini</i>	299
Management of postmortem dental radiography procedure in mass disaster victim identification <i>R. Tanjung &amp; I. Farizka</i>	305
Radiomorphometric analysis of gonion angle and upper ramus breadth as a parameter for gender determination <i>I. Farizka &amp; R. Tanjung</i>	312
 <i>Medical sciences and technology</i>	
Artificial intelligence application in dentistry: Fluid behaviour of EDDY tips <i>H.H. Peeters, E.T. Judith, F.Y. Silitonga &amp; L.R. Zuhul</i>	321
<i>MTHFR</i> C677T, A1298C*, and its interaction in nonsyndromic orofacial cleft phenotypes among Indonesian <i>S.L. Nasroen &amp; A.M. Maskoen</i>	328
 <i>Oral and maxillofacial surgery</i>	
The effectiveness of giving forest honey ( <i>Apis Dorsata</i> ) and livestock honey ( <i>Apis Cerana</i> and <i>Trigona</i> ) on the number of fibroblast in wound healing after tooth extraction ( <i>in vivo</i> research in Wistar rats) <i>T.A. Arbi, I.N. Aziza &amp; T. Hidayatullah</i>	341
Reconstruction of large post-enucleation mandibular defect with buccal fat pad <i>N.A. Anggayanti, A.D. Sastrawan &amp; O. Shuka</i>	348
Challenge and management of dental implant during COVID-19 pandemic: Bone formation on second stage implant surgery <i>D. Pratiwi, H. Pudjowibowo &amp; F. Sandra</i>	354

The evaluation of maxillary sinus for implant planning through CBCT <i>A.P.S. Palupi, W. Poedjiastoeti, M.N.P. Lubis, I. Farizka, B. Claresta &amp; J. Dipankara</i>	360
The jawbone quantity assessment of dental implant sites <i>W. Poedjiastoeti, M.N.P. Lubis, Y. Ariesanti, I. Farizka, J. Dipankara &amp; S. In glam</i>	366
Comparative assessment of the distance between the maxillary sinus floor and maxillary alveolar ridge in dentulous and edentulous using panoramic radiography <i>A.S.D. Audrey, W. Poedjiastoeti, M.N.P. Lubis, J. Dipankara &amp; S. In glam</i>	372
Comparison between impacted mandibular third molar against mandibular angle and canal <i>N. Marlina, W. Poedjiastoeti, I. Farizka, J. Dipankara &amp; S. In glam</i>	379
 <i>Oral biology</i>	
Saliva as a diagnostic tool for COVID-19: Bibliometric analysis <i>M.I. Rizal, R.A. Hayuningtyas, F. Sandra, M.S. Djamil &amp; B.O. Roeslan</i>	387
Cytotoxicity activity of <i>Allium sativum</i> extracts against HSC-3 cells <i>I.J. Pardenas &amp; M.O. Roeslan</i>	393
Effectiveness of probiotic lozenges in reducing salivary microorganism growth in patients with fixed orthodontic appliances: A pilot study <i>A.S. Widyarman, S. Vilita, G.C. Limarta, S.M. Sonia &amp; F. Theodorea</i>	399
Potential anticancer properties of <i>Apium graveolens</i> Linn. against oral cancer <i>T. Hartono, F. Sandra, R.A. Hayuningtyas, S. Jauhari &amp; J. Sudiono</i>	407
Antibacterial activity of bromelain enzyme from pineapple knob ( <i>Ananas comosus</i> ) against <i>Streptococcus mutans</i> <i>D. Liliany, E. Eddy &amp; A.S. Widyarman</i>	414
<i>Elephantopus scaber</i> Linn.: Potential candidate against oral squamous cell carcinoma <i>T. Pang, F. Sandra, R.A. Hayuningtyas &amp; M.I. Rizal</i>	424
Effectiveness of gargling with 100% coconut oil to prevent plaque accumulation and gingival bleeding <i>A.G. Soulissa, M. Juslily, M. Juliawati, S. Lestari, N.P. Ramli, Albert &amp; A. Ismail</i>	429
Hydroxamate HDAC inhibitors potency in mediating dentine regeneration: A review <i>I. Sulistyowati, W. Anggraini, A.P. Ariyani &amp; R.B. Khalid</i>	435
Various compounds that are used as oxidative stress inducers on fibroblast cell <i>Komariah, P. Trisfilha &amp; R. Wahyudi</i>	443
Nano encapsulation of lemongrass leaves extract ( <i>Cymbopogon citratus</i> DC) on fibroblast viability with oxidative stress <i>N. Ericka, K. Komariah, R. Wahyudi &amp; T. Trisfilha</i>	450

Arumanis mango leaves ( <i>Mangifera indica</i> L.) extract efficacy on <i>Porphyromonas gingivalis</i> biofilm <i>in-vitro</i> <i>S. Soesanto, Yasnill, A.S. Widyarman &amp; B. Kusnoto</i>	461
A systematic review to evaluate the role of antibiotics in third molar extraction <i>R.A. Hayuningtyas, S. Soesanto, P. Natassya &amp; S.B. Gutierrez</i>	468
Efficacy of epigallocatechin gallate gel on VEGF and MMP-9 expression on ulcerations <i>L.A. Porjo, R. Amtha &amp; M.O. Roeslan</i>	472

### *Oral medicine and pathology*

Salivary interleukin (IL)-6 in elderly people with stomatitis aphthous and gingivitis associated with the occurrence of cognitive impairment <i>D. Priandini, A. Asia, A.G. Soulissa, I.G.A. Ratih, T.B.W. Rahardjo &amp; E. Hogervorst</i>	481
The uses of palm fruit ( <i>Borassus flabellifer</i> L.) in dentistry <i>J. Sudiono &amp; T.G.R. Susanto</i>	489
Endodontic irrigation solution administration induces oral mucosal deformity: A case report <i>R. Amtha, D. Agustini, N. Nadiah, F.K. Hartanto &amp; R.B. Zain</i>	496
Profile of oral mucosa changes and perception of e-cigarettes smoker <i>R. Amtha, A.P. Rahayu, I. Gunardi, N. Nadiah &amp; W.M.N. Ghani</i>	502
Potency of <i>Solanum betaceum</i> Cav. Peel skin ethanol extract towards TNF- $\alpha$ blood level (Study in vivo on inflammatory rats model) <i>J. Sudiono &amp; M.T. Suyata</i>	508
Stomatitis venenata due to nickel as inlay materials in a 24-year-old woman: A case report <i>F. Mailiza, A. Bakar &amp; U. Nisa</i>	518
Treatment challenge of oral lichenoid lesion associated with glass ionomer cement restoration: A case report <i>F.K. Hartanto, I. Gunardi, M.L. Raiyon, N. Nadiah &amp; H. Hussaini</i>	526
Validity and reliability of the Indonesian version of COMDQ-26: A pilot study <i>J.V. Winarto, I. Gunardi, C.D. Marpaung, R. Amtha &amp; W.M.N. Ghani</i>	531

### *Orthodontics*

Interceptive orthodontic treatment needs and its relating demographic factors in Jakarta and Kepulauan Seribu <i>Y. Yusra, J. Kusnoto, H. Wijaya, T.E. Astoeti &amp; B. Kusnoto</i>	539
Diastema closure and midline shifting treatment with standard technique (Case report) <i>H.F. Lubis &amp; J.X. Ongko</i>	543
Intrusion and uprighting using TADs in mutilated four first permanent molar case <i>H.F. Lubis &amp; F. Rhiyanthy</i>	548

Moringa and papaya leaf inhibit <i>Streptococcus mutans</i> and <i>Candida albicans</i> <i>H.F. Lubis &amp; M.K. Hutapea</i>	554
Intruding upper first molar using double L-Loop in an adult patient: A retreatment case <i>H.F. Lubis &amp; Joselin</i>	561
Profile changes in Class III malocclusion using protraction facemask in Indonesian patients (Cephalometric study) <i>H. Halim &amp; I.A. Halim</i>	565
<i>Pediatric dentistry</i>	
Oral microbiome dysbiosis in early childhood caries (Literature review) <i>T. Putriany &amp; H. Sutadi</i>	575
<i>Periodontology</i>	
Permanent splint using removable partial denture framework on reduced periodontium: A case report <i>V. Hartono, F.M. Tadjoedin, A. Widaryono &amp; T.A. Mahendra</i>	587
The effect of electric smoking on the severity of chronic periodontitis <i>A.P. Fathinah &amp; M. Louisa</i>	594
Periodontitis effects toward the extent of COVID-19 severity (Scoping review) <i>S.A. Arthur &amp; M. Louisa</i>	603
Scaffold-based nano-hydroxyapatite for periodontal regenerative therapy <i>N.A. Harsas, Y. Soeroso, N. Natalina, E.W. Bachtiar, L.R. Amir, S. Sunarso, R. Mauludin &amp; C. Sukotjo</i>	614
Defect management using hydroxyapatite and platelet-rich fibrin in advanced periodontitis <i>V. Wibianty, V. Paramitha &amp; N.A. Harsas</i>	621
The relationship between age with caries status and periodontal treatment needs on visually impaired individuals <i>P. Wulandari, M.A.L. Tarigan, K. Nainggolan, M.F. Amin &amp; J. Maharani</i>	630
Effects of COVID-19 on periodontitis (Scoping review) <i>A.R. Somawihardja &amp; M. Louisa</i>	638
Concentrated growth factor for infrabony defect in periodontitis treatment: A review <i>F.C. Maitimu &amp; T. Suwandi</i>	643
Subcutaneous emphysema after dental stain removal with airflow: A case report and anatomical review <i>A. Albert, W. Anggraini &amp; W. Lestari</i>	651
Bonding agents for dentine hypersensitivity treatment: A review <i>O.N. Komala, L. Astuti &amp; F.C. Maitimu</i>	657
Advantages and disadvantages of 2017 new classification of periodontitis (Scoping review) <i>R. Anggara &amp; K. Yosvara</i>	668

Comparison of periodontal disease severity in COVID-19 survivors and non-COVID-19 individuals <i>M. Louisa, R.A. Putranto, O.N. Komala &amp; W. Anggraini</i>	677
Aerosol spread simulation during ultrasonic scaling and strategies to reduce aerosol contamination <i>M. Sundjojo, V. Nursolihati &amp; T. Suwandi</i>	685
The effect of pineapple ( <i>Ananas comosus</i> L.) juice on biofilm density of streptococcus sanguinis ATCC 10556 <i>T. Suwandi &amp; Y.V. Thionadewi</i>	689
 <i>Prosthodontics</i>	
Prevalence and risk indicators of bruxism in Indonesian children <i>C. Marpaung, I. Hanin, A. Fitriyanur &amp; M.V. Lopez</i>	697
Validity and reliability of temporomandibular disorders screening questionnaire for Indonesian children and adolescents <i>C. Marpaung, N.L.W.P. Dewi &amp; M.V. Lopez</i>	704
Effect of submersion of alginate molds in povidone iodine concentration of 0,47 % solution toward dimensional change <i>N. Adrian &amp; I.G.P. Panjaitan</i>	710
Effect of pure basil leaf extract on surface roughness of heat cured acrylic resin <i>I.G.P. Panjaitan &amp; N. Adrian</i>	715
Prosthetic rehabilitation after mandibular reconstruction in young adult patient with ameloblastoma history <i>I. Hanin &amp; I. Setiabudi</i>	720
Treatment of tooth supported magnet retained maxillary complete overdenture: Case report <i>I.G.A.R.U Mayun</i>	725
Complete denture management with torus palatinus: A case report <i>E.S.I. Sari, I.K. Julianton &amp; G.G. Gunawan</i>	730
Management of rehabilitation for partial tooth loss with immediate removable dentures in the era of the COVID-19 pandemic: A case report <i>A. Wirahadikusumah</i>	734
Management of anterior mandibular lithium disilicate crown fracture <i>J. Handojo &amp; L.A. Halim</i>	742
Author index	747

## Preface

Faculty of Dentistry Universitas Trisakti (Usakti) presents FORIL XIII 2022 Scientific Forum Usakti conjunction with International Conference on Technology of Dental and Medical Sciences (ICTDMS) on December 8th–10th 2022. The theme of the conference is “Quality Improvement in Dental and Medical Knowledge, Research, Skills and Ethics Facing Global Challenges”.

The triennial conference has served as a meeting place for technical and clinical studies on health, ethical, and social issues in field medical and dentistry. It is organized around 12 major themes, including behavioral, epidemiologic, and health services, conservative dentistry, dental materials, dento-maxillofacial radiology, medical sciences and technology, oral and maxillofacial surgery, oral biology, oral medicine and pathology, orthodontics, pediatrics dentistry, periodontology, and prosthodontics.

The most recent findings in fundamental and clinical sciences related to medical and dental research will be presented in the conference that will be published as part of the conference proceeding. This proceeding will be useful for keeping dental and medical professionals up to date on the latest scientific developments.

Dr. Aryadi Subrata  
Chairman FORIL XIII conjunction with ICTDMS



Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

## Acknowledgements

- Prof. Shinya Murakami, D.D.S., Ph.D. (*Department of Periodontology, Osaka University, Japan*)  
Prof. Adrian Yap (*Department of Dentistry, Ng Teng Fong General Hospital, Singapore*)  
Prof. Dr. Rosnah Binti Mohd Zain (*Department of Oro-Maxillofacial Surgical & Medical Sciences, Malaya University*)  
Prof. Chaminda Jayampath Seneviratne, BDS (Hons), M.Phil., Ph.D (*University of Queensland, Australia*)  
Cortino Sukotjo, DDS, Ph.D., MMSc (*Department of Restorative Dentistry, University of Illinois at Chicago, United States*)  
Prof. Dr. Nicola De Angelis (*Department of Periodontology, University of Genoa, Italy*)  
Prof. Hirotaka Kuwata, D.D.S., Ph.D. (*Department of Oral Microbiology and Immunology, Showa University, Japan*)  
Prof. Dr. drg. Tri Erri Astoeti, M.Kes (*Universitas Trisakti, Jakarta, Indonesia*)  
Prof. drg. Rahmi Amtha, MDS, Ph.D, Sp.PM(K) (*Department of Oral Medicine, Universitas Trisakti, Jakarta, Indonesia*)  
Prof. Dr. Siriwan Suebnukarn, D.D.S (*Thammasat University, Bangkok, Thailand*)





# Taylor & Francis

Taylor & Francis Group

<http://taylorandfrancis.com>

## Committee Members

### **Scientific Committee**

- Prof. Dr. drg. David Buntoro Kamadjaja, Sp.BM(K) (*Oral Maxillofacial Surgeon, Universitas Hassanudin, Makasar, Indonesia*)
- Prof. Dr. drg. Diah Savitri Ernawati, Sp.PM(K)., M.Si (*Oral Medicine, Universitas Airlangga, Surabaya, Indonesia*)
- Prof. Dr. drg. Maria Francisca Lindawati Soetanto, Sp.Pros(K) (*Prosthodontic, Universitas Indonesia, Jakarta, Indonesia*)
- Prof. drg. Boy Muchlis Bachtiar, M.S., Ph.D., PBO (*Oral Biology, Universitas Indonesia, Jakarta, Indonesia*)
- Prof. Dr. drg. Inne Suherna Sasmita, Sp.KGA(K) (*Pediatric Dentistry, Universitas Padjajaran, Bandung, Indonesia*)
- Prof. drg. Sondang Pintauli, Ph.D (*Public Health, Universitas Sumatera Utara, Indonesia*)
- Prof. Dr. drg. Miesje Karmiati Purwanegara, S.U., Sp.Orto (*Orthodontic, Universitas Indonesia, Indonesia*)
- Prof. Dr. drg. Sri Lelyati, S.U, Sp.Perio (K) (*Periodontic, Universitas Indonesia, Indonesia*)
- drg. Diatri Nari Ratih, M.Kes., Ph.D., Sp.KG(K) (*Conservative Dentistry, Universitas Gadjah Mada, Indonesia*)

### **Organizing Committee**

- Drg. Aryadi Subrata, Sp.KG(K), (*Conservative Dentistry, Universitas Trisakti, Jakarta, Indonesia*)
- Dr. drg. Armelia Sari W., M.Kes., PBO (*Microbiology Oral, Universitas Trisakti, Jakarta, Indonesia*)
- Dr. drg. Anggraeny Putri Sekar Palupi, Sp.BM (*Oral Maxillofacial Surgeon, Universitas Trisakti, Jakarta Indonesia*)
- Dr. drg. Muhammad Ihsan Rizal, M.Kes (*Oral Biology, Universitas Trisakti, Jakarta, Indonesia*)
- drg. Isya Hanin, Sp.Pros (*Prosthodontic, Universitas Trisakti, Jakarta, Indonesia*)
- drg. Muhammad Orliando Roeslan, M.Kes., PhD (*Oral Biology, Universitas Trisakti, Jakarta, Indonesia*)
- drg. Dina Ratnasari, Sp.KG(K) (*Conservative Dentistry, Universitas Trisakti, Jakarta, Indonesia*)
- drg. Carolina Damayanti Marpaung, Sp.Pros, PhD (*Prosthodontic, Universitas Trisakti, Jakarta, Indonesia*)

## Author index

- Adrian, N. 710, 715  
Agustini, D. 496  
Albert, A. 651  
Albert 429  
Amin, M.F. 95, 188, 226, 236, 630  
Amir, L.R. 614  
Amtha, R. 221, 472, 496, 502, 531  
Andayani, L.H. 3, 24  
Andriani, P. 214  
Anggara, R. 668  
Anggayanti, N.A. 348  
Anggraini, W. 42, 435, 651, 677  
Antonius, F. 207  
Arbi, T.A. 341  
Argosurio, Y.N. 236  
Ariesanti, Y. 366  
Ariwibowo, T. 188, 201  
Ariyani, A.P. 42, 435  
Arthur, S.A. 603  
Aryadi, A. 221, 249  
Aryadi 77, 243  
Asia, A. 49, 481  
Asman, S.A. 195  
Astoeti, T.E. 49, 539  
Astuti, L. 49, 657  
Audrey, A.S.D. 372  
Aziza, I.N. 341  
  
Bacthiar, E.W. 614  
Bakar, A. 518  
Brians, N. 160  
Budiyanti, E.A. 129  
  
Cahyanto, A. 255, 261  
Chandra, M. 56  
  
Cindy, C. 249  
Claresta, B. 360  
  
Darkim, A. 129  
Darmawanti, M.P. 84  
Dewi, N.L.W.P. 704  
Dipankara, J. 360, 366, 372, 379  
Djamil, M.S. 387  
Dwisaptarini, A.P. 73, 84, 112, 124, 136, 214  
  
Eddy, E. 267, 277, 414  
Elline, E. 166, 173, 195, 231, 236  
Elline 124  
Ericka, N. 450  
  
Farasdhita, F. 67  
Farizka, I. 305, 312, 360, 366, 379  
Fathinah, A.P. 594  
Fatya, M.J. 146  
Fauzi, A. 299  
Fibryanto, E. 67, 90, 116, 154, 166, 173, 231  
Fitri, A.N. 31  
Fitryanur, A. 697  
  
Ghani, W.M.N. 17, 502, 531  
Gunardi, I. 3, 17, 502, 526, 531  
Gunawan, G.G. 730  
Gunawan, J.A. 116, 160, 207, 214  
Gutierrez, S.B. 468  
  
Hadiutomo, I. 136  
Halim, H. 565  
  
Halim, I.A. 565  
Halim, L.A. 742  
Handojo, J. 742  
Hanin, I. 697, 720  
Haris, M.S. 299  
Harsas, N.A. 614, 621  
Hartanto, F.K. 17, 496, 526  
Hartini, A.S. 299  
Hartono, T. 407  
Hartono, V. 587  
Hasan, A.E.Z. 285  
Hayuningtyas, R.A. 387, 407, 424, 468  
Hidayat, A. 116  
Hidayatullah, T. 341  
Hogervorst, E. 481  
Hussaini, H. 526  
Hutapea, M.K. 554  
  
Iffendi, R. 173  
Inglam, S. 366, 372, 379  
Iskandar, B. 201  
Iskandar, B.O. 141, 178, 243  
Iskandar, N.D. 182  
Ismail, A. 429  
Istanto, E. 160  
  
Jamil, M.S. 124  
Jauhari, S. 407  
Jesslyn, G. 141  
Joselin 561  
Judith, E.T. 321  
Julianton, I.K. 730  
Juliawati, M. 429  
Juslily, M. 429  
  
Kamad, J. 277  
Katrini, F. 77

- Khalid, R.B. 435  
 Khazin, S.M. 160, 178  
 Komala, O.N. 657, 677  
 Komariah, K. 450  
 Komariah 443  
 Kresnatri, M.R. 267  
 Kurniawan, A. 17  
 Kurniawan, F.L. 255  
 Kusnoto, B. 461, 539  
 Kusnoto, J. 539
- Lambertus, R. 195  
 Landy, R. 101  
 Lestari, S. 429  
 Lestari, W. 651  
 Liliany, D. 277, 414  
 Limarta, G.C. 399  
 Lopez, M.V. 697, 704  
 Louisa, M. 594, 603, 638, 677  
 Lubis, H.F. 543, 548, 554, 561  
 Lubis, M.N.P. 360, 366, 372
- Maharani, J. 630  
 Mahendra, T.A. 587  
 Mailiza, F. 518  
 Maitimu, F.C. 643, 657  
 Margaretta, D.L. 267  
 Marlina, N. 379  
 Marpaung, C. 697, 704  
 Marpaung, C.D. 531  
 Maskoen, A.M. 328  
 Mauludin, R. 614  
 Mayun, I.G.A.R.U 725  
 Monthanapisut, P. 9  
 Musa, M.F.C. 42
- Nadhifa, R.U. 146  
 Nadiah, N. 496, 502, 526  
 Nainggolan, K. 630  
 Nasroen, S.L. 328  
 Natalina, N. 614  
 Natassya, P. 468
- Nisa, U. 518  
 Noh, N.Z.M. 116  
 Nursolihati, V. 685
- Octarina, O. 290  
 Ongkaruna, L.A.L. 290  
 Ongko, J.X. 543
- Palupi, A.P.S. 360  
 Pang, T. 424  
 Panjaitan, I.G.P. 710, 715  
 Paramitha, V. 621  
 Pardenas, I.J. 393  
 Peeters, H.H. 321  
 Poedjiastoeti, W. 3, 360, 366, 372, 379  
 Porjo, L.A. 472  
 Pradhista, A.R. 243  
 Prahasti, A.E. 154, 160, 166, 173, 178, 195, 231  
 Pratiwi, D. 249, 255, 267, 285, 354  
 Priandini, D. 481  
 Pudjowibowo, H. 354  
 Putranto, R.A. 677  
 Putri, S.A. 221  
 Putri, T.S. 285  
 Putriany, T. 575
- Quendangen, A. 299  
 Qurratuani, D. 231
- Rahardjo, T.B.W. 481  
 Rahayu, A.P. 502  
 Rayon, M.L. 526  
 Ramli, N.P. 429  
 Ranggaini, D. 42  
 Ratih, I.G.A. 481  
 Ratnasari, D. 84, 95, 136, 173, 182  
 Rhiyanthy, F. 548  
 Rizal, M.I. 387, 424  
 Roeslan, B.O. 387  
 Roeslan, M.O. 9, 393, 472
- Salsabila, P.A. 24  
 Sandra, F. 354, 387, 407, 424  
 Santoso, H.A. 267  
 Sari, E.S.I. 730  
 Sastrawan, A.D. 348  
 Setiabudi, I. 720  
 Setiawan, J. 188  
 Shuka, O. 348  
 Sidharta, A.J. 3, 17  
 Silitonga, F.Y. 321  
 Soeroso, Y. 614  
 Soesanto, S. 461, 468  
 Somawihardja, A.R. 638  
 Sonia, S.M. 399  
 Soulissa, A.G. 24, 429, 481  
 Stefani, R. 182  
 Subrata, A. 3, 178  
 Sudhana, W. 31, 49  
 Sudiono, J. 407, 489, 508  
 Suebnukarn, S. 3  
 Sukotjo, C. 614  
 Sulistyowati, I. 42, 435  
 Sunarso, S. 614  
 Sundjojo, M. 685  
 Susanti, Y. 201  
 Susanto, J.D. 73  
 Susanto, T.G.R. 489  
 Sutadi, H. 575  
 Sutanto, A. 154  
 Sutjiono, Y. 178  
 Suwandi, T. 267, 643, 685, 689  
 Suwartini, T. 90, 141, 195, 207  
 Suyata, M.T. 508
- Tadjoedin, F.M. 587  
 Tanjung, R. 299, 305, 312  
 Tanuri, N. 226  
 Tarigan, M.A.L. 630  
 Theodorea, F. 399  
 Theresia, T.T. 31  
 Thionadewi, Y.V. 689  
 Tio, A. 116

Tjandrawinata, R. 56, 95,  
136, 255, 261  
Trisfilha, P. 443  
Trisfilha, T. 450  
Trushkowsky, R. 136  
Utama, V. 299  
Vilita, S. 399  
Wahyudi, R. 443, 450  
Wibianty, V. 621  
Wibowo, L.H. 231  
Widagdo, A. 299  
Widaryono, A. 587  
Widyarman, A.S. 49, 146,  
399, 414, 461  
Widyastuti, W. 67, 77,  
101, 129, 166, 221  
Wijaya, H. 539  
Wijaya, M. 261  
Winardi, Y. 112  
Winarto, J.V. 531  
Wirahadikusumah, A. 734  
Witoko, F. 95  
Wulandari, P. 630  
Wulandari, W. 90  
Wulansari, S. 9, 73, 101,  
129, 146, 226  
Yanti, E.A.W. 124  
Yasnill 461  
Yosvara, K. 668  
Yusra, Y. 539  
Zain, R.B. 496  
Zuhal, L.R. 321

DO NOT COPY  
rosalina@trisakti.ac.id

# Knowledge regarding dental and oral health among pregnant women (study at Palmerah Community Health Center, West Jakarta)

P.A. Salsabila

*Faculty of Dentistry, Trisakti University, Jakarta, Indonesia*

L.H. Andayani & A.G. Soulissa

*Department of Preventive and Public Health Dentistry, Faculty of Dentistry, Trisakti University, Jakarta, Indonesia*

**ABSTRACT:** Backgrounds: Hormonal changes occurring in women during pregnancy may have an impact on oral and dental health. Pregnant women are more susceptible to dental and oral health issues, which may have harmful effects like premature births and babies with low birth weight (LBW). Pregnant women should be well informed about the oral health education and the importance of maintaining oral health during pregnancy. Objective: To identify socio-demographic characteristics associated with the pregnant women knowledge, regarding dental and oral health maintenance at the Palmerah Community Health Center, West Jakarta. Methods: This cross-sectional study involved 194 pregnant women taken by purposive sampling. Self-administered questionnaire contained 15 questions has been tested for validity and reliability. Spearman's Correlation Test was conducted to assess the correlation between socio-demographic characteristics and pregnant women's knowledge. Results: Knowledge regarding dental and oral health maintenance was poor among pregnant women (46.9%). There was significant correlation between knowledge regarding dental and oral health maintenance and education level ( $p = 0.000$ ), occupational status ( $p = 0.001$ ) and number of pregnancies ( $p = 0.004$ ). Conclusions: Knowledge regarding dental and oral health care maintenance among pregnant women at the Palmerah Community Health Center, West Jakarta, needs to be improved. More intensive dental and oral health education among pregnant women are still required.

## 1 BACKGROUNDS

The Special Capital Region of Jakarta is a city with high population density in Indonesia. Jakarta's population density may relate to several factors, such as the high number of marriages, that followed by the high number of pregnancies. Demographic data shows that there were 218,601 pregnant women recorded in Jakarta in 2021 (BPS-Statistics of DKI Jakarta Province 2021). Demographic research in 2022 shows that Jakarta is ranked seventh with the highest number of pregnant women in Indonesia (Kementerian Kesehatan Republik Indonesia 2022).

Pregnancy is a dynamic condition resulting several physical, behavioral, and hormonal changes that influence the oral cavity. The alteration of estrogen and progesterone may cause pregnant women become more susceptible to dental health problems (Wu et al. 2015). Oral health problems commonly occurred during pregnancy are periodontal diseases, such as gingivitis and periodontitis. American Dental Association (ADA) stated that 60% to 75%

of pregnant women had experience gingivitis during pregnancy (Silva de Araujo Figueiredo et al. 2017). Pregnancy gingivitis occurred as the inflammatory response to bacterial plaque that is attributed to increased levels of progesterone and estrogen (Thakur et al. 2020). The relationship between periodontal health and post-pregnancy conditions has been investigated in a number of studies (Andayani et al. 2019; Gesase et al. 2018). Periodontal disease during pregnancy may result in complications like premature birth and babies with low birth weight (LBW) (Gallagher-Cobos et al. 2022; Haresh Dave et al. 2021).

Along with nutrition changes and poor oral hygiene, pregnancy may cause a number of physiological changes, such as nausea, tiredness, and vomiting, which may have an impact on oral health. Pregnant women often pay less attention to the cleanliness of their oral cavities (Kim et al. 2021). They tend to focus more on the health of their fetus, as well as ignoring their dental and oral health (Azizah et al. 2021). Most pregnant women only visit the dentist if oral health problems already occurred, and require treatments (Tasyakuranti et al. 2019).

Knowledge of maintaining dental and oral health is essential during pregnancy. Good knowledge may improve the awareness and behavior of maintaining proper dental and oral health (Bushehab et al. 2022; Schröter et al. 2022). Information about proper toothbrushing time, method, and frequency, may assist to decrease the risk of dental and oral health diseases, though other predictors should also be controlled. This study aims to identify socio-demographic characteristics associated with the pregnant women knowledge, regarding dental and oral health maintenance at the Palmerah Community Health Center, West Jakarta.

## 2 RESEARCH METHOD

This Cross-Sectional study was conducted at the Palmerah Community Health Center, West Jakarta from September to November 2022. Palmerah Community Health Center consists of six sub-districts working area, providing affordable health services for society with various characteristics. Women who visited the antenatal clinic while pregnant made up the study's population. A questionnaire with 15 items about maintaining dental and oral health was given to a sample of 194 pregnant women. Sociodemographic data including age, education level, occupational status, gestational age, and number of pregnancies were also taken.

All pregnant women willing to fill out the questionnaire as well as the informed consent were included. The distribution of the sociodemographic characteristics and knowledge of dental and oral health maintenance was evaluated. The Spearman Correlation test was used to measure correlation among variables and statistical significance between each variable, where the level of significance was established at  $p < 0,05$ . This study was approved by the Ethics Committee of Faculty of Dentistry, Trisakti University, No. 545/S1/KEPK/FKG/7/ 2022.

## 3 RESULTS

Among 194 pregnant women were included in this study, 91 pregnant women (46.9%) had poor of knowledge about the maintenance of oral health. Table 1 shows that the majority of pregnant women in this study were aged between 26–35 years (68%), had medium level of education (52.1%), unemployed (59.8%), undergoing the third trimester of pregnancy (54.6%), and having their second pregnancy (46.9%).

Table 2 shows that the majority of pregnant women are capable to identify signs of healthy gums (77.8%), risk factors of gingivitis during pregnancy (81.4%), cause of nausea and vomiting during pregnancy (88.1%), and proper food should be consumed (85.5%). More than half pregnant women knows that they should brush they're twice a day (53%)



Table 1. Characteristics of pregnant women at the Palmerah Community Health Center, West Jakarta.

Variables	N	%
<b>Age (years)</b>		
17 – 25	49	25.3
26 – 35	132	68
36 – 45	13	6.7
<b>Education level</b>		
Under high school	30	15.5
High school	101	52.1
Diploma or higher	64	32.5
<b>Occupational status</b>		
Employed	78	40.2
Unemployed	116	59.8
<b>Gestational age</b>		
1st Trimester	39	20.1
2nd Trimester	49	25.3
3rd Trimester	106	54.6
<b>Number of pregnancies</b>		
1	57	29.4
2	91	46.9
3	35	18
4	11	5.7
<b>Knowledge level</b>		
Good	29	14.9
Moderate	74	38.1
Poor	91	46.9

Table 2. Knowledge regarding dental and oral health maintenance among pregnant women at the Palmerah Community Center, West Jakarta.

No.	Knowledge	Correct	Incorrect
1	Characteristics of healthy gums.	151 (77.8%)	43 (22.2%)
2	Signs of gingivitis.	99 (51%)	95 (49%)
3	Risk factors of gingivitis among pregnant women.	158 (81.4%)	36 (18.6%)
4	Correct toothbrushing frequency	103 (53%)	91 (47%)
5	Fluoride as the content of toothpaste	112 (57.7%)	82 (42.3%)
6	The use of dental floss	68 (35%)	126 (65%)
7	Causes of stomatitis in pregnant women.	22 (11.3%)	172 (88.7%)
8	Common oral problems in pregnant women.	133 (68.5%)	61 (31.5%)
9	Causes of nausea and vomiting during pregnancy.	171 (88.1%)	23 (11.9%)
10	Hormones affecting oral health during pregnancy.	79 (40.7%)	115 (59.3%)
11	Problems occurred if cavities are left untreated.	97 (50%)	97 (50%)
12	Food that suitable for oral health	166 (85.5%)	28 (14.5%)
13	Thing to do after vomiting during pregnancy.	79 (40.7%)	115 (59.2%)
14	Adverse pregnancy outcomes related to oral health	90 (46.3%)	104 (53.6%)
15	Frequency of dental check-up to the dentist.	58 (29.8%)	136 (70.2%)

using toothpaste with fluoride (57.7%). Half of pregnant women does not know what may occurred if tooth cavities are left untreated (50%), and few of them knows about the recommended time for a dental check-up to the dentist (29.8%).



Table 3 shows significant correlation between education level ( $p = 0.000$ ), occupational status ( $p = 0.001$ ), and the number of pregnancies ( $p = 0.004$ ) with knowledge of dental and oral health maintenance. Pregnant women with middle level of education have larger proportion (52.1%) of poor knowledge regarding dental and oral health maintenance. Table 3 also shows that unemployed pregnant women had lower level of knowledge (33.5%) than the employed (12.9%). Pregnant women undergoing their third trimester had lower level of knowledge (26.3%) as well as pregnant women who were having their second pregnancies (20.6%)

Table 3. Sociodemographic characteristics and knowledge of pregnant women.

Variables	Knowledge level			P Value
	Good	Moderate	Poor	
<b>Age (years)</b>				
17 – 25	6 (3.1%)	17(8.8%)	26 (13.4%)	0.446
26 – 35	21 (10.8%)	54 (27.8%)	57 (29.4%)	
36 – 45	2 (1%)	4 (2.1%)	7 (3.6%)	
<b>Education level</b>				
Under high school	1 (0.5%)	7 (3.6%)	22 (11.3%)	0.000
High school	11 (5.7%)	35 (18%)	55 (28.4%)	
Diploma or higher	17 (8.8%)	33 (17%)	13 (6.7%)	
<b>Occupational status</b>				
Employed	17 (8.8%)	36 (18.6%)	25 (12.9%)	0.001
Unemployed	12 (6.2%)	39 (20.1%)	65 (33.5%)	
<b>Gestational age</b>				
1st Trimester	6 (3.1%)	13 (6.7%)	20 (10.3%)	0.570
2nd Trimester	11 (5.7%)	19 (9.8%)	19 (9.8%)	
3rd Trimester	12 (6.2%)	43 (22.2%)	51 (26.3%)	
<b>Number of pregnancies</b>				
1	10 (5.2%)	27 (13.9%)	20 (10.3%)	0.004
2	15 (7.7%)	36 (18.6%)	40 (20.6%)	
3	4 (2.1%)	9 (4.6%)	22 (11.3%)	
4	0 (0%)	3 (1.5%)	8 (4.1%)	

#### 4 DISCUSSION

In this study, most of pregnant women (46.9%) had poor knowledge regarding dental and oral health maintenance. Several other studies in Indonesia also found that most pregnant women still have a low level of knowledge regarding dental and oral health maintenance (Setyani & Widyaning 2021; Soegyanto et al. 2020). These results may occur due to lack of information related to dental and oral health during pregnancy, thus affecting their knowl-edge. Poor knowledge may affect the awareness of dental and oral health among pregnant women, as they become not conscious of their oral cavity condition or their needs for dental treatment. According to National Basic Survey (Riskesdas) data in 2018, 57.6% of Indonesia's population had dental and oral problems, but only 10.2% is disposed to seek treatment (Gofur et al. 2021). This study shows that more than half pregnant women were aged 26 to 35 years (68%).

Many studies declared that the ideal age for healthy reproduction is between 20 and 35 years (Rahman et al. 2022). Pregnant women who were aged 26–35 years (29.4%) had lower level of knowledge compared to younger group (13.4%) and older group (3.6%). Various pre-dictors, including occupation, education, and environment may influence an individual level

of knowledge towards dental and oral health. Increasing age is not always related with the enhancement of knowledge, though it may affect the paradigm or experiences of someone (Barbieri et al. 2018).

Based on selected variables, there were significant correlation between education level and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.000$ ). Poor knowledge was found in pregnant women who graduated from high school (28.4%) or even lower (11.3%). This is similar with other study in Indonesia that found 66.6% of pregnant women with primary levels of education had lower level of knowledge related to dental and oral health (Raiyanti et al. 2021). Pregnant women with higher education may expressed better knowledge as they had broader mindset and better perspective that lead to increases in knowledge (Wassihun et al. 2022). Significant association between dental health knowledge and practice with education level and socioeconomic status also found in developed country as common result (Thomas et al. 2008). Education will affect knowledge by forming atti-tudes and behavior of someone to create a better healthy life (Selvaraj et al. 2021). Better knowledge will encourage better practice in applying dental and oral health favorably (Bamanikar & Kee 2013). Individual with higher education may learn recent knowledge and has more access to appropriate information (Mochlisin Fatkur Rohman 2021). Though the access to information is lesser, individual with low level education can still have sufficient knowledge due to opportunity to gain it. Formal education is not the only element that can influence level of knowledge (Sunarsih et al. n.d.).

Significant correlation also found between occupational status and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.001$ ). Unemployed pregnant women (33.5%) had lower level of knowledge compared to employed pregnant women (12.9%). This is similar to other study stated that employment may influence individual to acquire better knowledge (Irie et al. 2022). Employed pregnant women have more knowl-edge due to better social communication and information access.

Significant correlation was found between number of pregnancies and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.004$ ). The majority of pregnant women in this study was having their second pregnancies (46.9%). This fact is interesting since pregnant women with higher number of pregnancies should obtain more health information due to previous experience. Experience is one of way to acquire knowl-edge and learning experiences will develop decision-making skills and sorting out informa-tion (Kusumawati 2011). The more experience, the more knowledge will be obtained. This study found that most of pregnant women who was having their second pregnancies had lower level of knowledge (20.6%) compared to other groups. Pregnancy trimester and level of knowledge did not significantly correlate ( $p = 0.570$ ).

Pregnant women in the third trimester have the highest percentage of poor knowledge (26.3%) compared to pregnant women in the first and second trimesters. Pregnant women at higher gestational age should have received more information about general and oral health due to higher frequency of visiting health facility. This study shows that the addition of gestational age is not correlated with better oral health knowledge. More intensive oral and dental health education is still needed in every trimester of pregnancy, in order to achieve better knowledge.

## 5 CONCLUSION

Knowledge regarding dental and oral health maintenance among pregnant women at the Palmerah Community Health Center, West Jakarta, needs to be improved. To provide improved oral health care, pregnant women and the medical community need to be coun-seled on oral health issues. The foundations of preventative education and oral health care for pregnant women must be established through collaboration between health professionals and community organizations.

## ACKNOWLEDGMENT

Thanks to Palmerah Community Health Center which has supported this research.

## REFERENCES

- Andayani, L. H., Bungsu, P., & Prihartono, N. 2019. Determinants for periodontal disease during pregnancy among Indonesian women: A cross-sectional study using National Riskesdas 2013 data. *Journal of International Dental and Medical Research* 12(1): 337–343.
- Azizah, M. N., Ramadhani, M. N., Suwargiani, A. A., & Susilawati, S. 2021. Correlation of knowledge and attitude on the practice of pregnant women's oral health. *Padjadjaran Journal of Dentistry* 33(1): 38.
- Bamanikar, S., & Kee, L. K. 2013. Knowledge, attitude and practice of oral and dental healthcare in pregnant women. *Oman Medical Journal* 28(4): 288.
- Barbieri, W., Peres, S. V., Pereira, C. de B., Peres Neto, J., Sousa, M. da L. R. de, & Cortellazzi, K.L. 2018. Sociodemographic factors associated with pregnant women's level of knowledge about oral health. *Einstein (Sao Paulo, Brazil)* 16(1): eAO4079.
- BPS-Statistics of DKI Jakarta Province. 2021. *DKI Jakarta Province in Figures 2020*. Jakarta.
- Bushehab, N. M. E., Sreedharan, J., Reddy, S., D'Souza, J., & Abdelmagyd, H. 2022. Oral Hygiene practices and awareness of pregnant women about the effects of periodontal disease on pregnancy outcomes. *International Journal of Dentistry* 2022: 4–6.
- Gallagher-Cobos, G., Almerich-Torres, T., Montiel-Company, J. M., Iranzo-Cortés, J. E., Bellot-Arcís, C., Ortolá-Siscar, J. C., & Almerich-Silla, J. M. 2022. Relationship between periodontal condition of the pregnant woman with preterm birth and low birth weight. *Journal of Clinical Medicine* 11(22): 6857.
- Gesase, N., Miranda-Rius, J., Brunet-Llobet, L., Lahor-Soler, E., Mahande, M. J., & Masenga, G. 2018. The association between periodontal disease and adverse pregnancy outcomes in Northern Tanzania: A cross-sectional study. *African Health Sciences* 18(3): 601–611.
- Gofur, N. R. P., Aghasy, A. Z. Z., & Gofur, A. R. P. 2021. Spatial distribution analysis of dentists, dental technicians, and dental therapists in Indonesia. *F1000Research* 10.
- Haresh Dave, B., B Shah, E., V Gaikwad, R., & S Shah, S. 2021. Association of preterm low-birth-weight infants and maternal periodontitis during pregnancy: An interventional study. *Journal Healthcare* 37 (September): 183–188.
- Irie, K., Tsuneishi, M., Saijo, M., Suzuki, C., & Yamamoto, T. 2022. Occupational Difference in oral health status and behaviors in Japanese workers: A literature review. In *International Journal of Environmental Research and Public Health* (Vol. 19, Issue 13, p. 8081). MDPI.
- Kementerian Kesehatan Republik Indonesia. 2022. *Satu Data Kesehatan untuk Satu Indonesia*. Kemkes: Kementerian Kesehatan Republik Indonesia.
- Kim, E. G., Park, S. K., & Nho, J. H. 2021. Factors related to maternal oral health status: Focus on pregnant and breastfeeding women. *Healthcare (Switzerland)* 9(6): 708.
- Kusumawati, N. I. N. 2011. *Gambaran Tingkat Pengetahuan Perawat Tentang Perawatan Metode Kanguru di RSAB Harapan Kita*. Universitas Indonesia.
- Mochlisin Fatkur Rohman. 2021. Pengaruh integrasi media komunikasi terhadap pengetahuan pengunjung wisata edukasi pertanian kabupaten tulungagung. *Jurnal Penyuluhan* 18(01): 36–48.
- Rahman, T., Fatimah, F., Mulyaningsih, S., Paramita, D. P., Lestari, P., & Delia, A. R. 2022. The correlation between pregnant women with COVID-19 and mode of delivery. *JNKI (Jurnal Ners Dan Kebidanan Indonesia) (Indonesian Journal of Nursing and Midwifery)* 10(3): 262.
- Raiyanti, I. G. A., Gejir, I. N., & Kastini, D. 2021. Hubungan tingkat pengetahuan pemeliharaan kesehatan gigi dan mulut dengan pendidikan ibu hamil di kabupaten Gianyar tahun 2021. *Jurnal Kesehatan Gigi (Dental Health Journal)* 8(2): 73–79.
- Schröter, U., Ziebolz, D., Stepan, H., & Schmalz, G. 2022. Oral hygiene and oral health behavior, periodontal complaints and oral health-related quality of life in pregnant women. *BMC Oral Health* 22(1): 1–7.
- Selvaraj, S., Naing, N. N., Wan-Arfah, N., & Abreu, M. H. N. G. de. 2021. Assessment on oral health knowledge, attitude, and behaviour and its association with sociodemographic and habitual factors of South Indian population. *Pesquisa Brasileira Em Odontopediatria e Clínica Integrada* 21.
- Setyani, & Widyaning, N. W. R. 2021. *Gambaran Pengetahuan Ibu Hamil Tentang Pemeliharaan Kesehatan Gigi Dan Mulut Di Kabupaten Buleleng Tahun 2021*. Denpasar: Poltekkes Kemenkes Denpasar.

- Silva de Araujo Figueiredo, C., Gonçalves Carvalho Rosalem, C., Costa Cantanhede, A.L., Abreu Fonseca Thomaz, É.B., & Fontoura Nogueira da Cruz, M.C. 2017. Systemic alterations and their oral manifesta-tions in pregnant women. In *Journal of Obstetrics and Gynaecology Research* (Vol. 43, Issue 1, pp. 16–22).
- Soegyanto, A. I., Larasati, R. N., Wimardhani, Y. S., & Özen, B. 2020. Mother’s knowledge and behaviour towards oral health during pregnancy. *Pesquisa Brasileira Em Odontopediatria e Clinica Integrada* 20: 1–8.
- Sunarsih, T., Permatasari, I., & Meilani, M. n.d. Pengetahuan ibu hamil dapat meningkatkan perilaku pemeriksaan antenatal care terintegrasi. *Media Kesehatan Masyarakat Indonesia* 19(2): 127–133.
- Tasyakuranti, M. N., Linati, P. A., Azkiyah, F., & Erzaligina, D. F. 2019. Promoting dental check-up for pregnant women pre test and post test evaluation. *Indonesian Journal of Dental Medicine* 2(1): 2018–2020.
- Thakur, D. V., Thakur, D .R., Kaur, D. M., Kaur, D .J., Kumar, D. A., Viridi, D. D., & Jassal, D. S. 2020. Pregnancy & oral health and dental management in pregnant patient. *Journal of Current Medical Research and Opinion* 3(11): 724–731.
- Thomas, N. J., Middleton, P. F., & Crowther, C. A. 2008. Oral and dental health care practices in pregnant women in Australia: A postnatal survey. *BMC Pregnancy and Childbirth* 8(1): 1–6.
- Wassihun, B., Ayinalem, A., & Beyene, K. 2022. Knowledge of oral health during pregnancy and associated factors among pregnant mothers attending antenatal care at South Omo Zone public hospitals, Southern Ethiopia, 2021. *PLoS One* 17(8).
- Wu, M., Chen, S. W., & Jiang, S. Y. 2015. Relationship between gingival inflammation and pregnancy. In *Mediators of Inflammation* (Vol. 2015).

# Knowledge regarding dental and oral health among pregnant women (study at Palmerah Community Health Center, West Jakarta)

*by Abdul Gani Soulissa*

---

**Submission date:** 13-Aug-2024 02:38PM (UTC+0700)

**Submission ID:** 2380799667

**File name:** en\_study\_at\_Palmerah\_Community\_Health\_Center,\_West\_Jakarta.docx (735.48K)

**Word count:** 2837

**Character count:** 16339

## Knowledge regarding dental and oral health among pregnant women (study at Palmerah Community Health Center, West Jakarta)

P.A. Salsabila

*Faculty of Dentistry, Trisakti University, Jakarta, Indonesia*

L.H. Andayani & A.G. Soulissa

*Department of Preventive and Public Health Dentistry, Faculty of Dentistry, Trisakti University, Jakarta, Indonesia*

**ABSTRACT:** Backgrounds: Hormonal changes occurring in women during pregnancy may have an impact on oral and dental health. Pregnant women are more susceptible to dental and oral health issues, which may have harmful effects like premature births and babies with low birth weight (LBW). Pregnant women should be well informed about the oral health education and the importance of maintaining oral health during pregnancy. Objective: To identify socio-demographic characteristics associated with the pregnant women knowledge, regarding dental and oral health maintenance at the Palmerah Community Health Center, West Jakarta. Methods: This cross-sectional study involved 194 pregnant women taken by purposive sampling. Self-administered questionnaire contained 15 questions has been tested for validity and reliability. Spearman's Correlation Test was conducted to assess the correlation between socio-demographic characteristics and pregnant women's knowledge. Results: Knowledge regarding dental and oral health maintenance was poor among pregnant women (46.9%). There was significant correlation between knowledge regarding dental and oral health maintenance and education level ( $p = 0.000$ ), occupational status ( $p = 0.001$ ) and number of pregnancies ( $p = 0.004$ ). Conclusions: Knowledge regarding dental and oral health care maintenance among pregnant women at the Palmerah Community Health Center, West Jakarta, needs to be improved. More intensive dental and oral health education among pregnant women are still required.

### 1 BACKGROUNDS

The Special Capital Region of Jakarta is a city with high population density in Indonesia. Jakarta's population density may relate to several factors, such as the high number of marriages, that followed by the high number of pregnancies. Demographic data shows that there were 218,601 pregnant women recorded in Jakarta in 2021 (BPS-Statistics of DKI Jakarta Province 2021). Demographic research in 2022 shows that Jakarta is ranked seventh with the highest number of pregnant women in Indonesia (Kementerian Kesehatan Republik Indonesia 2022).

Pregnancy is a dynamic condition resulting several physical, behavioral, and hormonal changes that influence the oral cavity. The alteration of estrogen and progesterone may cause pregnant women become more susceptible to dental health problems (Wu et al. 2015). Oral health problems commonly occurred during pregnancy are periodontal diseases, such as gingivitis and periodontitis. American Dental Association (ADA) stated that 60% to 75%

of pregnant women had experience gingivitis during pregnancy (Silva de Araujo Figueiredo et al. 2017). Pregnancy gingivitis occurred as the inflammatory response to bacterial plaque that is attributed to increased levels of progesterone and estrogen (Thakur et al. 2020). The relationship between periodontal health and post-pregnancy conditions has been investigated in a number of studies (Andayani et al. 2019; Gesase et al. 2018). Periodontal disease during pregnancy may result in complications like premature birth and babies with low birth weight (LBW) (Gallagher-Cobos et al. 2022; Haresh Dave et al. 2021).

Along with nutrition changes and poor oral hygiene, pregnancy may cause a number of physiological changes, such as nausea, tiredness, and vomiting, which may have an impact on oral health. Pregnant women often pay less attention to the cleanliness of their oral cavities (Kim et al. 2021). They tend to focus more on the health of their fetus, as well as ignoring their dental and oral health (Azizah et al. 2021). Most pregnant women only visit the dentist if oral health problems already occurred, and require treatments (Tasyakuranti et al. 2019).

Knowledge of maintaining dental and oral health is essential during pregnancy. Good knowledge may improve the awareness and behavior of maintaining proper dental and oral health (Bushehab et al. 2022; Schröter et al. 2022). Information about proper toothbrushing time, method, and frequency, may assist to decrease the risk of dental and oral health diseases, though other predictors should also be controlled. This study aims to identify socio-demographic characteristics associated with the pregnant women knowledge, regarding dental and oral health maintenance at the Palmerah Community Health Center, West Jakarta.

## 2 RESEARCH METHOD

This Cross-Sectional study was conducted at the Palmerah Community Health Center, West Jakarta from September to November 2022. Palmerah Community Health Center consists of six sub-districts working area, providing affordable health services for society with various characteristics. Women who visited the antenatal clinic while pregnant made up the study's population. A questionnaire with 15 items about maintaining dental and oral health was given to a sample of 194 pregnant women. Sociodemographic data including age, education level, occupational status, gestational age, and number of pregnancies were also taken.

All pregnant women willing to fill out the questionnaire as well as the informed consent were included. The distribution of the sociodemographic characteristics and knowledge of dental and oral health maintenance was evaluated. The Spearman Correlation test was used to measure correlation among variables and statistical significance between each variable, where the level of significance was established at  $p < 0,05$ . This study was approved by the Ethics Committee of Faculty of Dentistry, Trisakti University, No. 545/S1/KEPK/FKG/7/ 2022.

## 3 RESULTS

Among 194 pregnant women were included in this study, 91 pregnant women (46.9%) had poor of knowledge about the maintenance of oral health. Table 1 shows that the majority of pregnant women in this study were aged between 26–35 years (68%), had medium level of education (52.1%), unemployed (59.8%), undergoing the third trimester of pregnancy (54.6%), and having their second pregnancy (46.9%).

Table 2 shows that the majority of pregnant women are capable to identify signs of healthy gums (77.8%), risk factors of gingivitis during pregnancy (81.4%), cause of nausea and vomiting during pregnancy (88.1%), and proper food should be consumed (85.5%). More than half pregnant women knows that they should brush they're twice a day (53%)



Table 1. Characteristics of pregnant women at the Palmerah Community Health Center, West Jakarta.

Variables	N	%
<b>Age (years)</b>		
17 – 25	49	25.3
26 – 35	132	68
36 – 45	13	6.7
<b>Education level</b>		
Under high school	30	15.5
High school	101	52.1
Diploma or higher	64	32.5
<b>Occupational status</b>		
Employed	78	40.2
Unemployed	116	59.8
<b>Gestational age</b>		
1st Trimester	39	20.1
2nd Trimester	49	25.3
3rd Trimester	106	54.6
<b>Number of pregnancies</b>		
1	57	29.4
2	91	46.9
3	35	18
4	11	5.7
<b>Knowledge level</b>		
Good	29	14.9
Moderate	74	38.1
Poor	91	46.9

Table 2. Knowledge regarding dental and oral health maintenance among pregnant women at the Palmerah Community Center, West Jakarta.

No.	Knowledge	Correct	Incorrect
1	Characteristics of healthy gums.	151 (77.8%)	43 (22.2%)
2	Signs of gingivitis.	99 (51%)	95 (49%)
3	Risk factors of gingivitis among pregnant women.	158 (81.4%)	36 (18.6%)
4	Correct toothbrushing frequency	103 (53%)	91 (47%)
5	Fluoride as the content of toothpaste	112 (57.7%)	82 (42.3%)
6	The use of dental floss	68 (35%)	126 (65%)
7	Causes of stomatitis in pregnant women.	22 (11.3%)	172 (88.7%)
8	Common oral problems in pregnant women.	133 (68.5%)	61 (31.5%)
9	Causes of nausea and vomiting during pregnancy.	171 (88.1%)	23 (11.9%)
10	Hormones affecting oral health during pregnancy.	79 (40.7%)	115 (59.3%)
11	Problems occurred if cavities are left untreated.	97 (50%)	97 (50%)
12	Food that suitable for oral health	166 (85.5%)	28 (14.5%)
13	Thing to do after vomiting during pregnancy.	79 (40.7%)	115 (59.2%)
14	Adverse pregnancy outcomes related to oral health	90 (46.3%)	104 (53.6%)
15	Frequency of dental check-up to the dentist.	58 (29.8%)	136 (70.2%)

using toothpaste with fluoride (57.7%). Half of pregnant women does not know what may occurred if tooth cavities are left untreated (50%), and few of them knows about the recommended time for a dental check-up to the dentist (29.8%).



Table 3 shows significant correlation between education level (p = 0.000), occupational status (p = 0.001), and the number of pregnancies (p = 0.004) with knowledge of dental and oral health maintenance. Pregnant women with middle level of education have larger proportion (52.1%) of poor knowledge regarding dental and oral health maintenance. Table 3 also shows that unemployed pregnant women had lower level of knowledge (33.5%) than the employed (12.9%). Pregnant women undergoing their third trimester had lower level of knowledge (26.3%) as well as pregnant women who were having their second pregnancies (20.6%)

Table 3. Sociodemographic characteristics and knowledge of pregnant women.

Variables	Knowledge level			P Value
	Good	Moderate	Poor	
<b>Age (years)</b>				
17 – 25	6 (3.1%)	17(8.8%)	26 (13.4%)	0.446
26 – 35	21 (10.8%)	54 (27.8%)	57 (29.4%)	
36 – 45	2 (1%)	4 (2.1%)	7 (3.6%)	
<b>Education level</b>				
Under high school	1 (0.5%)	7 (3.6%)	22 (11.3%)	0.000
High school	11 (5.7%)	35 (18%)	55 (28.4%)	
Diploma or higher	17 (8.8%)	33 (17%)	13 (6.7%)	
<b>Occupational status</b>				
Employed	17 (8.8%)	36 (18.6%)	25 (12.9%)	0.001
Unemployed	12 (6.2%)	39 (20.1%)	65 (33.5%)	
<b>Gestational age</b>				
1st Trimester	6 (3.1%)	13 (6.7%)	20 (10.3%)	0.570
2nd Trimester	11 (5.7%)	19 (9.8%)	19 (9.8%)	
3rd Trimester	12 (6.2%)	43 (22.2%)	51 (26.3%)	
<b>Number of pregnancies</b>				
1	10 (5.2%)	27 (13.9%)	20 (10.3%)	0.004
2	15 (7.7%)	36 (18.6%)	40 (20.6%)	
3	4 (2.1%)	9 (4.6%)	22 (11.3%)	
4	0 (0%)	3 (1.5%)	8 (4.1%)	

#### 4 DISCUSSION

In this study, most of pregnant women (46.9%) had poor knowledge regarding dental and oral health maintenance. Several other studies in Indonesia also found that most pregnant women still have a low level of knowledge regarding dental and oral health maintenance (Setyani & Widyaning 2021; Soegyanto et al. 2020). These results may occur due to lack of information related to dental and oral health during pregnancy, thus affecting their knowledge. Poor knowledge may affect the awareness of dental and oral health among pregnant women, as they become not conscious of their oral cavity condition or their needs for dental treatment. According to National Basic Survey (Risikesdas) data in 2018, 57.6% of Indonesia's population had dental and oral problems, but only 10.2% is disposed to seek treatment (Gofur et al. 2021). This study shows that more than half pregnant women were aged 26 to 35 years (68%).

Many studies declared that the ideal age for healthy reproduction is between 20 and 35 years (Rahman et al. 2022). Pregnant women who were aged 26–35 years (29.4%) had lower level of knowledge compared to younger group (13.4%) and older group (3.6%). Various pre-dictors, including occupation, education, and environment may influence an individual level

of knowledge towards dental and oral health. Increasing age is not always related with the enhancement of knowledge, though it may affect the paradigm or experiences of someone (Barbieri et al. 2018).

Based on selected variables, there were significant correlation between education level and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.000$ ). Poor knowledge was found in pregnant women who graduated from high school (28.4%) or even lower (11.3%). This is similar with other study in Indonesia that found 66.6% of pregnant women with primary levels of education had lower level of knowledge related to dental and oral health (Raiyanti et al. 2021). Pregnant women with higher education may expressed better knowledge as they had broader mindset and better perspective that lead to increases in knowledge (Wassihun et al. 2022). Significant association between dental health knowledge and practice with education level and socioeconomic status also found in developed country as common result (Thomas et al. 2008). Education will affect knowledge by forming attitudes and behavior of someone to create a better healthy life (Selvaraj et al. 2021). Better knowledge will encourage better practice in applying dental and oral health favorably (Bamanikar & Kee 2013). Individual with higher education may learn recent knowledge and has more access to appropriate information (Mochlisin Fatkur Rohman 2021). Though the access to information is lesser, individual with low level education can still have sufficient knowledge due to opportunity to gain it. Formal education is not the only element that can influence level of knowledge (Sunarsih et al. n.d.).

Significant correlation also found between occupational status and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.001$ ). Unemployed pregnant women (33.5%) had lower level of knowledge compared to employed pregnant women (12.9%). This is similar to other study stated that employment may influence individual to acquire better knowledge (Irie et al. 2022). Employed pregnant women have more knowledge due to better social communication and information access.

Significant correlation was found between number of pregnancies and knowledge of dental and oral health maintenance among pregnant women ( $p = 0.004$ ). The majority of pregnant women in this study was having their second pregnancies (46.9%). This fact is interesting since pregnant women with higher number of pregnancies should obtain more health information due to previous experience. Experience is one of way to acquire knowledge and learning experiences will develop decision-making skills and sorting out information (Kusumawati 2011). The more experience, the more knowledge will be obtained. This study found that most of pregnant women who was having their second pregnancies had lower level of knowledge (20.6%) compared to other groups. Pregnancy trimester and level of knowledge did not significantly correlate ( $p = 0.570$ ).

Pregnant women in the third trimester have the highest percentage of poor knowledge (26.3%) compared to pregnant women in the first and second trimesters. Pregnant women at higher gestational age should have received more information about general and oral health due to higher frequency of visiting health facility. This study shows that the addition of gestational age is not correlated with better oral health knowledge. More intensive oral and dental health education is still needed in every trimester of pregnancy, in order to achieve better knowledge.

## 5 CONCLUSION

Knowledge regarding dental and oral health maintenance among pregnant women at the Palmerah Community Health Center, West Jakarta, needs to be improved. To provide improved oral health care, pregnant women and the medical community need to be counseled on oral health issues. The foundations of preventative education and oral health care for pregnant women must be established through collaboration between health professionals and community organizations.

## ACKNOWLEDGMENT

Thanks to Palmerah Community Health Center which has supported this research.

## REFERENCES

- Andayani, L. H., Bungsu, P., & Prihartono, N. 2019. Determinants for periodontal disease during pregnancy among Indonesian women: A cross-sectional study using National Riskesdas 2013 data. *Journal of International Dental and Medical Research* 12(1): 337–343.
- Azizah, M. N., Ramadhani, M. N., Suwargiani, A. A., & Susilawati, S. 2021. Correlation of knowledge and attitude on the practice of pregnant women's oral health. *Padjadjaran Journal of Dentistry* 33(1): 38.
- Bamanikar, S., & Kee, L. K. 2013. Knowledge, attitude and practice of oral and dental healthcare in pregnant women. *Oman Medical Journal* 28(4): 288.
- Barbieri, W., Peres, S. V., Pereira, C. de B., Peres Neto, J., Sousa, M. da L. R. de, & Cortellazzi, K.L. 2018. Sociodemographic factors associated with pregnant women's level of knowledge about oral health. *Einstein (Sao Paulo, Brazil)* 16(1): eAO4079.
- BPS-Statistics of DKI Jakarta Province. 2021. *DKI Jakarta Province in Figures 2020*. Jakarta.
- Bushehab, N. M. E., Sreedharan, J., Reddy, S., D'Souza, J., & Abdelmagyd, H. 2022. Oral Hygiene practices and awareness of pregnant women about the effects of periodontal disease on pregnancy outcomes. *International Journal of Dentistry* 2022: 4–6.
- Gallagher-Cobos, G., Almerich-Torres, T., Montiel-Company, J. M., Iranzo-Cortés, J. E., Bellot-Arcís, C., Ortolá-Siscar, J. C., & Almerich-Silla, J. M. 2022. Relationship between periodontal condition of the pregnant woman with preterm birth and low birth weight. *Journal of Clinical Medicine* 11(22): 6857.
- Gesase, N., Miranda-Rius, J., Brunet-Llobet, L., Lahor-Soler, E., Mahande, M. J., & Masenga, G. 2018. The association between periodontal disease and adverse pregnancy outcomes in Northern Tanzania: A cross-sectional study. *African Health Sciences* 18(3): 601–611.
- Gofur, N. R. P., Aghasy, A. Z. Z., & Gofur, A. R. P. 2021. Spatial distribution analysis of dentists, dental technicians, and dental therapists in Indonesia. *F1000Research* 10.
- Hareesh Dave, B., B Shah, E., V Gaikwad, R., & S Shah, S. 2021. Association of preterm low-birth-weight infants and maternal periodontitis during pregnancy: An interventional study. *Journal Healthcare* 37 (September): 183–188.
- Irie, K., Tsuneishi, M., Saijo, M., Suzuki, C., & Yamamoto, T. 2022. Occupational Difference in oral health status and behaviors in Japanese workers: A literature review. In *International Journal of Environmental Research and Public Health* (Vol. 19, Issue 13, p. 8081). MDPI. Kementerian Kesehatan Republik Indonesia. 2022. *Satu Data Kesehatan untuk Satu Indonesia*. Kemkes: Kementerian Kesehatan Republik Indonesia.
- Kim, E. G., Park, S. K., & Nho, J. H. 2021. Factors related to maternal oral health status: Focus on pregnant and breastfeeding women. *Healthcare (Switzerland)* 9(6): 708.
- Kusumawati, N. I. N. 2011. *Gambaran Tingkat Pengetahuan Perawat Tentang Perawatan Metode Kanguru di RSAB Harapan Kita*. Universitas Indonesia.
- Mochlisin Fatkur Rohman. 2021. Pengaruh integrasi media komunikasi terhadap pengetahuan pengunjung wisata edukasi pertanian kabupaten tulungagung. *Jurnal Penyuluhan* 18(01): 36–48.
- Rahman, T., Fatimah, F., Mulyaningsih, S., Paramita, D. P., Lestari, P., & Delia, A. R. 2022. The correlation between pregnant women with COVID-19 and mode of delivery. *JNKI (Jurnal Ners Dan Kebidanan Indonesia) (Indonesian Journal of Nursing and Midwifery)* 10(3): 262.
- Raiyanti, I. G. A., Gejir, I. N., & Kastini, D. 2021. Hubungan tingkat pengetahuan pemeliharaan kesehatan gigi dan mulut dengan pendidikan ibu hamil di kabupaten ganyar tahun 2021. *Jurnal Kesehatan Gigi (Dental Health Journal)* 8(2): 73–79.
- Schröter, U., Ziebolz, D., Stepan, H., & Schmalz, G. 2022. Oral hygiene and oral health behavior, periodontal complaints and oral health-related quality of life in pregnant women. *BMC Oral Health* 22(1): 1–7.
- Selvaraj, S., Naing, N. N., Wan-Arfah, N., & Abreu, M.H. N. G. de. 2021. Assessment on oral health knowledge, attitude, and behaviour and its association with sociodemographic and habitual factors of South Indian population. *Pesquisa Brasileira Em Odontopediatria e Clínica Integrada* 21.
- Setyani, & Widyaning, N. W. R. 2021. *Gambaran Pengetahuan Ibu Hamil Tentang Pemeliharaan Kesehatan Gigi Dan Mulut Di Kabu-paten Buleleng Tahun 2021*. Denpasar: Poltekkes Kemenkes Denpasar.

- Silva de Araujo Figueiredo, C., Gonçalves Carvalho Rosalem, C., Costa Cantanhede, A.L., Abreu Fonseca Thomaz, É.B., & Fontoura Nogueira da Cruz, M.C. 2017. Systemic alterations and their oral manifesta-tions in pregnant women. In *Journal of Obstetrics and Gynaecology Research* (Vol. 43, Issue 1, pp. 16–22).
- Soegyanto, A. I., Larasati, R. N., Wimardhani, Y. S., & Özen, B. 2020. Mother’s knowledge and behaviour towards oral health during pregnancy. *Pesquisa Brasileira Em Odontopediatria e Clínica Integrada* 20: 1–8.
- Sunarsih, T., Permatasari, I., & Meilani, M. n.d. Pengetahuan ibu hamil dapat meningkatkan perilaku pemeriksaan antenatal care terintegrasi. *Media Kesehatan Masyarakat Indonesia* 19(2): 127–133.
- Tasyakuranti, M. N., Linati, P. A., Azkiyah, F., & Erzaligina, D. F. 2019. Promoting dental check-up for pregnant women pre test and post test evaluation. *Indonesian Journal of Dental Medicine* 2(1): 2018–2020.
- Thakur, D. V., Thakur, D .R., Kaur, D. M., Kaur, D .J., Kumar, D. A., Viridi, D. D., & Jassal, D. S. 2020. Pregnancy & oral health and dental management in pregnant patient. *Journal of Current Medical Research and Opinion* 3(11): 724–731.
- Thomas, N. J., Middleton, P. F., & Crowther, C. A. 2008. Oral and dental health care practices in pregnant women in Australia: A postnatal survey. *BMC Pregnancy and Childbirth* 8(1): 1–6.
- Wassihun, B., Ayinalem, A., & Beyene, K. 2022. Knowledge of oral health during pregnancy and associated factors among pregnant mothers attending antenatal care at South Omo Zone public hospitals, Southern Ethiopia, 2021. *PLoS One* 17(8).
- Wu, M., Chen, S. W., & Jiang, S. Y. 2015. Relationship between gingival inflammation and pregnancy. In *Mediators of Inflammation* (Vol. 2015).

# Knowledge regarding dental and oral health among pregnant women (study at Palmerah Community Health Center, West Jakarta)

## ORIGINALITY REPORT

17%

SIMILARITY INDEX

12%

INTERNET SOURCES

13%

PUBLICATIONS

2%

STUDENT PAPERS

## PRIMARY SOURCES

- 1** Submitted to Fakultas Teknologi Kebumihan dan Energi Universitas Trisakti 1%  
Student Paper
- 2** [ejournal.poltekkes-denpasar.ac.id](http://ejournal.poltekkes-denpasar.ac.id) 1%  
Internet Source
- 3** Anne A. Suwargiani, Erry M. Arief, Dudi Aripin, Sunardhi Widyaputra, Sri Susilawati. "Knowledge of Five Different Types of Indonesian Health Workers Regarding Oral Health Services for Pregnant Women", The Open Dentistry Journal, 2021 1%  
Publication
- 4** [trijurnal.trisakti.ac.id](http://trijurnal.trisakti.ac.id) 1%  
Internet Source
- 5** Riski Amalia Hidayah, Fitri Diah Oktadewi, Bambang Tri Hartomo, Naila Robbaniyya Fithriyya, Inneke Cahyani, Inneke Cahyani. "The Effectiveness of Dental Health Cadre Training on Increasing the Knowledge of

# Village Community Dental Health Cadres (UKGMD) in Karangtengah Village, Baturraden District", Kesmas Indonesia, 2024

Publication

---

6	<a href="http://www.ncbi.nlm.nih.gov">www.ncbi.nlm.nih.gov</a> Internet Source	1 %
7	<a href="http://oamjms.eu">oamjms.eu</a> Internet Source	1 %
8	Sara S. McMillan, Jie Hu, Sarira El-Den, Claire L. O'Reilly, Amanda J. Wheeler. "Pharmacy participation in dental and oral health care", JBI Evidence Synthesis, 2020 Publication	1 %
9	<a href="http://journals.plos.org">journals.plos.org</a> Internet Source	1 %
10	<a href="http://repository.unej.ac.id">repository.unej.ac.id</a> Internet Source	1 %
11	Eun Gyeong Kim, Sook Kyoung Park, Ju-Hee Nho. "Factors Related to Maternal Oral Health Status: Focus on Pregnant and Breastfeeding Women", Healthcare, 2021 Publication	1 %
12	"Abstracts of Posters", The European Journal of Contraception & Reproductive Health Care, 2009 Publication	<1 %

---

13	Natalie J Thomas, Philippa F Middleton, Caroline A Crowther. "Oral and dental health care practices in pregnant women in Australia: a postnatal survey", BMC Pregnancy and Childbirth, 2008 Publication	<1 %
14	Submitted to University of Northampton Student Paper	<1 %
15	<a href="http://bmcnurs.biomedcentral.com">bmcnurs.biomedcentral.com</a> Internet Source	<1 %
16	<a href="http://ejournal.unisayogya.ac.id">ejournal.unisayogya.ac.id</a> Internet Source	<1 %
17	<a href="http://ir.mu.ac.ke:8080">ir.mu.ac.ke:8080</a> Internet Source	<1 %
18	<a href="http://www.researchsquare.com">www.researchsquare.com</a> Internet Source	<1 %
19	<a href="http://bmcpregnancychildbirth.biomedcentral.com">bmcpregnancychildbirth.biomedcentral.com</a> Internet Source	<1 %
20	<a href="http://ejournal.almaata.ac.id">ejournal.almaata.ac.id</a> Internet Source	<1 %
21	<a href="http://iopscience.iop.org">iopscience.iop.org</a> Internet Source	<1 %
22	<a href="http://jurnal.umpwr.ac.id">jurnal.umpwr.ac.id</a> Internet Source	<1 %



23

[www.mdpi.com](http://www.mdpi.com)

Internet Source

&lt;1 %

24

[www.scielo.br](http://www.scielo.br)

Internet Source

&lt;1 %

25

Armin Azarshahri, Lori Rainchuso, Jared Vineyard, Lori Giblin-Scanlon. "Postpartum U.S. Women's Oral Health Knowledge, Attitudes, and Practices During Pregnancy", *Maternal and Child Health Journal*, 2022

Publication

&lt;1 %

26

Atie Rachmiatie, Ike Junita Triwardhani, Alhamuddin, Cep Ubad Abdullah. "Islam, Media and Education in the Digital Era", Routledge, 2022

Publication

&lt;1 %

27

Ade Gafar Abdullah, Isma Widiaty, Cep Ubad Abdullah. "Medical Technology and Environmental Health", CRC Press, 2020

Publication

&lt;1 %

28

Biresaw Wassihun, Abayineh Ayinalem, Kassaw Beyene. "Knowledge of oral health during pregnancy and associated factors among pregnant mothers attending antenatal care at South Omo Zone public hospitals, Southern Ethiopia, 2021", *PLOS ONE*, 2022

Publication

&lt;1 %



---

Exclude quotes      On

Exclude matches      Off

Exclude bibliography      On