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

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

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

Quality Improvement in Dental and Medical Knowledge, Research, Skills and Ethics Facing Global Challenges – Widyarman et al. (Eds)
© 2024 The Editor(s), ISBN 978-1-032-51441-3

Table of Contents

Dental materials

Dento-maxillofacial radiology

Medical sciences and technology

Oral and maxillofacial surgery

Oral biology

Oral medicine and pathology

Orthodontics

Pediatric dentistry

Periodontology

Prosthodontics

Quality Improvement in Dental and Medical Knowledge, Research, Skills and Ethics Facing Global Challenges – Widyarman et al. (Eds)

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

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*)

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*)

FAKULTAS KEDOKTERAN GIGI
UNIVERSITAS TRISAKTI

FORIL XIII 2022

FKG USAKTI SCIENTIFIC FORUM CONJUNCTION WITH INTERNATIONAL CONFERENCE IN DENTAL, MEDICAL SCIENCES AND TECHNOLOGY

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

8 - 10 December 2022 - JIEXPO Convention Centre and Theatre

FOREWORD

It is a great pleasure to welcome all of you, dentists, students, sponsors, and exhibitors, to this year's FORIL XIII (Forum Ilmiah) 2022. I am delighted to announce that FORIL XIII 2022 will be held at JI EXPO Convention Centre and Theatre on December 8th to 10th, 2022.

In the era of globalization, dentists have been expected to continuously pursue and update more knowledge, refine their skills, and learn advanced technology to be able to compete with dentists from all around the world and provide the best treatment for their patients. As a way to do that, our Faculty of Dentistry, Universitas Trisakti will hold FORIL, a scientific seminar with the theme "Quality Improvement in Dental Knowledge, Research, Skills, and Ethics Facing Global Challenges".

Faculty of Dentistry, Universitas Trisakti has held FORIL for many years with forefront topics on dental research and clinical applications brought by our established and professional experts from our faculty. Our organizing committe has prepared this event attentively with preeminent scientific programs, enthralling social events, and attractive dental exhibition. This event could also be the perfect place for your blissfull reunion with your colleagues. It would be an honor and privilege to have each and every one of you to participate and join us in our Faculty's acclaimed program.

drg. Aryadi, Sp. KG (K)
Chairperson, FORIL XIII 2022 Organizing Committee

Greetings from Jakarta,

It gives me tremendous pleasure to welcome all colleagues, students, sponsors and exhibitors to our Scientific Forum the “XIIIth FORUM ILMIAH” (FORIL 2022) to be held from 8 to 10 December 2022 at Jakarta International Expo Convention Centre and Theatre, Kemayoran, North Jakarta. I feel extremely proud that the XIIIth FORIL 2022 is going beyond as a part of Continuing Dental Professional Development Program.

The theme of the XIIIth FORIL 2022 is "Quality Improvement in Dental Knowledge, Research, Skills and Ethics Facing Global Challenges". This theme is to anticipate the challenges of globalization era in the field of dental health care, so that the quality of dental health professionals including dentists in Indonesia can be improved through the updating researches, clinical practices, sciences professionalism, skills and technology without leaving the ethical aspect.

The XIIIth meetings are expected to offer scientific programs, exhibition, and dentist reunion. These sessions will enrich your knowledge on the latest developments in oral and dental disciplines.

On behalf of Faculty of Dentistry Universitas Trisakti, I would like to invite everyone to be a part of this important event. I look forward to welcoming you to the XIIIth FORIL 2022.

Best wishes,
Prof Dr. Drg. Tri Erri Astoeti, MKes.
Dean of Faculty of Dentistry, Universitas Trisakti

FORIL XIII

Faculty of Dentistry Universitas Trisakti (USAKTI) presents International Conference in Dental, Medical Sciences and Technology (ICDMST) on December 8-10, 2022. With the main theme of "Quality Improvement in Dental and Medical Knowledge, Research, Skills and Ethics Facing Global Challenges", this triennial conference has served as a meeting place for researchers, practitioners, and academics to share their technical and clinical studies on health, ethical, and social issues in field medical and dentistry. The conference welcomes participants to present most recent findings in fundamental and clinical sciences related to medical and dental research under 12 major topics, 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. Selected papers will be published in a conference proceedings which will be useful for keeping dental and medical professionals up to date on the latest scientific developments.

AGENDA

May 16, 2022
First Call for Abstract

August 30 2022
Abstract Submission Deadline

September 9 2022
Announcement of Abstract Acceptance

October 14 2022
Full Paper Submission and Payment Deadline

December 8 2022
Conference Day 1

December 9 2022
Conference Day 2

December 10 2022
Conference Day 3

Jl. Kyai Tapa No.260, RT.4/RW.16, Grogol, Kec. Grogol petamburan, Kota Jakarta Barat, Daerah Khusus Ibukota Jakarta 11410

https://foril-usakti.id
081214124324
@forilusakti2022
seminarfkgusakti2022

COMITTEE

GUARDIAN

Prof. dr. Ali Ghufron Mukti, M.Sc., PhD

ADVISOR

Prof. Dr. drg. Tri Erri Astoeti, M.Kes
drg. Wiwiek Poedjiastoeti, M.Kes., Sp.BM, PhD
drg. Rosalina Tjandrawinata, MSi, PhD
drg. Abdul Gani Soulisa, MPH
Dr. drg. Wita Anggraini, M.Biomed, PAK., Sp.Perio

CHAIRPERSON

drg. Aryadi Subrata, Sp.KG(K)

SECRETARY 1

drg, Dewi Liliany Margaretta, M.Kes

SECRETARY 1

drg. Firstine Kelsi Hartanto, MClinDent

TREASURY 1

drg. Deviyanti Pratiwi, M.Kes

SCIENTIFIC DIVISION

Dr. drg. Armelia Sari W, M.Kes, PBO
drg. Anggraeny Putri Sekar Palupi, Sp.BM
drg. Dina Ratnasari, Sp.KG(K)
drg. Isya Hanin, Sp.Pros
drg. Carolina D. Marpaung, Sp.Pros, PhD
Dr. drg. M. Ihsan Rizal, M.Kes
drg. M. Orliando Roeslan, M.Kes, PhD

PROVISION DIVISION

drg. Riko Nofrizal, Sp.Ort
drg. Andy WIrahadikusumah, Sp.Pros
drg, Mikha Sundjojo, Sp.Perio
drg. Irvan Septrian Syah Putra Rasad

PUBLICATION DIVISION

drg. Intan Farizka, Sp.RKG
drg. Caesary Cloudya Panjaitan, M.M, M.K.G
drg. Annisaa Putri Ariyani, M.M., M.K.G

REGISTRATION DIVISION

drg. Goalbertus, M.M., M.K.M
drg. Wiena Widyastuti, Sp.KG(K)
drg. Rosita Stefani, Sp.KG

EVENT DIVISION

drg. Eka Seftiana Indah sari, Sp.Pros
drg. Rizki Tanjung, MM, MSi, MARS
deg. Idham Tegar Badruzzaman

EXHIBITION DIVISION

drg. Albert, Sp. Perio
Dr. drg. Jeddy, Sp.KGA
drg. Eddy, PhD

CONSUMPTION DIVISION

drg. Selviana Wulansari, Sp.KG
drg, Pretty Trisfilha, M.Biomed

FORIL XIII 2022

FAKULTAS KEDOKTERAN GIGI
UNIVERSITAS TRISAKTI

ABSTRACT

SHORT LECTURE

RECONSTRUCTION OF LARGE POST- ENUCLEATION MANDIBULAR DEFECT WITH BUCCAL FAT PAD

ABS-090

Nyoman Ayu Anggayanti, Agus Dwi Sastrawan, Oyagi Shuka

Background: The ideal intraoral reconstruction should mimic speech, mastication, articulation, and aesthetical function of previous soft and hard tissue. Buccal Fat Pad (BFP) is a vascularized graft with potent regenerative ability. However, reports in BFP application especially in mandibular defects are somewhat limited.
Case Report: A 47-year-old female patient came to Wangaya Regional Hospital, Bali, Indonesia with chief complaint of swelling on left lower jaw. Radiograph examination showed a large cystic lesion in posterior left mandible region.
Case Management: After extraction of affected teeth #36-38, overlying bone was removed, the cyst was enucleated and sent for biopsy. Necrotomy was performed, leaving a defect of 3.5 cm x 1.5 cm. Buccal extension of BFP was herniated via blunt dissection, placed into the post-enucleation defect, covered with flap, and sutured. The defect showed progressive and stable healing at one day, one week, and one-month post-reconstruction follow up.
Discussion: BFP has been increasingly used for intraoral reconstruction especially in oroantral communication and cleft palate cases. It has been reported to give successful result even in previously failed graft site. BFP has a low infection rate, is rich in vascularity, close to recipient site, has quick epithelization rate, and only needs minimal dissection to be harvested hence minimal morbidity at donor site. The main disadvantage of BFP is possible post-surgical contraction. Conclusion: BFP graft is a practical technique that could be applied clinically to achieve an ideal intraoral reconstruction, mimicking both aesthetic and functionality of antecedent removed tissues.

Keywords: Mandibular defect; Intra oral reconstruction; Buccal fat pad

INTERCEPTIVE ORTHODONTIC TREATMENT NEED AND ITS RELATING DEMOGRAPHIC FACTORS IN DKI JAKARTA AND KEPULAUAN SERIBU

ABS-091

Y Yusra, J Kusnoto, H Wijaya, T E Astoeti, B Kusnoto

Background: Interceptive orthodontic is an orthodontic treatment procedure that aims to minimize the effect of malocclusion and decrease the need for a more complex malocclusion treatment, high cost of treatment, and eventually declining the need for corrective orthodontic treatment. DKI Jakarta and Kepulauan Seribu has 763.666 primary school aged children thus screening for the need of interceptive orthodontic treatment would be highly useful in identifying children that would benefit from getting interceptive orthodontic treatment. Aim. To investigate the need for interceptive orthodontic treatment and identifying its relating factors in 8-11 years old children in DKI Jakarta and Kepulauan Seribu. Method. This research is observational analytic research with cross sectional study design utilizing the Indeks Kebutuhan Perawatan Ortodonti Interseptif (IKPO-I). Each indicator is scored based on the subjects intra oral conditions then the data gathered was used to quantify the need for interceptive orthodontic treatment and its relating factors. Result. Based on 2020 subjects it is found that 18.96% of subjects does not need orthodontic treatment, 59.36% require interceptive orthodontic treatment, and 21.68% need corrective orthodontic treatment. There is a significant correlation between need for interceptive orthodontic treatment with parents' income (r= -0.07; p= 0.02). Conclusion. IKPO-I can be used as an interceptive orthodontic treatment screening instrument. More than half of the subjects require interceptive orthodontic treatment. Parents' income is the only demographic factor relate to the need for interceptive orthodontic treatment.

Keywords: Interceptive orthodontic, treatment need, IKPO-I, DKI Jakarta and Kepulauan Seribu

PEPSODENT FORIL XIII AWARD

WHAT IS PEPSODENT FORIL XIII AWARD?

Pepsodent Foril XIII Award is a prestigious competition organized by Foril Scientific Committee to honour the participants with outstanding research, case reports or literature reviews. We welcome everyone from different institutes and countries who wishes to participate in Pepsodent Foril XIII Award. The winner of Pepsodent Foril XIII Award will be granted prize money from our sponsor.

CATEGORIES OF COMPETITION
Participants can choose to enter into one of the following categories in the competition during the online abstract submission:

1. Dentists Category:
Participants has acquired their dental degree, is a dental practitioner, or enrolled in a post-graduate or PhD program. The participant of this category can choose to submit abstract on one of the following criteria:
a. Research
b. Case Report
c. Literature Review.

2. Student Category:
This category will be limited to only students who have completed their research as part of undergraduate dental programs.

PRIZE FOR PEPSODENT FORIL XIII AWARD WINNERS

1. Dentist Categories

a. Research
The winner will receive Rp.12.000.000,-
The first runner up will receive Rp.9.000.000,-
The second runner up will receive Rp.7.000.000,-

b. Case Report
The winner will receive Rp.10.000.000,-
The first runner up will receive Rp.8.000.000,-
The second runner up will receive Rp.6.000.000,-

c. Literature Review
The winner will receive Rp.9.000.000,-
The first runner up will receive Rp.7.000.000,-
The second runner up will receive Rp.5.000.000,-

2. Student Categories
The winner will receive Rp.8.000.000,-
The first runner up will receive Rp.6.000.000,-
The second runner up will receive Rp.4.000.000,-

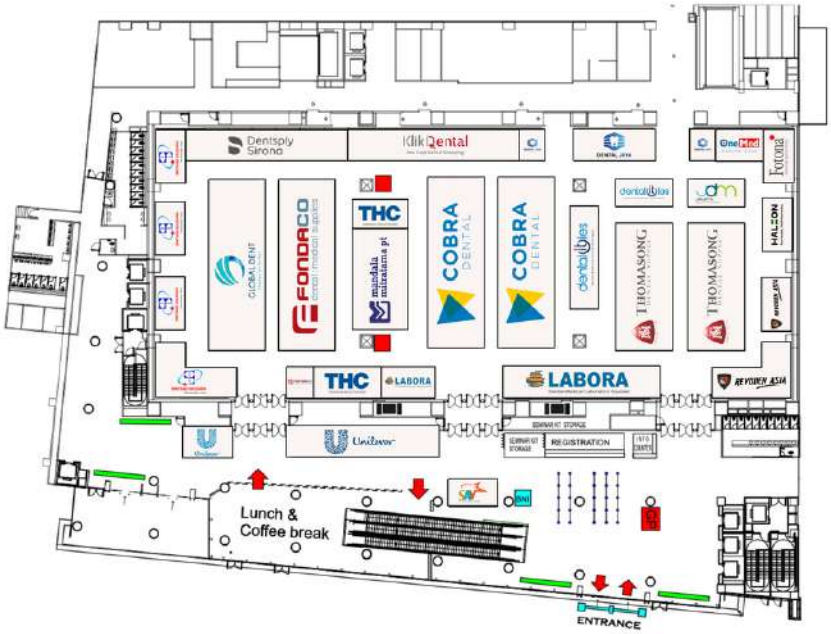
HOW TO PARTICIPATE?

- Participants can choose to enter award competition during abstract submission. Choose the correct category (Student/Dentist).
- Once the abstract is accepted, participants are expected to complete the registration/publishing payment and submit full paper. It is strongly recommended for the participant to proofread the manuscript using manuscript editor (Enago, etc) before full paper submission.
- The judges will review the abstract and full paper based on the originality and writing methods of the research/case report/literature review.
- The award finalists will be announced to present their paper to a panel of judges at the venue (offline session).
- The judging session will be held during the Pre-Foril session at Faculty of Dentistry Universitas Trisakti, Jakarta.

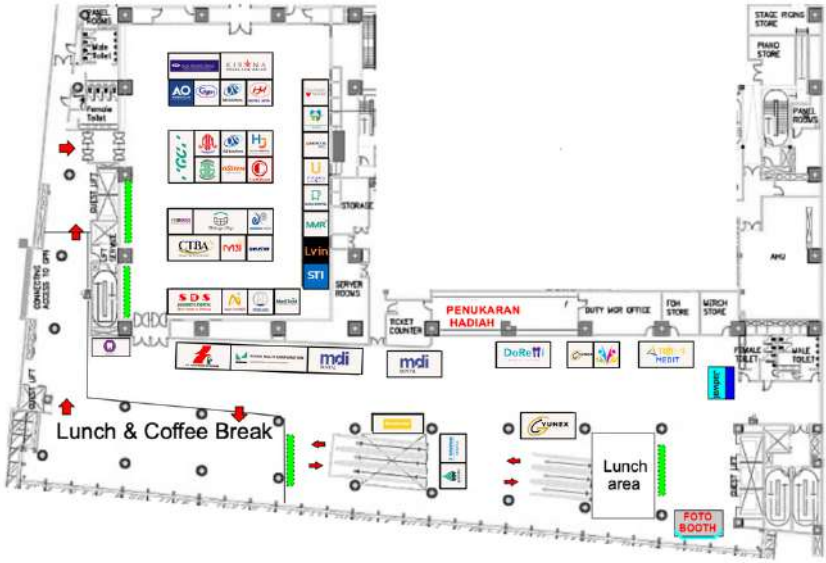
FLOOR PLAN

JIEXPO Convention Centre

GRAND BALLROOM



JUNIOR BALLROOM



LABORA 50th

onthos

sensitive
MINERAL EXPERT™
BY Pepsodent

THOMASONG
DENTAL SUPPLY
SINCE 1970

LABORÉ
sensitive skin care

Wardāh

MORITA

GIGI.ID

BNI
Melayani Negeri, Kebanggaan Bangsa

Quality Improvement in Dental and Medical Knowledge, Research, Skills and Ethics Facing Global Challenges – Widyarman et al. (Eds)
© 2024 The Author(s), ISBN 978-1-032-51441-3

A systematic review to evaluate the role of antibiotics in third molar extraction

R.A. Hayuningtyas, S. Soesanto & P. Natassya
Universitas Trisakti, Jakarta, Indonesia

S.B. Gutierez
University of the Philippines Open University, Manila, Philippines

ABSTRACT: Third molar extraction has become a frequent surgical practice for dentists. To minimize the postextraction infection, an antibiotics prescription is usually given. However, excessive antibiotic usage may also lead to several adverse reactions and bacterial resistance. The objective of this review is to understand the advantages and the risk of antibiotics prescription on third molar removal treatment. Systematic research was done on PubMed, SpringerLink, ScienceDirect, EBSCO, and Wiley using the search terms ("Odontectomy" OR "Third molar extraction") AND ("Antibiotics"). For this study, 92 articles were examined and only 7 were selected for this review. The Preferred Reporting Item for Systematic Review and Meta-Analyses (PRISMA) guidelines was used. Results showed that antibiotics such as clindamycin and penicillin reduce trismus, swelling, and pain after postoperative compared to placebo. Quality of life (QoL) is also slightly better in patients who were prescribed amoxicillin after surgery. Amoxicillin also reduces postoperative infections such as alveolar osteitis and dry socket. It can be concluded that antibiotics are still preferable to be given after the third molar extraction. Proper extraction methods and drug dosage must be fully understood by the operator to minimize infection and the drug's adverse effects.

1 INTRODUCTION

Third molar extraction is a common procedure in dental practice. The prevalence of third molar impaction is 24% throughout the globe (Carter & Worthington 2016). This procedure has several postoperative complications such as alveolitis, bleeding, infection, and nerve damage (Candotto et al. 2019). Dentists usually prescribe patients with preoperative prophylaxis antibiotics, although it showed no significant difference in preventing complications (Cho et al. 2017).

Antibiotics are used as antimicrobial agents for bacteria. In dentistry, prophylaxis is given to prevent infection or therapeutic, which is used to resolve the undergoing infection (Stein et al. 2018). It is usually given in cases of bleeding to prevent bacteremia. Furthermore, antibiotic prophylaxis is needed for patients with endocarditis, immunocompromised condition, organ failure, and pregnancy (Ramu & Padmanabhan 2012). Amoxicillin is the most prescribed by dentists (Ahmadi et al. 2021).

Over-prescription of antibiotics may lead to bacterial resistance such as *Clostridium difficile* (Thornhill et al. 2015). Therefore, antibiotics should be given in a narrow spectrum and used just for acute illness. Other researchers have stated that 96.6% of dentists prescribe antibiotics irrationally (Schmidt et al. 2021). Therefore, in 2015, World Health Organization (WHO) released a worldwide plan to resolve the antimicrobial resistance problems (Global Action Plan on Antimicrobial Resistance 2016). One of the suggestions is to prescribe

DOI: 10.1201/9781003402374-69

antibiotics according to the definitive diagnosis, while dentists usually prescribe antibiotics and analgesics after surgery for around five days to prevent infection. This study aims to know if the use of antibiotics prescription after third molar extraction is necessary. Hence, minimizing the adverse effect of antibiotics in dental practice.

2 METHODS

A systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Page et al. 2021).

2.1 *Search strategy*

A systematic literature search was performed on five databases: PubMed, SpringerLink, ScienceDirect, EBSCO, and Wiley to retrieve potential eligible articles published over the last 5 years till July 2022. A search string was created on the basis of the PICO model. The string ("Odontectomy" OR "Third molar extraction") AND ("Antibiotics") was launched on the databases.

2.2 *Inclusion/exclusion criteria*

The included studies were all full-text articles and human studies written in English. The article database included medicine, dentistry, oral maxillofacial surgery, health, and medical collection. The exclusion criteria were animal, modeling, and *in vitro* studies. Review articles were also excluded (Figure 1).

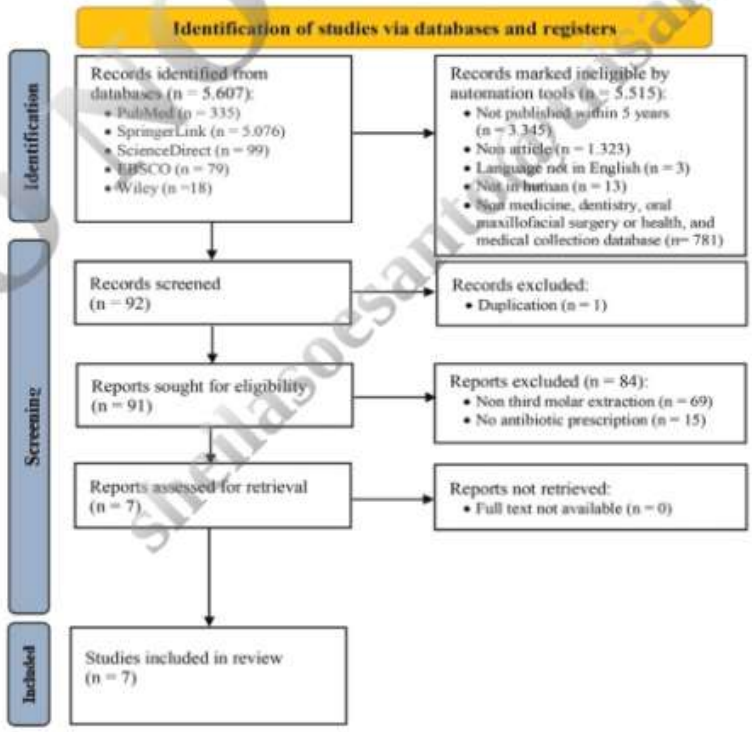


Figure 1. Flow chart of the review process.

2.3 *Study selection*

All identified references were organized and four reviewers (R.A.H, S.S, S.B.G, and P.N) independently screened the article first by titles and abstracts then based on full texts. Disagreements on the eligibility of articles were resolved by discussion between reviewers.

3 MAIN FINDINGS

Antibiotics play a big role in the treatment of third molar surgery. Almost all dentists prescribe antibiotics as the number one pro-drug to prevent infection after third molar surgery. Antibiotics can decrease postoperative pain and analgesic consumption after removal of third molar surgery (Braimah et al. 2017; Donmezer & Bilginaylar 2021; Khooharo et al. 2021; Yanine et al. 2021). Trismus, dry socket, alveolar osteitis, and edema are examples of postoperative pain (Khooharo et al. 2021; Momeni et al. 2021; Yanine et al. 2021). Antibiotics that dentists usually use to prevent the infection are amoxicillin and clindamycin (Braimah et al. 2017; Donmezer & Bilginaylar 2021; Janas-Naze et al. 2022; Khooharo et al. 2021; Yanine et al. 2021). Both antibiotics can reduce the pain and prevent infection. Others also stated that patients who use antibiotics after their third molar surgery improved their QoL (Braimah et al. 2017). Antibiotics are often compared with placebo and NSAID, and it is found that antibiotics are still effective in preventing pain (Momeni et al. 2021; Yanine et al. 2021). However, long-term use of antibiotics can affect antibiotic-resistant bacteria, so dentists need to use antibiotics rationally (Jung et al. 2019). As seen in Table 1, antibiotics can also reduce swelling mainly caused by bacteria (Momeni et al. 2021).

Table 1. Margin settings.

Author, Year	Type of Study	Subjects	Relevant findings
Donmezer et al. 2021	Research article	Local antibiotics, and systemic antibiotics, impacted third molar surgery	Both statistically decreasing pain and analgesic consumption, the results of local and systemic antibiotic therapy with the use of platelet-rich fibrin (PRF) following removal of the mandibular third molar were comparable
Yanine et al. 2021	Research article	Antibiotic prophylaxis, impacted third molar tooth extraction	When compared to a placebo, the use of 2 grams of amoxicillin after third molar surgery can decrease bacterial contamination and reduce postoperative pain
Braimah et al. 2017	Research article	Oral antibiotics, QoL, third molar surgery	Following the third molar surgery, there was a major decline in QoL, especially in postoperative days (POD) 1 and 3. By the seventh day, however, it had gradually restored to its preoperative level. Additionally, it was found that QoL was marginally improved in the extended amoxicillin/clavulanic group compared to the single bolus levofloxacin and amoxicillin/ clavulanic groups
Khooharo et al. 2021	Research article	Dry socket, mandibular third molar, amoxicillin	Amoxicillin can reduce infection and dry socket after third molar extraction
Momeni et al. 2021	Research article	Mandibular impacted third molar, amoxicillin	Antibiotic treatment can prevent the after-effect of third molar surgery
Janas-Naze et al. 2022	Research article	Clindamycin, third molar extraction, efficacy	Lower clindamycin dosages given over shorter time periods are effective in alleviating pain and minimizing postoperative complications after third molar surgery
Jung et al. 2019	Research article	Odontogenic infection, extraction of maxillary molars, metronidazole	Antibiotic therapy is effective to prevent bacterial infection.

Therefore, antibiotics are still very useful to be used after third molar surgery.

4 CONCLUSIONS

Clinicians must establish an adequate diagnosis to understand the risk of infection and complications. Antibiotics minimize the risk of postoperative complications such as dry socket, pain, and swelling. This shows that antibiotics prescription is still recommended after the third molar extraction. Prophylactic antibiotics should only be given to patients with medical compromises.

REFERENCES

Ahmadi, H., Ebrahimi, A., & Ahmadi, F. 2021. Antibiotic therapy in dentistry. *International Journal of Dentistry* 2021.

Braimah, R., Ndukwe, K., Owotade, J., & Aregbesola, S. 2017. Mandibular third molar surgery: An observational study. *Nigerian Journal of Clinical Practice* 20(9): 1189–1194.

Candotto, V., Oberti, L., Gabrione, F., Scarano, A., Rossi, D., & Romano, M. 2019. Complication in third molar extractions. *Journal of Biological Regulators and Homeostatic Agents* 33(3): 169–172.

Carter, K., & Worthington, S. 2016. Predictors of third molar impaction. *Journal of Dental Research* 95(3): 267–276.

Cho, H., Lynham, A.J., & Hsu, E. 2017. Postoperative interventions to reduce inflammatory complications after third molar surgery: review of the current evidence. *Australian Dental Journal* 62(4): 412–419.

Global Action plan on Antimicrobial Resistance, World Health Organisation 1 (2016).

Donmezer, C.M., & Bilginaylar, K. 2021. *Comparison of the postoperative effects of local antibiotic versus systemic antibiotic with the use of platelet-rich fibrin on impacted mandibular third molar surgery: a randomized split-mouth Sstudy*. BioMed Research International 2021.

Janas-Naze, A., Torbicka, G., Chybicki, D., Lipczyńska-Lewandowska, M., & Zhang, W. 2022. Comparative efficacy of different oral doses of clindamycin in preventing post-operative sequelae of lower third molar surgery—A randomized, triple-blind study. *Medicina (Lithuania)* 58(5).

Jung, K.H., Ro, S.S., Lee, S.W., Jeon, J.Y., Park, C.J., & Hwang, K.G. 2019. Multiple brain abscesses treated by extraction of the maxillary molars with chronic apical lesion to remove the source of infection. *Maxillofacial Plastic and Reconstructive Surgery* 41(1): 2–6.

Khooharo, T.S., Hassan, S.U., & Shaikh, A.H. 2021. Prevention of dry socket in mandibular 3rd molars with single preoperative oral dose of metronidazole and amoxicillin compared to conventional therapy. *Journal of the Pakistan Medical Association* 71(2 B): 585–589.

Momeni, E., Barati, H., Arbabi, M.R., Jalali, B., & Moosavi, M. 2021. Low-level laser therapy using laser. pdf. *BMC Oral Health* 21: 77.

Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A., Brennan, S.E., Chou, R., Glanville, J., Grimshaw, J.M., Hróbjartsson, A., Lalu, M.M., Li, T., Loder, E.W., Mayo-Wilson, E., McDonald, S., … Moher, D. 2021. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *The BMJ* 372.

Ramu, C., & Padmanabhan, T. V. 2012. Indications of antibiotic prophylaxis in dental practice-Review. *Asian Pacific Journal of Tropical Biomedicine* 2(9): 749–754.

Schmidt, J., Kunderova, M., Pilbauerova, N., & Kapitan, M. 2021. A review of evidence-based recommendations for pericoronitis management and a systematic review of antibiotic prescribing for pericoronitis among dentists: Inappropriate pericoronitis treatment is a critical factor of antibiotic overuse in dentistry. *International Journal of Environmental Research and Public Health* 18(13).

Stein, K., Farmer, J., Singhal, S., Marra, F., Sutherland, S., & Quiñonez, C. 2018. The use and misuse of antibiotics in dentistry: A scoping review. *Journal of the American Dental Association* 149(10): 869–884.e5.

Thornhill, M.H., Dayer, M.J., Prendergast, B., Baddour, L.M., Jones, S., & Lockhart, P.B. 2015. Incidence and nature of adverse reactions to antibiotics used as endocarditis prophylaxis. *Journal of Antimicrobial Chemotherapy* 70(8): 2382–2388.

Yanine, N., Sabelle, N., Vergara-Gárate, V., Salazar, J., Araya-Cabello, I., Carrasco-Labra, A., Martin, C., & Villanueva, J. 2021. Effect of antibiotic prophylaxis for preventing infectious complications following impacted Mandibular third molar surgery. A randomized controlled trial. *Medicina Oral Patologia Oral y Cirugia Bucal* 26(6): e703–e710.

A Systematic Review to Evaluate the Role of Antibiotics in Third Molar Extraction

by Ria Aryani Hayuningtyas FKG

Submission date: 21-Mar-2024 08:53AM (UTC+0700)
Submission ID: 2326349876
File name: w_to_Evaluate_the_Role_of_Antibiotics_in_Third_Molar_Extract.pdf (164.95K)
Word count: 1751
Character count: 9985

A Systematic Review to Evaluate the Role of Antibiotics in Third Molar Extraction

Ria Aryani Hayuningtyas[1], Sheila Soesanto[1], Sally B. Gutierez[2], Priska Natassya[1§]

[1] Oral Biology Department, Faculty of Dentistry, Universitas Trisakti, Indonesia
[2] Faculty of Education, University of the Philippines Open University, Philippines

[§] Corresponding author

Email Addresses:

Corresponding Author: priska@trisakti.ac.id

ABSTRACT

Background(s):

[Third molar extraction has become a frequent surgical practice for dentist. To minimize the post extraction infection, antibiotics prescription is usually given. However, excessive antibiotics usage may also lead to several adverse reaction and bacterial resistance.]

Objective(s)

[This study is to understand the advantages and the risk of antibiotics prescription on third molar removal treatment.]

Method(s):

[A systematic research was done on PubMed, SpringerLink, ScienceDirect, EBSCO and Wiley using the search term ("Odontectomy" OR "Third molar extraction") AND ("Antibiotics"). For this study, 92 articles were examined and only 7 were selected for this review. The Preferred Reporting Item for Systematic Review and Meta-Analyses (PRISMA) guidelines was used.]

Main finding(s):

[Antibiotics such as clindamycin and penicillin reduce trismus, swelling and pain after postoperative compared to placebo. Patient's quality of life is also slightly better in patients who were prescribed amoxicillin after surgery. Amoxicillin also reduces postoperative infections such as alveolar osteitis and dry socket.]

Conclusion(s):

[Antibiotics are still preferable to be given after third molar extraction. Proper extraction method and drug dosage must be fully understood by the operator to minimize infection and the drug's adverse effect.]

Keywords:

[antibiotics, postoperative infection, third molar extraction]

BACKGROUND(s)

[Third molar extraction is a common procedure in dental practice. The prevalence of third molar impaction is 24% throughout the globe.[1] This procedure has several postoperative complications such as alveolitis, bleeding, infection, and nerve damage.[2] Dentist usually prescribe patients with preoperative prophylaxis antibiotics although it showed no significant difference in preventing the complications.[3]

Antibiotic is used as antimicrobial agent for bacteria. In dentistry, it can be prophylaxis which is given to prevent infection or therapeutic which is used to resolve the undergoing infection.[4] It is usually given in cases with bleeding to prevent bacteremia. Furthermore, antibiotic prophylaxis is needed for patients with endocarditis, immunocompromised condition, organ failure and pregnancy.[5] Amoxicillin is the most prescribed by dentist.[6]

Over-prescription of antibiotics may lead in bacterial resistance such as *Clostridium difficile*.[7] In 2015, World Health Organization (WHO) released worldwide plan to resolve the antimicrobial resistance problems.[8] One of the suggestions is to prescribe antibiotics according to the definitive diagnosis. This study aims to understand the importance of antibiotics prescription after third molar extraction. Hence, minimizing the adverse effect of antibiotics in dental practice.]

METHOD(s)

[A systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA).[9]

Search Strategy

A systematic literature search was performed on five databases: PubMed, SpringerLink, ScienceDirect, EBSCO and Wiley to retrieve potential eligible articles published from over the last 5 years up to July

2022. A search string was created on the basis of the PICO model. The string ("Odontectomy" OR"Third molar extraction") AND ("Antibiotics") was launched on the databases.

Inclusion/exclusion criteria

The included studies were all full text article in human studies written in English. Article database included medicine, dentistry, oral maxillofacial surgery, health and medical collection. The exclusion criteria were animal, modelling and in vitro studies. Review article were also excluded (Figure 1).

Study Selection

All identified references were organized and four reviewers (R.A.H, S.S, S.B.G, and P.N) independently screened the article first by titles and abstracts then based on full texts. Disagreements on the eligibility of articles were resolved by discussion between reviewers.]

MAIN FINDING(s)

[Antibiotics play a big role in the treatment of third molar surgery. Almost all dentist prescribe antibiotics as number one pro-drug to prevent infection after third molar surgery. Antibiotics can decrease post-operative pain and analgesic consumption after removal of third molar surgery.[10–13] Trismus, dry socket, or alveolar osteitis, and edema are the example of post-operative pain.[11,13,14] Antibiotics that dentist usually used to prevent the infection are amoxicillin and clindamycin.[10–13,15] Both antibiotics can reduce the pain and prevent infection. Others also stated that patient who use antibiotics after third molar surgery improved their Quality of Life.[12]

Antibiotics often compared with placebo and NSAID, and it is found that antibiotics still effective in preventing pain.[11,14] However, long term use of antibiotics can affect the antibiotic resistant bacteria,

so dentists need to use antibiotics rationally.[16] Antibiotics can also reduce swelling mainly caused by bacteria (Table 1).[14] Therefore, antibiotics are still very useful to be used after third molar surgery.]

CONCLUSION(s)

[Clinicians must establish an adequate diagnosis to understand the risk of infection and complication. Antibiotics minimize the risk of postoperative complications such as dry socket, pain and swelling. This shows that antibiotics prescription is still recommended after third molar extraction. Prophylactic antibiotics should only be given to patient with medical compromises.]

REFERENCES

1. Carter K, Worthington S. Predictors of Third Molar Impaction. J Dent Res 2016;95(3):267–276.
2. Candotto V, Oberti L, Gabrione F, Scarano A, Rossi D, Romano M. Complication in third molar extractions. J Biol Regul Homeost Agents 2019;33(3):169–172.
3. Cho H, Lynham AJ, Hsu E. Postoperative interventions to reduce inflammatory complications after third molar surgery: review of the current evidence. Aust Dent J 2017;62(4):412–19.
4. Stein K, Farmer J, Singhal S, Marra F, Sutherland S, Quiñonez C. The use and misuse of antibiotics in dentistry: A scoping review. J Am Dent Assoc 2018;149(10):869-84.e5.
5. Ramu C, Padmanabhan T V. Indications of antibiotic prophylaxis in dental practice-Review. Asian Pac J Trop Biomed 2012;2(9):749–54.
6. Ahmadi H, Ebrahimi A, Ahmadi F. Antibiotic Therapy in Dentistry. Int J Dent. 2021;2021.
7. Thornhill MH, Dayer MJ, Prendergast B, Baddour LM, Jones S, Lockhart PB. Incidence and nature of adverse reactions to antibiotics used as endocarditis prophylaxis. J Antimicrob Chemother 2015;70(8):2382–88.
8. Division AR. Global action plan on antimicrobial resistance [Internet]. World Health Organisation

2016 p. 1–28. Available from: https://www.who.int/publications/i/item/9789241509763

9. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ 2021;372.
10. Donmezer CM, Bilginaylar K. Comparison of the Postoperative Effects of Local Antibiotic versus Systemic Antibiotic with the Use of Platelet-Rich Fibrin on Impacted Mandibular Third Molar Surgery: A Randomized Split-Mouth Study. Biomed Res Int 2021;2021: 3040661
11. Yanine N, Sabelle N, Vergara-Gárate V, Salazar J, Araya-Cabello I, Carrasco-Labra A, et al. Effect of antibiotic prophylaxis for preventing infectious complications following impacted Mandibular third molar surgery. A randomized controlled trial. Med Oral Patol Oral y Cir Bucal. 2021;26(6):e703–10.
12. Braimah R, Ndukwe K, Owotade J, Aregbesola S. Mandibular Third Molar Surgery : An Observational Study. Niger J Clin Pract. 2017;20(9):1189–94.
13. Khooharo TS, Hassan SU, Shaikh AH. Prevention of dry socket in mandibular 3rd molars with single preoperative oral dose of metronidazole and amoxicillin compared to conventional therapy. J Pak Med Assoc 2021;71(2 B):585–89.
14. Momeni E, Barati H, Arbabi MR, Jalali B, Moosavi M. Low-level laser therapy using laser. BMC Oral Health 2021;21:77.
15. Janas-Naze A, Torbicka G, Chybicki D, Lipczyńska-Lewandowska M, Zhang W. Comparative Efficacy of Different Oral Doses of Clindamycin in Preventing Post-Operative Sequelae of Lower Third Molar Surgery—A Randomized, Triple-Blind Study. Med 2022;58(5).
16. Jung KH, Ro SS, Lee SW, Jeon JY, Park CJ, Hwang KG. Multiple brain abscesses treated by extraction of the maxillary molars with chronic apical lesion to remove the source of infection. Maxillofac Plast Reconstr Surg 2019;41(1):2–6.

TABLES

Table 1. [Paper Results]

Author, Year	Type of Study	Subjects	Relevant findings
Donmezer et al, 2021 [10]	Research article	Local antibiotics, systemic antibiotics, impacted third molar surgery	Both statistically decreasing pain and analgesic consumption, the results of local and systemic antibiotic therapy with the use of Platelet Rich Fibrin (PRF) following removal of the mandibular third molar were comparable
Yanine et al, 2021 [11]	Research article	Antibiotic prophylaxis, impacted third molar tooth extraction	When compared to a placebo, the use of 2 grams of amoxicillin after third molar surgery can decrease bacterial contamination and reduce postoperative pain
Braimah et al, 2017 [12]	Research article	Oral antibiotics, quality of life, third molar surgery	Following third molar surgery, there was a major decline in Quality of Life (QoL), especially in postoperative day (POD) 1 and 3. By the seventh day, however, it had gradually restored to its preoperative level. Additionally, it was found that QoL was marginally improved in the extended amoxicillin/clavulanic group compared to the single bolus levofloxacin and amoxicillin/ clavulanic groups
Khooharo et al, 2021 [13]	Research article	Dry socket, mandibular third molar, amoxicillin	Amoxicillin can reduce infection and dry socket after third molar extraction
Momeni et al, 2021 [14]	Research article	Mandibular impacted third molar, amoxicillin	Antibiotic treatment can prevent the after effect of third molar surgery
Janas-Naze et al, 2022 [15]	Research article	Clindamycin, third molar extraction, efficacy	Lower clindamycin dosages given over shorter time periods are effective in alleviating pain and minimizing post-operative complications after third molar surgery
Jung et al, 2019 [16]	Research article	Odontogenic infection, extraction maxillary molars, metronidazole	Antibiotic therapy is effective to prevent bacterial infection.

FIGURES

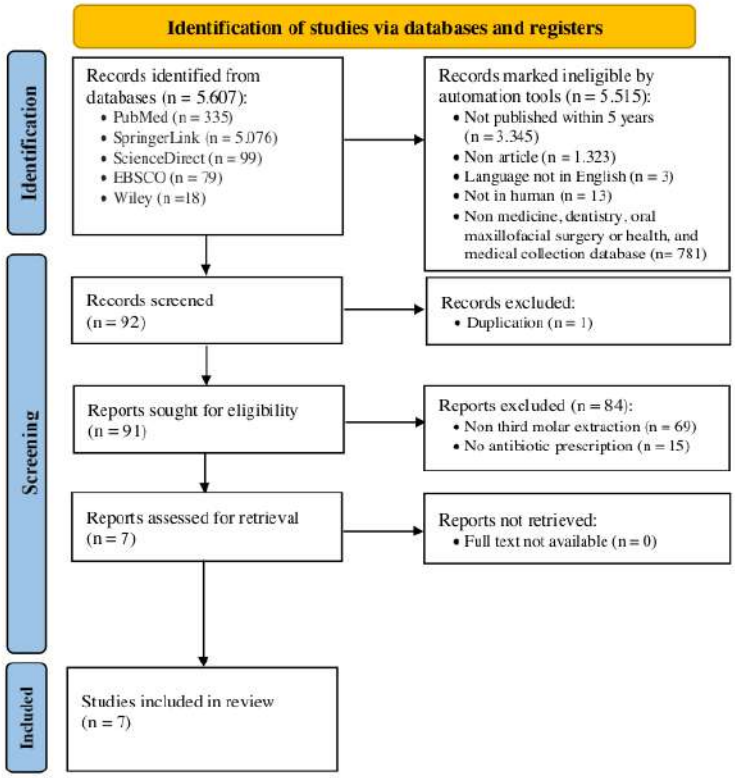


Figure 1. [Flow chart of review process]

A Systematic Review to Evaluate the Role of Antibiotics in Third Molar Extraction

ORIGINALITY REPORT

6%	4%	5%	1%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Chiara Cadeddu, Carolina Castagna, Martina Sapienza, Teresa Eleonora Lanza et al. "Understanding the determinants of vaccine hesitancy and vaccine confidence among adolescents: a systematic review", Human Vaccines & Immunotherapeutics, 2021 Publication	2%
2	www.researchgate.net Internet Source	2%
3	pubmed.ncbi.nlm.nih.gov Internet Source	1%
4	www.mdpi.com Internet Source	1%

Exclude quotes	On	Exclude matches	< 15 words
Exclude bibliography	On		