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EFFECT OF CHLORHEXIDINE MOUTHRINSE AFTER PLACEMENT OF DENTAL IMPLANTS: A SYSTEMATIC REVIEW

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ABSTRACT

The aim of this study is to determine the effect of chlorhexidine mouth rinse after placement of dental implants. A systematic review was conducted based on a literature search in the databases PubMed, Cochrane library, Elsevier science direct, Wiley online library, grey literature, Ovid Medline using the search keywords (chlorhexidine mouth rinse) AND (placement) AND (dental implants). Randomised controlled trials investigating the effect of Chlorhexidine mouth rinse and further followed by Cochrane database bias assessment was done. Four randomised controlled trials were included, and after discussed, the result of the p-value is significant in chlorhexidine mouth rinse after placement of dental implants. The use of chlorhexidine mouth rinse will reduce dental plaque control for gingivitis after placement of a dental implant. Chlorhexidine mouth rinse influences wound healing at the placement of a dental implant.

KEYWORDS: ***Chlorhexidine, dental implant, mouth rinse.***

INTRODUCTION

For any dental implant placement procedures, after an oral surgical technique, maintain good oral hygiene (1). Dental plaque is an etiological factor for the development of peri-implantitis. Wound healing after dental implant surgery may be negatively affected by the presence of dental plaque (2). In addition, after surgical interventions, oral biofilm by mechanical control is prohibited and therefore, it is achieved by using antimicrobial strategies (3).

Chlorhexidine plays a key role in the chemical control of dental plaque. It is a cationic bisbiguanide, and it has been used in medicine as a broad-spectrum antiseptic since 1953. Chlorhexidine mouth rinse binds to oral soft tissues allows the bacteria for up to 12 hours (4). Antimicrobial substances used as mechanical cleaning techniques, such as essential oils, metal salts and generally have been employed in oral biofilm (5). Chlorhexidine is proved to be an effective agent against dental plaque control. Chlorhexidine has antimicrobial activity against gram-positive and gram-negative bacteria, fungus, and viruses (6). Many articles suggested that professionally has mechanical plaque control for managing peri-implant mucositis (7).

The dose-dependent effect, whereas Chlorhexidine, is bacteriostatic at low concentrations, and in higher concentrations, it has a bactericidal effect (8). However, Chlorhexidine is an antiplaque agent, and it is a Di cationic chlorophenyl biguanide. Chlorhexidine is a broad antimicrobial spectrum used in many studies for its effectiveness in plaque control (9). Chlorhexidine mouth rinse binds in the oral cavity and has an effect for 7 to 12 hours (10). A mouthwash volume of 15 ml Chlorhexidine mouth rinse concentration of 0.12% provides a dose of 18 mg, and a volume of 10 ml Chlorhexidine mouth rinse concentration of 0.20% provides a dose of 20 mg, so the concentration of 0.12% Chlorhexidine mouth rinse appears to be as same effective as 0.2% concentration of chlorhexidine mouth rinse (11).

Many studies conclude that is a statistically significant difference in the effect of dental plaque between a 0.12% and 0.2% concentration of Chlorhexidine mouth rinse. In contrast, there is no difference in reducing gingival inflammation between both concentrations of 0.12% and 0.2% (12). After dental implant surgery, the most prescribed mouth rinse is Chlorhexidine mouth rinse, and which is an antimicrobial

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agent (13). This systematic review aimed to be determined effective of chlorhexidine mouth rinse after placement of a dental implant.

MATERIALS AND METHOD

STUDY DESIGN

A total of 830 articles were searched among those four articles are included in this study, and this systematic review was done using Chlorhexidine mouth rinse after placement of dental implants.

ELIGIBILITY CRITERIA

Inclusion criteria:

1.Studies published in English
2.Articles on the effectiveness on Chlorhexidine mouth rinse
3.Full text articles

Exclusion criteria:

1.Only abstracts available
2.Unrelated articles
3.Animal studies
4.Invitro studies
5. Non-experimental study

SEARCH ENGINES

PubMed
Cochrane library
Elsevier science direct
Wiley online library
Grey literature
Ovid Medline

After the search using the appropriate mesh terms, a total of 830 articles were found from the online databases. After duplicates removal of 650 articles were screened, and 30 full-text articles were available. Inclusion-exclusion criteria were applied, and finally, four related articles were selected for further assessment.

RESULTS

TABLE 1: shows the characteristics of the intervention in the included studies. In all above, the effectiveness of Chlorhexidine mouthwash after placement of dental implant was reviewed.

TABLE 2: shows an outcome and result of the effectiveness of Chlorhexidine mouthwash after placement of dental implants in the above-mentioned studies.

TABLE 3: shows the bias analysis of all the included studies. It is categorized as high-risk bias "-", low risk bias "++" and unclear "?".

DISCUSSION

Chlorhexidine mouth rinse is commonly prescribed mouth rinse after implant placement or implant surgery (3). This systematic review evaluates the effect of dental implant placement or implant surgery using the parameter of plaque index, gingival index or bleeding, wound healing, tooth staining or staining index and probing depth or bleeding on probing for comparing the other mouth rinse with the placebo. Four studies were included in this systematic review. The Chlorhexidine mouth rinse after implant placement or implant surgery represents a patient in reducing plaque control or oral biofilm for wound healing. Gartenmann et al. say chlorhexidine mouth rinse is a frequently used antiseptic agent for two weeks (13).

Genovesi et al. (14) 2014 reported that chlorhexidine mouth rinse with hyaluronic has a dose of 0.12% concentration of chlorhexidine with 0.1% concentration of hyaluronic, and only plain chlorhexidine mouth rinse has a dose of 0.12% concentration is used for the duration of 15 days. It is a randomized controlled trial showed that plaque index, gingival index, and staining index for the follow up period of 2 to 15 days. The result shows that the p-value is statistically significant in plaque index, gingival index, and staining index, and there is an effect of chlorhexidine mouth rinse after placement of a dental implant.

Laugisch et al. (15) 2015 reported that chlorhexidine mouth rinse with herbal extract has a dose of 0.05% concentration of chlorhexidine with herbal extract and only plain chlorhexidine mouth rinse has a dose of 0.1% concentration is used for the duration of 2 weeks. It is a randomized controlled trial showed that plaque index, tooth staining and early wound healing for the follow-up period of 1 to 2 weeks. The result shows that the p-value is statistically significant in plaque index and early wound healing, and in tooth staining, p-value (0.0467) is statistically significant, and there is an effect of chlorhexidine mouth rinse after placement of a dental implant.

Hamad Alzoman et al. (16) 2020 reported that 10 ml of distilled water, 10 ml of herbal oral mouth rinse, and chlorhexidine mouth rinse has a dose of 0.12% concentration used for the duration of twice daily for two weeks. It is a randomized controlled trial showed that plaque index, bleeding on probing and probing depth for the follow-up period of 3,6 and 12 weeks. The result shows that p-value (<0.01) is statistically significant in plaque index and bleeding on probing, and there is an effect of chlorhexidine mouth rinse after placement of a dental implant.

Bruna Sinjari et al. (17) 2018 reported that chlorhexidine gel with a dose of 0.20% concentration of chlorhexidine and the placebo gel is used for the duration of twice daily for seven days. It is a double-blind, randomized clinical study that showed that gingival index, plaque index, bleeding on probing for the follow-up period of 12 months. The result shows that p-value (p=0.05) is statistically significant in gingival index, plaque index, bleeding on probing that, and there is an effect of chlorhexidine mouth rinse after placement of a dental implant.

CONCLUSION

The use of chlorhexidine mouth rinse will reduce dental plaque control for gingivitis after placement of a dental implant. Chlorhexidine mouth rinse influences wound healing at the placement of a dental implant. Therefore, it is significant in all the studies discussed above. This study proved that there is an effect of using a chlorhexidine mouth rinse after placement of dental implants.

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LIMITATION OF THE STUDY

Many articles were excluded due to limited accessibility. The other sources should also be considered to get more relevant outcome. Only limited number of studies available and need further studies for research.

SOURCE OF FUNDING: Nil

CONFLICT OF INTEREST: No

ACKNOWLEDGEMENT: Nil

Figure 1: Flow diagram showing the number of studies identified, screened, assessed for eligibility, excluded, and included in the systematic

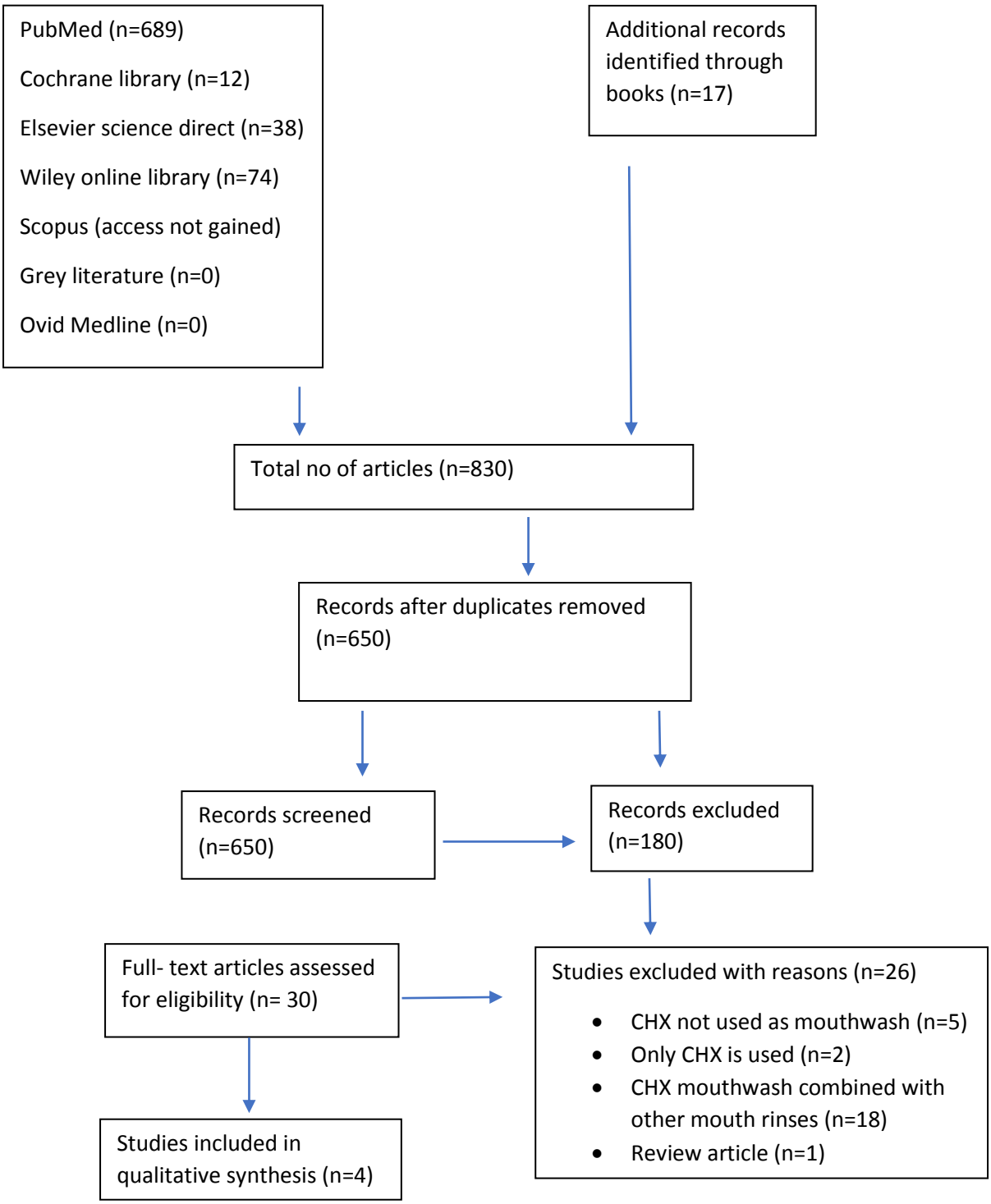

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TABLE 1: CHARACTERISTICS OF THE INTERVENTIONS IN THE INCLUDED STUDIES

Author & Year	No. Of Patients	Duration	Dose Required	Intervention
Genovesi et al 2015 (14)	40	15 days	0.12% CHX WITH 0.1% HYL 0.12% CHX	CHX WITH HYL CHX
Laugisch et al 2015 (15)	40	2 weeks	0.05% CHX WITH HERBAL EXTRACT 0.1% CHX	CHX WITH HERBAL EXTRACT CHX
Hamad Alzoman et al 2020 (16)	48	Twice daily for 2 weeks	10 ml 10 ml 10 ml of 0.12% CHX	DISTILLED WATER HERBAL ORAL RINSE CHX
Bruna Sinjari et al 2018 (17)	32	Twice daily for 7 days	0.20% NOT GIVEN	CHX GEL PLACEBO GEL

TABLE2: OUTCOME DATA AS REPORTED IN INCLUDED STUDIES

Author & Year	Year	Study Design	Follow Up	Outcome	Result
Genovesi et al 2015 (14)	2015	randomized controlled clinical trial	2 and 15 days	The outcome shows plaque index, gingival index, and staining index	The result shows p-value is statistically significant in plaque index, gingival index, and staining index.
Laugisch et al 2015 (15)	2015	randomized controlled clinical trial	1 and 2 weeks	The outcome shows plaque index, tooth staining and early wound healing	The result shows p-value (>0.05) is not statistically significant in plaque index and early wound healing, and in tooth staining, p-value (0.0467) is statistically significant.
Hamad Alzoman et al 2020 (16)	2020	randomized controlled clinical trial	3,6 and 12 weeks	The outcome shows plaque index, bleeding on probing and probing depth	The result shows p-value (<0.01) is statistically significant in plaque index and bleeding on probing.
Bruna Sinjari et al 2018 (17)	2018	double-blind randomized clinical study	12 months	The outcome shows gingival index, plaque index, bleeding on probing	The result shows p-value (p=0.05) is statistically significant in gingival index, plaque index, bleeding on probing

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TABLE 3: BIAS ANALYSIS OF INCLUDED STUDIES

Author Name	Year	Random Sequence Generation	Allocation Concealment	Selective Reporting	Incomplete Outcome Data	Blinding Of Outcome Assessment	Blinding Participants And Personals
Genovesi et al (14)	2015	-	-	-	++	?	++
Laugisch et al (15)	2015	-	-	-	-	-	++
Hamad Alzoman et al (16)	2020	-	-	-	++	-	-
Bruna Sinjari et al (17)	2018	-	-	-	-	?	++

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