

Silver Diamine Fluoride

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ABSTRACT

BACKGROUND

Silver diamine fluoride can be used as an intervention or treatment for active and progressing untreated carious lesion not involving the pulp among children in slums, remote areas, rural areas and other underserved and un-served communities. Silver diamine fluoride stains teeth after use and it is available in different concentrations like 10 % , 12%, 30% and 38%.

METHOD

An electronic literature search in African journals online and Science direct was done in September , 2023 using the Population, Concept and Context framework. Search terms and keywords were combined by Boolean operators. Two independent investigators screened titles and abstracts of publications on silver diamine fluoride use among children. Original (primary) research articles with accessible full text were included for review, while review articles, systematic reviews, viewpoints, books, letters, thesis, editorials, book chapters, dissertations, perspectives were among articles excluded during screening. Original research articles involving teeth (in-vitro studies) were also excluded during screening.

RESULTS

Abstract and full texts were screened using inclusion criteria by two independent investigators. One article with accessible full text was included as it was assessed to meet the inclusion criteria and aim of the review. The study design was a randomised controlled clinical trial and it was carried out in Egypt.

CONCLUSION

Silver diamine fluoride (SDF) is a simple, non-aerosol-generating, painless, non-technique sensitive treatment procedure for active carious lesion not involving the pulp. More studies from diverse ethnic population in Africa countries will fill the gaps in knowledge and add to the existing literature.

KEYWORDS

Africa, Children, Silver Diamine Fluoride, Studies

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INTRODUCTION

Silver diamine fluoride (SDF) has various indications in paediatric dentistry in the literature. It is available in different concentrations like 10% SDF, 12% SDF, 30% SDF and 38% SDF. This article is a follow up article to our previous article² on silver diamine fluoride. (Previous article 2 had omission of some studies from Africa in selected electronic databases.)

LITERATURE SEARCH METHOD

An electronic literature search in African journals online and Science direct was done in September, 2023 using the Population, Concept and Context framework.³⁻⁴

Population: Children

Concept: Silver diamine fluoride use among children

Context: Studies carried out in Africa continent, published in English language and in electronic databases

The keywords used were silver diamine fluoride, Africa continent, primary teeth, Africa countries, sub-Saharan Africa, sub-Saharan countries, permanent teeth, African children and Africa. Search terms and keywords were combined by Boolean operators. Two independent investigators screened titles and abstracts of publications on silver diamine fluoride use among children studies. Information was extracted from the full texts of articles regarding the location of the research and the main content. The inclusion criteria were original (primary) research articles from specific selected databases with information on silver diamine fluoride use among children carried out in Africa countries, published in English and in electronic databases. While review articles, systematic reviews, viewpoints, books, letters, thesis, editorials, book chapters, dissertations, perspectives, and news related to silver diamine fluoride use among African children were excluded. Original (primary) research articles without accessible full text was also excluded. Original research articles involving teeth (in-vitro studies) were also excluded. Study data of the included articles were extracted and collated in a table, including study details (author(s), year of publication, study design, study location or country, study participants, study objective). No time frame was used during the search and identified studies in Africa countries that met the inclusion criteria and had accessible full text were included. If relevant data or information were missing in the article, the authors of the articles were not contacted via e-mail.

RESULTS

Fifty four articles were identified during literature search; no duplicate was removed during screening. Abstract and full texts were screened using inclusion criteria by two independent investigators. Fifty three articles were excluded because they did not meet the inclusion criteria. One article with accessible full text was included as it was assessed to meet the inclusion criteria and aim of the review. The included study was carried out in Egypt, and it was a hospital based study. The study design was a randomised controlled clinical trial.

Figure 1: Flowchart of articles process

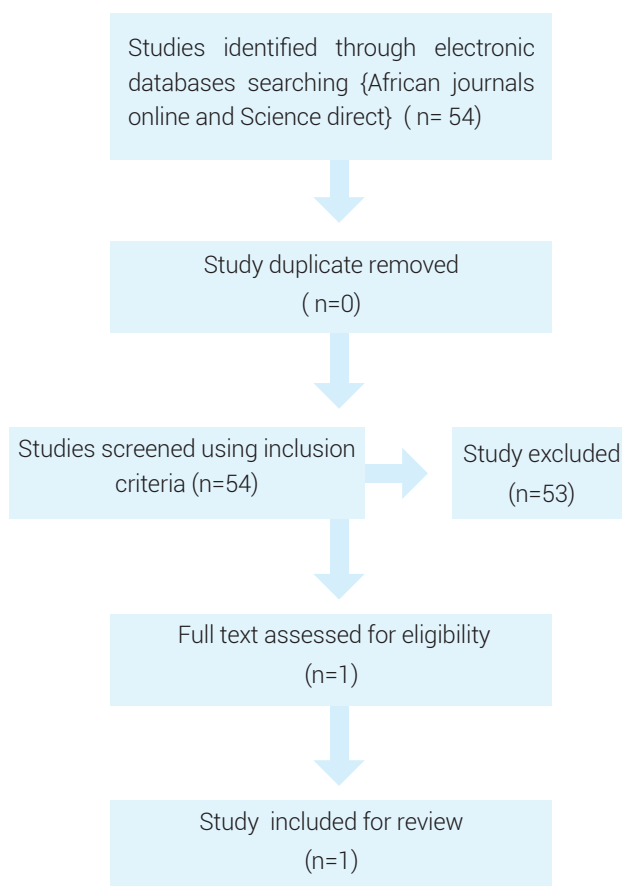


Table 1: Summary of identified study on silver diamine fluoride use among children in Africa continent.

Author/ Year of publication	Study participants	Study objective	Study design	Country of study
Salem et al,2022 ⁵	4 to 8 years old children	To increase the success rate of the Hall technique in carious primary molars by eradicating bacteria present in carious lesions using Silver diamine fluoride (SDF) or diode laser in combination with the Hall technique.	A randomised controlled clinical trial.	Egypt

DISCUSSION

Silver diamine fluoride application among children is a simple, non-aerosol-generating, painless, non-technique sensitive treatment procedure that can be done in resource poor settings with minimal training and simple armamentarium. It can cause dark staining of carious enamel and dentine. Previous study⁷ among Egyptian parents with the use of Likert scale⁸ reported acceptability of the post-treatment staining of teeth of silver diamine fluoride among parents. The acceptance of the dark stains from silver diamine were higher in posterior teeth than anterior teeth.⁷⁻⁸ In the study identified in this review, silver diamine fluoride was used to enhance/improve the success rate⁵ of the conventional hall techniques (silver-modified hall technique) like silver modified Atraumatic restorative treatment⁹⁻¹⁰ (SMART). Clinical and radiographic success rate of conventional hall technique with use of silver diamine fluoride was assessed at 3 months, 6 months, 9 months and 12 months respectively. During the various review period, the clinical and radiographic success rate of conventional hall technique with use of silver diamine fluoride was higher than the success rate of the conventional hall technique.

In the literature, 38% silver diamine fluoride with or without the use of potassium iodide had been used for indirect pulp capping of young permanent teeth¹¹ and it can be used as an intervention for arresting active and progressing untreated carious lesion not involving the pulp among children in underserved and un-served communities. Studies related to silver diamine fluoride among African children had been identified from Nigeria² and Egypt.² Africa has 54 countries^{4,8} with about 3000 ethnic population groups. More studies from various countries and ethnic groups in Africa will fill the gaps in knowledge, guide recommendations and clinical practice guidelines on the use of silver diamine fluoride among African children.

CONCLUSION

Silver diamine fluoride (SDF) have various indications among children. Africa has various ethnic population with socio-cultural practices and beliefs. More studies from the diverse ethnic population in Africa will contribute to the existing literature.

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