

The Impact of COVID-19 on Individual Oral Health: A Protocol for a Systematic Scoping Review

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Protocol

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Abstract

Poor oral health continues to be one of the most prevalent non-communicable diseases (NCDs) worldwide consuming one-fifth of out-of-pocket health expenditure [1-3]. In 2017, it was estimated that oral diseases affect close to 3.5 billion people worldwide, with caries (dental decay) of permanent teeth being the most common condition [4]. It is estimated that 44% of all people worldwide are suffering from untreated caries in primary and permanent teeth [5]. International data indicates that dental caries is one of the most prevalent health conditions [6-8] and a leading cause of preventable hospitalization [6]. Poor oral health is also associated with a number of other chronic diseases including stroke and cardiovascular disease [9, 10]. People's ability to look after their oral health is impacted by a range of social, economic, environmental and political determinants [11] and the impact of COVID-19 on oral health is hypothesised to be significant.

Background

Poor oral health continues to be one of the most prevalent non-communicable diseases (NCDs) worldwide consuming one-fifth of out-of-pocket health expenditure [1–3]. In 2017, it was estimated that oral diseases affect close to 3.5 billion people worldwide, with caries (dental decay) of permanent teeth being the most common condition [4]. It is estimated that 44% of all people worldwide are suffering from untreated caries in primary and permanent teeth [5]. International data indicates that dental caries is one of the most prevalent health conditions [6–8] and a leading cause of preventable hospitalization [6]. Poor oral health is also associated with a number of other chronic diseases including stroke and cardiovascular disease [9, 10]. People's ability to look after their oral health is impacted by a range of social, economic, environmental and political determinants [11] and the impact of COVID-19 on oral health is hypothesised to be significant.

The World Health Organization declared the global spread of coronavirus disease (COVID-19) a pandemic on March 11th, 2020 [12]. Globally, as of 12:49pm CET, 23 November 2021, there have been 258,364,841 confirmed cases of COVID-19, including 5,174,133 deaths, reported to WHO [13]. A range of measures were implemented to manage the virus including mask wearing, restrictions on movement, physical distancing, vaccinations, and various forms of lockdowns [14–17]. These measures aimed to contain the virus and to limit the impact on vulnerable health care systems [16]. Throughout the pandemic, healthcare has been considered an essential service however access to some services has been limited or new service models introduced. This has resulted in changes to prevention and treatment services for NCDs (like oral health) with low utilisation rates of preventive services being reported globally [18, 19, 3, 20, 21].

Declines in health promoting behaviours, reduced access to services and public apprehension about infection related to COVID-19 have impacted on public oral health and oral health related quality of life [22, 23]. The immediate increase in stress and anxiety levels in response to the COVID-19 outbreak can impact on adherence to health-promoting behaviors, including oral hygiene [24, 25]. During the pandemic,

an increase in prescribing antibiotics and opioid analgesics was observed in oral health services [26–28]. There was a significant decline in the utilisation of dental services in Australia due to restrictions and regulations on provision of non-urgent care during the lockdown [29]. A retrospective analysis of Medicare data on utilization of the Child Dental Benefits Schedule in Australia from March to September 2020 showed that there were 881 454 fewer dental services provided in 2020 than 2019, with the largest decline seen in April [30]. The greatest declines were seen in preventive and diagnostic services with 198 609 fewer dental services provided from July to September 2020 than 2019 [30]. There is abundant information in the existing literature on the perspectives and experiences of oral health service providers during the COVID-19 pandemic [see for example, 31, 32-35]. However, information on the oral health impacts of COVID-19 pandemic is lacking at an individual level. The aim of this systematic scoping review is to comprehensively map the literature on what is known about the impact of COVID-19 pandemic on the oral health at individual level.

Methods

Study design

We have chosen to undertake a systematic scoping review to explore the breadth or depth of the literature, map and summarize the evidence and identify or address knowledge gaps in relation to the impact of COVID-19 on individual oral health [36, 37]. The proposed systematic scoping review will be undertaken using the Joanna Briggs Institute Reviewers' Manual Methodology for JBI Scoping Reviews [36]. The review question collectively developed by the research team (including oral health and public health researchers and clinicians) is defined as: 'What is known about the impacts of the COVID-19 pandemic on oral health at individual level?'

Eligibility criteria

Population/ studies

Studies that explore impacts of COVID-19 pandemic on the oral health of all individuals will be included. The impacts on oral health at individual level could be explored from the perspectives of clients or their health service providers. Health service providers refer to dental, medical, nursing and allied health staff involved in providing or monitoring oral healthcare.

Concept

Inclusion and exclusion criteria are as follows:

Table 1: Inclusion and exclusion criteria

Criterion	Inclusion	Exclusion
Population	All individuals including children, adults, vulnerable populations and people with special needs	N/A
Setting	Any	N/A
Interventions	N/A	N/A
Study designs	All study designs	N/A
Publication type	Peer review of original research (including reviews)	Opinion pieces, editorials, magazine articles
Outcomes	Articles that explore the self-perceived oral health impacts of COVID-19 pandemic Articles related to accessing and utilisation of dental services during the COVID-19 pandemic Articles that explore the barriers and enablers of achieving optimal oral health during the COVID-19 pandemic	Articles that explore the transmission of COVID-19 in oral healthcare settings Articles that focus on prevention of COVID-19 at oral healthcare settings Articles that explore the perspectives, experiences and attitudes of oral health service providers on COVID-19 pandemic Articles that focus on challenges or enablers experienced by oral health service providers during the COVID-19 pandemic
Language	Articles written in English	Articles in language other than English
Availability	Full text available	Not full text available
Date	All articles from January 2020 onwards	Anything outside of this range

Search strategy

The study team will develop a search strategy as recommended by the 2020 Methodology for JBI Scoping Reviews in consultation with a specialist health librarian and peer reviewed by using the Peer Review of Electronic Search Strategies (PRESS) checklist [38]. A draft search strategy for MEDLINE is provided (see Additional file 1). The search strategy will then be refined and altered for use in each of the following databases: Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, OVID, Proquest, Embase, Dentistry and Oral Health Sciences Source (DOSS) and Cochrane Database of Systematic Reviews. Additional studies of relevance will be identified by hand-searching the reference lists of all the included studies.

A combination of terms related to two themes of 'COVID-19 pandemic' and 'oral health' will be searched across all databases and other searches. Boolean operators will be used to conduct the search. The search terms will be searched as both, keywords and subject headings (e.g., MeSH) in the titles and

abstracts. Search limits will be applied to language preference of English only. Search results will be saved and exported into EndNote, a bibliographic software program, to store, organize, and manage all results.

Data extraction

Once all searches have been undertaken the results will be imported into Covidence – Cochrane’s systematic review management software [39]. Duplicates will be removed once importation is complete, and screening undertaken against the eligibility criteria. A sample of 25 articles will be assessed by all reviewers to ensure reliability in the application of the inclusion and exclusion criteria (Table 1). Team discussion will be used to ensure consistent application. The Covidence software supports blind reviewing with two reviewers required at each screening phase. Conflicts are flagged within the software which allows the team to discuss those that have disagreements until consensus can be reached. The Preferred Reporting Items of Systematic Reviews extension for scoping reviews (PRISMA-ScR) checklist will guide the reporting of the review [40] (see Additional file 2) and all stages will be documented using the PRISMA-ScR flow chart [40].

A preliminary protocol for this review has been published in the Open Science Framework (OSF- <https://osf.io/7t9bq/>) preregistrations to enhance transparency and replicability and to reduce any publication or reporting biases.

Data management

A data charting instrument will be created in Covidence to extract study characteristics and to confirm the study relevance. The characteristics to be extracted will include, but not limited to the publication month and year, type of publication (e.g., original research, type of study design, country where the study was conducted, population characteristics (e.g., children, elderly), the domain of oral health (e.g., oral health status, oral health behaviours such as oral hygiene maintenance or utilisation of oral healthcare services) and information relevant to inclusion criteria. Data extraction function of Covidence will be used to extract these study characteristics.

Presentation of the results/ data mapping

Data will be extracted relating to the impact of COVID-19 on individual oral health and will be summarised in tabular format. The format of these tables will be developed and refined throughout the data extraction. Narrative summaries that describe how the extracted data relates to the aim of the review will also be developed based on the data extraction criteria.

Discussion

The proposed scoping review will describe how the COVID-19 pandemic affected oral health at an individual level. This scoping review will be the first to explore the impact that COVID-19 has had on individuals’ oral health. The results can provide some insight into the key areas of concern and may be

useful for oral health provision and future changes to policy in response to pandemic conditions. The review will contribute to further research into the impact that COVID-19 has on clients' oral health related experiences and care seeking behaviour. This review can provide insight in lingering effects of restrictions on access to oral healthcare and making dental appointments. The limitations related to date range and timing of conducting the search will be presented.

Abbreviations

Not applicable

Declarations

Acknowledgement

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Authors' contribution

VDS and RK conceptualised and designed the study. VDS, RK &TK prepared the protocol manuscript. VDS, RK and TK all developed the protocol document and reviewed the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials

Data sharing is not applicable to this article because no datasets were generated or analysed for the protocol development.

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests

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