Journal of Dental Sciences 20 (2025) 2559–2560

Available online at www.sciencedirect.com

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Limitations of bibliometric analysis: Evidences from trigeminocardiac reflex published in Journal of Dental Sciences

Trigeminocardiac reflex (TCR) is a brainstem reflex characterized by sudden reductions in heart rate (HR) and mean arterial blood pressure (MABP) by the stimulation of trigeminal nerves with efferent signals through vagus nerve to heart.[1] Approximately 10–20 % decreased HR and MABP from baseline are recognized as the occurrence of TCR.[1] Transient bradycardia, arterial hypotension, apnea, and gastric hypomotility are the common symptoms of TCR. Previously, most literatures regarding sudden notable hemodynamic instability were reported from neurosurgery, anesthesiology, and ophthalmology defined as the diving reflect, oculocardiac reflex, or TCR.[1,2] Recently, TCR was found not only in the procedures of oral maxillofacial surgery[2,3] but also during the routine dental treatment.[1]

Bibliometric analysis is a relatively simple process to analyze the large volumes of publishing articles with valuable insights into structure, trends, and impact of research. Therefore, the authors conducted a bibliometric analysis of TCR articles from Web of Science database (Clarivate Analytics, Philadelphia, PA, USA) with keywords TCR, bradycardia, diving reflect, or oculocardiac reflex in "Dentistry Oral Surgery Medicine" field. Subsequently, a full-text review was conducted for each extracted article. After rigorous screening procedures, a total of 52 articles were identified for further bibliometric analysis. As shown in Table 1 (number 1 to 4), 4 articles were published in Journal of Dental Sciences (JDS). The comparative group was to review TCR published in JDS from 2009 to May 20, 2025 from https://www.sciencedirect.com/journal/journal-of-dental-sciences. Interestingly, a total of 6 articles were identified as TCR-related publications in JDS (Table 1).

One article with topic "Blood pressure reduction in patients with irreversible pulpitis teeth treated by non-surgical root canal treatment" was published in 2017.[4] There were no any keyword mentioned about TCR in title and abstract. However, the results reported significantly higher reduction percentages of MABP in patients receiving vital pulpal extirpation. In discussion section, TCR was speculated to be a possible mechanism triggering parasympathetic effect on blood pressure reduction during non-surgical root canal treatment. Taken together, without rigorous review of full text could miss the important findings in such scientific research field.

Another article "Exploring the correlation between dental procedures and trigemino-cardiac reflex" is the newest online article.[5] This is a common limitation of bibliometric analysis that the recent accepted article is not able to be included in the database immediately. Thus, the time-lag inherent in publication often fails to obtain the newest contributions.

Bibliometric analysis is a systematic study that examines the scientific literature for the identification of article type, trends, and impact within a certain research field. However, bibliometric technique still has some limitations, especial for medical literature. In addition to the above evidences from this report, high citation counts do not always correspond to the high-quality research. In addition, not all research outputs are indexed in bibliographic databases. The databases obtained may be with limited coverage of certain languages or geographic regions. Taken together, the combination of bibliometric indicators and rigorous peer review are necessary for bibliometric analysis. The results concluded will be fair, neutral, and accurate with convinced evidences.

https://doi.org/10.1016/j.jds.2025.05.028

Table 1 Trigeminocardiac reflex-related articles published in Journal of Dental Sciences.

	Topic	Article type	Keyword
1[a]	Trigeminocardiac reflex during bilateral sagittal split osteotomy. J Dent Sci 2021; 16:782–3.	Short case report	Bradycardia Trigeminocardiac reflex
2[a]	Trigeminocardiac reflex-related sudden bradycardia and hypotension can be induced by drain removal after superficial parotidectomy. J Dent Sci 2021; 16:1320–1.	Short case report	Trigeminocardiac reflex Trigeminal nerve
3[a]	Trigeminocardiac reflex could occur during routine dental treatment. J Dent Sci 2021; 16:1322.	Letter to editor	No available
4[a]	Factors associated with transient bradycardia during local anesthesia administration to the oral cavity under intravenous sedation: A retrospective cohort study. J Dent Sci 2024; 878-84.	Original article	Trigeminocardiac reflex Vasovagal reflex
5	Blood pressure reduction in patients with irreversible pulpitis teeth treated by non-surgical root canal treatment. J Dent Sci 2017; 12:382–7.	Original article	Hypotension, Blood pressure parasympathetic effect
6	Exploring the correlation between dental procedures and trigemino-cardiac reflex. J Dent Sci 2025; 20:1810–5.	Original article	Trigeminocardiac reflex

[a] Represents articles obtained from this bibliometric analysis.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

Acknowledgments

This study did not receive any external funding resources.

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Received 24 May 2025
Final revision received 25 May 2025
Available online 6 June 2025