

Development Studies on Treatment of Vomiting and Nausea: Bibliometrical Analysis from the Years 1946-2024

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ABSTRACT

Nausea is the most common thing in pregnancy that is a symptom of discomfort that occurs in the early stages of pregnancies. This event has a considerable physical, social and psychological impact on women. The emotional and physical impact includes feelings of anxiety about the possibility of affecting the fetus. Research on the implementation of vomiting nausea in pregnancy found as many as 3030 articles, taken from the Pubmed database between 1875 and 2024. The purpose of the bibliometric analysis is to find out the research trends, the most widely used keywords, the journal of the most publishers, the author's instance and the country of collaboration of the author of the article. The keywords most commonly used by the authors are human, female, pregnancy, hyperemesis gravidarum, vomiting, nausea, treatment outcome. The American Journal of Obstetrics and Gynecology ranks first as the most widely published journal on Treatment vomiting and nausea, with a total of 144 articles. The highest affiliation of authors is from the University of Amsterdam and the Université de Californie, which have a total of 75 authors in common. The University of Toronto is in the next position with 64 authors, followed by the university of Cambridge with 70 authors. Multiple Country Publications (MCP) and Single Country Publication (SCP) collaborations are from the United States, China and Canada.

KEYWORDS: Bibliometrics, VOSViewer, vomiting, nausea, pregnancy

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I. INTRODUCTION

Nausea vomiting is the most common thing in pregnancy (Bustos et al., 2017). Nausea vomiting that occurs in pregnancy is a symptom of discomfort that occurs in early pregnancy (Zhu et al., 2023). Nausea vomiting that occurs in pregnancy is common and often occurs at the age of 6-8 weeks to 16-20 weeks of pregnancy (Razzak, 2019). Its prevalence varies greatly worldwide from 50% to 85% (Bello et al., 2022). The reported rate of nausea and vomiting during pregnancy is 35%–91%, with approximately 69% of women reporting having symptoms (Dunbar et al., 2022). Nausea affects about 70% and vomiting about 60% of pregnant women (Festin, 2014). There is considerable physical, social and psychological impact on women who experience these symptoms (Matthews et al., 2015). Nausea vomiting in pregnancy has an emotional and physical impact including feelings of worry and anxiety about the possible impact on the fetus (Bello et al., 2022). Nausea vomiting in pregnancy can also cause consequences to the fetus such as premature

birth, intrauterine growth retardation, low birth weight, and low Apgar score (Emami-Sahebi et al., 2021).

Persistent vomiting may indicate a condition known as hyperemesis gravidarum, which can be characterized by weight loss $\geq 5\%$, electrolyte abnormalities, liver function tests, and thyroid function tests (Coffey et al., 2023). Nausea, vomiting in pregnancy and Hyperemesis Gravidarum are associated with an extreme decrease in quality of life (Razzak, 2019). Hyperemesis Gravidarum (HG) is associated with significant morbidity and can lead to poor pregnancy outcomes (Liu et al., 2024).

The pathogenesis of nausea vomiting in pregnancy is multifactorial, involving genetic, endocrine, and gastrointestinal factors (Razzak, 2019). Nausea vomiting in pregnancy and Hyperemesis Gravidarum are reported to be associated with the hormones human chorionic gonadotropin, estrogen, progesterone, serotonin, and thyroid (Liu et al., 2024). There are several factors that influence nausea and vomiting in pregnancy, namely nausea and vomiting before

Development Studies on Treatment of Vomiting and Nausea: Bibliometrical Analysis from the Years 1946-2024

pregnancy, younger age, and multiple pregnancies (Dunbar et al., 2022).

Management and treatment of nausea vomiting in pregnancy focus on symptom reduction, improved quality of life, prevention of serious complications, and minimizing the effects of maternal pharmacological treatment on the fetus (Tinti et al., 2023). While several treatments are currently used to treat nausea and vomiting in pregnancy, alternative treatments such as acupuncture have been shown to provide benefits (albeit only in limited subjects), whereas ginger has shown beneficial effects in reducing symptoms of nausea, but not in vomiting. Some drugs available on the market: pyridoxine, anti-histamine such as meclizine, doxylamine, chlorpromazine, metoclopramide, corticosteroids (Tinti et al., 2023). Management of nausea vomiting in pregnancy includes a range of treatment strategies, including outpatient dietary advice, administration of antiemetic drugs, and hospitalization and intravenous fluid replacement in severe or persistent cases (Hu et al., 2024). Various drugs are used, although evidence of effectiveness is limited, Vitamin B6 with doxylamine is safe and considered a first-line therapy for NVP (Coffey et al., 2023).

Bibliometric analysis of research on the management and treatment of nausea vomiting in pregnancy was carried out to see if the study was interesting to do. Study information on the management and treatment of nausea and vomiting in pregnancy is presented in the bibliographic data. Bibliometric mapping is advantageous for both the scientific community and the public in general because it can help transform publication metadata into maps or visualizations, which are easier to manage to process in order to gain useful insights, such as visualizing keywords to identify research themes or clusters. In certain disciplines, map the author affiliations of specific journals to identify geographic coverage of journals, and map institutional collaborations and international collaborations as part of a framework for identifying emerging technologies. Bibliometrix is used in computing and visualization to extract bibliographic information and perform descriptive analysis. The VOSviewer tool (version 1.6.16) is used to create and visualize map the structure of the coupling network with the source of researchers and co-authors (Oyewola & Dada, 2022).

II. RESEARCH METHODS

A. Tools and Materials

The tool used is the application VOSViewer (1.6.18) used for bibliometric analysis. The study data was obtained from the Pubmed database downloaded on February 23, 2024. The database is retrieved from Pubmed. In addition, in bibliometric analysis using VOSViewer on PubMed, there are several limitations (Perwitasari et al., 2022). The use of bibliometrics is gradually extending to all disciplines (Asimo & Cuccurollo, 2017). Science mapping analysis is complex because it entails several steps that employ numerous and

diverse analyses and mapping software tools (Asimo & Cuccurollo, 2017).

B. Research Procedure

Study data related to treatment and vomiting and nausea were taken from the Pubmed database between 1875 and 2024. The data obtained is then analyzed using the VOSviewer application. VOSViewer software (1.6.18) is used to map writing, total number of publications, number of publications cited in CSV format. VOSviewer is an open source software developed by Nees Jan van Eck and Ludo Waltman at the Centre for Science and Technology (CWTS) Leiden University, Netherlands. VOSViewer is designed to build and visualize bibliometric maps such as author, co-authorship, co-occurrence, and citation-based maps. VosViewer can receive data from bibliographic databases and can be integrated with other tools. VOSviewer is used to visualize collaborating institutions and citing institutional maps (Tanudjaja and Kow, 2018; Van Eck N.J., Waltman L., 2010).

Bibliometric mapping will benefit both the scientific community and the public in general because it can help convert publication metadata into maps or visualizations (Sidiq, 2019).

C. Data Analysis

The study data was obtained from the Pubmed database downloaded on February 16, 2024. The search words used are treatment, vomiting, nausea and human with a search time span of 1875 to 2024. A search of the Pubmed database yielded 4940 documents. The data search strategy in this study can be seen in Figure 1. Data obtained from PubMed is then analyzed using Bibliometrix through RStudio. The bibliometrix package in R programming language, which is frequently used in bibliometric analysis (Büyükkidik, 2022). Bibliometric analysis includes study data information, publication trends, keywords used, sources of most article publishers, author agencies, and author collaborations by country.

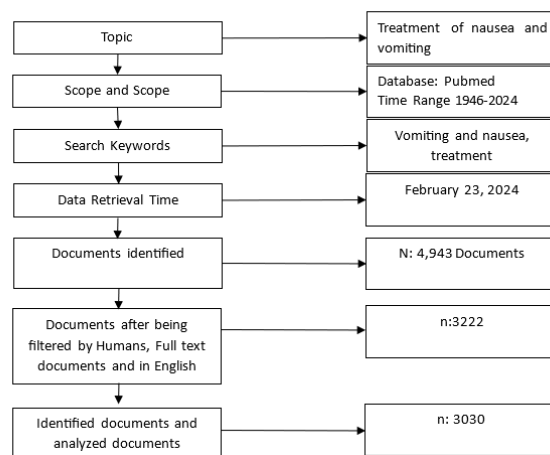


Figure 1. Data Search Strategy Related to Nausea and Vomiting Treatment from 1946-2024

Development Studies on Treatment of Vomiting and Nausea: Bibliometrical Analysis from the Years 1946-2024

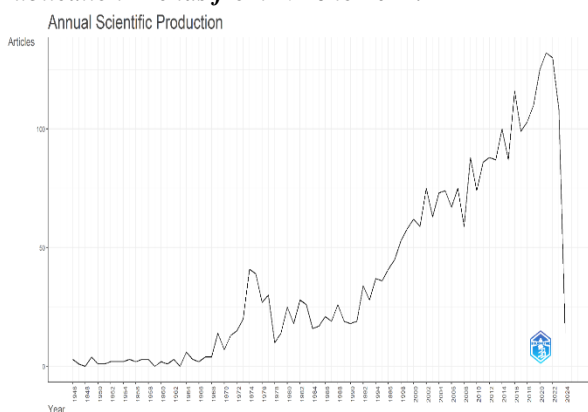
III. RESULTS AND DISCUSSION

The database taken from Pubmed analyzed using VosViewer obtained key information on studies related to vomiting and nausea that provides key information about data on studies from 1946 to 2024. Document type, average publication, citation and published author (Table I)

Table I. Data Information on Vomiting and Nausea Treatment Studies in the period 1946-2024

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	1946:2024
Sources (Journals, Books, etc)	707
Documents	3020
Annual Growth Rate %	1,99
Document Average Age	19
Average citations per doc	0
References	0
DOCUMENT CONTENTS	
Keywords Plus (ID)	8897
Author's Keywords (DE)	8897
AUTHORS	
Authors	10695
Authors of single-authored docs	305
AUTHORS COLLABORATION	
Single-authored docs	379
Co-Authors per Doc	4,41
International co-authorships %	4,272

A. Publication Trends from 1946 to 2024.



The graph above illustrates the study data on vomiting and nausea obtained from Pubmed in the time span from 1946 to 2024. On the graph, it can be seen that the trend of studies on vomiting and nausea continues to increase, especially in 2020 to 2023 which is the highest peak. This ever-increasing trend of studies becomes interesting to discuss.

B. Analyze topics based on keywords used by authors

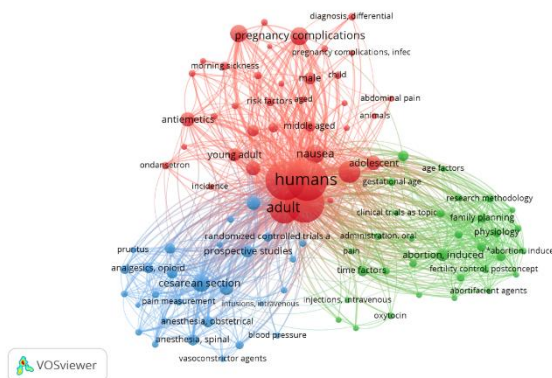


Figure 3. Keywords used by the author about Treatment Vomiting and Nausea

The most widely used keywords by the author include human, female, pregnancy, hyperemesis gravidarum, vomiting, nausea, treatment outcome, etc. These keywords are also keywords used by the author. Figure 3 shows the amount of keywords used and their relation to other keywords. Vosviewer is used in helping to analyze data and visualize the information needed (Iriyani et al., 2023).

C. Source of Most Article Publishers

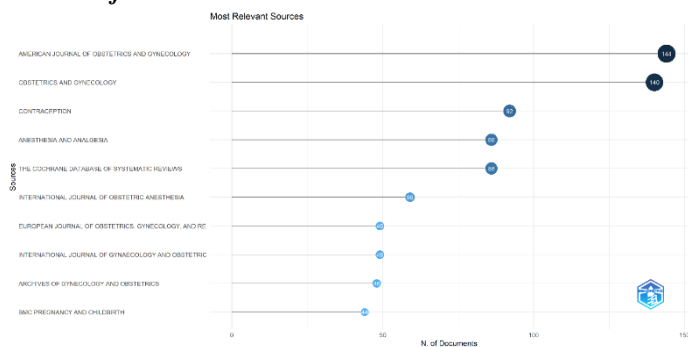
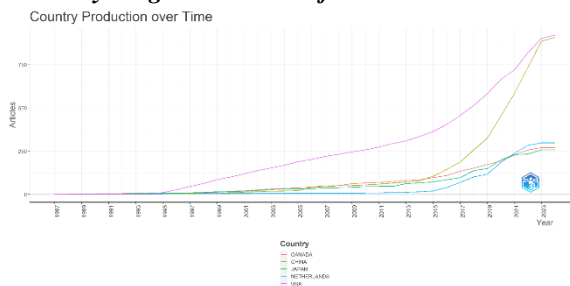


Figure 4. Journal with the Most Published Articles on Treatment of Vomiting and Nausea

Figure 4 above shows the top 10 journals that publish the most articles on Treatment Vomiting and Nausea. American Journal of Obstetrics and Gynecology occupies the first position as the Journal that publishes the most articles on Treatment vomiting and nausea is 144 articles. Followed by the journal Obstetrics and Gynecology which published 140 articles. As well as the 3rd position is the journal Contraception which published 92 articles.

D. Country Origin Production from Year to Year



Development Studies on Treatment of Vomiting and Nausea: Bibliometrical Analysis from the Years 1946-2024

The graph above illustrates research related to vomiting and nausea in pregnancy based on the 5 countries that produce the most articles. The 5 countries see an upward trend from year to year and reach a peak in 2023. What is expected to continue to increase in 2024 can be seen from the trend of related research at the beginning of 2024 which has shown a high trend

E. Author's Agency

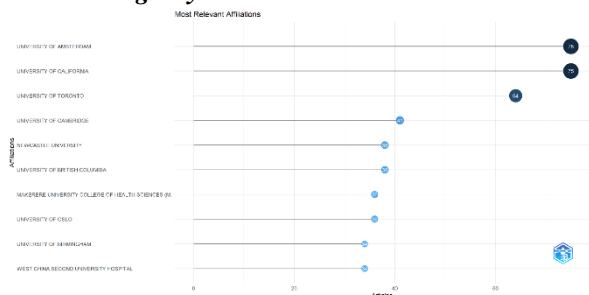


Figure 6. Affiliate author of Article About Treatment of Vomiting and Nausea

The origin of the top 10 author's agencies is most visible in the picture above. From the results of the analysis conducted, it can be seen that the highest article author affiliation is from the University of Amsterdam and the University of California which have the same number of 75 authors. In the next position is the University Of Toronto as many as 64 authors. It was followed by the University of Cambridge with 70 authors.

F. Author Collaboration by Country

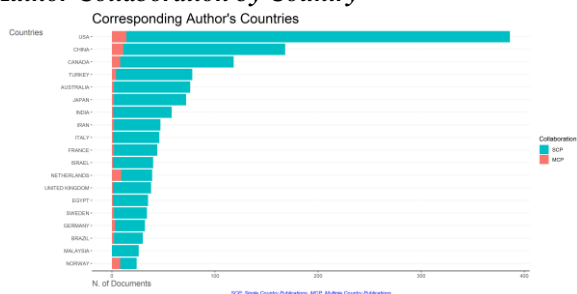


Figure 7. Top twenty correspondence by country of author

The graph above shows author collaborations by country which are divided into 2 categories, namely Single Country Publication (SCP) and Multiple Country Publication (MCP), from the top 20 author collaborations by country. Single Country Publication (SCP) is when all authors in an article are from the same country. While Multiple Country Publication (MCP) is when the author in an article comes from a different country. Many country collaborations are from the United States, China and Canada.

CONCLUSIONS

The publication of articles on the treatment of vomiting and nausea pregnancy from 1946 to 2024 continues to increase from year to year. This illustrates that the theme is interesting to discuss. Writers from the USA contribute the

most in article writing. The most author affiliations are from the University of Amsterdam and the University of California

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Development Studies on Treatment of Vomiting and Nausea: Bibliometrical Analysis from the Years 1946-2024

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