

## **BIBLIOMETRIC ANALYSIS OF ELDERLY INSTANT PORRIDGE**

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### **Abstract**

The elderly need nutritious food, that has health functions and is easily digested. Instant porridge made from functional ingredients can be used as an alternative solution to meet the needs of the elderly. The purpose of this study was to analyse the scope of research on Instant Porridge for the elderly using a bibliometric evaluation so that it can help and become a reference for us in deciding research topics. Data analysis was performed using the number of publications collected from Google Scholar by publish and perish application. The title of the study material, keywords, and abstract are used to guide the search process. The search results obtained 926 publications related to instant porridge for the elderly in the period 2020-2022. In 2020-2021 research related to elderly instant porridge is stable, but in 2022 it will decrease. Most citations were published in the Journal Diabetology International, the Italian Journal of Marketing, and Obesity Research & Clinical Practice. Through the VOSviewer, we analysed how many published articles about Instant Porridge for the Elderly and found that instant porridge for consumption by children and pregnant women has not been studied much at this time. This research highlights the value of bibliometric analysis in providing information about how phenomena occur.

Keywords: Bibliometric analysis, Elderly instant porridge, VOSviewer .

## 1. Introduction

Determining the age of the elderly is limited to two categories, namely old age (60-74) and old age (over 75 years) [1]. In 2017 the number of elderly people reached 12.3% of the total world population and in 2050 it is expected to increase up to 22%. This increase is proof of the success of development in the health sector [2]. Health has become a basic need for the life of the elderly, but aging causes various health problems. As you get older, your antibodies get weaker. However, a healthy lifestyle such as consuming nutritious food and exercising can maintain and improve the body's immune system [3]. Therefore, the elderly need foods that are easy to digest and can maintain the immune system.

Cereal-based products such as instant porridge are staple foods in many nutritionally at-risk groups such as the elderly [4]. In general, cereals contain incomplete functional nutrients, so various biofortification and food fortification strategies have been proposed and implemented over the last 20 years to increase the micronutrient density and bioavailability of staple cereal foods [5]. Enriching cereal products with functional ingredients is a promising concept because it can improve taste, and product appearance (e.g. colour), and enhance product health benefits [6]. Various research topics that provide novelty related to instant porridge for the elderly are very important to do. One method that can be used as a reference for us in deciding research topics is the Bibliometric method.

Bibliometrics is a field of study that can reveal the magnitude and superiority of a particular field of knowledge and even a particular educational institution with the application of various theories in it such as authorship analysis, citation analysis, webometrics (web-based bibliometrics), authorship cooperation, document obsolescence, and impact factors. With the use of bibliometrics, it can be seen how the productivity and distribution of scientific publications in their scientific fields. Bibliometric studies can also provide a broader understanding of all disciplines and reveal the names of the most productive authors in a discipline, country, or language that is more widely used in a field of science [7]. The bibliography itself comes from the Greek "bilio" (book) and "grafi" (writing). Thus, a bibliography can be interpreted as a list of books or magazine articles usually for a certain subject. In the world of research, VOSviewer is used for bibliometric analysis [8, 9].

Several studies related to bibliometrics including a bibliometric analysis of research on herbal medicine for hypertension in Indonesia using VOSviewer [10], a bibliometric analysis of food science and technology: scientific publications in ASEAN Countries [11], a bibliometric analysis of the development of halal food research [12], the role of technology for organizational change: a bibliometric study [13]. Bibliometric analysis, exposed by de Solla Price, is a technique widely and explicitly used in the quantitative and qualitative evaluation of the characteristics, structure, relationships, patterns, and current and future trends of scientific disciplines [14]. Moreover, it is a technique that can be used for a multidisciplinary evaluation through citations, cocitations [15,16], coauthorship [17], and bibliographic coupling [15,18] in achieving transparent and reliable results that guarantee a significant contribution to researchers investigating a topic of interest.

This research aims to analyse the scope of research on Instant Porridge for the elderly using a bibliometric evaluation and data mapping approach (VOS viewer software). The VOSviewer is a tool that allows the construction and visualization

of bibliometric networks for the analysis of an intellectual group (clustering solutions), was used throughout the time of the investigation, using elements of scientific publications such as authors, journals, keywords, references, and other bibliographic characteristics, obtaining information from the field of study related to its origins, development, and trends [19]. This research highlights the value of bibliometric analysis in providing information about how phenomena occur. This research is expected to help and become a reference for researchers in conducting and determining the research topic to be taken [20].

## 2. Method

The article data was taken from articles that have been published and indexed by Google Scholar. We use the publish and perish application to collect a database of published articles. The data sought comes from Google Scholar in the range of 2020 to 2022 with the keywords used, namely "elderly instant porridge". The publication results obtained on the publish and perish application totalled 926 articles. The next analysis is to do data mapping using the VOSviewer software. VOSviewer software can reflect the trend, impact, and evolutionary process of the topic's high frequency [21]. The research comprises four study phases: (i) search criteria of the research field; (ii) search and selection of documents; (iii) software and data extraction; and (iv) analysis of results and trends [22]. There are three forms of data mapping namely network, density, and overlapping visualization [23]. Keyword frequency is set as desired when creating the bibliometric map, and irrelevant or less relevant terms are deleted.

## 3. Results and Discussion

### 3.1. Research developments in the fields of elderly instant porridge

The data obtained using the Publish and Perish application shows research developments related to the topic of instant porridge for the elderly for 3 years (2020-2021) and many research publications are shown in Fig. 1. The number of research publications related to instant porridge for the elderly is stable in 2020-2021 and decreases in 2022. The number of publications in 2020 reached 339 and in 2021 reached 333. In 2022, it decreased to 254 articles. Based on a total of 926 articles, there are 7 articles with the highest number of citations based on search results through the Google Scholar database, shown in Table 1.

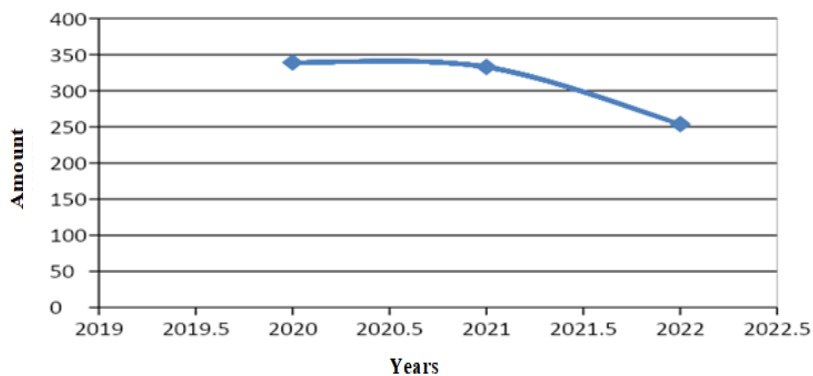


Fig. 1. Number of publications for 2020-2022.

**Table 1. Articles with the most citations.**

No.	Cite	Authors	Title	Years	Journal Name
1	218	Araki et al.	Japanese clinical practice guideline for diabetes 2019	2020	Diabetology International 11: 165-223
2	131	Hoekstra et al.	Marketing in the era of Covid-19	2020	Italian Journal of Marketing 246-260
3	121	Ma et al.	Skipping breakfast is associated with overweight and obesity: A systematic review and meta-analysis	2020	Obesity Research & Clinical Practice 14 (1): 1-8
4	82	Le-Bail et al.	Recent advances and future perspective in additive manufacturing of foods based on 3D printing	2020	Current Opinion in Food Science 35: 54-64
5	81	Guarino et al.	Mechanisms of action of prebiotics and their effects on gastro-intestinal disorders in adults	2020	Nutrients 12 (4): 1037
6	57	Mackie et al.	Simulating human digestion: Developing our knowledge to create healthier and more sustainable foods	2020	Food & Function 11: 9397-9431
7	51	Zhang et al.	Activation of Nrf2/HO-1 signalling: An important molecular mechanism of herbal medicine in the treatment of atherosclerosis via the protection of vascular	2021	Journal of Advanced Research 34 (21):43-63

Based on Table 1, three articles with the highest number of citations were published in the Journal Diabetology International, Italian Journal of Marketing, and Obesity Research & Clinical Practice. In addition, 7 of the published articles with the highest citations came from 6 Research Journals and 1 Review-Journal.

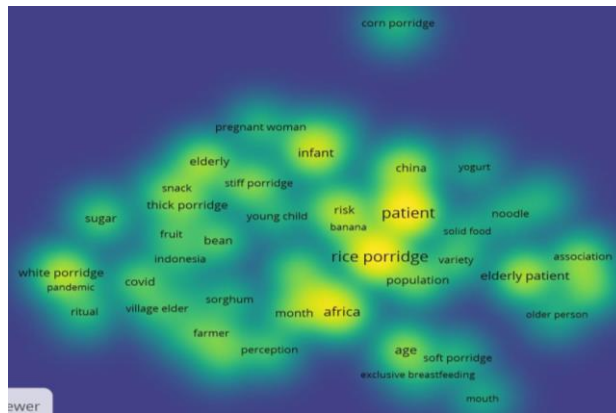
### 3.2. VOSviewer and network visualization on elderly instant porridge topic

According to Al Husaeni and Nandiyanto [24], the minimum number of relationships between terms in the VOSviewer is regulated by 2 terms. Research related to elderly instant porridge is based on analysis mapping visualization is divided into 7 clusters (see Fig. 2), namely

- (i) Cluster 1 (red) contains 13 items that are bean, cake, corn porridge, finger millet, fruit, infant, Nigeria, pregnant woman, risk, snack, stiff porridge, and young child.
- (ii) Cluster 2 (green) contains 11 items that are Africa, caregiver, community elder, exclusive breastfeeding, farmer, indigenous knowledge, information, month, perception, soft porridge, and sorghum.
- (iii) Cluster 3 (dark blue) contains 8 items that are association, elderly individuals, elderly patient, noodle, older adult, older person, side dish, and texture variety.



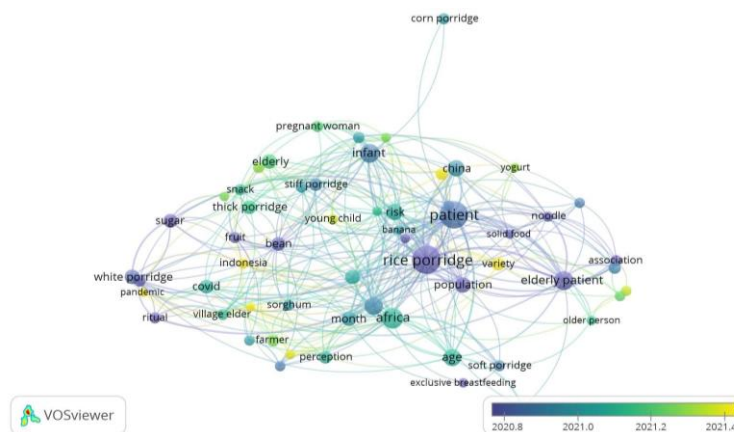
the visualization image (see Fig. 3)., the yellow colour on the density map shows a closer relationship. However, the greener colour on the density map is a sparser relationship. Based on the density results, the items that have been frequently studied are rice porridge, patient, Africa, white porridge, and elderly patients. Visualization is shown in Fig. 3.



**Fig. 3. Density visualization of elderly instant porridge.**

### 3.4. Overlay visualization on elderly instant porridge topic

The results of the Elderly Instant Porridge Visualization Overlay are shown in Fig. 4, showing the topic indicated by yellow and green items. Research topics that have been carried out for a long time are indicated by blue and purple collars. Research items included in the newest category are stapled food, variety, young child, caregiver, information, pandemic, Indonesia, pregnant woman, finger millet, yogurt, elderly individual, elderly, instant porridge, elderly, thin porridge, while old items the research consisted of the older person, age, Africa, perception, elderly population, risk, sorghum, covid, village elder, thick porridge, mouth, biscuit, snack, rice porridge, white porridge, sugar, ritual, fruit, bean, community elder, disease, banana, population, noodle, associations, side dish, soft porridge, and exclusive breastfeeding.



**Fig. 4. Overlay visualization of elderly instant porridge.**

#### 4. Conclusion

By integrating mapping analysis with VOSviewer software, this research attempts to do bibliometrics in the research study problem regarding instant porridge for the elderly. We found 926 relevant articles published between 2020 and 2022 based on our search results. In this study it can be seen that research in 2020 reached 339 articles, in 2021 it reached 333 and in 2022 it has decreased to 254 articles. Through the VOS-Viewer, we analysed how many published articles about Instant Porridge for the Elderly and found that instant porridge for consumption by children and pregnant women has not been studied much at this time. Therefore, bibliometric analysis or research related to instant porridge for children and pregnant women is recommended to be carried out.

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