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ORIGINAL RESEARCH PAPER

Scientometrics Analysis Global Research Trends in Ethics Education: 1999-2022

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ABSTRACT

SUBJECT AND OBJECTIVES: Scientometric analysis within the field of ethics education to spot hot spots and analysis gaps is taken into account as a necessity.

METHOD AND FINDING: The research method is descriptive-applied, and the research area includes all the articles on ethics education that were indexed in the Science Direct citation database from 1999 to 2022, and after filtering them, 24,939 of them were analyzed with the help of Excel and VOS Viewer software for analysis and display of data. The results of the research show that the number of articles has an upward trend and 2021 (1,121) had the largest share in the number of articles. Also, Research articles (8,140), journal of Social Science and Medicine (554), and the scientific field of Social Sciences (5,720) were ranked first.

CONCLUSION: Ethics, Education, corporate social responsibility, sustainability, culture, qualitative research, covid-19, gender, religion, have the most occurrence. 10 clusters were identified that the topics of informed consent, medical ethics, justice, professionalism, moral educationin are Previous, and also subjects: Covid-19, sustainability, Artificial Intelligence, Resilience, moral distressare, moral disagreement, moral disengagement are new and professional identity, self-efficacy, public interest, transformational leadership, social cognition, beneficence, professional values, fraud, public policy, professionalization, pedagogical issues can be new and independent and maybe it indicates the review attention of the research towards them, in the field of ethics education.

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58	3	(Iran, Canada)

Introduction

Regarding the definition of ethics and also the science of ethics, attention-grabbing discussions are raised within the wordbook and ethics books, and there square measure an oversized range of such definitions. Morality is that the basis of human social life and has somehow given aspiring to social life throughout history. *(Love, 2012)*

Morality is extremely necessary. Ethics may be a set of principles and norms of belief supported that the actions and behavior of humans square measure judged and it varies totally different|in several|in numerous societies or different civilizations and also the initial manifestation of an individual in society is that person's ethics or ethics education, interaction with the aim of achieving ethical action is aimed toward smart. In English, 2 words ethics and morality square measure wont to justify the that means of ethics. *(Davis, 1998; Ticktin,2006)*

Education in Islam, like other divine religions, is one of the most important principles that strengthen ethics in society. One of the principles of moral education of young Muslims should be mentioned like: Piety, dignity, creating favorable conditions, habit correction. *(Hosseini, 2022)*

Generally the that means of morality is its correctness and goodness, and generally morality is additionally utilized in the sense of ethical virtues, during which case this word is employed permanently ethicals and moral

virtues, in alternative words, morality means that unites individuals. It makes for a society during which all the positive skills of the individuals flourish.

Paying attention to what has been same, it will be attributed to the requirement of finding applied ethics in numerous areas of life and individual and cluster behavior of humans, there square measure serious and connected queries that result in the emergence of varied specialised and applied branches in moral studies like medical ethics, it's become biological ethics, atmosphere, sexual ethics, media ethics, economic ethics and political ethics. Among the kinds of ethics square measure normative, practical, religious, utilitarian, epicurean, stoic, etc. *(Iphofen, 2017; Rendtorff, 2019; Shapira-Lishchinsky, 2018)*

However, repeatedly they'll be mixed along, as a result of it's terribly tough to separate them.

Based on this, the questions of the current research are presented: What is the illustration map of scientific research in the field of ethics education? What areas have received attention in the previous decades? And what areas have been of interest in the last decade and have innovations?

Theoretical Foundations and Research Background

Scientometrics is a new scientific procedure that deals with the quantitative parcels and characteristics of wisdom and scientific exploration. Emphasis is

placed on exploration in which the development and medium of wisdom are studied with fine and statistical styles.

In scientometrics, scientific communication and styles of product, dispersion and use of scientific information are estimated laterally by examining their sources. *(Pournaghi and Nemati-Anaraki, 2015; Zavaraqi and Fadaie, 2013)*

Valid international citation indexes such as web of science citation databases, Journal citation report In cites and the like.

Also, Elsevier Institute's citation databases, including Scopus, Scival, and Google Scholar, are considered scientometric tools.

Scientometrics has the benefits of very useful results for researchers in different fields. Discovering the scientific fronts and identifying its gaps and planning in the direction of targeting and research benefits can be introduced as a necessity for a good science.

Also, this important matter plays a role in helping the future thinking of science in the world. Rapid measurement and evaluation of scientific productions at the macro level is one of the necessities of scientometrics.

Measuring and evaluating scientific productions using internationally accepted indicators and providing the possibility of comparing them can provide significant help to researchers and research scales.

The difficulty of qualitative assessment of the huge volume of international

scientific productions and the necessity of using statistical tools, identifying the scientific fields of interest in leading countries and comparing them with competing countries, in order to formulate correct strategic plans, is another one of these necessities. *(Bornmann and Leydesdorff, 2014; Chen et al, 2002; Mingers and Leydesdorff, 2015)*

Cultivating ethical virtues is one in every of the foremost necessary and at constant time most tough tasks, and doing this task is one in every of the necessary and lofty goals of human societies, that establishments of upper education and education square measure answerable. *(Coverdale et al, 2009)*

As an example, lecturers ought to have their own skilled ethics, and medical ethics may be a structured and sensible system to produce applicable solutions in regard to moral issues within the field of medical sciences, and odontology, like alternative branches of medical sciences, wants such it's structural. Moral behaviors in dentists square measure a mirrored image of the stress on teaching moral principles throughout their education.

Engineers and managers and every one jobs aren't exempt from this issue. Meanwhile, research within the field of ethics education is increasing and also the got to examine them is of explicit importance.

Most of the research in the background of the research

was related to the fields of medicine and nursing, a few of which are mentioned.

Coverdale et al, (2009) stated that psychiatrical educators should promote evidence-based and ethically even behaviors in learners and active physicians through example and by formal teaching. These processes along can change patients to trust the ability of psychiatrists which psychiatrists can serve the interests of patients initial.

Helft et al, (2009) In thier article regarding ethics education in undergrad school of medicine, they review the literature regarding ethics education in postgraduate surgical coaching programs. The few studies within the literature counsel that ethics education, once integrated in surgical residency curricula, will result in measurable enhancements in resident-centered outcomes, that embody data and confidence in handling moral dilemmas. These curricula might result in enhancements in patient care. These findings counsel that ethics education for surgical residents is effective however that queries relating to the optimum "dose" of ethics education and coaching moreover because the optimum teaching ways would get pleasure from extended systematic analysis and inquiry.

Mahieu et al, (2018) research with this question: However the sector of digital ethics is distributed over varied tutorial disciplines. They need initial of all found that the quantity of publications relating digital

ethics is exponentially increasing. They moreover established that whereas one could expect digital ethics to be a species of ethics, we tend to actually found that the assorted queries relating digital ethics square measure preponderantly being mentioned in engineering science, law and bioscience. It's in these fields, quite within the freelance field of ethics, that moral discourse is being developed around concrete and sometimes technical problems. Moreover, it seems that some vital moral values square measure terribly distinguished in one field (e.g: Autonomy in medical science), whereas being nearly absent in others.

Souza and Vaswani, (2020) in a analysis regarding teach medical ethics, reviewed the articles printed from January 2014 to Sept 2019. The authors searched PubMed for the relevant publications and extracted the data employing a data extraction sheet. Twenty-nine articles were enclosed for the review, that consummated the inclusion criteria. Case-based discussions were a wide accepted strategy to be told ethics. The studies highlighted a mixed teaching approach victimization multiple teaching tools.

A qualitative approach was most well-liked for the assessment through reflections, simulated patient interactions, and development of portfolios. However, there are gaps within the existing literature on the assessment methods for ethics education.

Heterogeneousness still exists within the coming up

with of the curricula, teaching, and assessment strategies. These curricula suit the cultural and non secular originated of that individual country. Case-based discussion could be a common teaching strategy, and there exist various innovative and efficient active teaching methods.

Research on ethics is of special importance and scientometrics will facilitate analysisers for effective research. This type of analysis will facilitate analysisers to figure in a very new field and make effective research. Supported this, the present analysis aims to draw a thematic map of revealed articles during this field and to spot hot and new topics.

Methodology

This article is descriptive-applied and has been carried out in the field of scientometrics. It is formed based on the illustration of co-occurrence networks and can produce, visualize and analyze the bibliography based on a network among the documents of many scientific publications.

The data was collected from Science Direct scientific database as a comprehensive and multidisciplinary citation profile and the network drawing tool was done using VOS Viewer software.

The statistical population of the research, all the articles of this scientific database published from 1999 to 2022 were examined. At first, 14103 articles were identified with the help of the

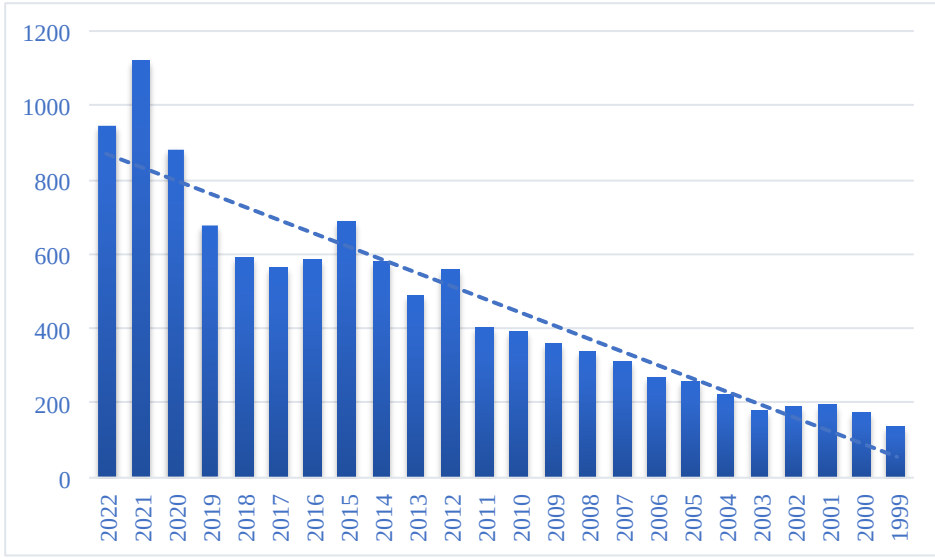
keyword “Ethical Education”, and by limiting them, the number of articles was reduced, and in the next place, a large number of articles were removed due to lack of connection, and similar, identical, plural and singular words were merged and with Removing the articles of other topics manually, the final number of articles reached 11116. Finally, with the expert option, they were extracted in 36 RIS files and entered into VOS Viewer software.

VOSViewer software has become popular in bibliographic research and has been developed due to its easy interpretation.

Findings

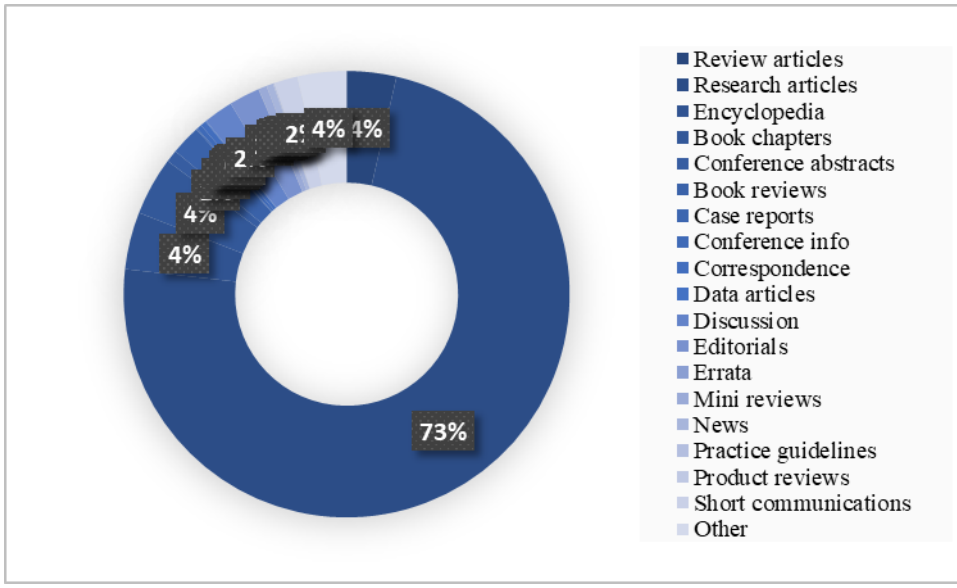
Figure 1. shows the growth trend of scientific productions in the field of ethics education during the years 1999-2022 in the Science Direct citation profile using Excel software. As can be seen, the number of articles has been on an upward trend since the beginning. The lowest share of scientific productions is in 1999 with 137 records and the highest share is in 2021 with 1,121 records.

Figure 1: The Number of Articles Published in the Period under Review



Among the types of articles, Research articles (8,140), Book chapters (470), Encyclopedia (461), Review articles (400), Discussion (310), Book reviews (260), Editorials (248), had the highest frequency respectively.

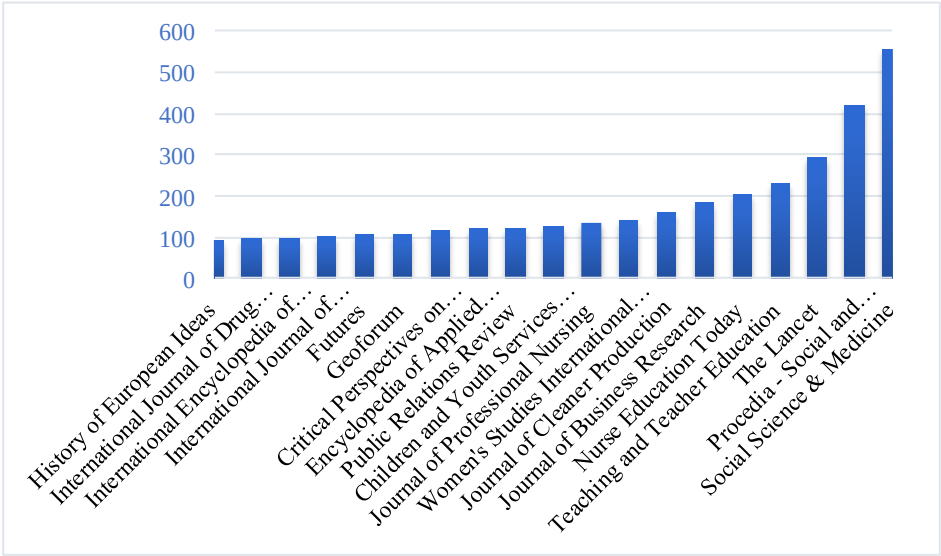
Figure 2: The Type of Research Considered by Researchers



Among the magazines, Social Science and Medicine (554), Procedia-Social and Behavioral Sciences (419), The Lancet (295), Teaching and Teacher Education (229), Nurse Education Today (203), Journal of Business Research (183), Journal of Cleaner Production (157), Women's Studies International Forum (140), Journal of Professional Nursing (134), Children and Youth Services Review (127), Public Relations Review (118), Encyclopedia of Applied Ethics (Second Edition), 2012 (118), Critical Perspectives on Accounting (117), Geoforum (107), Futures (104), International Journal of Nursing Studies (102), International Encyclopedia of the Social and Behavioral Sciences (Second Edition), 2015 (97), International Journal of Drug Policy (94), History of European Ideas (90), Business Horizons (90),

Technological Forecasting and Social Change (86), International Journal of Law and Psychiatry (82), Midwifery (82), Accounting, Organizations and Society (77), International Journal of Educational Development (77) have the most articles.

Figure 3: Scientific Journals with the Largest Number of Articles



Also, scientific fields Social Sciences (5,720), Medicine and Dentistry (4,878), Psychology (2,758), Business, Management and Accounting (2,052), Nursing and Health Professions (1,732), Arts and Humanities (1,215), Economics, Econometrics and Finance (833), Environmental Science (683), Neuroscience (637), Agricultural and Biological Sciences (545) were the most abundant.

Figure 4: Field of Research Considered by Researchers

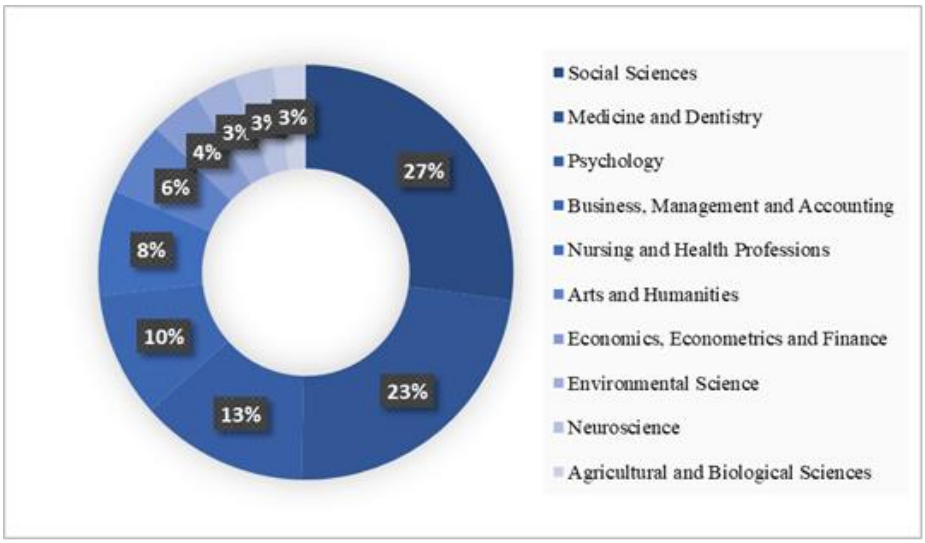


Table 1. also shows the keywords with the highest co-occurrence among all the words. Based on these keywords: Ethics, Education, corporate social responsibility, sustainability, culture, qualitative research, covid-19, gender, religion, the most frequency.

Table 1: Keywords with the Most Repetition and Co-Occurrence

Key Word	Occurrences	Total Link Strength
Ethics	654	1740
Education	225	571
Corporate Social Responsibility	139	200
Sustainability	137	239
Culture	133	429
Qualitative Research	129	271
Covid-19	126	260
Gender	126	369

Religion	113	361
Nursing	110	287
China	105	181
Professionalism	98	292
Values	90	262
Communication	86	262
Leadership	85	223
Children	83	244
Bioethics	77	293
Higher Education	77	133
Stigma	77	223
Informed Consent	74	273
Adolescents	72	161
Attitudes	71	148
Autonomy	70	309
Mental Health	70	202
Artificial Intelligence	68	123
Palliative Care	68	171
Qualitative	68	174
Australia	67	154
Trust	67	154
Health	62	264
Morality	62	167

The software presents its analytical results in the majority of maps, three of which are mentioned. To present the existing connections based on repetition 9, among the articles of this field, 702 items were formed, each belonging to a specific topic and shown as circles. In the meantime, the larger the circle is, it shows the wide connection of that collection with other collections.

Also, by thinking about the shape of the lines between the circles, it can be seen that they indicate the connection between the sets, and the thicker these lines are, the stronger the connection. In the research network, 10 clusters and 13,253 links are formed.

As seen in Fig. 5, in the network visualization, the clusters formed by each of them are shown in specific colors. Examining the clusters of ethics education showed that cluster number one, which is marked in the red circle image, is the largest and the best cluster.

This cluster has 114 thematic categories and 2,670 links, and among the categorie, culture has the most links (229 links) with other members of the network, and therefore the corresponding node has a larger size than the other nodes of the mentioned cluster.

Cluster number two, which is shown in green in the image, with 103 members and 1990 links, is the cluster that ranks second in terms of establishing links and among this categorie gender (204 links) has the most links with others. Among the all categories, Ethics has the most links (469 links) with other nodes located in cluster 7.

Figure 5: Network Visualization of the Research Community (VOSviewer)

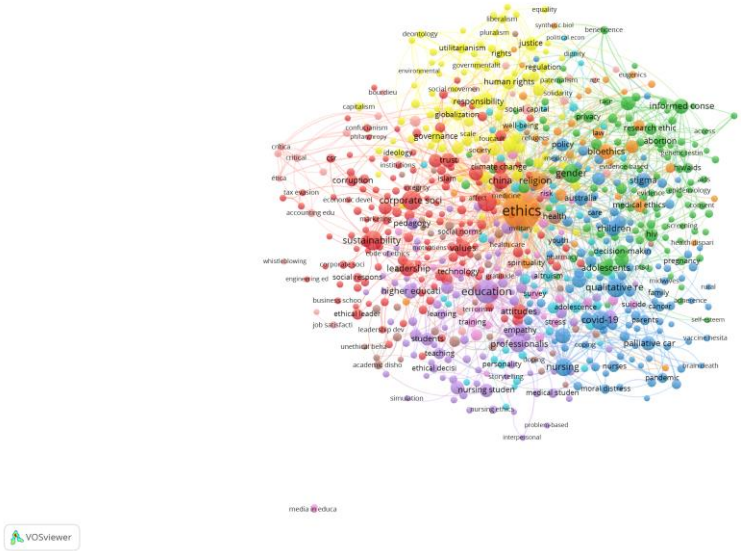
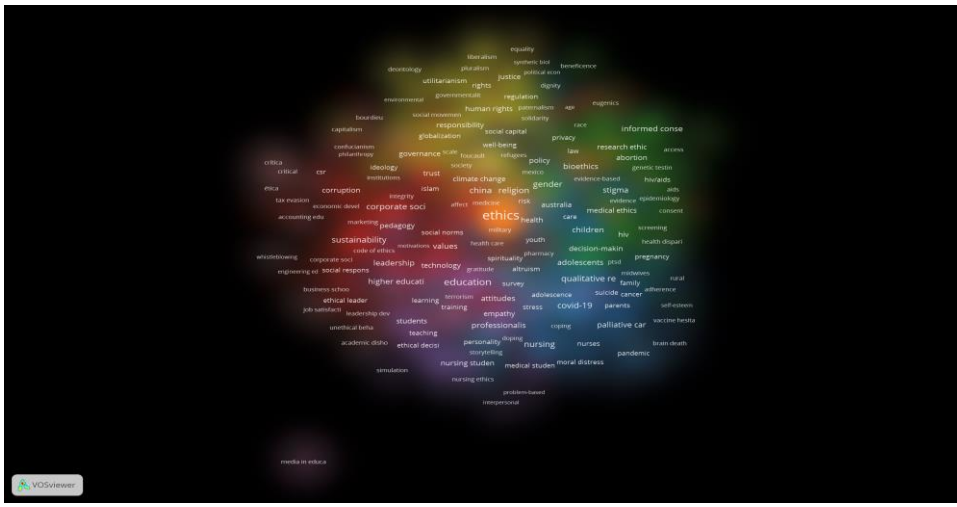


Figure 6. Also with a black background, it shows the density of all eight clusters, which corresponds to the previous figure in the color of items and shows all eight clusters and their subsets in the form of densities.

Figure 6: Network Visualization of the Research Community in Black Background (VOSviewer)



As can be seen in Figure 7. darker colors indicate the areas that in previous years such as informed consent, medical ethics, justice, professionalism, moral educationin the field of ethics education.

Table 2: Examples of Previous Topics in Overlay Visualization

Subject	Avg.pub.year	Examples
Informed Consent	2012	*(Alnamlah et al, 2022; Loeff and Shakhsheer, 2021; Troude, 2022)*
Medical Ethics	2012	*(Alnamlah et al, 2022; Bockhold et al, 2022; Essex et al, 2022)*
Justice	2013	*(Baer and Nelson, 2006; Kikuchi, 1996; Pennings, 2008; Wright and Wright, 2022)*
Professionalism	2014	*(Cook et al, 2013; Lifchez and Adams, 2020; Yahyavi et al, 2021)*
Moral Education	2011	*(Copeland, 2022; Joseph et al, 2022; Paramita et al, 2022; Taggart and Zenor, 2022)*

lighter colors indicate new areas that have recently been researched and investigated and subjects: Covid-19, sustainability, Artificial Intelligence, Resilience, moral distressare, moral disagreement, moral disengagement are new in the field of ethics education.

Table 3: Examples of New Topics in Overlay Visualization

Subject	Avg.pub.year	Examples
COVID-19	2021	*(Downs et al, 2022; Kuri and Schormans, 2022; Munir et al, 2022; Williams et al, 2022)*
Sustainability	2017	*(Ab Wahab, 2021; Bockhold et al, 2022; Joaquin and Biana, 2020; Koirala et al, 2022)*
Artificial Intelligence	2020	*(De Felice et al, 2022; Jackson et al, 2022; Martinho et al, 2021; Saheb et al, 2021)*
Resilience	2017	*(Bowman et al, 2018; Brenner et al, 2022; Caplan and Parent, 2022; Erragragui et al, 2018)*
Moral Disagreement	2018	*(Goodwin and Darley, 2012, 2012; Schmidt et al, 2017)*
Moral Distress	2018	*(Haddad and Bigger, 2020; Mabel et al, 2022; Mukherjee et al, 2009; Wands, 2018)*
Nurse Students	2018	*(Ion et al, 2018; Kessel, 2003; Megregian et al, 2021; Nichols et al, 2022; Zhen et al, 2022)*

Figure 7: Overlay Visualization of the Research Community (VOSviewer)

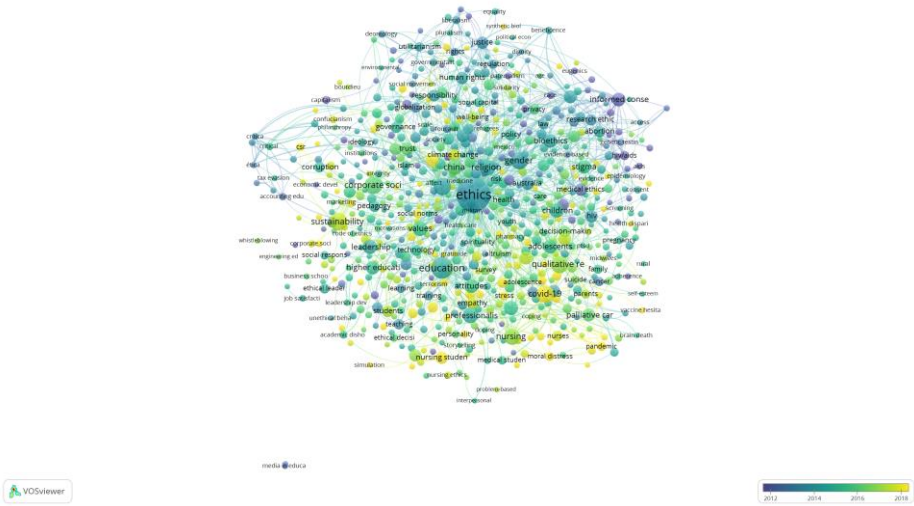
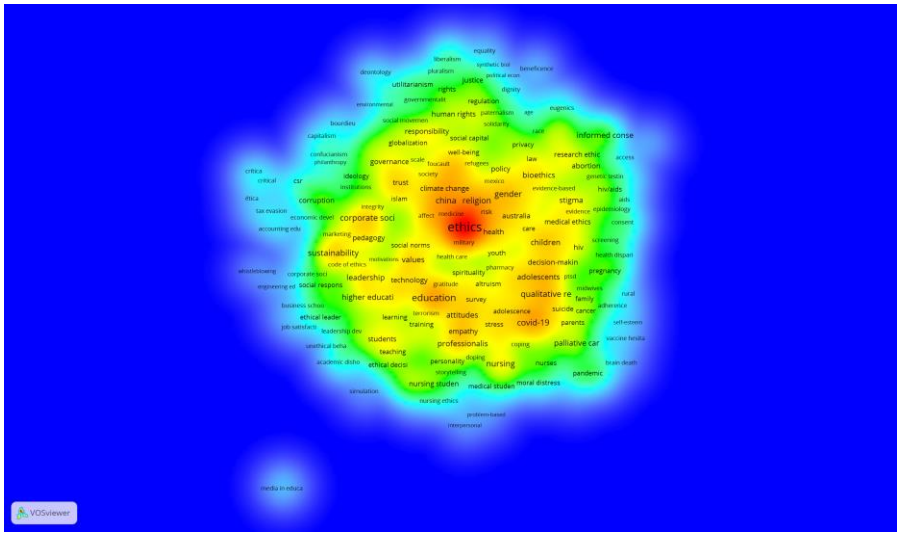


Figure 8: Density Visualization of the Research Community (VOSviewer)



The map of the Density visualization of the research community shows the co-occurrence of words in researchers' articles.

According to Figure 8. categories such ethics, Education, corporate social responsibility most influential categories in the field. Since these categories are assigned red points on the map, these categories are called the hot spots of this area.

In addition to these issues, it should be mentioned about the scattered and far from the central areas, which, while being related to the whole system, can be a new and independent area in the field of current research, and maybe it indicates the review attention of the research towards it.

The most important of these topics are: Professional identity, self-efficacy, public interest, transformational leadership, social cognition, beneficence, professional values, fraud, public policy, professionalization, pedagogical issues.

Conclusion

The aim of the current research is to draw a thematic map of published articles in the field of “Ethical Education” and to identify hot and new topics in this field. Scientometric review was done in the Science Direct citation profile using Excel software. The findings of the first part of the research show He said that scientific productions in the field of ethical education show an upward trend during the years 1999-2022.

The findings of the research showed that the lowest share of scientific productions is related to 1999 with 137 records and the highest share is related to 2021 with 1121 records. This indicates that probably the researchers gradually realized the importance of scientometric articles and its role in the coherent review of scientific sources, and more research measures have been taken in this regard.

In the next part, the research findings showed that most of the articles published in the field of ethics education are related to magazines, Social Science and Medicine (554), Procedia-Social and Behavioral Sciences (419), The Lancet (295). And the fewest articles published in magazines are: Accounting, Organizations and Society (77), International Journal of Educational Development (77) have the most articles.

The results of this part of the research show that the most attention was given to ethics education in the fields of social sciences, medicine, social sciences, behavior and teacher training, and the least attention was given in the fields of midwifery, accounting and educational development. It is more important in the areas that were not given much attention and also the areas that were not investigated at all.

In the next part, the findings of the research showed that the most scientific publications in the field of ethical education in order of priority are:

research articles with 8140 articles, book chapters with 470 titles, encyclopedias with 461 copies, review articles with 400 titles, discussions with 310 items, book reviews with 260 items, editorial with 248 items.

In the explanation of these findings, it can be pointed out that this topic is more interesting to researchers and has a place to work in other fields of scientific publications.

Examining keywords showed that ethics, education, corporate social responsibility, sustainability, culture, qualitative research, covid-19, gender, religion were the most frequent.

The new topics that the researchers recently addressed are: Covid-19, sustainability, artificial intelligence, resilience, moral distress, moral disagreement and moral non-participation.

Also, topics such as: ethics, education, social responsibility, were in the focus of attention and were the most influential and most used, which are considered hot spots; But things like: Professional identity, self-efficacy, public interest, transformative leadership, social awareness, benevolence, professional values, fraud, public policy, professionalization, educational issues are scattered and have received less attention.

Therefore, according to these cases, researchers can be suggested to investigate new topics and scattered topics far from the focal point as future research topics.

In the end, due to the day by day growth of scientometric articles and researches in the world, it is suggested that researchers in different scientific fields pay more attention to this type of research.

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