Original research article

# Assessment of knowledge regarding Scientometric among health care professionals: an observational study

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**Abstract**

**Aim:** To assess the knowledge of publication criteria among health care professionals and objected to know the knowledge about citation index, H index about publication.

**Materials and Methods**: This is questionnaire based assessment study was carried out in the Department of Pharmacology at Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India from july 2019 to march 2020. After taking oral consent of 80 health care professionals who are willing to participate were given with validated questionnaire. The opinion generated for each question was expressed in percentage of the study group and results were analyzed. **Results**: Out of 80 participants, 68.75.3% of them were attended training programme. 71.25% were conducting language check before submission. 57.5% knew what is COPE – Committee on Publication ethics and were following it. 66.25% knew that their paper will undergo Editorial – Peer review – Technical – Linguistic check. 60% knew about SCI – Science Citation Index and 42.5% of them were selecting the journals based on impact factor. **Conclusion:** Every investigator must be made aware of citation index, impact factor and H index before writing/submitting their article for publication to maintain the quality of their publications.

**Keywords**: Scientometric, Impact factor, H index, Citation index, Health care professionals



## Introduction

The institutional prestige and reputation is associated with faculty publishing productivity and is strongly associated with an individual faculty member's reputation, visibility, and advancement in the academic reward structure, particularly at higher learning institutions. Being a unique research area, scientometrics is used to quantify national and international systems of innovation which helps in developing policy in science and technology and derives long term economic and social benefits. The growth rate of scientific research literature of nations, organizations, and departments or in a field of knowledge can be assessed using scientometric techniques.

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It is used to identify the pattern of publication, authorship, productive author, author affiliation, year-wise growth, citations and behavior of a subject over a period of time and thereby offering insight into the dynamics of the area under study which in turn may help to formulate science policy.

Scientometric is a field of science dealing with quality assessment of the scientific validity of published articles and other type of publications. Worthiness of scientific journal is measured by the quality of articles published. The Impact factor (IF) - popular tool which analyses the quality of journal in terms of citations received by its published articles. Journals with high IF carry meaningful, prominent, and quality research. Other indices like H-index, G-index, m quotient, C-index are some other alternatives to judge the quality of an author but each index has its own merits and demerits.

As, the pre-clinical and clinical research are the heart of our health care system, providing a promising article which has un-plagiarised data is the most

important factor. If authors are aware about scientometrics, they will be able to maintain the standard in their research work. So, this study was conducted to assess the knowledge of health care professionals about Scientometrics and its importance

**Materials and Methods**

This is questionnaire based assessment study was carried out in the Department of Pharmacology at Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India from july 2019 to march 2020.

**Pre-testing of questionnaire:**

A self-administered structured questionnaire was developed and tested among a convenience sample of 10 participants, who were interviewed to gain feedback on the overall acceptability of the questionnaire in terms of length and language clarity. Based on their feedback, the questionnaire did not require any corrections. Cronbach's coefficient was found to be 0.80, which showed an internal reliability of the questionnaire. Mean Content Validity Ratio (CVR) was calculated as 0.87 based on the opinions expressed by a panel of five academicians. Face validity was also assessed and it was observed that 92% of the participants found the questionnaire to be easy.

**Methodology**

All health care professionals who have completed master degree, working at Jawaharlal Nehru medical college and hospital ,Bhagalpur, Bihar, India are included in the study. Those who are not willing to participate are excluded.

80 health care professionals who have completed their master degree and willing to participate were given with validated questionnaire containing 17 questions including demographic data like name, specialty, post MD experience and their number of publications to give their feedback.

**Statistical analysis:**

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2010) and then exported to data editor page of SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics included computation of percentages.

**Results**

**Table 1: Gender base distribution of Health care professionals**

| Gender | N=80 | % |
|---|---|---|
| Male | 60 | 75 |
| Female | 20 | 25 |

Out of 80 participated health care professionals, 75% were males and 25% were females

**Table 2: Knowledge of Health care professionals**

| S. No | **Questions** | Yes In % | No In % | NA (Not attended in %) |
|---|---|---|---|---|
| 1. | Have you attended any training for Scientific writing and publishing? | 55( 68.75%) | 25(31.25) | 0 |
| 2. | Do you know the term called 'Scientometric' | 36(45%) | 44(55) | 0 |
| 3. | Have you read once recommendations by International committee of Journal of medical editor's guidelines for publication? | 45(56.25) | 35(43.75) | 0 |
| 4. | Did you know what is COPE – Committee on Publication ethics ? | 46(57.5) | 34(42.5) | 0 |
| 5. | Did you follow what is COPE – Committee on Publication ethics (P)? | 42(52.5) | 38(47.5) | 0 |
| 6. | Do you know the types of review your paper will undergo after submission (Editorial – Peer review – Technical – Linguistic Review) | 53(66.25) | 27(33.75) | 0 |
| 7. | Do you follow authorship criteria? | 54(67.5) | 26(32.5) | 0 |

| | | | | |
|---|---|---|---|---|
| 8. | Are you familiar with various guidelines to write scientific paper (Eg. CONSORT guidelines for clinical study reporting) | 48(60) | 32(40) | 0 |
| 9. | Do you do yourself language check before submission? | 57(71.25) | 23(28.75) | 0 |
| 10 | Plagiarism check before submission? | 30(37.5) | 50(62.5) | 0 |
| 11. | Do you know about 'SCI – Science Citation Index'? | 48(60) | 32(40) | 0 |
| 12. | Do you select journal for publication based on impact factor by Thomson routers SCI analysis? | 34(42.5 | 46(57.5) | 0 |
| 13. | Do you know the term h index? | 31(38.75) | 42(52.5) | 7(8.75) |
| 14. | Do you usually measure your citations and h index? | 6(7.5) | 68(85) | 6(7.5) |
| 15. | Do you know h index is used to evaluate scientific merit of a publication? | 30(37.5 | 45(56.25) | 5(6.25) |
| 16. | Do you have any of the following researcher ID (Google scholar,SCOPUS or Orchid or Thomson Routers) | 31(38.75) | 44(55) | 5(6.25) |
| 17. | Do you know your citation metrics and h index calculated by above said Online researchers IDs when you enrol yourself ? | 20(25) | 55(68.75) | 5(6.25) |

**Discussion**

Scientific and professional research work is the primary educational tool to upgrade our knowledge. Scientists place their scientific work and experience in the common treasury of universal knowledge and at the same time is free to use the knowledge of other researchers. So it should have international standards by application of scientific methods and codes of conduct in scientific research are essential to science and its work to protect it against all forms of dupery.[1] So far, only 8.83% of Scientometric study has been conducted in India.[2]

Assessment of the achievement of every scientist, and thus indirectly determining his reputation in the scientific community of these publications, especially journals, is done through the impact factor, which shows how many times a scientific article in a specific journal receives an average number of quotes.[3]According to our study, 48(60%) of the health care professionals were familiar with different guidelines to write their scientific paper. Hopewell S et al says that The CONSORT Statement provides recommendations for reporting randomized controlled Trials. 63% were less clear in their recommendations. Very few journals mentioned the CONSORT extension papers.[4]

Almost 57(71.25%) were check for the language and grammar before forwarding their article for publication. Rest others found it is waste of their time and anyways it will be corrected under editorial review. Few mentioned that they are facing lack of time to do check.

We found that very few, 30(37.5%) of the participated professionals were checking for the plagiarism before submitting their research work for publication. Many were not having an idea about, from where to analyse for the Plagiarism and most of them thought that when they site an article, it must contain the same words and sentences[5], so they were just copying as it is in that cited in their publication. This in turn may lead to publication of most plagiarised article without intension.

The impact factor of a journal reflects the frequency with which the journal's articles are cited in the scientific literature.[6]A strength of the h-index is it evaluates quantity (evaluated by the number of publications) and quality (evaluated by the number of citations of publications). The H-index is, therefore, little affected by researchers who publish a high volume of low-impact papers or those who only have a few, high-impact publications.[7] In our study, among 80 participated health care professionals, average number of publications were 81 less than 50% were not having idea about the H index and Impact factor of the citation they have used in their journal. Many of them were not aware how to calculate Impact factor of the journal and H index. This may decrease the quality of their publication though they have conducted good clinical research. And if the citation which they have quoted has the less impact factor, the current publishing author's article will also have less

weightage. Number of citation of the present author will also be decreased by indirectly reducing the Impact factor of his articles.[8-11]

Online research IDs will provide Impact factor, Citation metrics and H index when the author upload their publication. Many of our participated health care professionals were not aware of this though 41.67% of them have their IDs in various sites.

Finally we came across the opinion that that, among the 55(68.75%) of the participants who had attended the training programme regarding Clinical trial, Guidelines for publication, Article writing and Author's criteria were not updated their knowledge. More than 60% of them have attended this training during their post-graduation. Many said that as the publications have made mandatory, they are lacking time to check all these factors.

**Conclusion**

Language and plagiarism checks to avoid being tagged plagiarist and avoid being lulled by fake journals and every investigator must be made aware of terms like citation index, impact factor and H index before writing/submitting their article for publication. Conduct workshops/programmes in view of update on current trends and key notes to improve their publication credibility and quality

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