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## Indian and Chinese Oncologists' ASCO Conference-based Derivative Articles: A Comparative Study

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## **Indian and Chinese Oncologists' ASCO Conference-based Derivative Articles: A Comparative Study**

### **Abstract**

#### **Introduction:**

Conference-based derivative article is a welcome step in medical fraternity because it overcomes limited peer review, enhances validation of the results, avoids duplication and reduces publication bias to some extent. Further, such work helps in the furthering visibility, archival and accessibility issues of the content. With this background the scope of the present work is restricted to comparing oncology publication output of India and China in terms of derivative articles based on American Society of Clinical Oncology (ASCO) conference papers.

#### **Objectives:**

The significance of the present study lies in the fact that it aims to compare the conversion rate of derivative articles for both the countries, understand some of the factors such as, authorship pattern, identify the bibliometric pattern of derivative articles, and attendance for a conference and number of papers presented and converted.

#### **Methods:**

ASCO conference papers for the period of 2005-14 are investigated for derivative articles in PubMed. At least one of the authors is from India or China in the conference paper. While, the criteria to determine the derivative article includes important keywords, reasonably content-wise similarity and at least one of the authors is common between conference paper and corresponding journal article.

#### **Results:**

It is revealed that in terms of attendance by oncologists, their contribution in conference papers and conversion into derivative articles, China is ahead of India.

#### **Conclusions:**

It is concluded that Chinese oncologists have surpassed Indian in terms of higher (i) conversion ratio, (ii) average number of authors, (iii) significantly higher presence of first and last author in corresponding derivative articles, (iv) citation impact including h- Index, (v) higher attendance at ASCO conference, and (vi) phase wise trials studies.

**Keywords:** *Conferences, Oncology, Derivative articles, Scholarly Communication, Information flow study, Bibliometrics*

## **INTRODUCTION**

Conference papers are an important source of scientific communication across all disciplines of science, technology and medicine (STM). Conferences provide a platform for (i) early sharing of the findings with the peers, (ii) limited validation to an extent, and (iii) avoiding any pitfalls for further study. However, citation and impact influence of conference papers is less and varies across disciplines compared to mainstream journal articles (Rahm, 2008).

Conference paper-based journal article or conversion is considered as a quality of research and logical conclusion of communication. This helps in archiving, ease of access, visibility to the work, and helps to overcome reporting bias to an extent (Rollin, Darmoni & Caillard 2009; Kreis, Panteli & Busse, 2014)

The reason for selecting the ASCO (American Society of Oncology) Conference because it is one of largest society of international repute for oncology, conducts annual conference regularly, and acceptance of a paper by the society is considered prestigious.

## **LITERATURE REVIEW**

In the present study twofold review of the literature from STM discipline has been carried out. The first part discusses the bibliometric factors that help in influencing citation impact of conference papers and journal articles in general. Such factors are related to type of document, journal related factors, and author(s) related factors (Tahamtan, Afshar & Ahamdzadeh, 2016). However, authors related factors are reviewed below.

While, second part discusses about the rate of conversion or derivative articles based on conference proceedings in selective manner for oncology discipline.

### **Author Related Factors**

In the present study the author related aspects considered are namely (i) number of authors, (ii) author's position in conference abstract and corresponding derivative journal article and (iii) first author affiliation.

The number of authors of a paper and co-authorship is correlated with the paper's impact so that the more authors a paper has, the more probably it will be cited (Dhaliwal and Kumar, 2008).

### **Author's Position**

In scientific disciplines it is observed that the trend of multiauthored papers is increasing. This results into sequence of authors important. Traditionally, the first author contributes most and also receives most of the credit, whereas the position of subsequent authors is usually decided by contribution, alphabetical order, or reverse seniority (Tscharntke, Hochberg & Tatyana, 2007). While, Macmillan et al (2007) viewed that the last author considered to be the senior most among all the authors mentioned.

Conventionally in the biomedical sciences the last author often gets as much credit as the first author as they are assumed to be the driving force, both intellectually and financially, for the research. The sequencing of the first and last author in conference abstract and corresponding derivative articles is important (Snedekera, Tottona & Sargeanta (2010). Corrêa et al (2017) in their study reveal that there is a strong relationship between authors ranking and the total of contribution made by authors. The study confirms that, in general, first and last authors make the most of the contributions to a scientific manuscript. Further, in 78.3% of derivative articles first author have retain their position.

Thus, in the present study it has been first checked whether both the first and last authors of the conference paper are there as authors in the derivative articles. Secondly it has been checked if one of them only is there in the derivative article and what his position is.

## Grants/Funding Factors

The research projects (papers) that have received grants from National Institute of Health (NIH), USA receive more citations than non-funded papers. Also, scholars funded by research councils obtain more citations (Suminski, Hendrix, May et al, 2006). (Suminski, Hendrix & May et al, 2006)

It is also maintained that the percent of GDP spent on research and development, healthcare, and country's GDP might increase or help in higher publication contribution (Tahamtan, Afshar, Ahamdzadeh, 2016; Caglar, Demir, Kucukler, 2016; Leydesdorff, Wagner, 2009; Rodriguez Granillo, Rodriguez, Bruining et al, 2013). Since, China has a higher GDP rate and spend towards research than India. Thus, in an indirect way this assumption holds true. As it's observed that there is a consistence increase in terms of attendance and contribution of Chinese oncologists than Indian oncologists. (Demir & Kucukler, 2016; (Rodriguez & Bruning et al, 2013)

## Database Selection: Conference Based Derivative Articles

Saad, Pinheiro and Masson et al, (2008) have investigated abstracts presented from Brazil at ASCO Conference and the conversion into a journal article. Their criterion for considering a study from Brazil selects a study when two-third institutions involved were from Brazil. Further, Medline and Lilacs databases were used to identify the derivative articles. Their findings reveal that only 16.9% abstracts were published in full and of these 80.7% appeared in print within two years from the presentation of the abstract in Medline. Support from the pharmaceutical industry was declared in 26.9% abstracts, always in association with clinical studies. In one of the studies based on clinical trial phase III abstracts (ASCO Conference - 2000) and their subsequent full-text publications with a temporal period of six years onward in PubMed was carried out and found that 74% of abstracts were converted. However, authors conclude that that when carefully selected, ASCO annual meeting abstracts of phase III trials consistently reflect final published results, but some differences were observed that warrant caution in using abstract results to shape treatment decisions before full publication (Tam & Hotte, 2008). Arap, Reis and Torricelli (2014) in their study based on American Urological Association (AUA) and ASCO for finding the derivative articles suggest that 51.4% for Urology and 37.4% for Oncology were converted in a period of 5

years in PubMed and Lilacs database. Thus, conversion into derivative articles may vary according to discipline.

## **RESEARCH QUESTIONS**

- i. To what extent do Indian and Chinese oncologists convert their conference papers into journal articles, along with different types of studies and time duration for conversion into a journal article?
- ii. What is the bibliometric pattern of derivative articles of ASCO conference papers contributed by Indian and Chinese oncologists?
- iii. What is the authorship pattern and related metric analysis with special emphasis on first and last author's presence in derivative articles?
- iv. What is the significance of first author affiliation with national origin and USA?
- v. What is the relationship between attendance at ASCO Conference and papers contributed?

## **RESEARCH METHODOLOGY**

### **a) Steps Involved in Matching the ASCO Conference Records with PubMed Database**

- I. Relevant data on the topic was retrieved from the Journal of Clinical Oncology (website) for ASCO Conference – Meeting Abstracts for India and China for the period 2005-14. The search terms used were like “cancer”, “oncology”, “Neoplasms”, and “Carcinoma” and country name as the case may be.
- II. The bibliographic details along with the abstracts from the step one were searched in PubMed database for the derivative articles. This was confirmed in two ways: (i) manual check for each record and (ii) 150 bibliographic records with abstracts for each country at random were matched with text similarity search engines like eTBLAST and HelioText with those of the potential journal articles for validation purpose. The minimum text similarity ratio was fixed at minimum 0.20 or above between ASCO conference abstract to that of probable PubMed based derivative article.

- III. In addition, randomly selected sample of 100 ASCO conferences based derivative articles from India and China were validated with the help of working medicos. Such human intervention is considered imperative in order not to miss any of the relevant derivative articles.

For successful matching at least one common author between conference paper, and derivative article was the minimum requirement. A temporal period of six years onwards from the publication of the conference paper record was considered for PubMed based derivative articles.

Next PRN (Profiles Research Network) a NIH-USA funded bibliometrics software utility was used for PubMed citations retrieved. For ASCO conference-based derivative articles, PMID unique identifier number from PubMed (assigned to each article) were searched in PRN tool during last week of September 2018.

To understand the trend of publication type in ASCO conference such as multicentre study, clinical trials etc. we have categorized the type of study which appears first in the title of the ASCO conference paper or if not clearly mentioned in title then within the body of the abstract.

#### **Use of PRN - NIH Tool for Bibliometrics Analysis**

In order to perform bibliometric analysis of such PubMed database derivative articles PRN tool is used (Profiles Research Network, Sept 208). It uses MeSH vocabulary for subject categorization. Furthermore, compared to multidisciplinary databases such as Scopus, it categorizes publication types such as observational, clinical trials more precisely and specific to suits the present study. However, the limitation of PRN in terms of journal coverage is less and time to index articles is few weeks more than Scopus, WoS (Leydesdorff, Tobias, 2013; Bonato, 2016; Sharma, 2018, Ngwa, Sajo and Ngoma T et al, 2015; Warner, Carapinha, Weber, 2016; Whaling, Malik, Foster, 2013).

Many times, Medline assigned more than one publication type category to same article. Similarly, if more than one type of grants or fund allocated to a given article then it will mention all such details and a single publication might be listed more than once. Thus, total number of PMIDs may not match exactly to the total number of type of articles.



### **Bibliometric Variables Studied**

In the present study some of the important bibliometric aspects of such derivative articles are compared for the Indian and Chinese oncologists. This includes (i) publication types such as different level of clinical trials, multicentre studies and observational studies, (ii) multiple authorship, (iii) first and last author position in conference papers and corresponding derivative article(s), (iv) average number of authors for conference based derivative articles, (v) average number of authors per ASCO conference paper and corresponding derivative articles, (vi) average number of references cited by both including and excluding self-citations, (vii) m-index, h-index, (viii) average time-period for conversion or contributing a derivative article and (ix) first author affiliation.

### **Attendance at ASCO Conference and Papers Contributed**

To understand the relationship between number of attendance from both the countries and number of papers submitted for the annual conference. ASCO authorities were approached in June 2017. The data available for 2011 to 2015 only was provided vide their email dated 10<sup>th</sup> September 2017.

### **FINDINGS AND DISCUSSION**

The scope of ASCO type of conferences is more towards clinical findings/ research and therefore from among different types of studies; three categories (phase wise clinical trial, multicenter studies and observational studies) are very important and are treated individually.

**Table 1: First Summary for India and China Derivative Articles based on ASCO Conference Papers**

Country	Year	Total Abstracts	Total No. of Abstracts Converted into Journal articles	Ratio of Conversion into Journal article	Total_Multi center studies	Multicenter Converted into Journal article	Total Observ ation studies	Observation Converted Journal articles	Total Phase Wise studies	Phase Wise Converted Journal articles
India	2005	39	11	28.2	1	0	0	0	6	3
India	2006	46	8	17.39	1	1	1	1	5	1
India	2007	53	11	20.75	0	0	0	0	7	3
India	2008	71	17	23.94	1	1	0	0	11	3
India	2009	70	20	28.57	0	0	2	1	10	6

ASCO Conference -Derivative articles

India	2010	66	22	33.84	1	1	0	0	16	7
India	2011	57	24	42.1	1	1	0	0	16	7
India	2012	91	20	21.97	1	1	0	0	11	6
India	2013	97	32	32.98	1	1	2	0	17	9
India	2014	96	21	21.87	5	0	4	0	13	5
China	2005	69	32	46.37	1	1	0	0	16	11
China	2006	87	40	45.97	0	0	0	0	27	6
China	2007	68	35	40.69	2	0	1	0	9	4
China	2008	106	34	32.07	1	0	1	1	19	8
China	2009	125	62	49.6	3	3	0	0	25	9
China	2010	119	56	47.05	1	1	0	0	29	7
China	2011	189	110	58.2	6	5	3	2	42	27
China	2012	219	81	36.98	7	3	1	1	53	39
China	2013	210	135	63.93	7	2	2	2	51	22
China	2014	280	131	46.78	1	0	0	0	45	23

*i. To what extent do Indian and Chinese oncologists convert their conference papers into journal articles, and time duration for conversion?*

A total of 2,158 ASCO conference papers contributed by Indian and Chinese authors were investigated. Of these 686, and 1,472 were contributed by Indian and Chinese authors respectively during the period 2005-14. Out of the papers, Indians have derived 186 (0.27) in comparison Chinese authors have converted 716 (0.42) articles. A few conference papers have resulted into more than one derivative article. The findings reveal that the contribution of derivative articles ( $M = 27.16$ ,  $SD=7.5$ ) and ( $M = 46.76$ ,  $SD=9.32$ ) for India and China respectively (Table 1).

Indian authors take on an average 4.8 years with standard deviation of 2.09 years while, China the period is 5.1 years with standard deviation of 1.91 years. It is therefore observed that Chinese oncologists pursued their work for a longer duration compared to Indian oncologists.

**Table 2: ASCO Conference Based Derivative Articles Bibliometric Portrait: India and China**

Country Name	Year of Conference	Average Authors	Average Cites All	Average Cites	h-Index	m-Index
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<b>India</b>	2005	8.273	5.182	4.818	3	0.333
<b>India</b>	2006	9.875	8.75	8.25	3	0.429
<b>India</b>	2007	8.4	7.3	7.2	4	0.667
<b>India</b>	2008	6.889	2.611	2.278	3	0.333
<b>India</b>	2009	9.421	8.947	8.421	6	2
<b>India</b>	2010	10.368	10.211	7.737	8	2
<b>India</b>	2011	7.231	3.923	3.577	6	1
<b>India</b>	2012	7.758	6.727	6.182	6	0.6
<b>India</b>	2013	9.923	2.962	2.308	4	1
<b>India</b>	2014	14	14.435	12.261	8	1
<b>China</b>	2005	8.485	17	16.273	6	0.667
<b>China</b>	2006	9.415	12.049	11.244	8	0.381
<b>China</b>	2007	8.293	4.073	3.561	7	0.875
<b>China</b>	2008	8.565	5.516	4.871	9	1
<b>China</b>	2009	9.651	26.508	24.683	11	1.833
<b>China</b>	2010	9.258	9.097	7.952	13	1.182
<b>China</b>	2011	10.018	9.375	8.152	16	2
<b>China</b>	2012	11.463	11.966	10.228	19	2.714
<b>China</b>	2013	11.31	11.491	10.353	16	0.727
<b>China</b>	2014	11.4	7.5	6.4	13	2.6

*ii. What is the bibliometric pattern of derivative articles of grey literature contributed by Indian and Chinese oncologists?*

For ease of understanding bibliometric patterns are discussed thematically.

**Types of Studies**

For the present study following three types of studies are further analyzed (i) multicenter studies (ii) observational studies, and (iii) phase wise studies (Phase I to IV combined). India has total contribution of 12, 9 and 112 whereas in case of China total contribution is 29, 8 and 316 respectively. This clearly indicates that clinical trials (Phase wise) are preferable types of studies in both the countries (Table 1). Further, in case of India the ratio of multicentre, observation and phase wise studies out of total abstracts considered is 0.017, 0.013 and 0.16 respectively. When further analyzed out of these three types of studies converted into journal article, the ratio is 0.5, 0.22 and 0.45 for multicentre, observation and phase wise studies respectively. Whereas, in case of China the ratio of Total Abstract for the same three categories the ratio is 0.019, 0.005 and 0.21 respectively. While, in

terms of conversion from the same category of abstract to derivative article the ratio is 0.51, 0.75 and 0.49.

Thus, it can be observed that in case of multicentre and phase wise studies in terms of both ASCO abstracts and derivative articles China is ahead of India. While, for observational studies, China has contributed less abstracts than India. However, from the same category of abstracts conversion into a journal article is more for China than India.

To find out the different types of publication of derivative articles, PMIDs for the period of 2005-09 and 2010-14 were fed to the PRN Bibliometric search interface and results were noted down separately for the two periods so as to make a comparative analysis (Table 3). It is observed that for both the countries and periods Multicentre studies have consistently increased. This could be associated with the increase in the number of authors per conference paper or derivative article (Table 2).

### **Influence of Grants**

In terms of receiving grants NIH- Intramural, Extramural or Research Support, U.S. Government, Non-P.H.S. it is evident from Table 4 that China has received more than India during both the period viz. 2005-09 and 2010-14.

When we consider these findings in the context of Table-3 for citations impact for different types of articles contributed, it is clearly observed that types of grants have a positive influence in terms of number of contributions and citation impact. Articles based on the studies that received grants are greater in number as it is mandatory for such studies to be published.

**Table 3 : India and China (2005-09; 2010-14): Top 10 Different Publication Types with Average Citations Received**

Publication Type India (2005-09)	Number of Publications (India 2005-09)	Average Cites (India: 2005-09)	Publication Type (India: 2010-14)	Number of Publications (India 2010-14)	Average Cites (India 2010-14)	Publication Type (China : 2005-09)	Number of Publications (China: 2005 -09)	Average Cites (China: 2005 -09)	Publication Type (China:2010-14)	Number of Publications (China: 2010-14)	Average Cites (China: 2010-14)
Journal Article	63	4.492	Journal Article	120	6.383	Journal Article	230	12.978	Journal Article	487	9.136
Research Support, Non-U.S. Gov't	20	7.3	Research Support, Non-U.S. Gov't	49	11.755	Research Support, Non-U.S. Gov't	122	20.803	Research Support, Non-U.S. Gov't	324	11.938
Randomized Controlled Trial	14	11.714	Randomized Controlled Trial	29	16.034	English Abstract	53	0.453	Randomized Controlled Trial	93	26
Comparative Study	11	4.636	Multicenter Study	18	20.389	Multicenter Study	38	42.868	Multicenter Study	73	23.767
Clinical Trial, Phase II	10	12.3	Clinical Trial, Phase II	15	5.733	Clinical Trial, Phase II	34	8.765	Clinical Trial, Phase II	56	9.554
Multicenter Study	8	15	Clinical Trial, Phase III	14	22.929	Randomized Controlled Trial	30	59.6	Comparative Study	53	16.189
Clinical Trial	5	1	Comparative Study	9	6.778	Comparative Study	22	60.591	Clinical Trial, Phase III	52	40.115
Clinical Trial, Phase III	3	18.333	Research Support, N.I.H., Extramural	8	10.75	Clinical Trial	18	5.889	English Abstract	34	0.559
Clinical Trial, Phase I	3	14	Review	3	7.333	Clinical Trial, Phase III	16	100.563	Research Support, N.I.H., Extramural	29	9.931
Evaluation Studies	2	1	Research Support, U.S. Gov't, Non-P.H.S.	2	21.5	Clinical Trial, Phase I	9	8	Clinical Trial	19	4.105

*iii. What is the authorship pattern and related metric analysis with special emphasis on first and last author's presence in derivative articles?*

**Authorship Pattern in ASCO Conference and Derivative Articles**

Average number of authors is considered at two stages; firstly, while presenting a conference paper and secondly based on derivative articles contributed. The ratio of average authors is 6.93 and 7.11 while, presenting a conference paper for Indian and Chinese oncologists respectively. Chinese authors are higher from Indian authors. For derivative articles the average authors' number is 9.21 and 9.78 respectively, for India and China (Table 4). While, overall in terms of correlation between the two sets of authors there is positive relationship 0.71 and 0.87 during the period 2005-14 for India and China respectively. However, it is observed that comparatively in case of China for derivative articles the average number of authors are indicating a gradual and consistence growth. Thus, it can be concluded that Chinese authors have a consistence pattern than those of Indian authors over a period.

Further a selective bibliometric analysis of the derivative articles for each year is tabled(2). Essentially, the study is confined to Average No. of Citations All (Avg. Authors) received including self-citations and Average Citations (Avg. Cites) - excluding self-citations. The other important variables considered here are "h-Index" and "m-Index". In terms of average values, the h-Index is 5.1 and 11.8 for Indian and Chinese derivative articles whereas corresponding m-Index values are 0.936 and 1.397 respectively for the period of 2005-14. Thus, it is easy to observe in terms of both h and m – index Chinese oncologist have a higher and consistency over a period than Indian oncologists (Table 2).

**Significance of First and Last Author**

It is observed that in case of India the average presence of the first author is 14.4 and last author the value is 13.8. Both these values are comparatively less from their Chinese counterpart whose average values for first author and last author is 61 and 48.5 (Table 5).

It may be easily observed from the Table 4 for both India and China that there is a constant increase in the total number of conference papers and number of authors/papers each year.

**Table 4: Trend for Total Number of Authors against Total Number ASCO Conference Papers and for Derivative articles:**

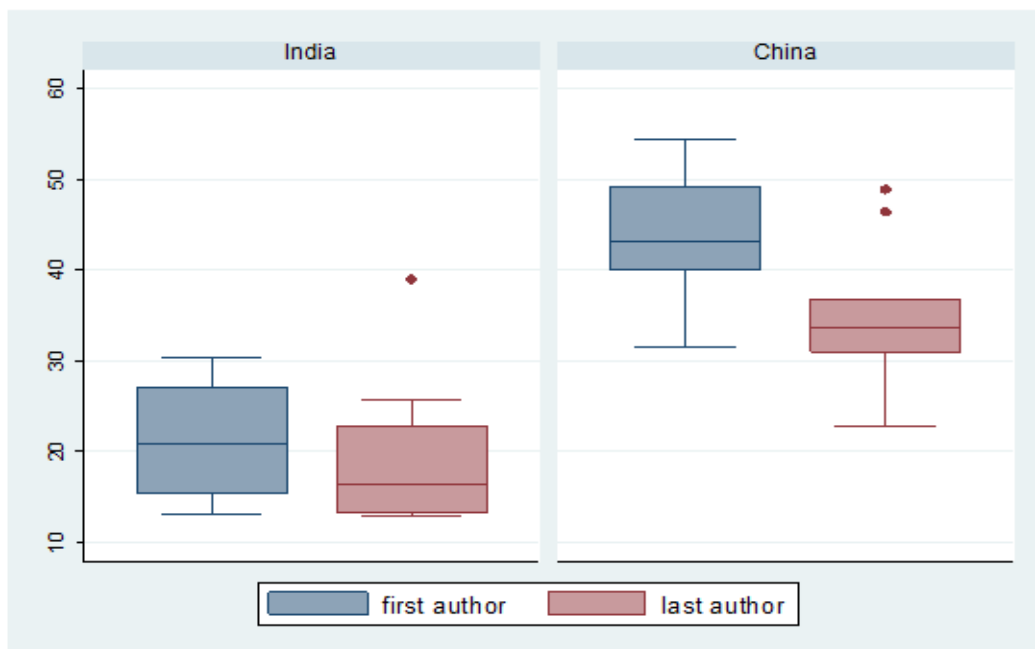
**India and China**

<b>Year</b>	<b>Total No of Authors (India)</b>	<b>Total No. Conference Papers (India)</b>	<b>Average No. Authors per conference Paper (India)</b>	<b>Derivative articles based Average Authors: India</b>	<b>Total No. Authors (China)</b>	<b>Total No. Conference Papers (China)</b>	<b>Average No. of Authors per Conference Paper (China)</b>	<b>Derivative articles based Average Authors: China</b>
2005	187	39	4.794	8.273	444	69	6.342	8.485
2006	286	46	6.217	9.875	611	87	7.023	9.415
2007	372	53	7.018	8.4	435	68	6.397	8.293
2008	418	71	5.887	6.889	655	106	6.179	8.565
2009	471	70	6.728	9.421	861	129	6.674	9.651
2010	488	67	7.283	10.368	812	120	6.766	9.258
2011	429	59	7.271	7.231	1379	179	7.703	10.018
2012	662	92	7.195	7.758	1795	219	8.196	11.463
2013	756	103	7.339	9.923	1827	211	8.658	11.31
2014	932	97	9.608	14	1883	260	7.242	11.4

### ASCO Conference Based Journal Articles and Corresponding First and Last Authorship Pattern

For the present study an important observation is made for the first and last author's position in the ASCO-abstract and its corresponding derivative journal article (Table-5). This is to confirm how far the presence of these two author's position is helpful or correlated with conversion. This is depicted with the figure 1.

**Figure 1 :** Box-Whisker Plot of First authors' and Last Authors' Share in Total



India average and median both are significantly lower than China in term of abstract converts to journal, although the dispersion is comparatively higher in China vis-à-vis India. The significance of the first and last author's presence from the conference paper into corresponding derivative articles is depicted in Figure 1.

1. In both cases (first and last author) the share is far better for China than India
2. In India, the comparison between first author and last author shows marginal difference.
3. In contrast to India, China explicates a considerable difference between first author and last author.



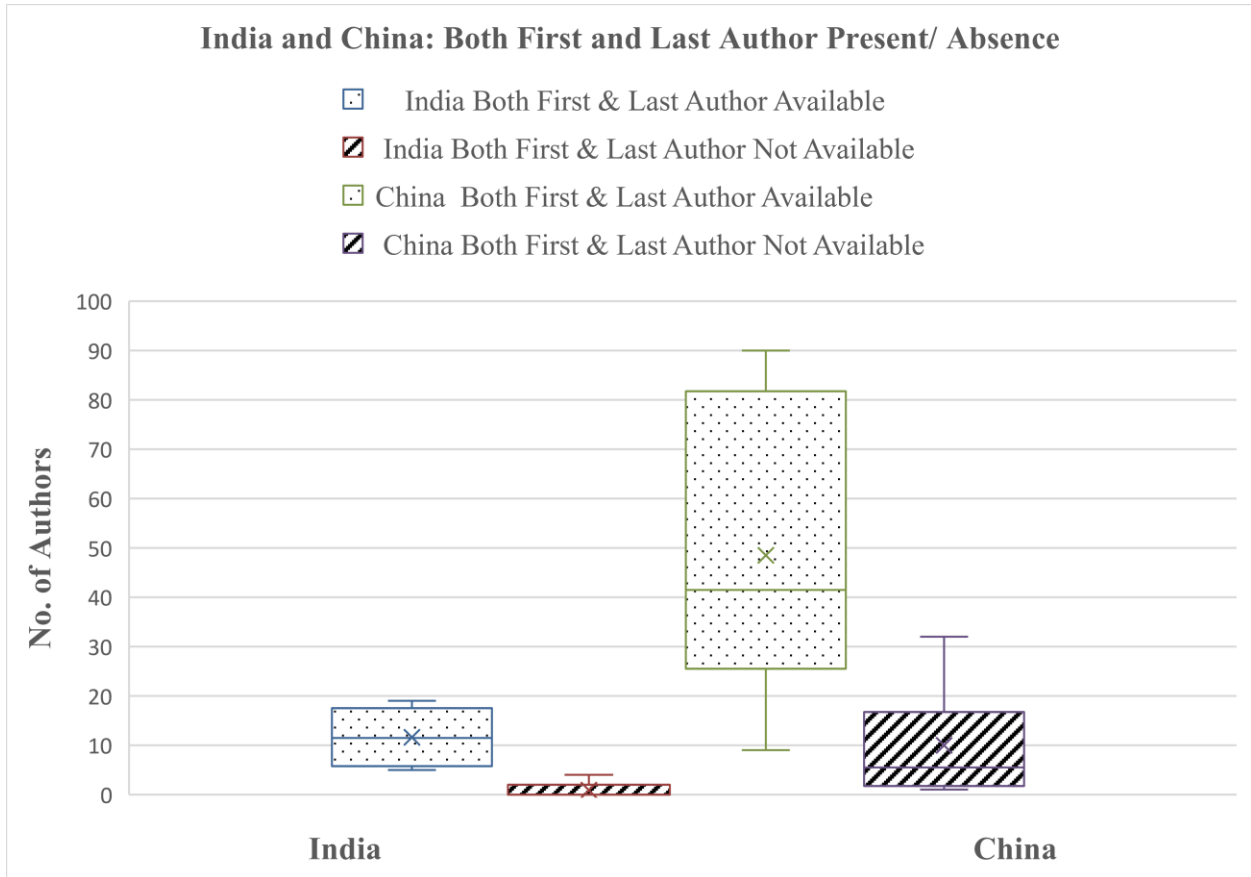
**Table 5:** Analysis of First and Last Author's Position in Derivative Articles – Average Values

<b>Country</b>	<b>Total First Author Available</b>	<b>Total Last Author Available</b>	<b>Total No. of First Author retaining their position</b>	<b>Total No. of Last Author retaining their position</b>	<b>Both First and Last Authors Available Together</b>	<b>Both First and Last Authors not Available Together</b>
India	14.4	13.8	10.3	5.8	11.6	0.9
China	65	52	47	27.1	48.5	10.03

From the results obtained, it can be said that the individual presence of first author at first and last author in last position in derivative article is significantly higher for the Chinese oncologists. Similarly, presence of both the authors together is higher in case of Chinese oncologist. It shows that their presence in the derivative articles is higher than Indian authors (Table 6).

Presence of both first and last authors together from the conference paper in derivative article is found 11.6 and 48.5 for India and China respectively. Whereas, the absences of both first and last author together from conference paper in derivative article the average is 0.9 and 10.03 for India and China. This is because in case of China the average number of authors is more than India. It also suggests that Chinese authors encourage other authors to contribute a derivative article.

**Figure 2: Presence and Absence of both First and Last Author Together for India and China**



**Figure 3: Both First and Last Authors Retaining their Position for India and China**

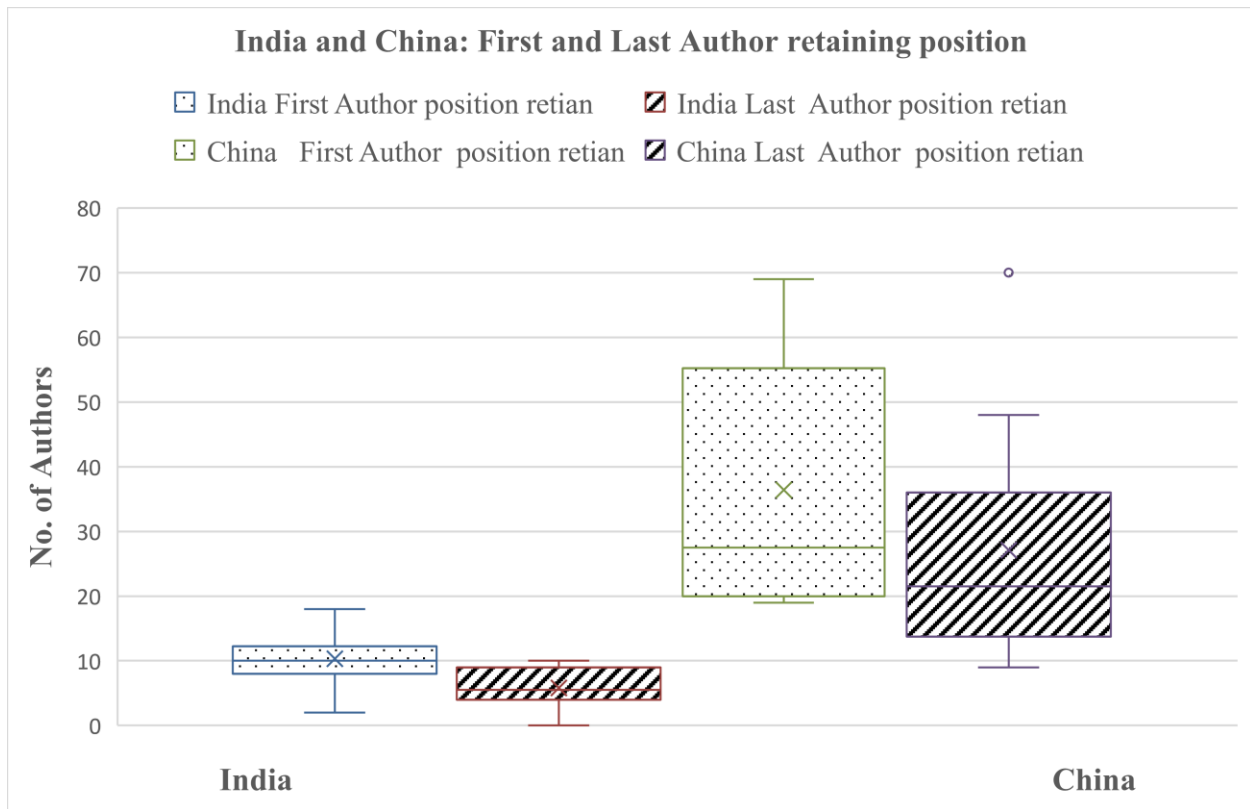


Figure 2 and 3 helps to understand the position of first and last author presence/absence and position from the conference paper in derivative article. On analysis the total presence of first and last author of conference paper in the derivative article, it was found that the mean value was 14.4 and 13.8 for Indian. However, for Chinese oncologists the mean value for the first author was 65 and last author 52. The median value of presence of conference papers authors in journal articles is high in case of China as compared to India.

Figure 3 depict how far first and last author from the conference paper have retained their position in the derivative article. In case of India the average for first and last author retaining their position is 10.3 and 5.8 respectively. Similarly, the average of first and last authors retaining their position in case of China is found 47 and 27.1 respectively.

Furthermore, from the Box-Whisker plots given above, it is also observed that comparatively for the first and last author’s position the Chinese author’s values are significantly more in upper third quartile i.e. above the median value.

**Table 6:** ASCO Based Journal Article and Corresponding First and Last Authorship Pattern for India and China

(a) Country	(b) Year	(c) Total No. of ASCO Abstracts	(d) Total PMIDs (Articles converted)	(e) Total First Author Available	(f) Total Last Author Available	(g) Both First & Last Author Available (Any Position)	(h) First Author Available Last Author Not Available	(i) First Author Not Available But Last Author Available (At any position)	(j) Both First & Last Author Not Available	(k) Total No of First Author at First Position	(l) Total No of First Author other than First Position	(m) Total No of Last Author at Last Position	(n) Total No of Last Author other than Last Position
India	2005	39	10	9	5	5	3	0	0	8	2	4	1
India	2006	46	8	7	6	5	0	0	0	2	5	0	6
India	2007	53	12	10	7	6	5	1	1	8	2	7	3
India	2008	71	17	13	11	10	2	1	2	9	5	4	7
India	2009	70	20	20	11	11	11	0	0	18	2	7	4
India	2010	66	22	20	17	17	4	1	0	11	8	9	8
India	2011	59	24	16	23	19	5	3	0	16	8	9	12
India	2012	92	32	21	21	19	17	4	4	11	9	4	17
India	2013	100	24	13	17	12	12	5	2	9	4	10	7
India	2014	97	23	15	20	12	1	6	0	11	9	4	17
China	2005	69	37	34	32	29	32	4	1	20	12	14	15
China	2006	87	40	39	27	9	8	32	1	21	12	13	14
China	2007	70	35	22	16	15	14	4	3	19	3	9	7
China	2008	106	53	44	33	37	10	5	2	20	8	14	19
China	2009	128	62	53	47	45	15	1	3	20	14	20	25
China	2010	120	65	47	38	38	12	5	13	34	26	23	24
China	2011	189	114	93	67	80	28	3	15	51	42	32	35
China	2012	219	147	119	107	90	34	10	8	69	51	48	46
China	2013	211	135	98	58	55	17	5	32	42	27	28	29
China	2014	260	133	104	95	87	17	7	22	68	36	70	24

**iv. What is the significance and trend of first author affiliation with national origin and USA?**

**First Author Affiliation**

The ratio for tracing the first author affiliation of the derivative article is based on the assumption that ASCO conference is held in the USA only. To attend and present the paper oncologists goes there. The societal network of oncologist could be one the reason to participate, collaborate and convert the conference paper into a derivative article. Secondly, receiving different types of grants from the USA is also important.

In terms of first author affiliation of the national origin, Indian oncologists have a conversion ratio of 0.64 less than Chinese oncologist with the ratio of 0.78. However, in terms of affiliation from the USA, the ratio for Indian authors the ratio is 0.29 is significantly higher than Chinese authors having the ratio of 0.06 (Table 7).

**Table 7:** First Author Affiliation for Derivative Articles for India and China

Year	Total No. Derivative Articles (India)	Affiliation of First Author (National Origin): India	Affiliation of First Author from USA :India	Total No. Derivative Articles (China)	Affiliation of First Author (National Origin): China	Affiliation of First Author from USA: China
2005	10	8	0	33	27	2
2006	7	3	1	55	31	0
2007	10	9	0	46	41	3
2008	19	17	0	66	59	3
2009	21	13	0	76	58	5
2010	22	15	0	70	55	4
2011	28	16	7	111	93	8
2012	31	25	6	160	124	10
2013	22	9	11	114	85	1
2014	20	7	11	93	72	7

Using Independent Samples t-test it is found that the conversion rate of published Indian derivative articles with first USA affiliated author is greater than the proportion of published Chinese derivative articles with first USA affiliated author.

*v. What is the correlation between attendance at ASCO Conference and papers contributed?*

It is revealed from the ASCO conference database that the China has remained among the list of top ten countries in terms of attendance. Though, Indian participants has increased over a period but not adequate to be listed in top ten countries.

In order to explore the relationship between the total number of (i) participants (ii) conference papers presented by Indian and Chinese oncologist data provided by ASCO authorities for the period of 2011 to 2015 was analyzed. These two facts with total number of papers presented were correlated. (Table 8).

**Table 8:** Summary for India and China Attendance and Derivative Articles Based On ASCO Meeting Abstracts

Country	Year	Attendance	Total abstracts
India	2011	146	57
India	2012	135	91
India	2013	148	97
India	2014	165	96
India	2015	124	NA
China	2011	594	189
China	2012	561	219
China	2013	730	210
China	2014	609	280
China	2015	845	NA

From Table 8 it can be easily observed that since 2011 to 2014 there is a constant but, gradual increase in the number of attendance from both the countries and number of papers presented or abstracts submitted, except in case of India for 2014. Furthermore, the Spearman correlation matrix suggests there is strong positive correlation (0.88) between number of attendance and number of papers presented for both the countries at the CI =99%.

## **CONCLUSION**

The findings suggest that Chinese oncologists compared to Indian oncologists have converted significantly higher of their conference papers into derivative articles over the period.

Further, it is revealed that the following factors have helped the Chinese oncologists to have higher conversion ratio. Compared to Indian oncologists, Chinese oncologists have higher attendance and conference papers contribution at ASCO annual meet during the period of investigation. It is also found that average number of authors of Chinese oncologists per conference paper and derivative articles is higher than Indian counterpart. First and last author's presence and position both individually or as a pair from conference paper to derivative article is significantly higher among Chinese oncologists. Furthermore, in absence of both first and last author higher number of authors per conference papers among Chinese oncologist has had helped in higher conversion than Indian oncologists. This suggests that Chinese oncologist encourage their colleagues for such conversion work. In addition, in terms of first author affiliation it is found that Chinese are significantly higher than Indian authors. However, for the derivative article in terms of first author affiliation from the USA is higher among Indian papers than Chinese. Thus, it can be said that, Chinese oncologist authorship network is less dependent on USA based authors. Interestingly, over a period Chinese oncologist could fetch higher number of grants from NIH- USA and Non-US Government Research Support than Indian. Common trend is that multicentre and clinical trials (various Phases) are increasing from both the countries.

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