

Original Article

Journey from conference presentation to peer-reviewed publication: Do ends really meet?



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ABSTRACT

Introduction: The National Conference (NATCON) of Anatomical Society of India (ASI) is the preeminent meeting of anatomists in South-east Asia region. In the present study we undertook a quantitative assessment of the abstracts presented orally in three NATCON of ASI held between 2013 and 2015, with regards to rate of subsequent publication in peer reviewed journals.

Methods: A detailed electronic literature search was undertaken in indexation databases such as Medline, PubMed, Scopus, EMBASE, Cochrane Library, CINAHL & Google Scholar to determine whether abstract has been published or not. For abstracts eventually published we noted the time-interval from presentation to publication and the impact factor of the journal when available.

Results: The effective abstract-to-publication ratio (EAPR) for the three NATCON's from 2013 to 2015 were noted as 0.034, 0.041 & 0.024 respectively. Survival plot analysis revealed probability of publication increases with time and time-interval adjusted survival plot analysis showed similar shape of curves for all three NATCON's. Median impact factor of journals for the three NATCON's were found to be similar with no statistical significance of the difference in values (Kruskal Wallis $P=0.883$).

Discussion: Documented EAPR values could be used as benchmark to assess quality of future anatomy conferences in India. Analysis of observations showed that probability for improvement in publication rates for NATCON is on the higher side and there is uniformity in standard of research presented in NATCON. Publication rates could further improve with workshops dedicated towards cultivation of research output among young researchers.

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1. Introduction

Annual meetings of anatomical societies provide an ideal platform for exchange of ideas and communication of information among professionals.¹ Across the globe these conferences attract considerable presence of anatomists every year as they look forward to utilize the forum for education, discussion, networking and socializing.² Conferences beyond doubt represent one of the fundamental avenues for dissemination of research findings thus playing a critical role in the advancement of scientific activities.³ Presentation of valuable research output in these conferences is

significant towards supporting academic productivity and career development of young anatomists.¹

Nevertheless the gold standard for widespread dissemination of research remains publication in a peer-reviewed journal.⁴ The desirable culmination for any research activity undertaken is to provide a long lasting, retrievable record of the work in the form of a full text published article. Failure to publish a scientific article subsequent to its presentation in abstract form in a conference limits the value of research and curtails its validity.⁵ Moreover researchers have opined that the standard of a scientific meeting can be gauged by the proportion of presented abstracts that eventually gets published as full length article in peer-reviewed journals.⁵

Based on the above discussion it is clear that although presentation of abstracts in meetings of anatomical societies is valuable, however the ultimate goal of original research should be publication in peer-reviewed journals. Remarkably recent research reports have documented a significantly skewed abstract-to-publication ratios for scientific meetings. A recent Cochrane review

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on the fate of abstracts presented at meetings across all medical specialities noted a mean publication rate of 44.5%, suggesting that more than half of the abstracts were not published as full-length articles after presentation in meetings.⁷ The situation seems to be more serious as we shift our focus to meetings of anatomical societies as a very recent study has reported that a total of 20.4% of abstracts presented in annual meetings of British Association of Clinical Anatomists were eventually published in indexed journals.¹ This emerging trend has prompted researchers to propose that a baseline abstract-to-publication ratio be established as a benchmark to assess the quality of future anatomical conferences.²

The National Conference (NATCON) of Anatomical Society of India (ASI) is held annually in winter and is the preeminent meeting of anatomists in the South-east Asia region. NATCON of ASI attracts close to 1000 delegates every year, being attended by eminent anatomists from India and abroad.⁸ Hence in the present study we undertook a quantitative assessment of the abstracts presented orally in three NATCON of ASI held between 2013 and 2015, with regards to rate of subsequent publication in peer reviewed journals. Our study focussed on three objectives:

- To estimate the abstract-to-publication ratio (APR) for each of the NATCON of ASI
- To estimate the time interval between presentation to publication for successful abstracts for each of the meetings
- To assess the impact factor of journals (when available) where successful abstracts were eventually published as full-text articles.

2. Materials & methods

The study was conducted at the Department of anatomy, ESIC Medical College, Gulbarga, Karnataka. The study design was reviewed by the Institutional Review Board (IRB) of the above mentioned institution and was deemed exempt from review by the institutional Ethics Committee (IEC). The study was conducted between March'2017 and August'2017. We identified all the oral presentations given at each of the three meetings from 2013 to 2015. For this study we excluded the poster presentations as they are mostly case reports having less chance of publication as most journals are nowadays inclined to publish only original research articles. We excluded the proceedings from 2016 meeting as very little time interval was available between presentation to a possible publication. Further we excluded presentations from meetings before 2013 to neutralize any undue advantage in terms of longer time interval from the date of meeting.

Abstract titles and authors were identified from the conference proceedings (abstract book). A detailed electronic literature search was undertaken in the Medline database to determine whether an abstract has been published or not. The research was initially conducted for the first author, if unsuccessful, searches were subsequently conducted using the remaining authors and appropriate key words from the title. If the Medline search was unsuccessful, successive searches were undertaken using the same criteria as above on PubMed database, Scopus, EMBASE, Cochrane Library, CINAHL, Google Scholar and standard Google search engine in that order respectively. Each full length published article was assessed each of the authors to confirm that it was directly related to the same piece of work described in the abstract. Similarly if a publication could not be identified, an independent search was conducted by a second author followed by the third. Abstracts were considered as unpublished if they could not be retrieved as full reports even after three independent search.

Once a full length published article was identified, we recorded the data with respect to the journal in which the work was

published, time interval from presentation to publication and the journal impact factor (when available) of the publishing journal was derived from Journal Citation Report available in Thomson Reuters database. We did not contact the authors of unpublished abstracts to analyse the reasons for non-publication as this would have confounded the study parameters. Moreover we did not undertake a hand search of any non-indexed journals to avoid dilution of accumulated data. We consciously avoided search of predatory journals which mostly publish non peer-reviewed articles.

2.1. Statistical analyses

For this study, abstract-to-publication ratio (APR) for any NATCON of ASI was defined as ratio of number of published full length articles to total number of abstracts presented orally. The time interval between presentation to publication were used as time-to-event data where full-length publication was defined as the event. This data was analysed through survival type analyses and the survival time was precisely measured based on the date of submission to the journal indexing database. Results were plotted as Kaplan-Meier curves. Median impact factor of journals (where abstracts were published as full-length articles) for each meeting was compared using a Kruskal-Wallis test. The unpaired two tailed *t*-test was used to calculate if the difference in number of abstracts presented in each of the three meetings was significant. The statistical analysis were performed using SPSS (version 22, SPSS Inc., Chicago, IL) and MedCalc software (version 11.6.1.0).

3. Results

A total of 352, 170 & 338 abstracts were identified which were presented orally in NATCON'2013, NATCON'2014 & NATCON'2015 respectively. Among these 34 (9.66%), 15 (8.82%) and 08 (2.37%) abstracts respectively were eventually published as full length articles in peer reviewed journals till the month of August'2017. Based on the above data, the abstract -to- publication ratio (APR) for NATCON'2013 was analysed to be 0.097, for NATCON'2014 it was 0.088 and for NATCON'2015 it was 0.024 (Table 1). The skewed APR values was due to the difference in the time interval between the event (NATCON) and the end of the study period (August'2017), which was 44 months for NATCON'2013, 32 months for NATCON'2014 and 20 months for NATCON'2015. To neutralize this disparity we considered the number of published articles within 20 months of the event for NATCON'2013 (12 articles) and NATCON'2014 (7 articles). Accordingly the APR was calculated as 0.034, 0.041 and 0.024 respectively for NATCON'2013, NATCON'2014 and NATCON'2015 (Table 1). The time interval adjusted APR was christened as effective abstract-to-publication ratio (EAPR). The difference in EAPR values for the three NATCON of ASI was not statistically significant (*p* value > 0.05).

Based on the conference proceedings, abstracts presented orally in the three NATCON under study were classified section wise as gross anatomy, histology & cytology, imaging techniques, embryology, genetics & reproductive biology, medical education and neurosciences. Likewise the full-length articles published from these abstracts were also classified under the same sections. Analysis of the results showed that proportional distribution of published articles was somewhat different from proportional distribution of presented abstracts (Table 2). As compared to section wise distribution of abstracts, more articles were published on neurosciences, imaging techniques, medical education and Genetics & reproductive biology. Whereas proportionately less number of abstracts were published in gross anatomy and histology & cytology (Table 2).

Table 1
Publication rate of abstracts presented orally in NATCON of ASI from 2013 to 2015.

Name of Conference	Number of Abstracts Presented Orally (A)	Number of Full-Length Articles Published Till August'2017 (B)	Abstract-to-Publication Ratio/APR (B/A)	Number of Full-Length Articles Published in First 20 Months from Event (C)	Effective Abstract-to-Publication Ratio/ EAPR (C/A)
NATCON of ASI' 2013	352	34	0.097	12	0.034
NATCON of ASI' 2014	170	15	0.088	07	0.041
NATCON of ASI' 2015	338	08	0.024	08	0.024

NATCON: National Conference; ASI: Anatomical Society of India.

Table 2
Section Wise Distribution of Abstracts Presented orally in NATCON of ASI from 2013 to 2015 and Subsequent Publications Thereof.

Sections Under Which Abstracts/ Manuscripts Distributed	Proportional Distribution of Abstracts [%] (A)	Proportional Distribution of Manuscripts [%] (B)	Ratio of Proportion of Published Manuscripts to Proportion of Abstracts Presented (B/A)
Gross Anatomy	52.5	31.6	0.60**
Histology & Cytology	12	8.8	0.73**
Imaging Techniques	8.2	21	2.56*
Embryology	5.8	Nil	-
Genetics & Reproductive Biology	9.7	14	1.44*
Medical Education	9.3	17.6	1.89*
Neurosciences	2.5	7	2.8*

NATCON: National Conference; ASI: Anatomical Society of India.

* Proportion of Full-Length Articles Published in Neurosciences, Imaging Techniques, Medical Education and Genetics & Reproductive Biology were more than the proportion of Abstracts Presented on these sections in NATCON of ASI.

** Proportion of Full-Length Articles Published in Gross Anatomy and Histology & Cytology were less than the proportion of Abstracts Presented on these sections in NATCON.

The time interval between presentation to publication for each of the NATCON were investigated through a survival plot (Fig. 1). In this plot we used the data related to all the published articles for each of the NATCON. It can be seen in the plot that the shape of the curves differ for each of the NATCON because the rate of publication increases with the time interval from the presentation. In other words, more the time interval from presentation, more would be the probability of a publication. This observation justifies the selection of a uniform time interval from the date of the meetings to be able to compare the APR. Hence we investigated the time interval adjusted data (published articles within 20 months of presentation in NATCON) through another survival plot (Fig. 2). In this plot it can be noted that there is very little difference between

the shape of the curves for each of the NATCON which implies that the rate of publication for the three NATCON's have followed a similar trend within the given time period i.e. 20 months. This observation was further corroborated through a set of Box and Whisker plots, which shows the median time interval between presentation to publication was 11 months for NATCON'2013, 10 months for NATCON'2014 and 9 months for NATCON'2015 (Fig. 3). Kruskal-Wallis test confirmed that there is no significant difference between the values (p value 0.885).

The impact factor of journals, when available, were noted for each of the published article. It was observed that 18 articles from NATCON'2013, 9 articles from NATCON'2014 and 6 articles from NATCON'2015 were published in journals having listed impact

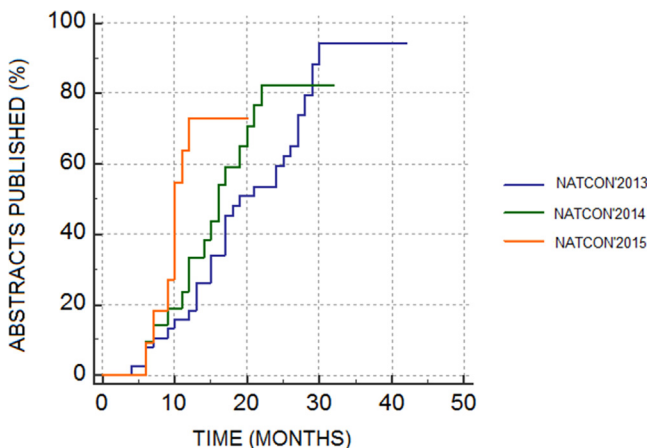


Fig. 1. Kaplan-Meier Survival Plot showing the probability of publication of abstracts with time-interval from presentation in National Conference of Anatomical Society of India.

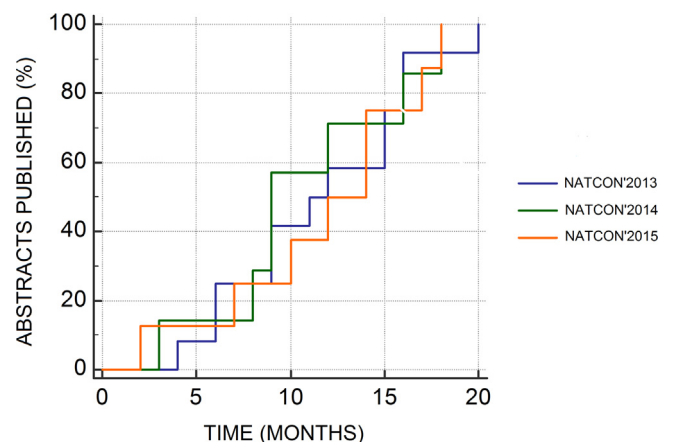


Fig. 2. Kaplan-Meier Survival Plot showing the probability of publication of abstracts within first 20 months of presentation in National Conference of Anatomical Society of India.

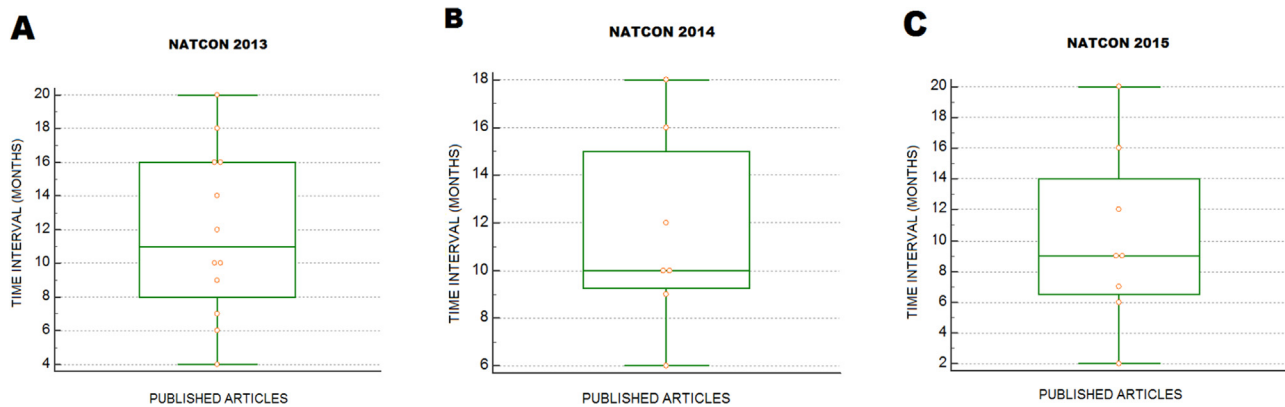


Fig. 3. Box & Whisker Plots showing the median time-interval from presentation to publication for abstracts within first 20 months of National Conference of Anatomical Society of India.

factor. The observations were plotted in a series of Box and Whisker plots and the median impact factors were analysed as 0.59, 0.67 and 0.58 for NATCON'2013, NATCON'2014 and NATCON'2015 respectively (Fig. 4). Kruskal-Wallis test confirmed that there is no significant difference between the values (p value 0.883).

4. Discussion

The present study is the first to assess the longitudinal trend in publications arising from abstracts presented at annual national conference (NATCON) of the Anatomical Society of India. We observed that among the abstracts presented orally in these meetings only 9.66% (NATCON'2013), 8.82% (NATCON'2014) and 2.37% (NATCON'2015) were eventually published as full length articles in peer reviewed journals. We hypothesized that for the remaining abstracts, either the authors were not submitting their research as full length articles for peer review or else manuscripts were getting rejected during peer review (Fig. 5). Another possibility could be authors are getting their articles published in non-indexed journals or predatory journals, both of which were not considered in this study.^{9–11} These issues can be addressed effectively by organising workshops either during NATCON or any convenient time window of the year but under the aegis of Anatomical Society of India. The target participants for these workshops should ideally be the young researchers and the objective should be to motivate them (to make them prepare manuscripts from their research) and guide them with regards to manuscript preparation (to withstand the rigors of peer review) (Fig. 5). Through various forums under the

Anatomical Society of India, awareness should be spread regarding the pitfalls of publishing in obscure/ predatory journals.^{12,13} These measures could potentially increase the publication rate of abstracts as low publication rate raises concern about the quality of the research work presented in scientific meetings and is definitely not a healthy trend for the future of young researchers.¹⁴ Herein lies the need to establish baseline values of abstract-to-publication ratio (APR) or more precisely the effective abstract-to-publication ratio (EAPR) as benchmark to assess the success of scientific conferences. In the present study we endeavoured to do the same and accordingly the EAPR values were analysed as 0.034 (NATCON'2013), 0.041 (NATCON'2014) and 0.024 (NATCON'2015), with the difference in the values not having any statistical significance (Table 1).

A detailed analysis of section wise distribution of abstracts as presented in the conferences showed that an overwhelming majority (52.5%) of abstracts were presented on gross anatomy. Going by the present trend of articles accepted in leading anatomy journals, this observation could be one of the factors behind the low rate of publication, as nowadays editors prefer articles on clinical vignettes, imaging based studies, experimental studies and other innovative aspects of anatomy.^{15,16} This was further corroborated by our findings as we noted higher proportion of abstracts published on imaging techniques, genetics & reproductive biology, medical education and neurosciences, whereas lower proportion of abstracts got published on gross anatomy (Table 2). More options regarding the journals available to publish manuscripts in specialized fields like radiology, obstetrics & gynaecology, medical education and neurology is also a factor which favours manuscripts in these sections.¹⁷ This is an aspect where both

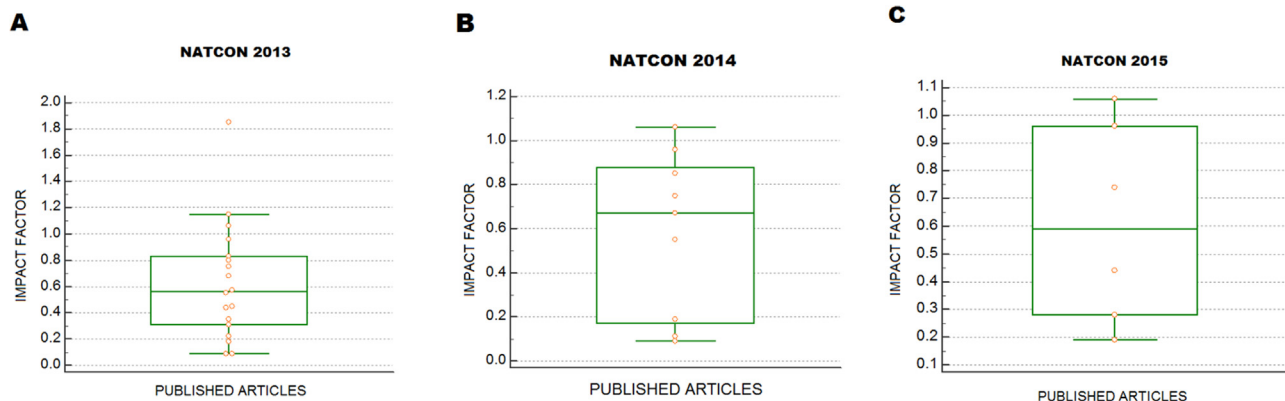


Fig. 4. Box & Whisker Plots showing the median impact factor of journals where abstracts presented in National Conference of Anatomical Society of India were eventually published.

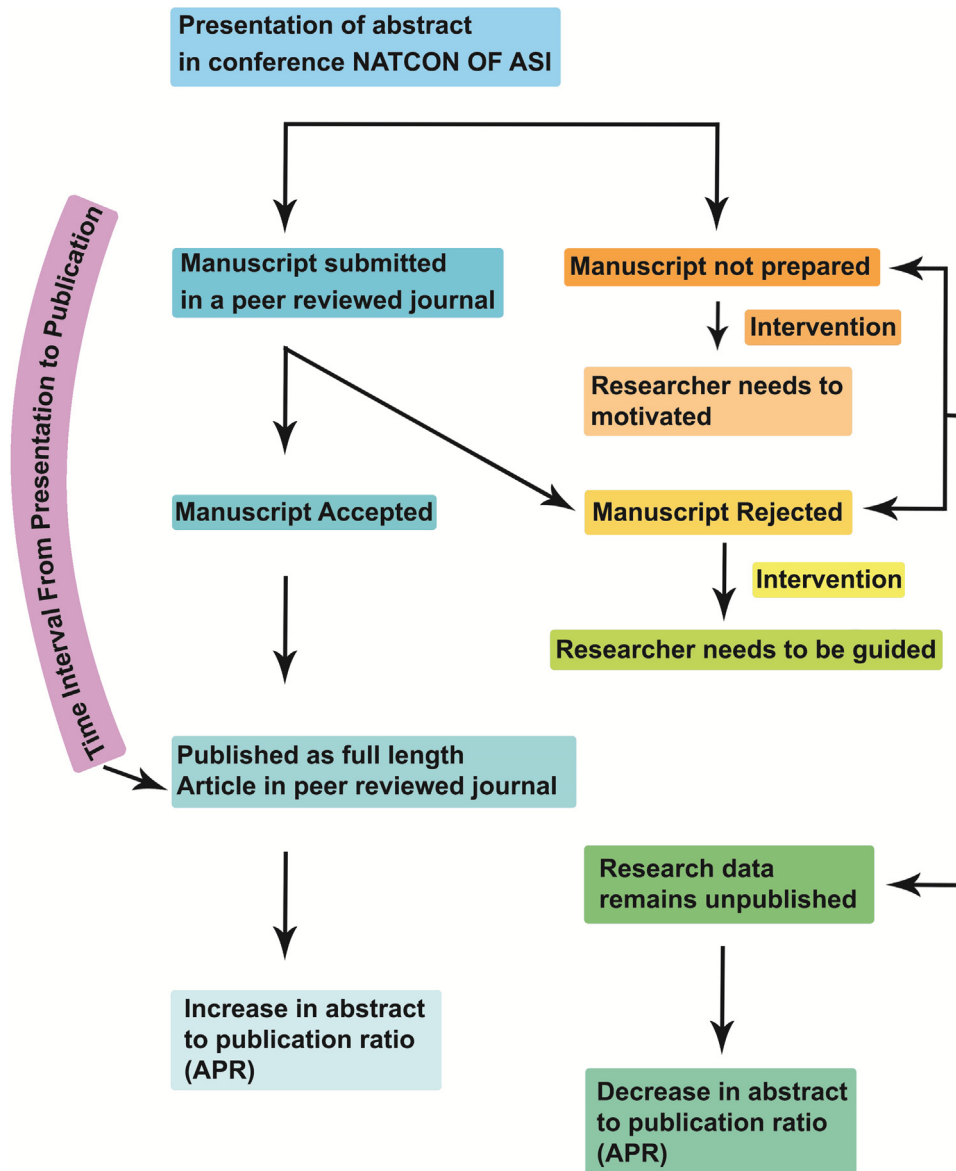


Fig. 5. A Schematic Illustration showing the general plan of the present study.

potential authors as well as organizers of future meetings could emphasize upon for a better eventual outcome in terms of abstract-to-publication ratio (APR).

Survival plot analysis of time interval between presentation of abstract in NATCON and the culmination event i.e. publication in a peer reviewed journal showed that the probability of publication increases with time interval (Fig. 1). This is in accordance with the global trend, and implies that with time, the proportion of abstracts published would increase.¹⁸ Hence it may be suggested that the prevalent pattern of publication for abstracts presented in NATCON is at par with that of scientific meetings held around the globe. However in order to provide comparative values of EAPR, we undertook another survival plot analysis for articles published within a fixed time interval (20 months for the present study) from presentation, which showed similar shape of curves for all the three NATCON's (Fig. 2). This observation implies that there is a similar trend with regards to the screening method applied for abstracts by the conference organizer, standard of research, author profile (in terms of young and experienced researchers), quality of peer review by journals and distribution of journals chosen for

submission of research.¹⁹ Less fluctuations is a testimony of the premier status of NATCON of ASI in terms of research presented in the domain of anatomical sciences. It implies that the anatomical meetings do attract the best possible research output available in the Indian subcontinent and thus continues to provide an excellent platform for researchers to present their valuable work.⁸

Analysis of impact factors of journals where abstracts were published, revealed that the median impact factor were very close for all the three NATCON's (Fig. 4). This possibly implies the existing limitations in terms of journals available to authors for publishing their research work. This really is an area of concern because the number of standard journals in anatomical sciences has remained the same over the years.²⁰ With submissions increasing over the years, chances of rejection is on the higher side for most of the journals.²¹ This means less chances of publication of submitted research which could significantly affect the abstract-to-publication ratio (APR) and thereby the standard of the conference as such. This is an area where there is scope for improvement as either more national anatomical societies in Asia-Pacific region could come up with their own journal on a

collaborative basis with established publishing houses or existing journals could come up with more issues to accommodate the ever increasing research output.

There are obvious limitations of the present study as we could have possibly missed out on a considerable number of manuscripts which are in the process of publication i.e. either accepted/ under proof preparation/ in final stages of review and likely to be accepted. Also in some cases for a robust research multiple abstracts are presented however published as a single article and this could potentially dilute the APR/EAPR values. Nevertheless we were able to ascertain baseline EAPR values for the NATCON's of ASI, which could serve as a benchmark to ascertain success of future anatomical meetings (Table 1). There are still unresolved aspects in this research area which could be the basis of future investigations in this domain. We were unable to throw any light on the criteria applied by peers to filter abstracts for preparation. Moreover we were not able to analyse the relationship between the quality of research and its likely hood of getting accepted as a full length publication.

5. Conclusion

The annual meetings (NATCON) of the Anatomical Society of India (ASI) are a platform for presenting quality research in the field of anatomical sciences. However how many of these research work does actually see the light of the day as full length manuscripts and of these how many are likely to withstand the rigors of peer review in a quality journal is an area of research yet to be explored. Based on the findings of the present study, we have documented values of effective abstract-to-publication ratio (EAPR) for three NATCON's from 2013 to 2015. These could serve as baseline values and could be utilised as benchmarks to analyse the quality of future meetings of ASI. Survival analysis of the research data revealed that probability of publication increases with time interval, hence there is a reasonable possibility that publication rates for the NATCON's considered for the present study would increase in the future. Absence of fluctuations in time interval adjusted survival curves is a testimony of the uniformity of standards among all the three NATCON's. Near similar values of median impact factor of journals where abstracts were eventually published as full length articles is further evidence for uniformity of standard of research presented in the NATCON's but is also an indicator of lack of choice with regards to the peer reviewed journals available for publication. Publication rates and hence abstract-to-publication ratio (APR) for NATCON's could further be improved by conducting workshops targeted at motivating and guiding young researchers and if possible encouraging recognized societies to introduce quality journals within the subject domain. These aspects could be looked into in the future by the organizers in collaboration with the publishing houses.

Conflict of interest

None.

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