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Surgical grand rounds at a University Hospital. Applying "publication presentation index" to evaluate outcomes

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ABSTRACT

Background and objective: Surgical grand rounds (SGR) are an important educational activity in all teaching hospitals however each institute has its own way of conducting them. At our institute, grand rounds in the Department of Surgery include an original research presentation by residents. The publication of the research work acts as a measure of its success. In this study we analyzed the outcome of this activity and review factors affecting their progression to publication.

Methodology: We conducted a retrospective review of a prospectively maintained database of all presentations made at the Surgical Grand Round at a University Hospital from January 2001 to December 2010. Presentations with incomplete follow up records were excluded from analysis. A Publication-Presentation Index (PPI) was used to evaluate outcomes of SGRs and to study factors influencing outcomes. Differences in PPI in each category were calculated using the chi square test.

Results: Total of 470 presentations were made. Majority presented retrospective studies (73%). Majority of the presentations were made by junior residents (year 1–3, 62%). Following presentation, 279 (59.4%) studies were presented at a national conference, 80 (17%) were presented at an international forum while only 99 (21.1%) studies were published. Mean presentation to publication time was 34.8 months. Study design, level of resident, section of surgery, sample size and national/international presentation were associated with conversion to a publication (all $p < 0.05$). Overall PPI was 0.32. Randomized controlled trials had the highest PPI (0.67).

Conclusion: The proportion of SGR presentations converted into national/international presentations and/or publications was found to be low. The PPI has a potential to be used as a tool to study the association of presentation to publication.

1. Introduction

The origin of modern day grand rounds is difficult to trace, but it may have evolved from 19th century practice of bedside teaching, when the number of physicians outgrew the capacity of the "bedside" and the patient had to be moved to the amphitheater.[1] At the dawn of the last century, Sir William Osler of the Johns Hopkins University published in favor of grand round lectures as an effective tool for education.[2] A century later today, the grand rounds are conducted in nearly all departments of most academic institutions, although the format has evolved considerably from the earlier patient centered teaching practice to a more didactic one.[3–6] The structure of grand rounds however, appears to vary considerably between institutions as well as between different specialties within the same institution in various aspects.[7,8] The academic exercise is nonetheless held in very high esteem and is constantly evaluated for improvement in standards as well as participation of faculty and residents.[1,9–17]

The Surgery Residency programme at our University was launched 25 years ago, and the Surgical Grand Rounds (SGR) has been an integral part of this programme. The format of the SGR consists of resident presentations based upon their research work conducted under supervision of faculty. This presentation is made to the entire department of surgery, including the residents, fellows, faculty, medical students and faculty and staff of biostatistics. The objective of the entire exercise is to encourage residents to participate in research and train them for formal presentation to a scientific audience. However the outcome of these presentations, in terms of publications, local and international presentations, which defines the success of this activity, has never been analyzed.

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This study aims at reviewing the outcome of SGR presentations and to identify factors that may affect the final outcome in form of publications.

2. Methods

This is a retrospective review of a prospectively maintained data base of all the presentations made in the SGR at a university hospital, over a 10 year period (from Jan 2001 till Dec 2010). All presentations were identified from the department data base, and the respective residents and their supervisors were contacted personally. Information regarding publication, international and or national presentation was obtained from presenters, cross confirmed with the supervisors and checked on the internet using the online search engines such as PubMed, Pak Medinet (local search engine for biomedical research) and Google Scholar. Thus only publications in peer reviewed indexed journals were included in the study. Presentations comprising of guest lectures, student presentations and those resident presentations in which the resident or the supervisor could not be contacted, were excluded from the final analysis. Data was recorded on a specially designed tabulated form on MS EXCEL 2011. All the required variables were recorded and the file converted to SPSS, for statistical analysis.

Descriptive analysis was performed by calculating proportions for categorical variables and means with standard deviations or medians with inter-quartile ranges for continuous ones depending on the variable type. Trends by year were observed by looking at the proportions in each year and visual inspection of line graphs. To judge performance, a publication-presentation index (PPI) was derived for each category. The PPI is a ratio of the number of publications and number of presentations. It is calculated by simply dividing the number of publications in each category to the total number of presentations in that category. This index has values between 0 and 1. The ideal value would be 1.00 which means each study that is presented has led to a publication. For example for the category 'prospective study' of the variable 'study design' the PPI is calculated by counting the total of prospective studies presented in the surgical grand round and determining what fraction of these have been published. This was similarly calculated for year of presentation, level of resident, section of surgery, sample size of study and whether the study was presented at a national or international forum. Inferential univariate analysis was conducted to compare differences in PPI in each category using the chi square test. Level of significance was set at 5%. All analyses were performed on SPSS version 19.

3. Results

During the 10 year period, 470 presentations were made by a total of 187 surgical residents and fellows, under the supervision of 91 members of the surgical faculty. The rate of presentations varied between 35 and 50 presentations per year, except for year 2010 when 70 presentations were made. Even though a majority (73%) of residents presented retrospective studies, a wide variety of study designs was observed including cross-sectional studies (10%), prospective studies (9%) and experimental studies (4%) (Table 1). Presentations were made by residents of all years with the majority (62%) being by junior residents (year 1 to year 3). All sections of the surgical department were represented and the number of presentations from each section matched with their resident density. Most studies were relatively small with a median sample size of 48 (inter-quartile range; 22, 97). However 41 (9%) of studies had a sample size above 200, 12 had a sample size above 500 and 8 studies included over 1000 subjects.

Following presentations in the university, 279 (59.4%) studies were presented at a national conference and 80 (17%) were presented at an international forum. Only 99 (21.1%) studies were published at the time of this survey while another 53 (11.3%) have been submitted to a biomedical journal for consideration. No study was published in a non-indexed non-peer-reviewed journal. The mean presentation to publication time was 34.8 (±25) months. However a notable downward trend was observed when time from presentation to publication was plotted by year (Fig. 1). The time taken from presentation to publication decreased steadily over the 10 year period to 20 months in the year 2010.

The publication-presentation index was found to be useful at identifying factors associated with publication rates (Table 1). Study design, year of presentation, level of resident, section of surgery, sample size and national/international presentation were associated with conversion to a publication (all $p < 0.05$). Randomized controlled trials had the highest PPI (0.67) for all types of studies followed by laboratory based studies (0.38). The PPI was lower in more recent years, 0.31 for presentations in 2001 and 2002 compared to 0.09 for 2009 and 2010 (Fig. 2). This was expected as earlier presenters have had more time to publish their studies. Fellows were found more likely to publish their presentations with

Table 1
Characteristics of presentations with their frequencies and publication-presentation index (PPI).

Characteristic	Categories	*N* (%)	PPI	*p* Value[a]
Study design	RCT	6 (1.3)	0.67	<0.038
	Laboratory	13 (2.8)	0.38	
	Cross-sectional study	45 (9.6)	0.27	
	Prospective study	40 (8.5)	0.25	
	Case report	12 (2.6)	0.25	
	Retrospective studies	343 (73.0)	0.19	
	Others	11 (2.3)	0.09	
Year	2001–2002	80 (17.0)	0.31	<0.002
	2003–2004	97 (20.7)	0.22	
	2005–2006	87 (18.5)	0.20	
	2007–2008	93 (19.8)	0.27	
	2009–2010	113 (24.0)	0.09	
Level of resident	PGY 1	85 (18.1)	0.25	<0.037
	PGY 2	97 (20.6)	0.21	
	PGY 3	109 (23.2)	0.19	
	PGY 4	91 (19.4)	0.22	
	PGY 5	60 (12.8)	0.18	
	PGY 6	14 (3.0)	0.21	
	Fellow	8 (1.7)	0.75	
	Others	6 (1.3)	0.33	
Section	Urology	56 (11.9)	0.41	<0.001
	Otolaryngology	41 (8.7)	0.29	
	Dental surgery	64 (13.6)	0.20	
	Pediatric surgery	27 (5.7)	0.19	
	Neurosurgery	39 (8.3)	0.18	
	Orthopedics	82 (17.4)	0.18	
	Cardiothoracic	19 (4.0)	0.16	
	General Surgery	121 (25.7)	0.15	
	Vascular surgery	13 (2.8)	0.15	
	Plastic surgery	8 (1.7)	0.13	
Sample size	1–10	49 (10.4)	0.20	<0.046
	11–25	77 (16.4)	0.21	
	26–50	100 (21.3)	0.15	
	51–75	60 (12.8)	0.25	
	76–100	43 (9.1)	0.28	
	101–200	57 (12.1)	0.21	
	>200	41 (8.7)	0.41	
Presented Nationally	No	191 (40.6)	0.12	<0.001
	Yes	279 (59.4)	0.28	
Presented Internationally	No	390 (83.0)	0.17	<0.001
	Yes	80 (17.0)	0.40	

[a] Chi square test.

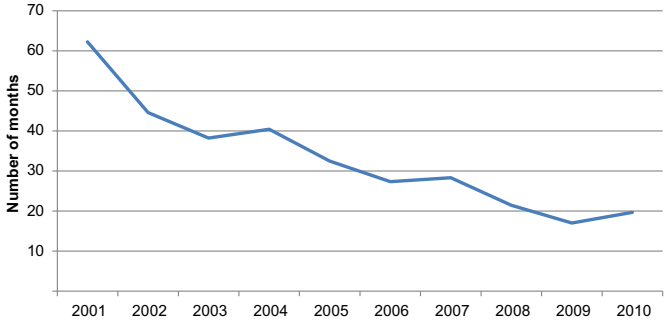

Fig. 1. Mean time taken from presentation to publication by year of presentation.

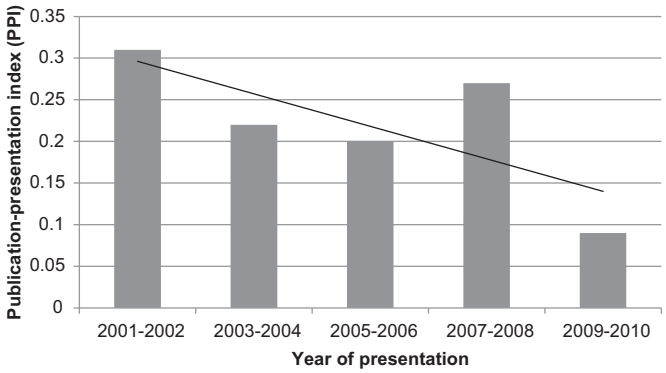

Fig. 2. Trend in publication-presentation index (PPI) over time.

a PPI of 0.75. Significant section-wise differences could also be noted with higher PPI in the sections of Urology, and Otolaryngology. Larger studies were more likely to be published than smaller studies and presentations that were also presented at national or international forums had a much higher PPI than those that were only presented at the University grand rounds ($p < 0.001$) (Table 1).

4. Discussion

The Surgical Grand Round (SGR) was introduced as an integral part of the surgery residency program at our University from its inception. In the beginning, each SGR featured two surgery residents, who would present to the department, their research work done under the supervision of a faculty over the past six months. Every surgery resident had to make at least three SGR presentations on different topics during his/her training. The objective was to encourage residents to participate in research and train them for formal presentation of their work to a scientific audience.

Over the years, the department has grown considerably and now includes nine fully established surgical specialties. With the growth in the number of residents, each resident now presents once every 10 months. The grand round is conducted in a University Lecture Hall with seating capacity of around 200, and is attended by faculty members of all surgical specialties, senior and junior residents, interns, medical students, as well as department statisticians and research officers, who are all encouraged to freely critique the presented work. Given the time that a resident and his/her supervisor spends on the planning, conduction and eventually, the execution of each SGR, with the background of available departmental support, it is expected that all SGRs will go on to be presented at National and/or International meetings, and eventually be published in appropriate journals, which remains the benchmark for any worthwhile research project today. The university and the department provide funding to residents as well as the faculty, for these endeavors. This strategy appears to have inculcated a model research culture in a country where research outputs are in general disappointing.[18–20]

Despite a quarter of a century of SGR at our university, it has yet to be critically analyzed for the quality of research or the yield of presentations. To determine the final outcome of presentations, a simple scoring system was devised, the PPI. It can be applied not just to evaluate the yield of the academic activity itself, but also individual residents, faculty, different sub-specialties, departments or even the outcome of grand rounds in different institutions. Beside comparisons, this can potentially help in monitoring individual and departmental progress, finalizing appraisals, but most importantly, for motivating residents and faculty to “do more” than just present their work. It is a common problem in academic institutions that even when a research project has been planned, executed and completed, it gets “lost in translation” either due to lack of interest, funding, or human resource.[21]

During the present exercise of applying the PPI to the SGR, we came across several interesting observations. Firstly, we have a low PPI at 0.32, after assuming that all submitted manuscripts will eventually get published. Although in the absence of related literature, it is difficult to comment whether such an index is normal, it still appears astonishing that only a third of all completed research projects get published from SGR. This can be compared to conversion of abstracts submitted for specialty specific scientific meetings of repute. Tierney and Lozano noted that only one third (32%) of the abstracts submitted to annual meetings of the Congress of Neurological surgeons and American Association for Neurological Surgeons, ultimately got published.[22] Similar findings have been noted in scientific meetings of other specialties, ranging from 32% to 46 %.[23–29] It is also noteworthy that presentations were slow to be converted to publications with a mean presentation to publication time of 34.8 (±25) months, although this duration was found to be decreasing steadily over the 10 year period to 20 months in the year 2010.

The PPI was also applied to identify possible factors associated with publication rates and interestingly, study design, year of presentation, level of resident at the time of presentation, individual section of surgery, size of sample and whether the study was presented in national or international meetings; were all associated with a statistically significant likelihood of conversion into a publication (all $p < 0.05$, Table 1). As expected, randomized controlled trials had the highest PPI (0.67) while retrospective studies were least likely to be published with a PPI of 0.19. Surgical Fellows, who are typically appointed for one or two years after finishing their residency, were the most likely to publish their presentations with a PPI of 0.75. Statistically significant differences were also observed in the PPI when analyzed for different sections within the department of surgery, ranging from as low as 0.13 in Plastic Surgery to as high as 0.41 for Urology. Also of note is that larger studies were more likely to be published than smaller studies and gradual upwards trend was noticed in the PPI by increasing sample size. Similarly, presentations that were presented at national or international forums had a much higher PPI than those that were not presented elsewhere ($p < 0.001$).

We need further evaluation of the factors associated with low PPI. Low sample size and retrospective reviews are known to be labeled as ‘weaker’ in reference to the ‘level of evidence’ they provide.[30] But any medical data having enough worth of being presented at SGR should carry some unique aspect which can be shared with the medical community in form of a publication. Individual presenters were informally interviewed of possible reasons for the low conversion rates. One of the reasons suggested was lack of interest from either the presenters or faculty side. If this PPI can be included in final evaluation of the resident, then this would be a motivating factor for the resident to make sure that end point of his research work is a publication and not merely a grand round presentation. Another reason for this low PPI was suggested to be lack of familiarity with epidemiology and statistics. According to surgical residents because of their busy schedule they have difficulty in finding spare time to spend on learning methods of basic clinical research. Instead they seek help of department’s statistician for their research projects, which takes a lot of time and many of residents do not pursue it further after their presentation. Recently one of the sections of Department of Surgery at our institute has started to conduct ‘Research Hour’ for the residents. All the residents are freed from their respective clinical responsibilities to attend this academic activity, in which there are

interactive sessions on basic and advanced clinical research followed by discussion among residents on their individual research projects. It is a weekly exercise and is supervised by Research Instructor of the section and the Residency Coordinator. This academic activity is aimed to enhance the knowledge of clinical research among the residents and to promote a healthy outcome in form of more publications by the residents.

Due to its retrospective design the study does have some limitations. We were unable to account for some variables in our analysis that might have shown interesting associations. For example, robustness of analysis, the use of multivariate analyses, and a better measure of study quality. The study is also a single center study making it difficult to generalize the results. However the factors we find associated with PPI are likely to be present at other institutions as well and this should be confirmed with similar studies in different departments and different academic centers.

5. Conclusion

Surgical Grand Round is a special and a unique feature of Surgical Residency at our University. It provides not only a forum for the residents to present their research work but also motivates them to carry on their research up to the level of paper presentation at international forum and ultimately publishing their work. A very simple, yet unique formula of PPI is found to be a useful indicator of academic progress at an individual, departmental or even at institutional level. This can be of significant value for a residency programme if included in final evaluations for the residents. Through this data we observed that PPI for our SGR is low. As the next step, we plan to monitor more closely the factors behind inability to convert a research work in to a publication and rectify them to make improvements. Factors associated with higher PPI will be promoted, for e.g. providing more funds for prospective studies, and for national and international conferences. Dedicated research time for residents is perhaps another step towards creating a researcher's mind and making of an academic surgeon.

Ethical approval

Ethical approval was not taken as this is a retrospective audit of prospectively maintained data of grand round presentations done at our university. No patient related data has been studied or referred to, in this paper.

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Author contribution

Muhammad Shahrukh Effendi: Study design, data collection, analysis, & writing.

Syed Nabeel Zafar: Data analysis and writing.

Syed Johar Raza: Data collection and writing.

Muhammad Shahzad Shamim: Writing.

Mohammad Hammad Ather: Writing.

Conflict of interest

None declared.

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