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The fate of abstracts presented at Turkish national radiology congresses in 2010-2012

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PURPOSE
This study aims to evaluate the analysis and publication rates of abstracts presented at the Turkish National Radiology meetings in 2010–2012.

METHODS
Abstracts presented in the national radiology meetings of 2010, 2011, and 2012 were included in the study. The presentations were classified according to presentation type (oral or poster presentations), study type, study design, imaged organ or body systems, imaging modalities, time interval between the presentation and the publication date, and the journal in which the article was published. The conversion rate of presentations into full-text articles in peer-reviewed journals were surveyed through PubMed. The time from presentation in the meetings to publication was determined. The distribution of journals was also demonstrated.

RESULTS
The total number of presentations submitted in three national radiology meetings was 3,192. The publication rate was 11% for the 2010 meeting, 8.2% for the 2011 meeting, and 9.6% for the 2012 meeting. A total of 300 papers were published, with an average of 15 months (range, 0–42 months) between presentation and final publication. The first three refereed international journals with the most number of papers derived from these meetings were Diagnostic and Interventional Radiology, Clinical Imaging, and European Journal of Radiology.

CONCLUSION
The overall publication rate of scientific abstracts from Turkey was lower than those from overseas countries. Encouraging the authors to conduct higher-quality research would raise the publication rate as well as improve the quality and success of our scientific meetings.

Radiology meetings provide a significant channel for exchanging scientific information. Abstract presentations at national meetings allow a rapid transfer of knowledge in summarizing current research and focusing future research endeavors (1–5). In spite of the fact that many studies are of sufficient value for presentation in these sessions, only the most instructive and highest quality studies are worthy of full-text publication in a peer-reviewed journal (2). The rate of publication may be considered as an indicator of the scientific quality of the meeting, that is, the ratio of presented abstracts to full-text published papers in peer-reviewed journals. In a survey of the literature, the publication rate of papers from a variety of specialties ranged between 8.5% and 78% (6). Worldwide, only a few investigations exist concerning radiology meetings, which report rates ranging 11%–47% (1–8). According to a study evaluating Turkish radiology meetings in years 1995–2002, the overall publication rate was 11% (1). We aimed to investigate the subsequent publication rates in Medline-indexed journals from presentations at the Turkish Congress of Radiology between 2010 and 2012.

Methods

Using the abstract CDs from the meetings, a list of the presentations submitted to Turkish national radiology congresses between 2010 and 2012 was obtained. The publication rate in Medline-indexed journals was determined by searching the PubMed database with the aim of exploring whether the abstracts had been expanded to full-text articles by September 2014. Three of the authors (N.F., A.K., and H.U.) performed this search via PubMed® using the first author's surname and initial(s). If this failed, the same search was performed for the second author or if necessary an appropriate keyword from the title of the abstract was added to the search. To

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confirm the results, coherence between the information that was included in the summary of the published article and that cited in the abstract of the presentation was carefully evaluated. The abstracts were classified according to presentation type (oral or poster presentations), study type (case reports, scientific research, and educational exhibit type presentations), study design (prospective or retrospective), imaged organ or body systems (abdominal, head and neck, interventional, cardiovascular, musculoskeletal, breast, neuroradiology, pediatric, thorax, and others), imaging modalities (radiography, computerized tomography, magnetic resonance, ultrasonography, angiography/interventional, multimodality, and others), time interval between the presentation and the publication, and the journal in which the article was published. Presentations that were published prior to the congress were included in the study and their publication period was assumed to be zero months. The range of the published presentations according to the above classification, publication rates, and the length of the publication process were identified.

All statistical analyses were conducted via SPSS for Windows (version 20.0, IBM Corp.). Descriptive statistics were reported and Chi-square test was used to compare these proportions. The statistical significance level was set at $P < 0.05$.

Results

A total of 3,192 abstracts were presented at the 2010, 2011, and 2012 national radiology congresses. Between November 2010 and September 2014, 300 of 3192 abstracts became articles that were published in Medline-indexed journals, for an overall publication rate of 9.4%. The period between presentation and publication was 0–42 months, with an average of 15 months. The publication rates according to years are shown in Table 1. Although there was no statistical difference between the years ($P = 0.3$), publication rate was lower in 2011, despite presentation of the highest number of abstracts.

In terms of document type, most abstracts (n=2107; 66%) were case reports, while scientific research (n=654) and educational exhibit type research (n=431) represented 20.5% and 13.5% of presentations, respectively (Table 2). Although case reports dominated among presentations, they had the lowest publication rate; publication rates according to study type were statistically different ($P < 0.001$), as shown in Table 2. Moreover, publication rate was significantly higher among orally presented posters than electronic posters (16.8% vs. 8.1%; $P < 0.001$). Publication rates according to study type, imaging modality, study design, type of presentation, and subspecialty are presented in Table 2.

Of oral presentations, 332 (69%) were scientific research and 149 (31%) were educational exhibits; no case reports were selected for oral presentation. In contrast, of 2711 electronic posters, most were case reports (n=2107; 77.7%), with only 322 (11.9%) scientific research presentations and 282 (10.4%) educational exhibits.

Among 1085 original research studies, 533 (49.1%) were prospective and 552 (50.9%) were retrospective. The rate of publication was not significantly different between prospective and retrospective study designs (15.6% vs. 13.4%, $P = 0.31$) (Table 2). Diagnostic and Interventional Radiology, a peer-reviewed journal covered by Science Citation Index Expanded (2013 impact factor: 1.427; 5-year impact factor: 1.289), was the journal with the most number of publications (n=31) derived from the Turkish national radiology congress presentations of the years 2010–2012. A list of first 20 Medline-indexed journals where presentations from years 2010–2012 were published as full-text articles is provided in Table 3.

Table 1. Overall publication rate of abstracts presented at Turkish national radiology congresses in 2010–2012

	2010	2011	2012	Total
Total number of abstracts	844	1299	1049	3192
Total number of publications	93	106	101	300
Publication rate (%)*	11.0	8.2	9.6	9.4

*Publication rate was not significant between the years ($P = 0.300$).

Main points

- Abstract presentation at national meetings allows rapid transfer of knowledge, summarizing current research, and focusing future research endeavours.
- The rate of publication (the percentage of research published in peer-reviewed journals over the total number of abstracts presented) may be regarded as an indicator of the scientific level of the meeting.
- In the Turkish national radiology congresses, the publication rate was 11% in 2010, 8.2% in 2011, and 9.6% in 2012.
- The overall publication rate of scientific abstracts from Turkey was lower than those from overseas countries.
- The quality and success of scientific meetings can be enhanced by encouraging higher-quality research from the authors which would raise its publication rate and in consequence the worth of the meeting itself.

Discussion

Our results indicate that case reports dominated among all abstract types and publication rate of orally presented posters was significantly higher than electronic posters. Approximately one tenth of abstracts presented at national meetings are later published in indexed journals. There was no statistical difference in publication rates between years or types of study.

The annual congress of the Turkish Society of Radiology is a national meeting that provides rapid dissemination of the latest research and new knowledge between radiology colleagues. More than 800 abstracts are presented in these settings. Evaluating the methodologic quality of conference abstracts is more difficult than the quality of fully published articles at the time that they are submitted (9). Manuscripts undergo a period of more exhaustive investigation before they are accepted for publication (10). An indicator of the quality of these meetings is the proportion of abstracts that result in publication in a refereed journal (11). In order to prevent a publication bias, it is advised to avoid abstracts as references in articles (8).

In the study by Dossett et al. (12), evaluating the quality and content variables associated with accepted abstracts at a national trauma meeting, the location where these abstracts were showcased (in the poster hall) was suggested to have a dramatic impact on the level of scrutiny and peer and press attention they received. It was also hypothesized that oral presentations would rate higher than poster presentations (12). In our study, we reached a similar conclu-

Table 2. Publication rates according to study type, imaging modality, study design, type of presentation, and radiology subspecialty

	2010 n/N (%)	2011 n/N (%)	2012 n/N (%)	Total n/N (%)	*P*
Study type					<0.001*
Case report	42/512 (8.2)	52/866 (6.0)	49/729 (6.7)	143/2107 (6.8)	0.29
Scientific research	31/166 (20)	36/246 (14.6)	47/242 (19.4)	114/654 (17.4)	0.33
Educational exhibit	20/166 (12)	18/187 (9.6)	5/78 (6.4)	43/431 (10)	0.38
Imaging modality					0.003*
Radiography	0/7 (0)	2/20 (10)	2/14 (14.3)	4/41 (9.8)	0.58
CT	20/158 (12.7)	26/294 (8.8)	21/212 (9.9)	67/664 (10.1)	0.43
MRI	17/206 (8.3)	22/312 (7.1)	20/242 (8.3)	59/760 (7.8)	0.82
US	14/80 (17.5)	11/117 (9.4)	20/112 (17.9)	45/309 (14.6)	0.13
Angiography/ interventional	10/80 (12.5)	16/93 (17.2)	4/58 (6.9)	30/231 (13.0)	0.18
Multimodality	32/313 (10.2)	29/457 (6.3)	34/405 (8.4)	91/1175 (8.1)	0.14
Others	0	0/6 (0)	0/6 (0)	0/12 (0)	-
Study design					0.31*
Prospective	22/162 (13.6)	25/183 (13.7)	36/188 (19.1)	83/533 (15.6)	0.24
Retrospective	29/170 (17.1)	29/249 (11.6)	16/133 (12)	74/552 (13.4)	0.24
Type of presentation					<0.001*
Oral presentation	30/136 (22.1)	22/198 (11.1)	29/147 (19.7)	81/481 (16.8)	0.017
Electronic poster	63/708 (8.9)	84/1101 (7.6)	72/902 (8)	219/2711 (8.1)	0.62
Subspecialty					0.26*
Abdominal	23/208 (11.1)	20/360 (5.6)	37/318 (11.6)	80/886 (9)	0.01
Head & neck	13/67 (19.4)	10/128 (7.8)	8/87 (9.2)	31/282 (11)	0.04
Interventional	14/98 (14.3)	14/87 (16.1)	3/53 (5.7)	31/238 (13)	0.18
Cardiovascular	5/98 (5.1)	18/149 (12.1)	8/116 (6.9)	31/363 (8.5)	0.11
Musculoskeletal	6/93 (6.5)	6/116 (5.2)	4/76 (5.3)	16/285 (5.6)	0.91
Breast	4/50 (8)	10/72 (13.9)	5/48 (10.4)	19/170 (11.2)	0.58
Neuroradiology	10/128 (7.8)	15/181 (8.3)	18/132 (13.6)	43/441 (9.8)	0.19
Pediatric	9/45 (20)	3/100 (3)	11/132 (8.3)	23/277 (8.3)	0.003
Thorax	7/49 (14.3)	9/97 (9.3)	7/79 (8.9)	23/225 (10.2)	0.31
Others	2/8 (25)	1/9 (11.1)	0/8 (0)	3/25 (12.0)	0.56

CT, computed tomography; MRI, magnetic resonance imaging; US, ultrasonography.
**P* refers to the statistical difference between posters according to study type, imaging modality, study design, type of presentation, and subspecialty.

sion that oral presentations had higher publication rates than posters (16.8% vs. 8.1%). Yoon et al. (13) declared that retrospective studies have higher publication rates compared with prospective ones, which is probably due to prospective designed studies requiring more planning and endeavor in methodology. In general, experimental studies are prospective rather than retrospective, and require careful forethought and planning to carry out. Conversely, clinical research is frequently retrospective and has the advantage of obtaining data that is already present in patient records (8). We found that from 2010 to 2012, publication rate of prospective studies increased, while that of retrospective studies decreased (Table 2). In addition, we observed that there was a dramatic decrease in the number of educational exhibit type studies during the same period. In terms of imaging modalities, we saw that the "others" category, including physics and whole body imaging, had one of the highest rates. This may be due to the requirement in basic science studies for elaborate experimental design to produce significant results. Regarding the journals in which articles were published, compared with 1995–2012, in addition to the similar media sharing upper positions, surprisingly a new journal that prints case reports obtained the fifth position (Table 3).

The overall publication rates of scientific abstracts from Turkey were lower than those from overseas countries (1–5, 8, 9). A recent Korean study investigated the publication rate of abstracts presented at national and international radiology meetings. Out of 1097 abstracts, the publication rate was 35.4% for studies presented at the congress of the Radiological Society of North America, 50.5% for the European Congress of Radiology, and 23.6% for the conference of the Korean Radiological Society (5). Secil et al. (1) evaluated the publication rates of Turkish national radiology congresses in 1995–2002 and reported an increase in publication rate from 9.8% to 14.8%. When we compared our results with the aforementioned study, in spite of the increase in presented abstracts, we found that there was a reduction in publication rate, with an overall rate of 9.4%. It is possible that these low publication rates indicate a lack of methodologic quality in presented abstracts that do not ultimately stand up to peer review. Rather than basing abstract acceptance on methodologic quality, other criteria, such as institutional affiliation and authorship, may play a role in selection. In addition, it is possible that particularly "hot" clinical topics are preferentially selected without particular attention to research methodology (12).

There are so many reasons causing failure to publish. It could be as a result of individual reasons like "lack of time" to prepare a full text, presenting abstracts only to acquire qualifications for entry into training programs, or having low confidence about the concept and results of the study (13). In a survey of 71 authors who had oral presentations at the annual meeting of the American Academy of Orthopedic Surgeons but did not subsequently submit their works for publication, Sprague et al. (14) reported the reasons for not publishing as: lack of time for preparing a manuscript for possible publication (47%), the study still ongoing five years after the oral presentation (31%), the task of preparing for the presentation of the work being transferred to a co-author (20%),

Table 3. List of journals with the most number of publications derived from the Turkish national radiology congress presentations in years 2010–2012

Diagnostic and Interventional Radiology	31
Clinical Imaging	14
European Journal of Radiology	12
Journal of Clinical Ultrasound	11
British Medical Journal Case Reports	10
Journal Belge de Radiologie - Belgisch Tijdschrift voor Radiologi	8
Cardiovascular and Interventional Radiology	7
Iranian Journal of Radiology	7
Japanese Journal of Radiology	7
Clinical Radiology	5
Journal of Clinical Imaging	5
Journal of Computer Assisted Tomography	5
Journal of Ultrasound in Medicine	5
Pediatric Emergency Care	5
Acta Radiologica	4
American Journal of Roentgenology	4
Korean Journal of Radiology	4
Saudi Medical Journal	4
Surgical and Radiologic Anatomy	4
Wiener Klinische Wochenschrift	4

controversy with co-authors (17%), and submitting a manuscript being a low priority for the authors (13%). In a questionnaire-based study with 266 researchers who had performed oral presentations to the Society for Academic Emergency Medicine, the obstacles in the way of publishing their work in full were: lack of time (42%), pessimistic belief about the likelihood of acceptance (20%), lack of confidence about the importance of the results (12%), trouble with co-authors (9%), the work not worthy of submission (7%), the presence of other articles that provide identical results (6%), the results of the statistical analysis not being positive (4%), and other reasons (22%) (15).

It is expected that many abstracts would fail to stand up to the rigorous analysis of multi-reviewer inspection. Preparation of an abstract requires only a fraction of the effort that manuscript preparation requires. Moreover, the cost of the travel for a scientific meeting for trainees who have abstracts to be presented is provided by the organization committee. This process encourages preparation of abstracts, without similar rewards for manuscript preparation (8). In Turkey, reasons such as extensive workload in radiology clinics in daily practice, lack of technological capabilities, lack of advanced technological equipment and software that expands the horizons of research, absence of modalities in some health centers, and also the difficulties in translating the manuscript from Turkish into foreign languages discourage young radiologists from research and study. Because of the poor archiving systems in these institutions, the regular records of patients cannot be obtained sufficiently for a retrospective study. Also, publications in peer-reviewed journals are necessary for academic upgrade, so radiologists that have academic concerns are more enthusiastic in writing scientific publications.

Our study has some restrictions that could potentially influence the results. First, since our full-text search was limited to Medline indexed journals, we possibly missed some articles that were published in journals indexed out of this database. In addition, when exploring whether an abstract was published, the content of the presentation abstract and the summary of the published article were checked whether they were parallel with each other or not. If the obtained data were incompatible, the presentation was assumed to have not been published and this would decrease the publication rate. Moreover, extending the time interval of our research to include older meetings might have changed the observed publication rate. Nevertheless, we wished to utilize the most current results as much as possible and gain an idea of where we are in terms of publication rates from our meetings. In a study of abstracts presented in the annual meetings of the urological society of Australia and New Zealand between 2005–2009, the mean publication time was 14.8 months and 80% were published in less than two years (13). In a study examining neuroradiology abstracts in 1993, the mean time interval between abstract presentation and publication was 15 months and 89% of all subsequently printed abstracts were published within two years of presentation (8).

In conclusion, the overall publication rate was relatively low compared with other radiology meetings held in America and Europe. We believe that young and dedicated radiology specialists can produce more qualified and original work, given sufficient encouragement and improvement of research conditions. To increase the publication rate of abstracts as well as the scientific quality of the meetings, scientific committees may be encouraged to be more selective in choosing presentations. Future research should focus on overcoming obstacles in the publication process.

Conflict of interest disclosure

The authors declared no conflicts of interest.

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