



Knowledge and awareness of optimal use of reporting guidelines in paediatricians: A cross-sectional study

Eda Karadağ Öncel¹, Sevgen Tanır Başaranoğlu¹, Kübra Aykaç¹, Ayça Kömürlüoğlu¹, Alkım Öden Akman², Sibel Kıran³

¹Department of Pediatrics, Division of Pediatric Infectious Disease, Hacettepe University School of Medicine, Ankara, Turkey

²Ankara Child Health Diseases Hematology-Oncology Training and Research Hospital, Ankara, Turkey

³Clinic of Pediatrics, Institute of Public Health, Hacettepe University School of Medicine, Ankara, Turkey

Cite this article as: Karadağ Öncel E, Tanır Başaranoğlu S, Aykaç K, Kömürlüoğlu A, Öden Akman A, Kıran S. Knowledge and awareness of optimal use of reporting guidelines in paediatricians: A cross-sectional study. *Turk Pediatri Ars* 2018; 53(3): 163-8.

Abstract

Aim: The aim of this study was to investigate pediatricians' ideas and awareness of reporting guidelines of scientific researches, as well as the use of these guidelines in routine practice.

Material and Methods: This cross-sectional survey was conducted among pediatricians working at two of the largest pediatric hospitals in Ankara. The pediatricians were asked to complete a 13-item questionnaire in Turkish about reporting guidelines and the Enhancing the Quality and Transparency of Health Research internet network, and their level of knowledge, awareness, and use of these guidelines were investigated.

Results: A total of 224 physicians from both centers agreed to participate in the study (56.4% of the target population). The average age of the participants was 34±9.24 years, their median age was 31

(min-max: 24-63) years, and 71.4% were female physicians. The participants' median duration in their careers was 6 (min-max: 1-39) years and 63.8% had participated in a scientific study as a researcher. Forty-five (20%) of the participants had known about the reporting guidelines before and reported that they had most frequently heard about them via journals, congresses, and seminars. Twenty (26.6%) of these physicians had used the guidelines. Sixty-five (29%) of the participants had served as a reviewer for a scientific article, but only three (4.6%) stated that they had made use of the guidelines while reviewing the articles. Some 83.5% of the participants reported that they would like to be informed about reporting guidelines. Both centers had similar knowledge levels about the use of the guidelines.

Conclusion: The awareness and use of reporting guidelines of scientific researches by pediatricians is insufficient.

Keywords: Awareness, knowledge, pediatricians, reporting guidelines

Introduction

The main aim of research in any scientific discipline is to attain knowledge about the fundamental subjects of that particular scientific field alongside gaining access to up-to-date information. The complete and transparent reporting of research will ensure that researchers, reviewers, and editors have access to such information. It is necessary to develop reporting guidelines for various types of research in order to standardize and increase the quality of scientific reporting. The most well-known of these guidelines and the first of its kind was the Consolidated Standards of Reporting Trials Statement for Reporting Randomized Controlled Trials (CONSORT) (1), which was developed in 1996 for randomized con-

trolled trials. The emergence of CONSORT has laid the foundation for the preparation of other guidelines to follow. The most well-known ones among these are Transparent Reporting of Systematic reviews and Meta-Analyses (PRISMA) (2) for systematic guidelines and metaanalyses, Standards for Reporting of Diagnostic Accuracy Studies (STARD) (3) for diagnostic validation, Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) (4) for observational studies in epidemiology, and Animal Research: Reporting: In Vivo Experiments Guidelines (ARRIVE) (5) for experimental animal studies. Due to the growing interest in these research guidelines, Moher et al. (6) published a study in 2010 for the improvement of these guidelines for developers of such health research-reporting guide-

Corresponding Author: Eda Karadağ Öncel E-mail: dredakaradag@gmail.com

Received: 20.10.2017

Accepted: 10.07.2018

©Copyright 2018 by Turkish Pediatric Association - Available online at www.turkpediatriarsivi.com

DOI: 10.5152/TurkPediatriArs.2018.6167

lines. This guide underlined consensus-based methods and profoundly dealt with the insufficiency of information on consensus building in the guidelines from a multidimensional perspective.

Enhancing the Quality and Transparency of Health Research (EQUATOR) is an organization that was established to improve the quality of reporting rules, research funds, and research publications for researchers, medical journal editors, and reviewers (7). The aim of this organization is to ensure accurate, complete, and transparent reporting in order to enhance the repeatability and use of all health studies. By this means, the value of health research will be increased and the rate of financial investments and human labor in health research projects with low use will be minimized. Through this organization, which was initially formed as a local meeting in 2006, researchers are now able to access 284 reporting guidelines (7). Most of these guidelines contain checklists, flow diagrams, or clear text samples, as well as the titles of the journals that recommend using these guidelines.

Awareness of both these reporting guidelines and the EQUATOR network is at a low level among physicians. The level of knowledge and awareness of these reporting guidelines among authors, reviewers, and editors has been investigated in various scientific fields (8, 9), but the number of such studies is rather limited in the literature. There are also no studies on pediatricians' awareness and level of knowledge of these reporting guidelines and the EQUATOR network. Therefore, the aim of this study was to investigate the awareness, level of knowledge, and ideas of pediatricians about the applicability of these guidelines working at two of the largest pediatric hospitals in the Turkish capital city, Ankara, one of which is a university hospital and the other is a training and research hospital.

Material and Methods

Two of the largest pediatric hospitals in Ankara were selected in this cross-sectional survey. The level of knowledge and awareness of the academic staff and research assistants on this issue working at these two pediatric hospitals were investigated between March and June 2016 by applying a 13-item questionnaire about the EQUATOR network and reporting guidelines. EQUATOR is a comprehensive network that publishes guidelines in English and serves as a unique source for reporting guidelines. Specific attention was paid to

asking pediatricians about the most well-known and commonly used questionnaires on the EQUATOR site in this study. This study was approved by Hacettepe University Medical School's Board of Ethics. A 13-item questionnaire in Turkish was developed for those who agreed to take part in the study and they were asked to offer information on their ages, sex, years in medical practice; whether they had participated in any scientific study before the application of the questionnaire, their number of publications; whether they had acted as a reviewer for scientific journals, and if yes, their numbers of reviews; whether they had used reporting guidelines in their publications; whether they had known about the EQUATOR network, if so, the medium from which they had learnt about it; which reporting guidelines they had known and whether they had used these as authors or reviewers; their ideas about the applicability of these guidelines; and their views on whether they were interested in being informed about these guidelines. The preliminary application of the developed questionnaire was conducted with 10 pediatricians working at another hospital, and they stated that the questionnaire was completed in about 10 minutes and was comprehensible.

The participants were also asked whether they knew about CONSORT, STROBE, PRISMA, CAse REport (CARE), Standards for Reporting Qualitative Research (SPQR), STARD, Standards for QUality Improvement Reporting Excellence (SQUIRE), Consolidated Health Economic Evaluation Reporting Standards (CHEERS), Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT), ARRIVE, Transparent Reporting of Evaluations with Nonrandomized Designs (TREND), the Conference on Guideline Standardization (COGS), STrengthening the REporting of Genetic Association studies (STREGA), and Outbreak Reports and Intervention Studies Of Nosocomial infection (ORION), which are the most well-known and commonly used reporting guidelines, and whether they had used these guidelines.

Statistical Analysis

All statistical analyses were performed using The Statistical Package for the Social Sciences (SPSS) program, version 20.0 (IBM Corp.; Armonk, NY, USA). Values for numerical variables are provided as mean±standard deviation or median [minimum–maximum] depending on the normality of distribution. Categorical variables are provided as absolute values or percentages, and comparisons were conducted using the Chi-square test.

Continuous variables were compared using the independent samples t-test, and the Mann–Whitney U test was used when there was no normal distribution. Statistical significance was set at <0.05.

Results

Out of the total 218 individuals working at the university hospital and 179 individuals working at the training and research hospital, 140 (64.2%) and 84 (46.9%) agreed to participate in the study, respectively; thus, a total of 224 physicians participated in the study from the two centers (Figure 1). The mean age of the participants was 34±9.24 years, their median age was 31 (min-max: 24-63) years, and 71.4% were female. The participants’ median duration in medical practice was 6 (min-max: 1-39) years and 63.8% had taken part in a study as a researcher. When the participants’ number of publications was investigated, it was seen that 41 (18.3%) participants did not respond to the question “How many studies have you published in Turkish?,” 70 (31.3%) had none, 72 (32.1%) had five or less, and 41 (18.3%) had more than five publications. Forty-five (20.1%) participants did not respond to the question “How many studies have you published in English?”; 68 (30.4%) had none, 46 (20.5%) had five or less, and 65 (29%) had more than five publications. Forty-five (20%) participants had heard of the reporting guidelines before. When the most commonly used and known guidelines were questioned, it was seen that 23 (10.3%) participants knew about PRISMA, 21 (9.3%) knew about CONSORT, 11 (4.9%) knew about ORION, eight (3.6%) knew about SQUIRE, six (2.7%) knew about STROBE, five (2.2%) knew about SPIRIT and TREND, four (1.8%) knew about CARE, SPQR, STARD, ARRIVE, STREGA, three (1.3%) knew about COGS, and two (0.9%) knew about CHEERS. Twelve (26.6%) of those, who had been informed about reporting guidelines, used these as well. When they were asked about the medium from which they had learnt about these guidelines, 14

(31.1%) stated that they had heard about them from journals, 13 (28.8%) at congresses, six (13.3%) at seminars, five (11.1%) from training courses they had taken, and seven (15.5%) from other media. When the participants were asked about their ideas regarding the guidelines, 90 (40.2%) did not respond to the question; 112 (50%) said they had no ideas, 14 (6.1%) stated that they were useful, three (1.3%) said that they were necessary, three (1.3%) stated that they did not possess sufficient knowledge to be able to comment on the subject, one (0.4%) said that they were not commonly in use, and one (0.4%) reported that they were too strict and unnecessary. When the participants were asked whether they had ever acted as a reviewer for a scientific article, 65 (29%) reported having served as reviewers but only three (4.6%) of these stated that they had used these guidelines while reviewing the articles. When the level of awareness of the participants about the EQUATOR network was questioned, only 5.8% (n=13) knew about EQUATOR. Moreover, 11 (84.6%) of these participants had taken part in a study before. When they were asked about the medium from which they had learnt about EQUATOR, four (30.7%) indicated that they had learnt about it from journals for which they had acted as reviewers, four (30.7%) at congresses, two (15.3%) at seminars, and three (23%) from other media.

Some 83.5% of the participants indicated that they wished to be informed about reporting guidelines. There was no statistically significant difference between years in medical practice and requests for information (p=0.462). When physicians with fewer than 10 publications in Turkish and English and those with more than 10 were compared, it was observed that there was a statistically significant difference regarding those with more than 10 publications in English and requests for information, but there was no statistically significant difference with regards to the number of publications in Turkish (p=0.024 and p=0.211 respectively). Fourteen out of the 34 who did not want to be informed about the guidelines had publications and 11 of them had more than 10 publications. In other words, those with more publications in English did not want to be informed about the reporting guidelines. Although there was no statistically significant difference between having participated in a scientific study and having knowledge of EQUATOR and wanting to be informed about guidelines (p=0.106 and p=0.326, respectively), the difference between having participated in a scientific study and having publications in English and years in medical practice was statistically significant (p<0.001 and

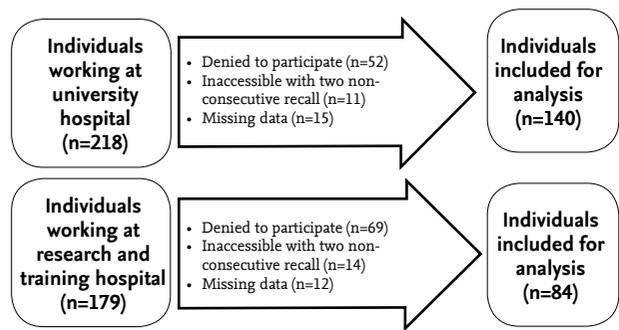


Figure 1. Flow diagram of the study

p<0.001, respectively). When the characteristics of those working at the university hospital and the training and research hospital were compared, it was observed that there was a statistically significant difference with regards to publications in English by participants working at the university hospital (p=0.017) and publications in Turkish by those working at the training and research hospital (p=0.005); all the other characteristics proved to be similar between the two centers (Table 1).

Discussion

The fundamental goal of medical studies is to promote scientific information, thereby improving healthcare. However, if no standardization in scientific studies can be achieved, unnecessary and redundant information will accrue in the literature. In order to prevent such ac-

cumulation, reporting guidelines on various scientific methods have been developed. The checklists covered by these guidelines allow authors and reviewers to assess the quality of the study and identify any missing information. Thus, this study investigated pediatricians' level of knowledge on and use of reporting guidelines. At the same time, we aimed to scrutinize possible differences between pediatricians working at university and training and research hospitals. Only 20% of the participants in our study had heard about any one of these guidelines, and 10.7% stated that they had used of the guidelines before. Only 4.6% of those who had acted as reviewers for journals indicated that they had used these guidelines. Furthermore, the results of this study revealed that the level of awareness about the guidelines among pediatricians was quite low. The results of an awareness survey conducted among editors of veterinary science journals indicated that 52.9% of those who had responded were informed about reporting guidelines and 35.1% stated that these reporting guidelines were covered by their own journals' guidelines for authors and reviewers (8). It was even observed that about half of the journal editors were not informed about these guidelines. Although a great majority of our participants had not heard of the guidelines, 83.5% requested to be informed. All except on of those who had been using reporting guidelines in their studies requested information on the guidelines. This shortcoming was recognized through this study and informational meetings on reporting guidelines were planned for both hospitals.

Reporting guidelines provide guidance about the ways in which both reviewers and authors can shape and define the details of scientific studies, as well as rendering health research more informative. These reporting guidelines make the evaluation of articles much easier, especially for reviewers. Many reviewers, however, do not know about the guidelines and do not make use of them. The results of our study also revealed that only three (4.6%) out of 65 physicians, who had reviewed articles for journals, had used a reporting guideline when reviewing other studies. If journal editors encourage reviewers to use these guidelines, this will lead to an increase in the awareness of such guidelines, make the use of these guidelines more common, and thus render scientific studies more valuable.

When the most commonly used guidelines were investigated separately, it was seen that the most well-known were PRISMA, CONSORT, and ORION. The results of

Table 1. Characteristics of the participants from universities and education and research hospitals

	Participants from university hospital (n=140)	Participants from education and research hospital (n=84)	p
Age (years) ^a	34.42±10.01	33.3±7.78	0.883
Gender (female) ^b	95 (67.8)	65 (77.3)	0.127
Years of career ^c	6 (1-39)	5.5 (1-35)	0.760
Participation in any scientific study ^b	93 (66.4)	50 (59.5)	0.298
Having scientific publication in Turkish ^b	71 (50.7)	42 (50)	0.918
Number of scientific publications in Turkish ^c	1 (0-250)	3 (0-75)	0.005
Having scientific publications in English ^b	78 (55.7)	33 (39.2)	0.017
Number of scientific publications in English ^c	1 (0-340)	7 (0-150)	0.053
Using reporting guidelines ^b	14 (10)	10 (11.9)	0.536
Using reporting guidelines for publications ^c	1 (1-15)	1.5 (1-3)	0.548
Being a journal reviewer ^b	45 (32.1)	20 (23.8)	0.173
Using guideline while evaluating any scientific publication ^b	2 (1.4)	1 (1.1)	0.334
Knowing the EQUATOR network ^b	10 (7.1)	3 (3.5)	0.379
Requesting information about guidelines ^b	118 (84.2)	69 (82.1)	0.636

^aThe values are given as mean±standard deviation

^bThe values are indicated as number (%)

^cThe values are given as median and minimum-maximum

a study, which explored the rate of use of such guidelines covered by urology journals' guides for authors and reviewers, revealed that only 25.5% of these journals covered at least one reporting guideline, among which CONSORT was the most frequently used, and other guidelines, other than CONSORT, were mentioned in less than 6% of the guides (9). Previously, most guidelines were developed for randomized-controlled trials (6), but now attention has increasingly begun to be paid to such guidelines for other types of health research. In spite of this, some scientific journals offer recommendations in order to inform authors and reviewers about both the EQUATOR network and reporting guidelines as such an awareness fares at a low level in many fields (10, 11). The EQUATOR network is a website that includes all the reporting guidelines with easy access to the most recent forms and checklists of such guidelines, and offers the recommendations of journals as to which guidelines the authors should use (7). Within the framework of our study, only 5.8% of the participants knew about EQUATOR and most had participated in a clinical study. Most of those participants, who had been informed, learnt about the network from the journals for which they acted as reviewers, and contributed to awareness-raising about the network at congresses and seminars. We believe that raising awareness about the EQUATOR network in both journals and other scientific platforms will enable reporting guidelines to reach a wider audience and increase the rate of their applicability.

Although it is believed that the number of studies at university hospitals is higher and more time can be allocated to scientific research, the results of our study showed that many features of both hospitals such as conducting research, number of studies published, awareness of such guidelines and their use, and acting as reviewers for journals were similar. No studies in the literature have investigated the differences between centers. In our study, there was a high level of requests to be informed about the guidelines. Thus, both authors and reviewers should be encouraged to use these guidelines and checklists at the planning, performing, presenting, and publishing stages. The use of these guidelines at the onset of research will render it easier to present the results of the study in an appropriate and accurate way (12). Many methodologic mistakes can be averted at the initial stages of a study by integrating the recommendations of these guidelines and this will finally bring about a more valuable study. The use of such guidelines at every stage of scientific studies will make it possible for researchers to present more

accurate data collected within the scope of their studies and will render the studies more useful for researchers, physicians, and patients.

One of the main limitations of this study was the fact that all the pediatricians at all academic levels in these two hospitals were covered by the study. This bias was attempted to be minimized as the profiles of the participants from both hospitals were similar. Another limitation was that the study was conducted on a voluntary basis and some pediatricians refused to participate in the study, which might have affected the results of the study. Regardless, we suggest this had a limited effect because the level of awareness on reporting guidelines was low.

Conclusion

If a greater number of medical journals use such guidelines to enable accurate and complete reporting in clinical studies, the quality of publications in pediatrics and other medical fields can be increased. Practices such as the use of reporting guidelines to ensure high-quality publications have recently been on the rise. The awareness and use of such guidelines by pediatricians, however, is still insufficient. Therefore, raising awareness and popularization of reporting guidelines will contribute to rendering research more valuable and comprehensible, and to the presentation of studies with a common terminology.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Hacettepe University School of Medicine (no:16/29)

Informed Consent: Written informed consent was obtained from all participants.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - E.K.O., S.K.; Design - E.K.O., S.K.; Supervision - E.K.O., S.K.; Funding - E.K.O., S.T.B., K.A., A.K.; Materials - E.K.O., S.T.B., K.A., A.K. A.O.A.; Data Collection and/or Processing - E.K.O., S.T.B., K.A., A.K. A.O.A.; Analysis and/or Interpretation - E.K.O., S.K.; Literature Review - E.K.O., S.K.; Writing - E.K.O., S.K.; Critical Review - E.K.O., S.T.B., K.A., A.K. A.O.A., S.K.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Kaynaklar

1. Simera I, Altman DG, Moher D, Schulz KF, Hoey J. Guidelines for reporting health research: the EQUATOR network's survey of guideline authors. *PLoS Med* 2008; 5: 139. [\[CrossRef\]](#)
2. Moher D, Liberati A, Tetzlaff J, Altman DG, the PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med* 2009; 6: 1000097. [\[CrossRef\]](#)
3. Bossuyt PM, Reitsma JB, Bruns DE, et al. Towards complete and accurate reporting of studies of diagnostic accuracy: the STARD initiative. *Standards for reporting of diagnostic accuracy. Clin Chem* 2003; 49: 1-6. [\[CrossRef\]](#)
4. von Elm E, Altman DG, Egger M, et al. The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *PLoS Med* 2007; 4: 296. [\[CrossRef\]](#)
5. Kilkenny C, Browne WJ, Cuthill IC, Altman DG. Animal research: reporting in vivo experiments—the arrive guidelines. *J Cereb Blood Flow Metab* 2011; 31: 991-3. [\[CrossRef\]](#)
6. Moher D, Weeks L, Ocampo M, et al. Describing reporting guidelines for health research: a systematic review. *J Clin Epidemiol* 2011; 64: 718-42. [\[CrossRef\]](#)
7. Equator Network. Enhancing the QUALity and Transparency of health Research. Available from: www.equator-network.org (accessed November 2015).
8. Grindlay DJ, Dean RS, Christopher MM, Brennan ML. A survey of the awareness, knowledge, policies and views of veterinary journal Editors-in-Chief on reporting guidelines for publication of research. *BMC Vet Res* 2014; 10: 10. [\[CrossRef\]](#)
9. Popham K, Calo WA, Carpentier MY, et al. Reporting guidelines: optimal use in preventive medicine and public health. *Am J Prev Med* 2012; 43: 31-42. [\[CrossRef\]](#)
10. Christensen R, Bliddal H, Henriksen M. Enhancing the reporting and transparency of rheumatology research: a guide to reporting guidelines. *Arthritis Res Ther* 2013; 15: 109. [\[CrossRef\]](#)
11. Rohrich RJ, Weinstein A. So, you want to improve your plastic surgery papers? Introducing PRS' friendly EQUATOR reporting guidelines. *Plast Reconstr Surg* 2015; 136: 205-8. [\[CrossRef\]](#)
12. Christensen R, Langberg H. Statistical principles for prospective study protocols: design, analysis, and reporting. *Int J Sports Phys Ther* 2012; 7: 504-11.