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## **Applying STROBE Statement to assess the quality of reporting of Observational studies concerning uveitis**

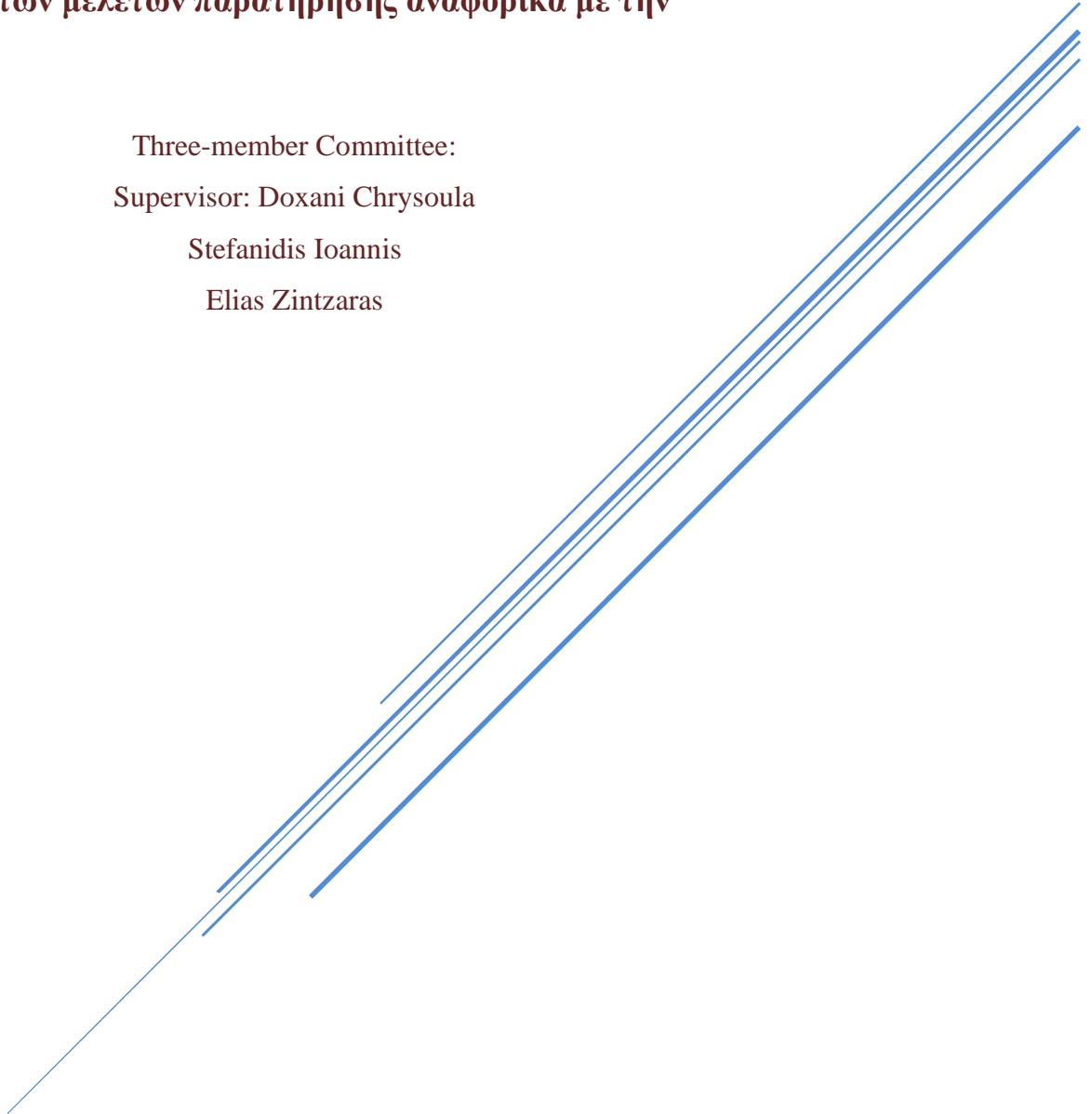
**Εφαρμογή της STROBE Statement για την αξιολόγηση της ποιότητας των αναφορών των μελετών παρατήρησης αναφορικά με την ραγοειδίτιδα**

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## Abstract

### Introduction

Uveitis is a leading cause of human blindness with early diagnosis playing an important role in the therapeutic result. There have been numerous observational studies concerning uveitis, therapeutic procedures and its potential risks. However, not all of them are of high quality. Their validity based on their compliance to STROBE Statement criteria would be examined in this systematic review.

### Purpose

To evaluate the quality of observational studies in uveitis published from 2000 to 2019 by applying the **Strengthening of Reporting of Observational Studies In Epidemiology (STROBE) Statement** writing standards.

### Methods

We performed a literature research of articles published from 1st of January 2000 to 20th of August 2019 concerning uveitis. We then assessed the quality of observational studies using STROBE guidelines and performed sub-group analysis concerning journals with different impact factor and characteristics of study's design.

### Results

Fifteen publications were finally included in the analysis. The mean estimated score of STROBE criteria was 68%. Most studies did not included information concerning matching criteria ((for matched studies)) and the use of a flow diagram, while they reported the scientific background of their hypothesis and a summary of results. Furthermore, sub-group analysis demonstrated that between journals with high and low impact factor there was no statistically important difference in the quality of reporting the STROBE criteria.

### Conclusions

The results of the study indicated that articles presented the criteria at a different percentage, but adequately. Further analysis of the data revealed differences between different journals and study's design and to what extent they were following STROBE guidelines.

## Περίληψη

### Εισαγωγή

Η ραγοειδίτιδα είναι σημαντική αιτία τύφλωσης του ανθρώπινου πληθυσμού. Η έγκαιρη διάγνωση παίζει ένα σημαντικό ρόλο στη θεραπεία. Έχουν πραγματοποιηθεί πολυάριθμες μελέτες παρατήρησης

όσον αφορά τη ραγοειδίτιδα, τα πιθανά θεραπευτικά πρωτόκολλα και τις επιπλοκές της νόσου. Παρόλα' αυτά δεν μπορούν να χαρακτηριστούν όλες οι μελέτες υψηλής ποιότητας. Η εγκυρότητα αυτών των μελετών με βάση τα κριτήρια STROBE θα εξεταστούν σε αυτή τη συστηματική ανασκόπηση.

### Στόχοι

Να εξεταστεί η ποιότητα των αναφορών των μελετών παρατήρησης που αφορούν τη ραγοειδίτιδα και έχουν δημοσιευτεί από το 2000 μέχρι το 2019 εφαρμόζοντας τα STROBE πρότυπα.

### Μέθοδοι

Πραγματοποιήσαμε μια βιβλιογραφική αναζήτηση άρθρων δημοσιευμένων από τη 1η Ιανουαρίου 2000 μέχρι και την 20η Αυγούστου 2019 που αφορούν την ραγοειδίτιδα. Έπειτα, αξιολογήσαμε την ποιότητα τους χρησιμοποιώντας τις οδηγίες της STROBE Statement.

### Αποτελέσματα

Η ανάλυση περιέλαβε συνολικά 15 δημοσιεύσεις. Η μέση βαθμολογία των STROBE κριτηρίων υπολογίστηκε στο 68%. Η πλειοψηφία των μελετών δεν περιείχε πληροφορίες όσον αφορά τα κριτήρια αντιστοίχισης και την χρήση διαγράμματος ροής .Ωστόσο, οι περισσότερες μελέτες περιείχαν αναφορά στο επιστημονικό υπόβαθρο της υπόθεσης και μια περίληψη των αποτελεσμάτων. Επιπροσθέτως, η ανάλυση μεταξύ των υποομάδων έδειξε ότι ανάμεσα σε περιοδικά με υψηλό και χαμηλό impact factor δεν υπήρχε στατιστικά σημαντική διαφορά στην ποιότητα των αναφορών τους.

### Συμπεράσματα

Τα αποτελέσματα της μελέτης έδειξαν ότι τα άρθρα ακολουθούσαν τα STROBE κριτήρια σε διαφορετικό ποσοστό, αλλά επαρκώς. Επιπρόσθετη ανάλυση των δεδομένων αποκάλυψε διαφορές κυρίως μεταξύ της μορφής των μελετών και των διαφόρων περιοδικών και σε τι βαθμό εφάρμοζαν τις κατευθυντήριες STROBE οδηγίες .

### Introduction

The diagnosis and therapy of uveitis remains a challenge for the general ophthalmologist and even for the uveitis specialist nowadays. Overall, the term uveitis refers to an umbrella term that involves inflammation of the uveal tract (ie, iris, ciliary body, choroid ) or adjacent ocular structures (eg, retina, optic nerve, vitreous, sclera).

During the diagnosis, the definition of uveitis type is of major importance as it helps research centers to understand the background and the therapeutic strategy that should be followed. According to the Standardization of Uveitis Nomenclature (SUN) Working Group the definition of the uveitis type should include information about the location and onset, duration and the clinical course of the disease

(1).The ULISEE STUDY in 2017 proposed a standardised 2-steps approach for diagnosis. In cases uncharacterised during initial evaluation, which includes clinical or paraclinical findings (1<sup>st</sup> step), following evaluation is based on the anatomic type of uveitis (2<sup>nd</sup> step). This strategy showed no significant difference with the non-standardised strategy (2).

Epidemiological studies have shown that uveitis affects a large number of individuals of different ages and gender, worldwide. In Europe it is responsible for 5-10% of all cases of blindness with patients presenting 1/10 in visual acuity or less in the better eye because of the risk for complications such as macular oedema, retinal ischemia or ocular hypertension. (3, 4) More studies have been realised to examine the prevalence of uveitis based on geographical criteria, sex, age, habits, environmental (e.g. tuberculosis), genetic and ethnic factors (HLA-B27 and sarcoidosis). The main causes of uveitis in developing countries are of infectious origin (toxoplasmosis in South America) while in Western countries the majority of cases are caused due to another ophthalmologic disease, another systematic disease and 25% of the patients suffer from uveitis of unexplained origin.(5)

The quality of the studies regarding uveitis has not been examined thoroughly, yet. In the evaluation of the quality of studies various checklists have been used including the STROBE Statement. The aforementioned checklist was created during a two-day workshop in September 2004(6). Back then, a team of methodologists, journal editors and researchers tried to create a checklist of items to assess the strengths and weaknesses of observational studies. This list was revised and processed through several meetings and debates from the larger STROBE group based on methodological procedures and experience and ended up in 2007 to form STROBE Statement. Therefore, STROBE Statement (Strengthening the Reporting of Observational Studies in Epidemiology) is a common effort of epidemiologists, statisticians, methodologists, researchers, journalists and research editors involved in the conduct and dissemination of observational studies to reinforce the quality of observational studies guidelines. The checklist proposed contains 22 different criteria. STROBE Statement can help interpreting easier report's data both for editors and readers. There are different articles that explain and elaborate STROBE Statement guidelines and would be helpful in this study (7). To date STROBE Statement has already been endorsed from more than 120 journals with BMJ and Lancet to be some of them.

In Ophthalmology there is a great amount of studies that belong to the category of observational studies (cross-sectional, case-control and cohort-studies). Most of them do not thoroughly adhere to those criteria. Hence, the purpose of this study is to evaluate the reporting of observational studies concerning uveitis for the time period between 2000 and 2019 based on STROBE Statement standards.

## **Methods**

A systematic review based on eligibility criteria and a search strategy was performed.

### Search Methods concerning Uveitis and inclusion criteria

The search method followed contained literature research of the database PubMed. Taken into consideration that a large amount of observational studies concerning uveitis are available in several databases for this time period of twenty years, PUBMED database was solely chosen. PUBMED database offers a high variety and quality of studies, it is widely used for biomedical subjects and can offer substantial results in the investigation.

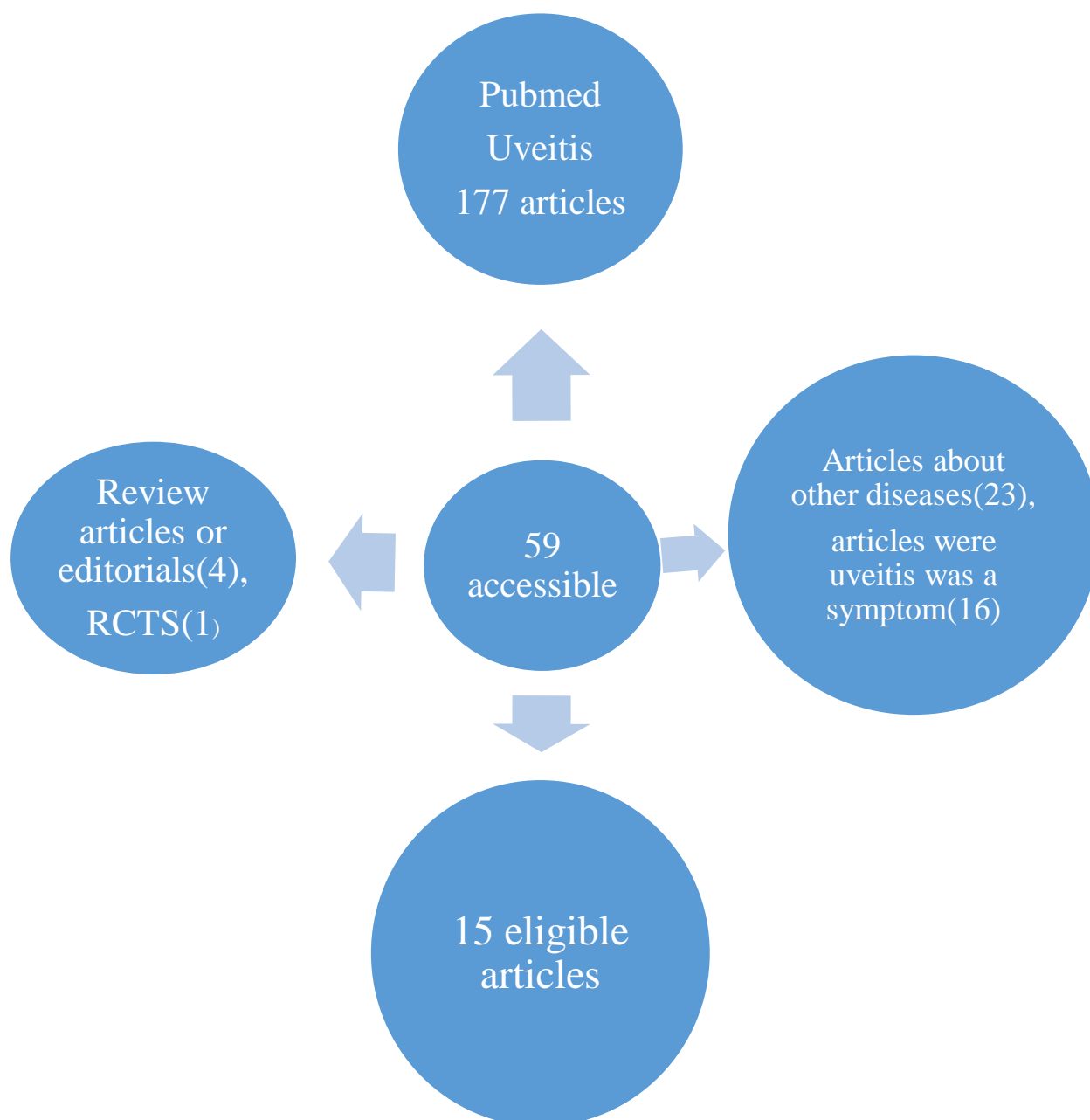
The search strategy that was used was Uveitis (all fields). Additional filters were chosen. The publication type selected was observational studies (cohort study, case study, cross-sectional study). The rest of the study types were excluded. The time period was between 01/01/2000 and 20/08/2019, the studies referred to 'human' species and the language of the articles selected was English (6 studies were not written in English). The final algorithm formed was the following: **("uveitis"[MeSH Terms] OR "uveitis"[All Fields]) AND (Observational Study[ptyp] AND "loattrfree full text"[sb] AND ("2000/01/01"[PDAT] : "2019/08/20"[PDAT]) AND "humans"[MeSH Terms] AND English[lang]) .**

### Exclusion criteria

A number of exclusion criteria were selected. Out of the 177 articles (that the search method followed came up with,) only 59 were accessible and the rest of them were not further evaluated due to lack of reviewer sources.

Moreover, review articles or editorials (4), RCTs (1), articles that referred exclusively other diseases (23) and articles where uveitis was only referred as a symptom of other diseases without further evaluation (16) were excluded. However, observational studies that examined the strong association between uveitis and systemic diseases, particularly rheumatological, were included in the study. Finally, all types of journals (ophthalmological, general and rheumatological) were included. Out of the 59 articles only 15 complied with the inclusion and exclusion criteria. STROBE statement criteria were applied to the extracted studies. Even though STROBE statement includes 22 criteria the final grading scale contained a maximum of 34 points.

#### 1. Flow diagram of Search strategy



### Grading system

Each subpart of a general question was assessed for 1 point. The grading was performed by only one reviewer. However, the form was revised twice before the final report outcome. Grading could take two



different prices 1, 0. Grade 1 was used for items that was well presented according to the checklist. Grade 0 was given to items that could have been included such as relevant dates, study's size but were not referred sufficiently. Some items were characterized as not applicable and were omitted from the final evaluation. Some questions such as 'settings, location, dates' contained more than one components. For those questions an available answer was searched for each component and the question was graded with 1 when it responded to the majority of the components. Final maximum possible score was 34 (STROBE Statement criteria Table 1).

### Data analysis

Data were collected at first in reviewer's grading sheets and then transferred to Microsoft Excel 2007. Then, they were further categorized and evaluated for normality tests, descriptive statistics and other statistical procedures (IBM SPSS Statistics 25 was used).

Overall analysis, refers the number of items included as well as the number of possible score applied to each study. The analysis performed estimated the differences between journals, type of studies (prospective vs retrospective), the country of origin, reference to the source of funding, publication year and if the study was multicentre or monocentric.

### Sensitivity analysis

All of the studies were published after 2014, seven years after the implementation of STROBE Statement. Therefore, the authors were informed about the existence of STROBE criteria and not a further sensitivity analysis was required.

## Results

### STROBE Statement main results of reporting

Out of all studies only 15 studies met our inclusion criteria as they are described in the section 'Material and methods'. Those studies were evaluated based on STROBE Statement checklist. Grading process took place from only one reviewer from 26 of June till 26 of August, 2019. Main results such as reporting of items, study design characteristics, articles reporting scores can be seen in the tables below (that were formed using Excel 2013 program).

Table 1. STROBE Statement criteria and Reporting of different items

Article Topic	Section and	Item	Description	Score Reported(percent)
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Title and Abstract	1	Indicate the study's design with a commonly used term in the title or the abstract	13/15 87%
	2	Provide in the abstract an informative and balanced summary of what was done and what was found	14/15 93%
Introduction			
Background/Rationale	3	Explain the scientific background and rationale for the investigation being reported	15/15 100%
Objectives	4	State specific objectives, including any prespecified hypotheses	13/15 87%
Study design	5	Present key elements of study design early in the paper	15/15 100%
Setting	6	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	11/15 73%
Participants	7	(a) Cohort study—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up Case-control study—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls Cross-sectional study—Give the eligibility criteria, and the sources and methods of selection of participants	11/15 73%
	8	(b) Cohort study—For matched studies, give matching criteria and number of exposed and unexposed Case-control study—For matched studies, give	4/13 31%

		matching criteria and the number of controls per case	
Variables	9	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	6/15 40%
Data sources/ measurement	10	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	8/15 53%
Bias	11	Describe any efforts to address potential sources of bias	8/15 53%
Study size	12		10/15 67%
Quantitative variables	13		13/15 87%
Statistical methods			
	14	Describe all statistical methods, including those used to control for confounding	13/15 87%
	15	Describe any methods used to examine subgroups and interactions	10/15 67%
	16	Explain how missing data were addressed	7/14 50%
	17	Cohort study—If applicable, explain how loss to follow-up was addressed Case-control study—If applicable, explain how matching of cases and controls was addressed Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy	9/15 60%
	18	Describe any sensitivity analyses	6/13 46%

Results			
Participants	19	Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	11/15 73%
	20	Give reasons for non-participation at each stage	9/14 64%
	21	Consider use of a flow diagram	5/15 33%
Descriptive data			
	22	Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	12/15 80%
	23	Indicate number of participants with missing data for each variable of interest	7/13 54%
	24	Cohort study—Summarise follow-up time (eg, average and total amount)	7/8 88%
Outcome data	25	Cohort study—Report numbers of outcome events or summary measures over time Case-control study—Report numbers in each exposure category, or summary measures of exposure Outcome data 15* Cross-sectional study—Report numbers of outcome events or summary measures	14/15 93%
Main results	26	Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which	12/14 86%

		confounders were adjusted for and why they were included	
	27	Report category boundaries when continuous variables were categorized	10/14 71%
	28	If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	4/8 50%
Other analyses	29	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	9/15 60%
Discussion			
Key results	30	Summarise key results with reference to study objectives	14/15 93%
Limitations	31	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	8/15 53%
Interpretation	32	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	13/15 87%
Generalisability	33	Discuss the generalisability (external validity) of the study results	9/15 60%
Other information			
Funding	34	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	9/15 60%

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at

<http://www.plosmedicine.org/>, *Annals of Internal Medicine* at <http://www.annals.org/>, and *Epidemiology* at <http://www.epidem.com/>). Information on the STROBE Initiative is available at [www.strobe-statement.org](http://www.strobe-statement.org).

#### STROBE Statement Quality summary of Reporting

	Reported Score	Main Author	Country,Year	Number of Eyes or patients	Funding reference
1.	18/34	Maitra P.	India,2019	34 eyes/25 patients	yes
2.	23/31	Frantz C.	France,2019	301 patients/82 patients with uveitis	no
3.	22/31	Berasategui B	Spain,2018	24 eyes/24 patients	yes
4.	24/33	Tappeiner C	Switzerland,Germany,2018	954 patients with JIA/133 patients with uveitis and JIA	yes
5.	23/31	Kim M	Korea,2017	120 patients	yes
6.	21/33	Maruyama K	Japan,2017	234 eyes/191 patients	yes
7.	11/32	Cosickic A	Bosnia and Ezegovina,2017	97 patients with JIA/14 patients with JIA and uveitis	no
8.	26/33	Kwon JW	Korea,2017	50 patients	yes

9.	24/31	Kim AY	USA,2016	-	yes
10.	12/33	Sun L	China,2016	390 patients with AS/38 patients with AS and uveitis	yes
11.	30/34	Vallet H	France,2016	160 patients	no
12.	30/34	Zarranz-Ventura J	USA,UK,Spain,2016	105 eyes	yes
13.	19/31	Muir KW	Brasil,2014	45 patients	no
14.	22/34	Mao Y	China,2014	84 patients	no
15.	25/31	Grange LK	USA,2014	853 patients	yes(additional detail not as extra paragraph)

Abbreviations: JIA: Juvenile Idiopathic Arthritis, AS: Ankylosing Spondylitis

In general, the items were reported in a highly variable manner (Range=0.54). At least 5 items were reported at a more than 90% percentage with those to be: a balanced and informative summary, the scientific background of the investigation, an early presentation of the key elements of the study design, the outcome events and a summary of key results with reference to study purposes. At least 4 items were reported in less than 40% of the studies and those are the following: indication of the study's design with a commonly used term in the title or the abstract, eligibility criteria, sources and methods of selection of participants, follow-up, for matched studies give matching criteria and the use of a flow-diagram.

Table.3 *STROBE* Score Descriptive statistics of the items

Mean	0.693824
Standard Error	0.033069
Median	0.69
Mode	0.87
Standard Deviation	0.192826

Sample Variance	0.037182
Range	0.69
Minimum	0.31
Maximum	1

The reported score between different articles according to the STROBE Statement criteria varied from 34% to 88% (11/32 to 30/34 items) with a mean value 68% and median value 73%. The articles reported the STROBE Statement criteria in a highly variable manner (SD=0.16). The results checked for normality with Kolmogorov-Smirnov ( $P=0.200>0.05$ ) and Shapiro-Wilk test ( $P=0.087>0.05$ ).

Table.2. *STROBE Score Descriptive statistics of the articles*

Mean	0.678667
Standard Error	0.04229
Median	0.73
Mode	0.74
Standard Deviation	0.163788
Sample Variance	0.026827
Range	0.54
Minimum	0.34
Maximum	0.88

### Reported score of each section

The introduction section complied in the most accurate way with STROBE Statement (mean value 93.5%). On the opposite, methods (statistical methods included) followed the writing standards at a much lower percentage 63%. The results and discussion parts estimated scores were also significantly lower with a range rising from 33% to 93% and 53% to 93% respectively.

### Sub analysis of STROBE Statement

Sub analysis was also performed between STROBE Statement scores and different journals. Sub analysis was also performed in Excel 2013 and SPSS Statistics 25.



Table.5 Sub analysis of STROBE Statement Scores for different journals

	Journals	Strobe Score reported(percent)
1	Indian Journal of Ophthalmology	18/34 53%
2	Clinical and Experimental Rheumatology	23/31 74%
3	BMC Ophthalmology(2)	22/31 23/31 73%
4	Arthritis Rheumatology(2)	24/33 30/34 76%
5	BMJ Open	21/33 64%
6	Med Archives	11/32 34%
7	Medicine(Baltimore) (2)	26/33 12/33 58%
8	American Journal of Ophthalmology (3)	24/31 30/34 25/31 86%
9	Arquivos Brasileiros de oftalmologia	19/31 61%
10	Acta Ophthalmologica	22/34 65%

Table.6. Sub-analysis of STROBE Scores for several parameters (funding reference, country of origin etc.)

		Reported STROBE score(percent)
Funding reference	9/15 60%	
Non funding reference	6/15 40%	

Prospective	7/15	64.5%
Retrospective	5/15	75%
cross-sectional study	3/15	
Country		
India	1	53%
China	2	36%/65%
USA	2	77%/81%
France	2	74% 88%
Korea	2	74% / 79%
Bosnia and Herzegovina	1	34%
Spain	2	71% /88%
Germany	1	73%
UK	1	88%
Brasil	1	61%
Japan	1	64%
multicentre	5/15 33%	
non-multicentre	10/15 66%	

As far as the sub analysis results are concerned in the table above, the highest score belongs to the American Journal of Ophthalmology which is one of the highest-ranked journals of ophthalmology in the world. Additionally, all the articles were published in ophthalmological (12) or rheumatological journals (2) demonstrating the strong association between uveitis and rheumatological systemic diseases and mainly juvenile idiopathic arthritis. The majority of the articles were published in ophthalmological journals and at least 3 of them (American Journal of Ophthalmology, Acta Ophthalmologica and BMC Ophthalmology) are published in the first 50 highest ranked journals. One of the two rheumatological journals described in the table ‘Clinical and Experimental Ophthalmology’ is also between the 15 highest ranking journals in rheumatology.(9)The mean reported score for highest ranked journals was 75% , while for lowest ranked journals was 58%.However,the t-test for independent

values showed that there was no statistically important difference ( $P=0.077>0.05$ ) between the mean values of the two types of journals (journals with high impact factor and journals with lowest impact factor). Therefore, both journal with high impact factor and journals with lowest impact factor reported STROBE Statement criteria in a similar way. All values were tested for normality with Kolmogorov-Smirnov and Shapiro-Wilk tests and a  $P$ -value=0.05% level of confidence was used.

Table.7 *STROBE Score Descriptive statistics of journals with high impact factor. One of the two Rheumatological journals is also included.*

		Statistic	Std. Error
VAR00002	Mean	.7633	.03180
95% Confidence Interval for Mean		Lower Bound	.6816
		Upper Bound	.8451
5% Trimmed Mean		.7631	
Median		.7550	
Variance		.006	
Std. Deviation		.07789	
Minimum		.65	
Maximum		.88	
Range		.23	

Table 8-9. Independent Samples T-test between journals with highest impact factor and journals with lowest impact factor.

Independent Samples Test						
		Levene's Test for Equality of Variances				
		F	Sig.	t	df	Sig. (2-tailed)
predictedscore	Equal variances assumed	3.678	.077	-1.751	13	.103
	Equal variances not assumed			-2.035	11.519	.066

t-test for Equality of Means			
Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		Lower	Upper
-.14111	.08058	-.31520	.03297
-.14111	.06936	-.29293	.01071

Only 1 of the journals (BMC Open) refer to the STROBE Statement in their instructions for authors. The two articles with the highest score come from France (non multicentre study) and UK, USA, Spain (multicentre study) and they were both written in 2016. More than 60% of the articles included a funding reference while the rest 40% of the articles have omitted the funding source. Furthermore, multicentre studies were half in number of the non-multicentre studies and out of the 15 studies, the prospective studies demonstrated a STROBE score of 64.5% while score of retrospective studies was 75% (cross-sectional studies were not included in any of the two categories).

## Discussion

From what we know this is the first time that STROBE Statement criteria are being used to evaluate observational studies concerning uveitis. In the past, there have been efforts of applying the STROBE Statement in various subjects. Some of them were in Ophthalmology sector for neovascular age-related macular degeneration studies Fung,2009 and in blindness prevalence surveys in low and middle income countries Ramke J , 2017.(9, 10)The first study of Fung in 2009 revealed similar reported scores to our survey with also the section of ‘Title and Abstract’ presenting the highest score(86%).In this study also the majority of the articles discussed the background of the investigation and stated an objective or an hypothesis as in our data.The second survey of Ramke J in 2017 reinforced our claims that journals with a highest impact factor had a highest STROBE score than that of journals with a lowest impact factor. Nevertheless, in our survey non Ophthalmological journals demonstrated also very high reported score.

There are several limitations concerning our study that should be mentioned. First, having selected and assessed a limited number of 15 studies during our literature search, the possibility of random error could have augmented. Moreover, we used exclusively one database, PUBMED, to extract our articles and that could have also affected the results.(8)

However, during the procedure, both the name of the authors and the name of the publication journal remained unknown to the reviewer in an effort to diminish the potential bias. All of the chosen studies were taken place from 2014 to 2019 at least seven years after the implementation of STROBE

Statement, therefore authors and editors were aware of those guidelines and there was no need of performing a sensitivity analysis. This fact probably explains also that even though there is a high variance in the quality of reporting between the observational studies, the mean value is adequately high.

The articles with the highest grading score were both written recently in 2016. This demonstrates a tendency of editors lately to comply with the STROBE Statement Standards. The results revealed that journals with a highest impact factor comply to the STROBE Statement criteria at a higher percentage than journals with lowest impact factor, however their difference was not statistically important. Therefore, even less renown journals complied with the guidelines adequately, showing that even smaller studies from independent researchers can offer high accuracy and validity of reporting and should be reinforced in the future.

It should be taken into account that STROBE Statement was not written in any case in order to show how to conduct and design an observational study. Its purpose is to provide the writer with guidelines in order to improve his/her reporting. (11) Therefore, we highly recommend ophthalmology journals to adopt the principles of STROBE statement and encourage their usage from researchers in order to provide scientists with high quality observational studies.

Validity and accuracy of study reporting remains one of the hardest hurdles even today. Both editors, reviewers, authors and readers should work in cooperative way in order to surpass possible obstacles and improve substantially study reporting. Consequently, they will collectively ameliorate the quality of knowledge offered to the scientific community.

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