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Improving The Reporting Of Observational Studies In Veterinary Research: Turkish Adaptation Of Strobe-Vet Criteria

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Abstract

This study, the Turkish version of the STROBE-VET was made to strengthen the reporting of observational studies in the veterinary field and making the usage of the STROBE-VET better understood by the researchers. Firstly, STROBE-VET expression translated into Turkish by 4 authors (TB, FG, ÖK, MAT) each from the other and afterwards four translated versions have been combined with consensus by expert translator. The final version of criteria was translated into English by another expert translator using reverse translation method and found to be quiet similar between translated of Turkish control list and the original control list. Secondly, in order to assess the Turkish control list whether it is understood correctly by the researchers, 20 studies in the field of veterinary sciences have been evaluated by two veterinarians (DÖ and MBC). The correspondence between the responses of the researchers was examined using Cohen's Kappa statistic ( ) and the percentage of compliance between researchers for each criterion. In addition, it was assessed using the Bland-Altman Method and the Intraclass Correlation Coefficient (ICC) using the total number of reported criteria. According to results, criteria has a great variation in the frequency of reporting in the studies. The Turkish version of STROBE-VET will be a guide for the referees and editors of journals as well as researchers studying in the field of veterinary science.

Keywords: STROBE-VET, Adaptation of STROBE-VET, Bland-Altman Method, ICC

INTRODUCTION

Observational studies are a methodological approach widely used in veterinary surveys to estimate the distribution of a disease, the factors affecting this distribution, to test hypotheses, to create new hypotheses and to investigate the effect of risk factors.

Although randomized studies are accepted as the gold standard for assessing the effects of medical interventions; randomize studies sometimes have limitations due to the nature of the method used or the way in which the experiments are run. Also; when financial, logistical or ethical reasons prevent a randomized study, observational studies are needed [1,2,3,4,5,6,7].

The methodological quality of a research is related with the quality of the report. So; the report of the researcher's work is depended to the extent to which it provides information about the design, execution and analysis of the researcher. It is also important for the design of the study, its execution, its comprehensive and transparent reporting of its results, the applicability of the study, its use as inputs to work on meta-analyzes and risk assessments, and the interpretation of the research.

Neglecting or unclear reporting of significant details is a common problem in research report. Some negligence limits the benefits of research or seriously limits research by creating a suspicion of the results of the study. These omissions result in your work being wasted[8,9,10].

There are studies on the reporting of observational studies in the field of veterinary medicine. The CONSORT statement, which was developed to report randomized controlled studies in medical practice, was modified to be used in the veterinary medicine field and REFLECT notification was created to report randomized controlled studies in animal husbandry and food safety. Although the original STROBE report and its accompanying document were directly applicable to report on observational studies in veterinary medicine, it was considered that the amendments made to address specific issues in veterinary medicine would increase the applicability in this area and STROBE-VET criteria were established. It is stated that the STROBE-Vet control list will be an excellent source of explanatory and detailed documentation for all observational studies on animal health, production, welfare or food safety. On May 11-13, 2014, a meeting of opinion was held in Mississauga, Ontario, Canada. Nineteen experts from North America, Europe and Australia attended the meeting. It consists of veterinarians, epidemiologists and biostatistics, and many of them are in editorial positions with relevant journals. Prior to the meeting, to address specific issues relating to observational work in health, production, prosperity or food and animal species; 19 experts have completed a questionnaire on whether or not the original STROBE statement had to be modified or replaced. At the meeting, questionnaire responses and relevant literature information on the reporting of participatory veterinary observational studies were provided. During the meeting, each STROBE item has been discussed to determine if it has been altered or modified and whether attachments are required. A vote was held to determine if there is a consensus on each amendment or addition [11,12,13,14].

Complete and accurate reporting of observational studies can provide readers with an opportunity to understand the bias that may be present in the results, as well as information on applicability and generalization of the results obtained. The aim of our study is to contribute to the complete reporting of the researchers' research activities, which have been accepted by the scientific circles and translated into Turkish into STROBE-VET criteria translated into many languages.

MATERIAL and METHODS

In the process of adaptation of the STROBE-VET control list to Turkish, the original STROBE-VET statement published in 2017 was translated into Turkish independently by 4 authors (TB, MAT, ÖK, FG). During the translation, the material published by the STROBE-VET group in 2018 and explaining the materials with examples was utilized. In order to ensure language equivalence, the STROBE-VET criteria for Turkish adaptation were checked by a professional interpreter at the same level as the Turkish and English languages and the necessary arrangements were made. The control list thus finalized is translated into Turkish by another professional interpreter who is at the same level of Turkish and English languages. The author compared the original STROBE-VET criteria with the STROBE-VET criteria translated into English and found a high degree of similarity between them. The Turkish adaptation of the STROBE-VET criteria used in the reporting of observational studies is shown in Table 1.

In the evaluations made, scores were given as 0 and 1 for each item. The 1 answer given to the article shows that the article provides the subject matter and the 0 answer does not. The total score for each article was obtained by the collection of these scores. At the same time, these total scores indicate the total number of items provided for each article. Bland Altman method was used to measure reproducibility between observers in terms of the total scores given to the articles. The Bland Altman method shows the distribution of the differences between the scores given by two observers on the provision of STROBE-VET criteria. Coherence between observers was measured by calculating the mean and standard deviation of the differences between the scores given by the observers. The reduction of the average of the differences and the decrease of the standard deviations indicate that the compatibility between the observers increases. Bland and Altman graphs were drawn from the above mentioned articles, with the difference between the scores given by two observers (Author DÖ-MBC) on the Y-axis and the scores given by the observers on each item on the X-axis, according to the Turkish STROBE control list. The Bland and Altman graph is a graphical statistical method comparing two measurement techniques. In this graphical method, the differences between the two techniques (or alternatively the ratios) are compared by plotting the deviations determined at 95% confidence limits according to the average of the two methods. The results of each evaluation were given a score of 51, and then the average and standard deviation of the general scores given to the articles by each observer were calculated. The in-class correlation coefficient (ICC) was used to obtain information about the ability of observers to distinguish whether the articles included in the study were well reported. The intraclass correlation coefficient varies from 0 to +1, and it is desirable that the coefficient is greater than 0.75. Two-way random effects model and two-way random effect models were used to calculate the intraclass correlation coefficient[15,16,17,18,19,20,21,22].

Table 1. STROBE-VET Criteria

	item	STROBE-Vet recommendation
Title and Abstract	1	(a) Indicate that the study was an observational study and, if applicable, use a common study design term
		(b) Indicate why the study was conducted, the design, the results, the limitations, and the relevance of the findings
Background / rationale	2	Explain the scientific background and rationale for the investigation being reported
Objectives	3	(a) State specific objectives, including any primary or secondary prespecified hypotheses or their absence
		(b) Ensure that the level of organizationa is clear for each objective and hypothesis
Study design	4	Present key elements of study design early in the paper
Setting	5	(a) Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
		(b) If applicable, include information at each level of organization
Participants b	6	(a) Describe the eligibility criteria for the owners/managers and for the animals, at each relevant level of organization
		(b) Describe the sources and methods of selection for the owners/managers and for the animals, at each relevant level of organization
		(c) Describe the method of follow-up
		(d) For matched studies, describe matching criteria and the number of matched individuals per subject (e.g., number of controls per case)
Variables	7	(a) Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. If applicable, give diagnostic criteria
		(b) Describe the level of organization at which each variable was measured
		(c) For hypothesis-driven studies, the putative causal-structure among variables should be described (a diagram is strongly encouraged)
Data sources / measurement	8*	(a) For each variable of interest, give sources of data and details of methods of assessment (measurement). If applicable, describe comparability of assessment methods among groups and over time
		(b) If a questionnaire was used to collect data, describe its development, validation, and administration
		(c) Describe whether or not individuals involved in data collection were blinded, when applicable
		(d) Describe any efforts to assess the accuracy of the data (including methods used for"data cleaning" in primary research, or methods used for validating secondary data)
Bias	9	Describe any efforts to address potential sources of bias due to confounding, selection, or information bias
Study size	10	(a) Describe how the study size was arrived at for each relevant level of organization
		(b) Describe how non-independence of measurements was incorporated into sample-size considerations, if applicable
		(c) If a formal sample-size calculation was used, describe the parameters, assumptions,and methods that were used, including a justification for the effect size selected
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen, and why
Statistical methods	12	(a) Describe all statistical methods for each objective, at a level of detail sufficient for a knowledgeable reader to replicate the methods. Include a description of the approaches to variable selection, control of confounding, and methods used to control for non- independence of observations
		(b) Describe the rationale for examining subgroups and interactions and the methods used
		(c) Explain how missing data were addressed
		(d) If applicable, describe the analytical approach to loss to follow-up, matching, complex sampling, and multiplicity of analyses
		(e) Describe any methods used to assess the robustness of the analyses (e.g., sensitivity analyses or quantitative bias assessment)

Participants	13*	(a) Report the numbers of owners/managers and animals at each stage of study and at each relevant level of organization - e.g., numbers eligible, included in the study, completing follow-up, and analyzed
		(b) Give reasons for non-participation at each stage and at each relevant level of organization
		(c) Consider use of a flow diagram and/or a diagram of the organizational structure
Descriptive data on exposures and potential confounders	14*	(a) Give characteristics of study participants (e.g., demographic, clinical, social) and information on exposures and potential confounders by group and level of organization, if applicable
		(b) Indicate number of participants with missing data for each variable of interest and at all relevant levels of organization
		(c) Summarize follow-up time (e.g., average and total amount), if appropriate to the study design
Outcome data	15*	(a) Report outcomes as appropriate for the study design and summarize at all relevant levels of organization
		(b) For proportions and rates, report the numerator and denominator
		(c) For continuous outcomes, report the number of observations and a measure of variability
Main results	16	(a) Give unadjusted estimates and, if applicable, adjusted estimates and their precision (e.g., 95% confidence interval). Make clear which confounders and interactions were adjusted. Report all relevant parameters that were part of the model
		(b) Report category boundaries when continuous variables were categorized
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	17	Report other analyses done, such as sensitivity/robustness analysis and analysis of subgroups
Key results	18	Summarize key results with reference to study objectives
Strengths and Limitations	19	Discuss strengths and limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalizability	21	Discuss the generalizability (external validity) of the study results
Funding Transparency	22	(a) Funding- 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
		(b) Conflicts of interest-Describe any conflicts of interest, or lack thereof, for each author
		(c) Describe the authors' roles- Provision of an authors' declaration of transparency is recommended
		(d) Ethical approval- Include information on ethical approval for use of animal and human subjects
		(e) Quality standards-Describe any quality standards used in the conduct of the research

FINDINGS

Table 2. Intra Class Correlation Coefficients

Article No	Intra Class Correlation	p
1	0,628	0,001**
2	0,436	0,024*
3	0,511	0,006**
4	0,816	0,001**
5	0,868	0,001**
6	0,576	0,001**
7	0,916	0,001**
8	0,687	0,001**
9	0,487	0,010*
10	0,567	0,002**
11	0,351	0,065
12	0,687	0,001**
13	0,83	0,001**
14	0,78	0,001**
15	0,786	0,001**
16	0,605	0,001**
17	0,783	0,001**
18	0,745	0,001**
19	0,811	0,001**
20	0,754	0,001**

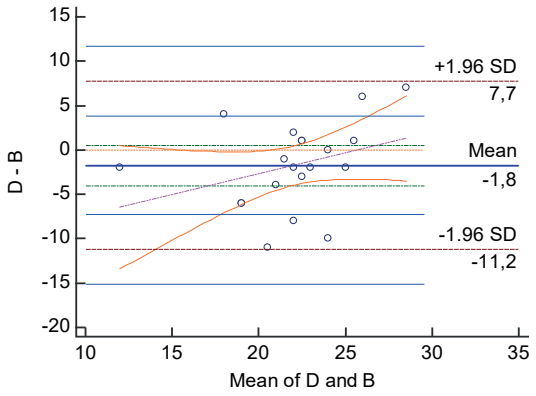

Figure 1. Bland Altman Graph

In terms of the total scores awarded to the articles, the confidence intervals calculated when considering the confidence intervals for the differences between the observers are zero. As a result of evaluating the confidence intervals regarding the differences, it was concluded that the evaluations were not wrong (Table 2, Figure 1).

DISCUSSION and SUGGESTIONS

Considering these results, it was observed that the reporting quality of published observational studies was below the standards and that the STROBE-VET checklist was not generally followed in the studies conducted. Unfortunately, the number of articles published did not bring scientific quality together. For this reason, researchers use the STROBE-VET checklist as a guideline in their publications, and reporting their results accurately is of great importance both in terms of human health and future work. The use of the STROBE-VET checklist in Turkish as a globally accepted guide for researchers in the field of diagnostic accuracy in healthcare will enable future studies to be developed using a common set of criteria consistent with methodological standards and thus achieve scientific quality at the desired.

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