

## \CHECKLIST for DISCUSSOR

### I. THE RESEARCH PROBLEM

#### 1. *Is there a statement of the problem and is it adequate?*

Is the problem clearly, accurately, and completely described?

Are the components of the problem described in enough detail to permit judgment on the appropriateness of the direction taken by the researcher?

Are purposes of the study clearly stated?

A good manuscript will give the discussor a clear and detailed description of the research problem that has been studied. The statement of the problem can be used as a "road map" for reading the remainder of the manuscript and as a basis for judging how well the study accomplished its purposes. If the statement of the problem is missing, severely abbreviated or vague, the remainder of the report should be more carefully scrutinized.

#### 2. *Is the review of the literature adequate?*

Has a thorough review of the literature relating to the problem been made?

Have the studies cited been evaluated in regard to their validity?

Have earlier studies been described in enough detail to show that existing evidence does not solve the problem?

Progress in science requires that each investigator build upon what is already known. The trustworthy manuscript will include a critical, thorough and impartial review of previously related studies to enable the reader to better judge the validity and importance of the study. On the other hand, an author who is trying to convince the reader of the value of some product or point of view is not likely to present a balanced review of related studies. It is usually fairly easy to spot such a report by the absence of any negative findings or contraindications among the references.

#### 3. *Are important terms defined?*

Are important terms and concepts adequately defined?

In the body of the report, are these terms and concepts actually used as defined?

If important terms and concepts are not carefully defined and appropriately used, it may be impossible to be sure what the author really studied. Vague and general terms need defining and the carefully written manuscript will include such definitions.

#### 4. *Are the hypotheses or objectives adequate?*

Are the hypotheses or objectives stated clearly enough to judge whether they can be tested or achieved?

If the hypotheses or objectives are not clear, can they be restated clearly enough to judge whether they can be tested or achieved?

Do the hypotheses or objectives follow directly from the statement of the problem?

Are the assumptions on which the hypotheses or objectives are based clearly stated and obviously warranted?

The hypotheses or objectives are the heart of any research project. If they are fuzzy, poorly stated, or do not follow from the statement of the problem, care should be taken to be certain what was really studied.

## II. EXPERIMENTAL OR DESCRIPTIVE METHOD

### 1. *What is the population and how is it sampled?*

What are the characteristics of the population in which the investigator was interested?

What are the characteristics of the objects or people included in the sample and how large is the sample?

Have any conditions biased selection or assignment of the objects or persons in the sample?

When reviewing research, the clinician should be particularly concerned with the characteristics of the population and sample used in the study.

### 2. *Research Design (for experimental studies only)*

Has the investigator clearly formulated and described his research design?

Has the possibility of hidden factors, other than the experimental variables that might influence the results of the investigation, been considered?

The research design should be meticulously planned and executed to permit firm conclusions. If the research design is not described clearly and in an understandable way, it is a fair bet that the researcher did not formulate the design completely or clearly enough to be valid.

### 3. *Measurement*

Do the tests and measurements used give reasonable measures of the factors under study?

Is evidence presented to show that the test and instruments used give valid and reliable measures of the factors under study?

Are the conditions in which the measurements were obtained fully and clearly described?

Are all factors or variables listed or implied in the hypotheses or objectives measured?

In all research, measurement is a great importance, but in clinical research, measurement is particularly important. It is often very difficult to develop a reliable and valid measure of many clinical conditions. But often clinical researchers depend on such descriptions as good, fair, poor and bad or clinically pathological and clinically normal or

similar category systems when more refined measurements are both necessary and possible. If the measures used are inadequate or if they fail to measure the factors listed in the hypotheses or objectives, caution must be taken in interpreting and using the results of the study.

### **III. RESULTS OF THE STUDY**

#### **1. Data analysis**

Are all factors that needed to test the hypotheses or achieve the objectives included in the analysis?

Where statistical tests of significance are used, are these tests described, or at least named?

Are the hypotheses, in fact, tested? Are the objectives of the study achieved?

Where the author claims significant differences, are the differences large enough to make any difference in clinical practice?

Depending on the training in statistical methods, the discussor may expect some difficulty in reviewing the data analysis of the study. However, two very important and informative actions can be taken regardless of the background in statistics: 1) Look at the hypotheses or objectives in relation to the data presented to be sure that the author has, in fact, tested the hypotheses or achieved the objectives listed. 2) If statistically significant differences are reported, look at the data to determine if the differences are large enough to be clinically important.

#### **2. Presentation of findings**

Are the data presented in a straightforward, clear manner suggesting that the author has done a careful job in analysis and presentation?

Are the purposes and contents of the summary statistical tables clear?

The presentation of findings section is a good index of the care taken by the author in his research. It is all too frequent that the presentation of findings is muddled and tables are unclear. If this section is not understandable, conclusions given at the end of the article should not be accepted without very close scrutiny.

### **IV. DISCUSSION AND CONCLUSIONS**

#### **1. Discussion**

Does the discussion follow directly from the results of the study?

Are generalizations of the results limited to the population and conditions of the study?

When findings and discussion are not closely related, the discussor should be aware of personal or professional biases.

## **2. Conclusions**

Are the conclusions warranted by the findings?

Are the conclusions relevant to the situation to which you might wish to apply them?

If the findings of a study are pertinent to a clinical situation, the conclusions should be very carefully scrutinized in terms of the population used, the research methods utilized, and the practical circumstances in which the study was done. Comparison should be made between the data reported in the results section and the conclusions to be sure that they agree.