

INTRODUCTION

State the problem that led to the study (Why?)

Clearly convey the focus of your project early in the narrative

Indicate the relationship of your project to a larger set of problems or issues and justify why your particular focus has been chosen

Establish the importance and significance of the problem

Demonstrate: a precise understanding of the problem or need that you are attempting to solve

that the problem is feasible to solve

the need for your methodology, readers should be able to anticipate your solution based on your analysis of the problem

Make the reader want to read further (sell your story)

Include a concise review of relevant literature

Extensive citing of the literature belongs in the Discussion

State your hypothesis and purpose

The hypothesis is the foundation of your project. Make sure it is solid. It must be important to the field, and you must have a means of testing it.

Provide a rationale for the hypothesis. Make sure it is based on current scientific literature.

A good hypothesis should increase understanding of normal biologic processes, diseases, or treatments or preventions.

OBJECTIVES

Specify the outcomes of the project (What?)

List your objectives in no more than one or two sentences each in approximate order of importance.

Do not bury the objectives in a morass of narrative.

Demonstrate that your objectives are important, significant and timely.

Don't confuse your objectives (ends) with your methods (means).

A good objective emphasizes what will be done and when it will be done.

Your objectives should be:

Specific – indicate precisely what you intend to change through your project

ImmEDIATE – indicate the time frame during which a current problem will be addressed

Measurable – indicate what you would accept as proof of project success

Practical – indicate how each objective is a real solution to a real problem

Logical – indicate how each objective systematically contributes to achieving your overall goal

Evaluable – indicate how much change has to occur for the project to be effective

METHODS

Describes your projects activities in detail, indicating how your objectives will be accomplished. (How?)

Detailed description of what will occur from the time the project begins until it ends – matching the previously stated objectives

Order and timing of study events including reasons for specific order if needed

Defend chosen methods, why the planned work will lead to the outcomes anticipated

Study design:

prospective, retrospective

inclusion/exclusion criteria

duration of study

study population, demographics

length of follow up (must be greater than 2 years for publication)

Statement of patient protection – informed consent, IRB approval

Statistical Methods:

sample size determination

description and rationale of data analysis techniques

level of acceptable significance

RESULTS

Provide a detailed report on the data obtained during the study. (What?)

Do not discuss results in this section, merely describe.

Follow statistical methods and guidelines given in methods

Accuracy counts

Problem words:

incidence/prevalence

validity/reliability

significant

Incidence- number of new cases of a disease in a population over a period of time

Prevalence – number of people in a population who have the disease at a given time

Validity – an instrument measures what it is intended to measure

Reliability – an instrument measures the same result repeatedly

Significant – only use as a measure of statistics, when results indicate “statistical significance”

Use table to present data more concisely, do not repeat information in the text

Label tables accurately

Presenting results in percentages:

provide the corresponding numbers

do not use $n < 20$

appropriate decimal places

Describe bilateral results as: number of patients and number of procedures

DISCUSSION

Describes the study results

Be succinct – describe important findings that demonstrate how objectives were achieved (or not achieved)

Is your hypothesis affirmed or refuted

Not a repeat of results

Importance of your article with regard to the published literature (do not redo lit review from intro)

Detail strengths and weaknesses

Limitations of study

Briefly summarize pertinent findings

Don't overstate conclusions – must be based on study findings

ABSTRACT

Carefully written cogent summary of your project

State the problem

State what was done

Report results

State conclusions

A clinical relevance section should be added for basic science projects

Write after manuscript is complete

Be concise

LITERATURE REVIEW

Read the entire article – not just the abstract

Keep a detailed file of included/excluded articles

JBJS is available full text on line at HUBNET

All residents can arrange free internet access from home to UB Health Science Library

Always update your lit review as you are collecting data, and again at the completion of the study.

A quick manual (actually reading) review of the most current journals may yield articles not yet in HUBNET

STATISTICAL ANALYSIS

Null Hypothesis – no difference

Alternative (testable) Hypothesis – research hypothesis

Type I error - False positive (you say there is a difference when there is not) usually set at 0.05

Type II error – False negative (you say the treatments do not differ when they do differ) –If no difference is found between treatment groups, you must decide if the sample was large enough to detect a difference if one existed. A power analysis will tell you the probability of detecting a given effect size – usually set at: power = 80% or a 20% probability of committing a Type II error.

Nearly all journals require a power analysis for publication – this must be done prior to data collection.