I. Preparation and Planning
   A. Choose a topic
      1. Your interest is prime motivator
      2. Timely, important and interesting to your target audience
   B. Conduct a literature search
      1. Do not duplicate what is already published
      2. Review published reports to determine whether or not data in those reports are valid, outdated, etc.
   C. Avoid compartmentalizing your research – making one project into many small papers; this can minimize the impact of your results.
   D. Form a research team (if needed) of compatible individuals and discuss authorship.
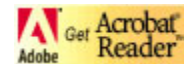
II. Methodology – adherence to traditional scientific methodology is essential
   A. State the problem or purpose of the study clearly and concisely
   B. Formulate your hypothesis – give a tentative explanation for the facts to be tested.
   C. Design your study
      1. Good planning is essential to strong design
      2. Originality
      3. Master terminology appropriate to your study design (e.g., incidence, prevalence, sensitivity, specificity)
      4. Choose your optimal study design
         a. Case-control study- uses two groups for study, those with and without disease.
         b. Cohort studies = follow-up, prospective or incidence studies
             i. Longitudinal studies – subjects are followed over time to observe natural course.
             ii. Randomized controlled trials – excellent for proving causation
         c. Historical prospective studies – use of past records to determine attribute or outcome.
         d. Cross-sectional studies – snapshot of a problem at a specific point in time; prevalence studies
      5. Plan to minimize bias
         a. Bias – "systematic error introduced into sampling or testing by selecting or encouraging one outcome or answer over others Webster's)."
         b. Research specific types of bias and epidemiologic methods for your particular study design and topic
         c. Selection bias – to avoid choose a random sample from a stable population and get adequate follow-up
         d. Response bias – respondents differ systematically from non-respondents.
         e. Information, or measurement, bias – systematic difference among the measurements recorded in different study groups.
         f. If bias occurs, try to measure its effects and adjust your statistics accordingly.
         g. Use randomization and blinding to minimize bias
      6. Design a short but comprehensive data collection form.
         a. Ask experienced researcher to critique your form
         b. Conduct a pilot test of your form.
         c. Test for reliability and validity.
      7. Determine eligibility for your study – group should be a homogeneous as possible.
         a. Define criteria for inclusion and exclusion – must be clearly objective.
      8. Always protect patient confidentiality.
      9. End points and outcome

        a. Choose the optimal unit of analysis before your start your data collection.

        b. Anticipate extraneous variables that could distort you data.

        c. Use your literature search to identify variables that could affectyour data.

        d. Distinguish between independent and dependent variables; record outcome with several variables

        e. Choose variables that can be quantified; measure variables as precisely as possible

10. Determine sample size needed to produce good statistical results or definitively answer your research question.

11. Prepare for your statistical analysis

        a. Consider how to measure each of your variables.

        b. Organize your variables into logical groups.

        c. Establish a valid control group (if needed).

        d. Determine a length of follow-up (if needed).

D. Collect the data

  1. Obtain and carefully record your findings.

  2. Periodically monitor progress of the study to assure that protocol is being followed and data are complete and accurate.

  3. Monitor for potential problems and needs for revision of elements of the study design.

  4. Build your database with statistical analysis in mind.

  5. Clean and freeze data in advance of analysis.

E. Analyze and interpret the data – keep an open mind and let the data reveal the truth.

  1. Univariate analysis – "characterized or depending upon only one random variable (Webster's)."

  2. Multivariate analysis – "having or involving a number of independent mathematical or statistical variables (Webster's)."

III. Writing the Paper – should read like a research report not a dissertation.

A. Choosing a title – short, concise, easy to understand and gives accurate idea as to methodology and content.

B. Abstract – the gateway to your paper, be sure it is well written.

  1. Demonstrate that your findings are important and study was carefully done.

  2. State your objectives clearly and concisely.

  3. Avoid having the same sentences in your abstract and in the body of the paper.

  4. Keep it short but do not exclude key information – briefly state your findings.

C. Introduction

  1. Go right to the essence of the problem or premise of the article in order to focus the reader's attention.

  2. Provide adequate background information; use the literature to enhance your introduction.

  3. Define terms used in the title, as needed.

  4. Describe the purpose of your paper clearly and concisely.

D. Methods

  1. Provide ample details and organize in a meaningful way.

  2. Describe all aspects of the study design and how the data were collected.

  3. Describe data collection in detail (who, what, when, where, how, why?)

  4. Define all your variables.

  5. Statistical analysis – make this easy to understand and define what is statistically significant.

      a. Provide reproducible details of the statistical methods used in the data analysis.

E. Results

  1. Present your results with confidence and provide your data in natural order.

  2. Begin with the major positive findings; give negative findings at the end of the results section.

  3. Present statistical information using statistical terms appropriately.

  4. Be sure that this section is comprehensive and convincing.

  5. Acknowledge any problems with data (e.g., small sample size, limited follow-up time, etc.)

  6. Present data for similar variables consistently.

  7. Use well-designed tables, graphs, flow charts, histograms, and figures; be sure to cite and summarize these in the text.

      a. Simple and self-explanatory and not a repetition of the written text.

      b. Use consistent formats; clearly define all terms.

          c. Provide units for each variable.
          d. Include clearly written legends for each figure.
      8. Present adverse outcomes perceptively.

F. Discussion
1. Begin with your most important point.
2. Confine the discussion to your results and comparison of your results with other data in the published literature.
3. Provide practical information and emphasize any new information that your results provide.
4. Keep the discussion focused; avoid lengthy rambling discussions.
5. Discuss the implications of your findings.
6. Consider other explanations for your results, if appropriate.
7. Discuss any limitations of your study.

G. Conclusions
1. Conclusions should be clear and strong.
2. Be sure that your conclusions are fully supported by the results presented.
3. Limit conclusions to boundaries of the study presented.
4. Describe any further research that should be considered, if applicable.

H. References
1. Use full-length articles from peer-reviewed journals; you may also use articles accepted for publication but not yet in print ("in press").
2. Make sure that all required information is complete and accurate.
3. Limit list to key citations; appropriate, recent or review references; do not use a long bibliography.
4. Appropriately cite references throughout the paper.
5. Refer to reference guidelines for targeted journal.

IV. Submitting the Paper for Publication
A. Selecting a journal – choose the journal most appropriate to the content and reader interest of your study or topic.
B. Read and follow the "Guidelines for Authors" of the target journal.
C. Be sure you understand issues of copyright; get permission to use copyrighted material, if necessary.
D. Organize all of your materials into a manuscript for submission.
1. Cover letter.
2. Title page.
3. Abstract and key words.
4. Text of paper (introduction, materials and methods, results, discussion, conclusions)
5. Acknowledgements
6. References
7. Tables and figures
8. Figure legends.
E. Proofread your manuscript several times
1. Edit, edit, edit; pay attention to detail; minimize jargon.
2. Check grammar, syntax and punctuation
3. Delete redundant or excess words and sentences; revise for clarity and brevity.
4. Remember to number your pages in sequence
5. Recheck all of your calculations.
6. Know when and how to use trade names.
F. Request an internal review of the paper from an experienced researcher prior to submission.
G. Work with reviewers and editors to correct any problems or deficiencies
H. Most common deficiencies encountered (in order of frequency):
1. Poor presentation
2. Weak discussion
3. Lack of originality
4. Poor methods
5. Inappropriate statistical analysis
6. Inadequate results
7. Weak conclusion

TOP

American Society of Cytopathology
100 West 10th Street • Suite 605 • Wilmington, Delaware 19801
Telephone: (302) 543-6583 | Fax: (302) 543-6597

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