How to Present Data in Tables and Figures in Health Research

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ABSTRACT

The effective presentation of data in health research is achieved through strategically designed tables and figures. These elements can capture readers' attention and convey complex information visually. Tables organize intricate data concisely, with descriptive titles and layouts that facilitate comparison. On the other hand, figures must clearly state their communicative purpose. Both should be numbered and arranged in the text. They exhibit specific characteristics in terms of dissemination; for instance, posters require appropriate spacing and fonts for readability. In conclusion, tables and figures are valuable tools for summarizing and presenting information in health research.

Key words: tables, figures, manuscript, posters, research report, data visualization

Cómo presentar los datos en tablas y figuras en la investigación en salud

RESUMEN

La presentación efectiva de datos en investigaciones de salud se logra a través de tablas y figuras estratégicamente diseñadas. Estos elementos tienen la capacidad de captar la atención de los lectores y transmitir información compleja de manera visual. Las tablas organizan datos complejos de manera concisa, con títulos descriptivos y disposiciones que facilitan la comparación. Por otro lado, las figuras deben ser claras para cumplir con su propósito comunicativo. Ambas se deben numerar y ordenar en el texto. Presentan particularidades en el modo de difusión, por ejemplo en los pósteres requieren espaciado y fuentes adecuadas para su legibilidad. En conclusión, las tablas y figuras son herramientas valiosas para resumir y presentar información en investigaciones de salud.

Palabras clave: tablas, figuras, manuscrito, pósteres, informe de investigación, visualización de datos.

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Every research study must strategically present its main findings to capture the attention of potential readers. In this regard, tables and figures play an essential role as they are used to provide a preview of the study results even before reading it.

The purpose of tables and figures is to communicate substantial and complex information that would be difficult to convey in text alone. That is because comparison and analysis become easier by compacting the results and placing them all in one place. The choice between using a table or a figure depends on the type of information to present and the communication objectives, although it is also feasible to use both tools.

Tables are more suitable for presenting extensive amounts of detailed numerical data, organizing them, or allowing direct comparisons between them. On the other hand, opting for a figure is advisable when representing trends, visualizing time series, simplifying complex data, or creating visual impact to capture the reader's attention.

Its creation requires a time investment to acquire proficiency in using the creation functions in word processing or spreadsheet programs. They are a wise choice when more than 5 or 6 pieces of information need to be displayed. Otherwise, the information could be presented more effectively in a well-written text excerpt.

A recommended practice for both tables and figures is to introduce them in the body of the text, accompanied by a brief explanation of their content. Subsequently, it is possible to integrate them with phrases like "Figure 1 shows" or "Table 2 demonstrates," aiming to summarize the essential information without repeating all the concepts they contain. Then, we detail the common aspects, such as the title and footnotes, followed by the specific observations required.

TITLE AND FOOTNOTES

When creating tables and figures, consider their main components. Firstly, the title should be descriptive enough to introduce the reader to the information in the table or figure. It is also appropriate to clarify certain elements such as sample size, scope of development, and study duration.

Finally, there are footnotes, which are necessary to explain essential details and abbreviations in the tables and figures, although the aim should be to keep them to a minimum. Even if an abbreviation has widespread use in practice, it is necessary to provide its explanation in the footnotes. To arrange them, we recommend a sequential adoption of the following symbols: *, †, ‡, §, ||, ¶. In case you need to place more footnotes, these will be duplicated. However, it is essential to consult the instructions in the author's guidelines, as each journal establishes its guidelines regarding symbol or letter use for references.

TABLES

Tables play a fundamental role in condensing and visually organizing complex data. They have titles for each row and column, which should explicitly communicate the content of the displayed information. To achieve this, it is advisable to summarize the characteristics of the group in a brief phrase, avoiding arbitrary naming such as "Group A," "Group B," and "Group C," which would require the reader to continuously refer back to the text to remember what each one represents. That is closely related to the presentation of the data, as "depending on the objective pursued," the groups will be arranged either laterally or vertically. Furthermore, note that it is a lot easier to compare two numbers next to each other than if they lie one below the other. Table 1 shows the elements common in all tables and how they are usually aligned.

Another aspect to consider relates to the content presented in the table: if it involves variation over time, temporal moments (baseline, week 1, week 2) will function as column headers. On the other hand, if you are comparing groups, column headers will represent the distinguishing characteristics. The design influences the tables; for example, in studies with a larger sample size, such as a cross-sectional or cohort study, summary information can be presented using statistical methods (Fig. 1). In a case series with a small sample size, it may be convenient to present each case separately (Fig. 2). In these cases, it is advisable to use whole numbers for greater clarity and ease of comprehension, both for expressing percentages and indicating measures of central tendency and dispersion. If the author chooses decimals, they should use a comma as a separator. Avoid combining whole numbers and decimals in the same table or figure and only use one option.

– Other recommendations to consider when designing tables:

– Avoid tables longer than one page in length.

– In the initial stages of the writing process, consciously select the key results to present in tables.

– Avoid duplication of information from tables in the text. Instead, highlight the salient conclusions of the tables.

FIGURES

Regarding figures, we emphasize the importance of clarity in their presentation, as a confusing figure is worse than its absence. It is essential to define their purpose before starting the design, as their creation or editing involves a significant time investment proBNP: brain natriuretic peptide compared to writing and textual review. From the outset, the author should pose questions regarding the aspects they intend to highlight, thus determining the type of image used. Types of figures include photographs, images, drawings, diagrams or

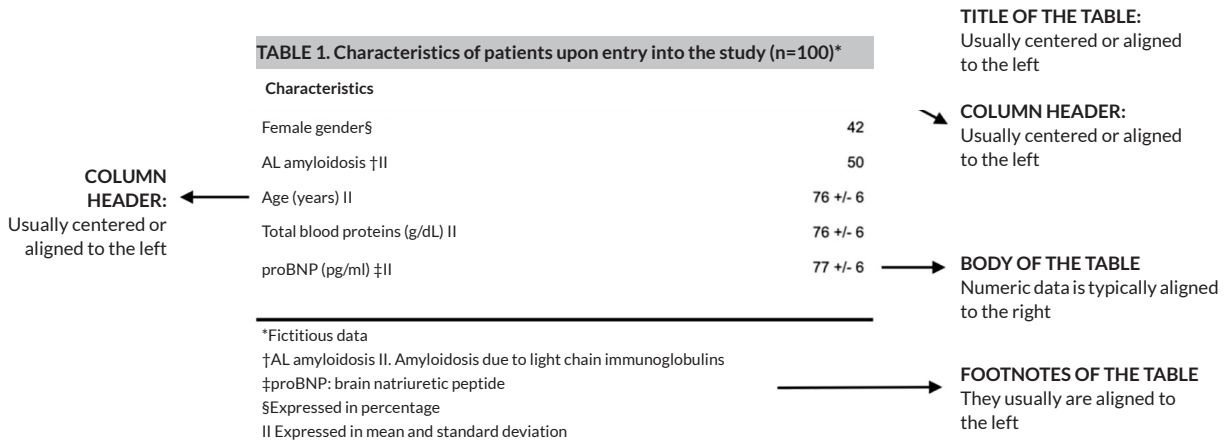

Figure 1. Example of a properly designed table for a large sample size, with its corresponding elements

TABLE 2. Characteristics of patients upon entry into the study

Gender†	AL amyloidosis‡	Age (years)	Total blood proteins (g/dL)	proBNP (pg/ml)§
F	1	74	6.95	768.4
F	0	69	7.3	22920
M	0	81	7.4	19235
F	1	79	7.1	392.6
M	1	77	7.5	16826
M	1	82	6.5	348.3
M	0	67	9.45	8122
F	1	82	6	312.3
M	1	79	5.1	2297
F	0	68	8	29285

*** Fictitious data**
†Gender: F: Female, M: Male
‡AL amyloidosis. Amyloidosis due to light chain immunoglobulin. 1: Presence of the disease. 2: Absence of the disease
§ proBNP: brain natriuretic peptide

Figure 2. Example of a properly designed table for a small sample size.

vignettes, and presentations of numerical data (pie charts, scatter plots, bar graphs, and line graphs), each with a characteristic purpose. For example, images could more effectively impact by demonstrating specific aspects, such as visualizing the degree of pneumothorax in an X-ray. The constituent components of figures comprise the image, numerical values, title, and caption (Fig. 3). Every figure has to be identified using Arabic numerals (Figure 1, Figure 2, etc.) and should be presented in the order they appear in the text. We recommend that titles be concise, clear, and explanatory. Likewise, captions should contain an objective description of the figure's content without disclosing the results.

An essential concept revolves around the idea that if a reader needs to spend more than five minutes interpreting the figure, it has not fulfilled its communicative purpose. Therefore, one must have a deep understanding of everything related to figures. Some additional recommendations to consider when designing figures:

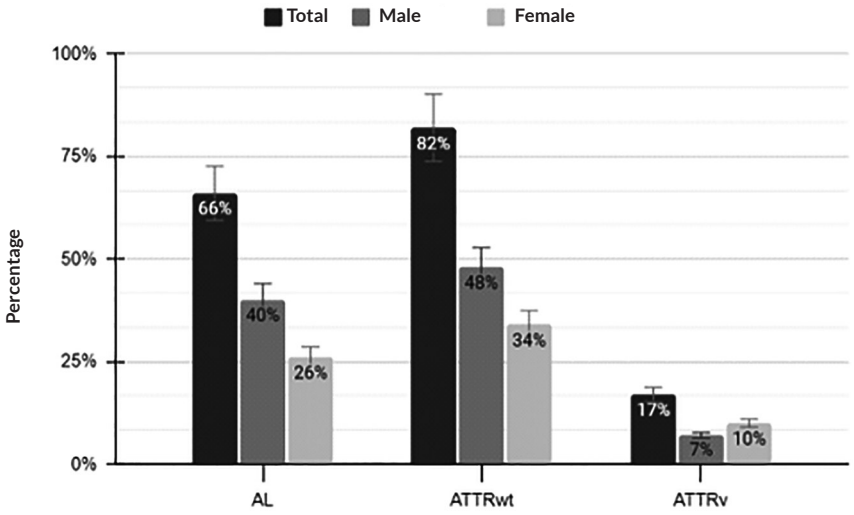

FIGURE 1. Prevalence of amyloidosis by gender in the XX period at a university hospital in Argentina.

* Fictitious data

†AL Amyloidosis due to light chain immunoglobulin

‡ATTRwt: Wild-type transthyretin amyloidosis (senile)

§ATTRv: Amyloidosis due to hereditary transthyretin mutations

Figure 3. Example of a properly designed figure.

– Ensure that the content of the illustrations is correct and legible.

– Carefully design the layout of its elements to emphasize the study's credibility.

– Avoid chaotic illustrations and refrain from using them for contexts where communication is more efficient using words.

POSTERS

It is worth considering certain aspects when presenting tables and figures on a poster. Firstly, since the audience should be able to read it from a distance of one meter, the font size should be a minimum of 20 points. Additionally, rows and columns should have correct spacing to ensure the information is readable. On the other hand, a reasonable number of figures and tables to incorporate is between 4 and 10. They should always be accompanied by a caption of 100 words or less, explaining the data and information they contain.

USEFUL TIPS

Before you start editing tables and figures, we suggest you plan the organization of the information hierarchy, considering the research question and following reporting guidelines (available at https://www.equator-network.org/). In addition, consider the number of tables or figures allowed depending on the indications of the conferences or the journal author's guidelines. In the latter case, it is also crucial to consider design aspects, such as the presence of internal vertical or horizontal lines in tables and the image quality in figures (high resolution with no less than 300 dpi) and background color.

Finally, when uploading the files to each journal's website, it is necessary to adapt them to the required format (Word, PDF, etc), and to ensure that they comply with the permitted size (in megabytes). Creating blank tables or figures without the information of the results serves to visualize how the data would look summarized with the context of the results. Creating good tables and figures is time-consuming; you can see how similar articles presented the information. During their creation, it is advisable to review clarity, consistency, or length, and seek help from someone on the team with design and editing skills to make them more visually appealing. Then revise, revise, revise. For more information, we recommend to read Annesley TM.

CONCLUSION

Tables and figures serve to present the information contained in a research work in a concise, efficient, and attractive manner. It is essential to select both the

information to highlight and how to display it carefully, considering the pre-established objectives.

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