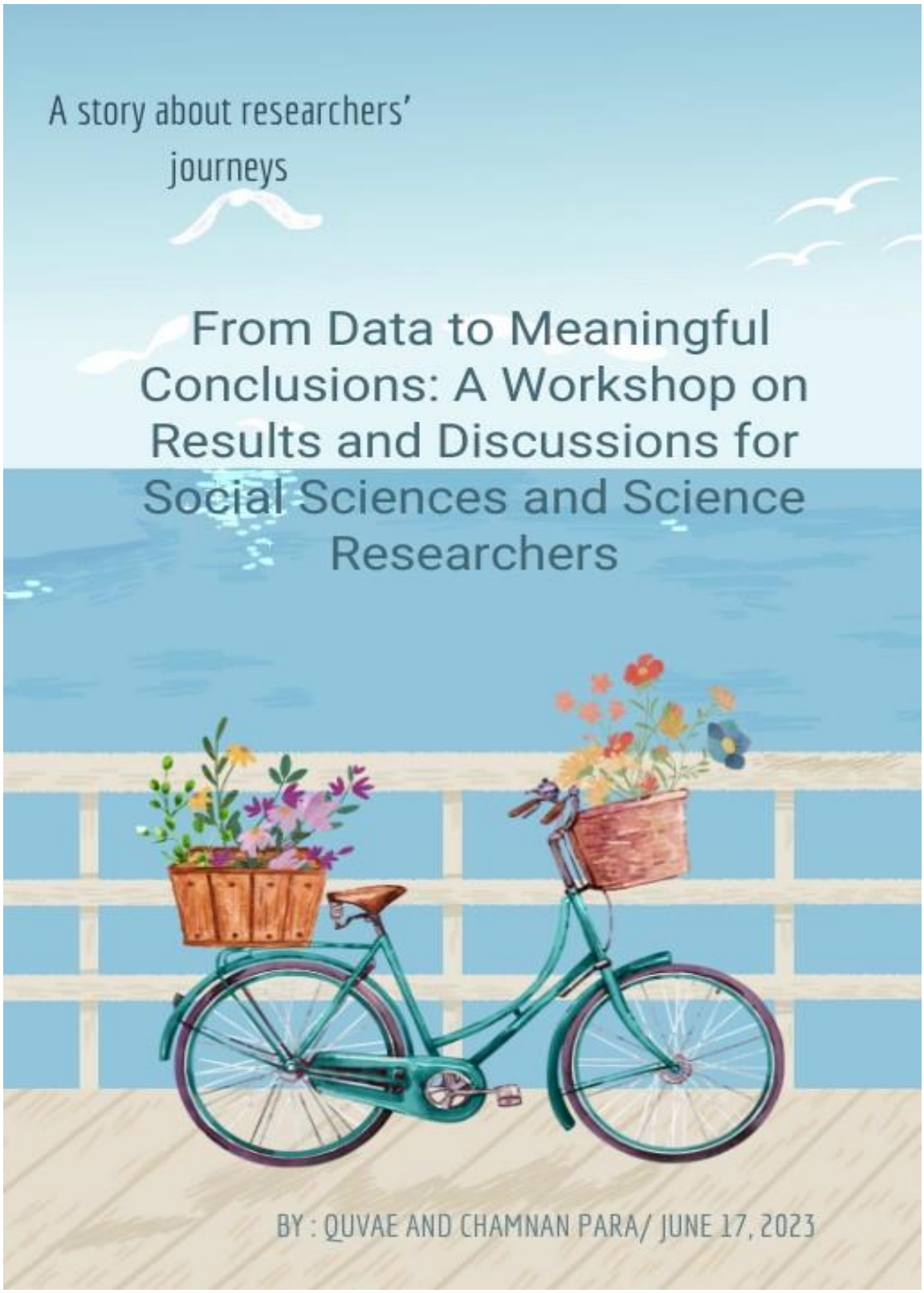

A story about researchers' journeys
From Data to Meaningful Conclusions: A Workshop on Results and Discussions for Social Sciences and Science Researchers
BY : QUVAE AND CHAMNAN PARA/ JUNE 17, 2023

Topic: Results
1. Overview of the study
- Briefly recap the research question and objectives.
2. Results presentation
- Present findings using tables, graphs, or visual aids.
- Summarize the data, highlighting key observations and statistical analyses.
Topic: Discussion
1. Interpretation of main findings
- Analyze and interpret the implications of the results.
- Identify significant patterns, trends, or relationships.
2. Comparison with existing literature
- Compare results with previous studies or established theories.
- Discuss similarities, differences, and potential reasons behind them.
3. Limitations and alternative explanations
- Acknowledge the limitations or constraints of the study.
- Discuss alternative explanations or confounding factors.
4. Significance and implications
- Summarize the significance of the findings and their impact on the field.
- Discuss how results contribute to existing knowledge or have practical applications.
- Highlight recommendations or future research directions.

Research articles typically follow a specific structure and format to present the results of a study in a clear and organized manner. While the exact structure can vary depending on the field or journal, here is a general outline of what research articles often look like

Title: The title provides a concise and descriptive summary of the research study.

Abstract: The abstract is a brief summary of the study, highlighting the research question, methodology, key findings, and conclusions. It serves as a snapshot of the entire article, allowing readers to grasp the main points quickly.

Introduction: The introduction section provides background information on the research topic, establishes the research problem or gap, and presents the research objectives and hypotheses. It may also include a literature review to situate the study within the existing body of knowledge.

Methods: The methods section describes the study design, sample or participants, data collection methods, and any statistical or analytical techniques used. This section should be detailed enough for other researchers to replicate the study if desired.

Results: The results section presents the findings of the study in a logical and structured manner. It often includes tables, graphs, or figures to display data and statistical analyses. The results should be presented objectively, focusing on the critical outcomes without interpretation or discussion.

Discussion: In the discussion section, the results are interpreted, analysed, and compared with previous research. The authors explain the significance of the findings, discuss any limitations of

the study, and explore possible implications and future directions. This section often includes references to support the arguments and provide additional context.

Conclusion: The conclusion section summarizes the main findings of the study and restates the research objectives. It should be concise and tie back to the research question. It may also offer suggestions for further research or practical applications.

References: A list of cited references is included at the end of the article, following a specific citation style (e.g., APA, MLA, Harvard). The references provide the sources used in the article and enable readers to explore the cited works further.

It's important to note that the structure and organization of research articles may vary depending on the specific field or journal requirements. However, this general outline represents a common format used to present research findings in a systematic and cohesive manner.

Results

The results section of a research article focuses on presenting the findings of the study in a clear and objective manner. This section typically includes a combination of textual descriptions, tables, figures, and statistical analyses to convey the results effectively. Here's a breakdown of what you might find in the results section:

Organization: The results section is usually organised based on the research objectives or research questions. Each objective/question may have its own subsection, facilitating the logical flow of information.

Description of data: Start by providing a brief description of the data collected or analyzed for the study. Specify the sample size, demographic information about participants, data collection methods, and any relevant details about the dataset.

Textual summaries: Use concise and clear language to summarize the main findings. Present the results in a logical order, following the structure of your objectives or research questions. Use paragraphs to describe and discuss key findings, highlighting the most important or significant results.

Tables and figures: Utilize tables, graphs, charts, or other visual representations to present data in a structured and easily understandable format. Each table or figure should be numbered, titled, and properly labelled. Refer to the tables and figures in the text and provide a brief interpretation or explanation of the information they convey.

Statistical analyses: If applicable, include the statistical analyses conducted on the data. This may involve descriptive

statistics, inferential statistics, correlations, regression analyses, or any other appropriate statistical methods. Present the results of these analyses in a clear and concise manner, using appropriate statistical measures (e.g., p-values, confidence intervals) to indicate the significance or precision of the findings.

Supplementary materials: In some cases, the results section may refer to supplementary materials, such as additional tables, figures, or datasets. These materials can provide more detailed or extensive information that may not be included in the main text due to space constraints.

Remember, the results section should focus solely on presenting the findings without interpretation or discussion. Save the interpretation and implications of the results for the subsequent discussion section of the research article.

It's important to adhere to the specific guidelines and requirements of the target journal when structuring and presenting the results section. Additionally, ensure that your results are accurate, reliable, and supported by appropriate data analysis techniques.

Discussion

The discussion section of a research article allows authors to interpret and analyse the results presented in the previous section, discuss their implications, compare them with previous studies, and provide a broader context for the findings. Here's an overview of what the discussion section typically includes:

Interpretation of results: Start by summarising the main findings from the results section. Provide a concise overview of the key results and their significance. Interpret the findings in light of the research objectives or questions, explaining what they mean and how they relate to the existing literature or theoretical framework.

Comparison with previous studies: Discuss how your findings align with or diverge from previous research in the field. Point out similarities and differences, and provide explanations for any inconsistencies. Consider referencing relevant studies and theories to support your arguments. Identify gaps in the literature that your study fills or areas that require further investigation.

Explanation of unexpected or contradictory results: Address any unexpected or contradictory results that emerged during your study. Offer plausible explanations for these findings based on the limitations of your research design, sample characteristics, or other factors. This demonstrates your critical thinking and helps readers understand the complexity of the topic.

Limitations: Acknowledge the limitations of your study. Discuss any potential biases, constraints, or weaknesses that may have influenced the results. Be transparent about the limitations and

their potential impact on the validity and generalizability of your findings. This demonstrates your awareness of the study's boundaries and can guide future research directions.

Implications and applications: Discuss the broader implications of your findings and how they contribute to the field. Address the practical or theoretical implications of your results, and explain how they can be applied or used to advance knowledge, inform policy, or guide future interventions or research endeavours.

Strengths and weaknesses: Reflect on the strengths and weaknesses of your study. Highlight the aspects that contribute to the reliability, validity, or novelty of your research. Discuss the methodology, data collection, or analytical techniques that strengthened your study. Conversely, address any limitations or potential sources of bias that may have affected the results.

Future directions: Offer suggestions for future research based on the findings of your study. Identify areas that require further investigation, propose potential research questions, or suggest alternative methodologies to explore the topic in more depth. This helps shape the research agenda in the field and demonstrates your contribution to knowledge development.

The discussion section should be balanced, objective, and supported by evidence from your study and relevant literature. Avoid making unfounded claims or overgeneralizing the results. Keep the focus on the research objectives and ensure that your discussion aligns with the overall purpose of the study.

Remember to consult the specific guidelines and requirements of the target journal to ensure your discussion section meets its expectations and formatting guidelines.

Similarities between Results and Discussion:

Integration: Both sections are interconnected and build upon each other. The results presented in the Results section serve as the basis for the discussion and interpretation in the Discussion section.

Objectivity: Both sections aim to present the findings objectively, without personal opinions or biases. The Results section focuses on reporting the data, while the Discussion section objectively analyses and interprets the results.

Reference to data: Both sections refer to specific data, whether it's textual descriptions, tables, figures, or statistical analyses. The Discussion section may reference the data presented in the Results section to support the arguments and interpretations.

Differences between Results and Discussion:

Presentation vs. interpretation: The Results section primarily focuses on presenting the data and findings in a clear and structured manner. It describes the results without interpretation or discussion. On the other hand, the Discussion section provides an opportunity to interpret and analyze the results, explore their implications, and discuss their significance in a broader context.

Order: The Results section typically follows a logical order, often mirroring the research objectives or questions. It presents the results in a systematic and organized manner. In contrast, the discussion section may not necessarily follow the same order as the results section. It allows for flexibility in presenting and discussing the findings based on their significance and relevance.

Emphasis: The Results section focuses on the objective presentation of data and results, while the Discussion section emphasizes the interpretation, analysis, and synthesis of the findings. The Discussion section also provides an opportunity to address limitations, suggest future directions, and discuss the broader implications of the study.

Regarding presenting all data in a table format, it's important to consider the limitations and feasibility. While tables are a common way to present data, it might not always be practical or necessary to include all the data in tables within the article itself. Here are a few factors to consider:

Relevance: Include data in tables that are most relevant and essential for understanding and supporting your findings. Including excessive or unnecessary data can make the article overwhelming or difficult to navigate.

Space limitations: Journals often have specific limitations on the length and number of tables allowed. If you have a large amount of data, you might need to prioritize and select the most important or representative data for inclusion in tables.

Supplementary materials: Consider utilizing supplementary materials or appendices to provide additional tables or datasets that support your findings. These materials can be referenced in the article and made available online or as supplemental files.

Data complexity: If the data is complex and requires extensive explanation or interpretation, it might be more appropriate to describe it in the text rather than presenting it solely in tables. Use tables to summarize key data points or patterns and provide detailed explanations in the text.

Overall, the decision to present data in a table format should be based on its relevance, importance, and the guidelines of the target journal. Ensure that the tables are clear, well-organized, and effectively communicate the key findings.

Similarities between Results and Discussion
1. Integration: Both sections are interconnected and build upon each other. The results presented in the Results section serve as the basis for the discussion and interpretation in the Discussion section.
2. Objectivity: Both sections aim to present the findings objectively without personal opinions or biases. The Results section focuses on reporting the data, while the Discussion section objectively analyzes and interprets the results.
3. Reference to data: Both sections refer to specific data, whether it's textual descriptions, tables, figures, or statistical analyses. The Discussion section may reference the data presented in the Results section to support the arguments and interpretations.

Differences between Results and Discussion
Presentation vs. interpretation: The Results section primarily focuses on presenting the data and findings in a clear and structured manner. It describes the results **without interpretation or discussion**. On the other hand, the Discussion section provides an opportunity to interpret and analyze the results, explore their implications, and discuss their significance in the broader context.

Differences between Results and Discussion
Order: The Results section typically follows a logical order, often mirroring the research objectives or questions. It presents the results in a systematic and organized manner. In contrast, the Discussion section may not necessarily follow the same order as the Results section. It allows for flexibility in presenting and discussing the findings based on their significance and relevance.
Emphasis: **The Results section focuses on the objective presentation of data and results,** while the **Discussion section emphasizes the interpretation, analysis, and synthesis of the findings**. The Discussion section also provides an opportunity to address limitations, suggest future directions, and discuss the broader implications of the study.

"Results and Discussion" or "Results with Discussion" format.

In this combined format, the presentation and interpretation of results are interwoven within the same section. The authors present the findings and immediately discuss their implications, interpretations, and connections to previous research. This format aims to provide a more seamless integration of the results and their discussion, allowing for a more coherent and focused narrative.

If a journal specifically requests or allows the merging of Results and Discussion sections, it is important to follow their guidelines and formatting requirements. In such cases, you would need to structure the combined section in a way that clearly presents the results and provides a comprehensive analysis and interpretation

within the same section. This may involve integrating the description of results, statistical analyses, and interpretations into a cohesive narrative that flows logically.

It's important to note that the merging of Results and Discussion sections is not common across all journals or disciplines. Therefore, it is essential to carefully review the guidelines and instructions of the specific journal you are submitting your research to, and adhere to their requirements for the structure and formatting of the manuscript.

Source: https://www.scirp.org/journal/paperinformation.aspx?paperid=125419

3. Results and Discussion

3.1. Setting Goal for Marks and Grades by Learners in the Study Area

Figure 1 displays the overall distribution of the responses of the participants (n = 633) indicated that while very few learners (4% male and 2% female) reported that they do not like the idea; the majority (48% male and female 46%) preferred to always set target for themselves on the marks and grades they wanted to score in their tasks. It can thus be argued that the preference of most of the participants for setting marks and grades achievement goal is an indication of effective study habit among the learners. It has been reported that setting an effective and rigorous goal leads to higher achievement levels for academics (Garavalia & Gredler, 2002). Rigorous and specific goals lead to a great effort towards a task, in contrast to simple and vague goals (Locke & Latham, 2006). The primary academic purpose of grades is to measure student achievement of learning in a

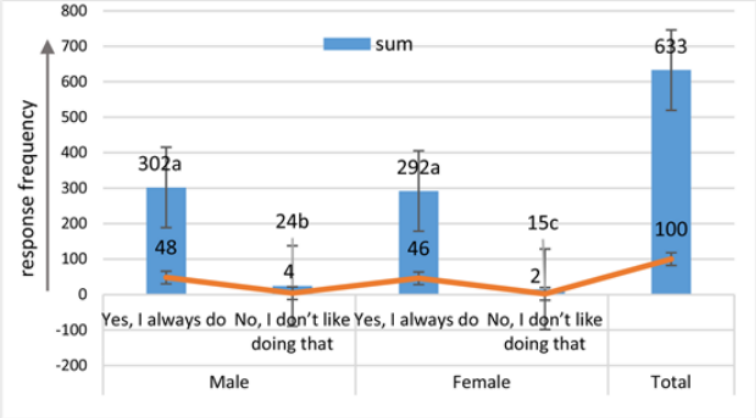


Figure 1. Overall distribution of the participants by gender in setting goal for marks and grades (n = 633), Bars (paired means) with different alphabets are statistically significant ($p < 0.05$).

3.2. Approach to Self-Study by Learners in the Study Area

Figure 2 presents the overall distribution of respondents' (n = 636) approach to self-study by gender. Whereas, most learners (33% male and 29% female) indicated that they study everyday following their personal reading timetables, a much lesser number of learners (9% male and 8% female) indicated that they study everyday but without personal reading timetables; and similar number (9% male and 8% female) stated that they only study when they have a task to do. Interestingly, the numbers of learners (2% male and 2% female) who indicated that their friends always interrupt their personal reading times were the lowest. The t-test analysis of the paired sample mean between responses by gender only showed significant difference ($p < 0.05$) with respect to the statement: I study everyday following my personal study time table. A learner's approach to self-study essentially defines his or her ability to organize and plan learning strategies, and hence, the study habits developed. Good learning strategies involve clarity of purpose and the use of goal-directed actions in the individual's own learning (Deniz, 2013). These strategies are crucial for academic success, especially in today's word characterized by peer pressure and over-involvement in social media among school learners.

3.5. Learner's Attitude during Personal Reading Time in the Study Area

Figure 5 below displays the results of the overall learners' (n = 654) attitude during personal reading time. The results revealed that the attitude of taking short rest and coming back to read the subject again highly prevailed in both groups (27% male and 23% female learners). This was followed by the attitude of immediately changing to another subject (20% male and 21% female learners) when the learner is bored with the subject being read but the attitude of continuing to read the subject is less considered by both male (3%) and female (3%) learners while stopping the reading that day was least (2% male and 1% female). The t-test analysis of the paired sample mean between the male and female learners' attitude during personal reading time was not statistically significant ($p > 0.05$), except in taking short rest. These findings are not surprising as it was earlier reported in the present study that majority of the participants prefer empty classroom space for personal daily study. In such environment, the tendency for a learner to be distracted by external factors such as noise is very likely, and this can affect concentration as well as mood swings during study. During personal study, abrupt change of subject being read, frequently taking rest within the study duration, and just stopping the reading before the set time may be associated with mood swings and lack of concentration. By contrast, the attitude of continuing to read the subject despite any possible sources of distraction (which unfortunately, was indicated by less number of the participants) is a good sign of full concentration and deep engagement with the study. When studying,

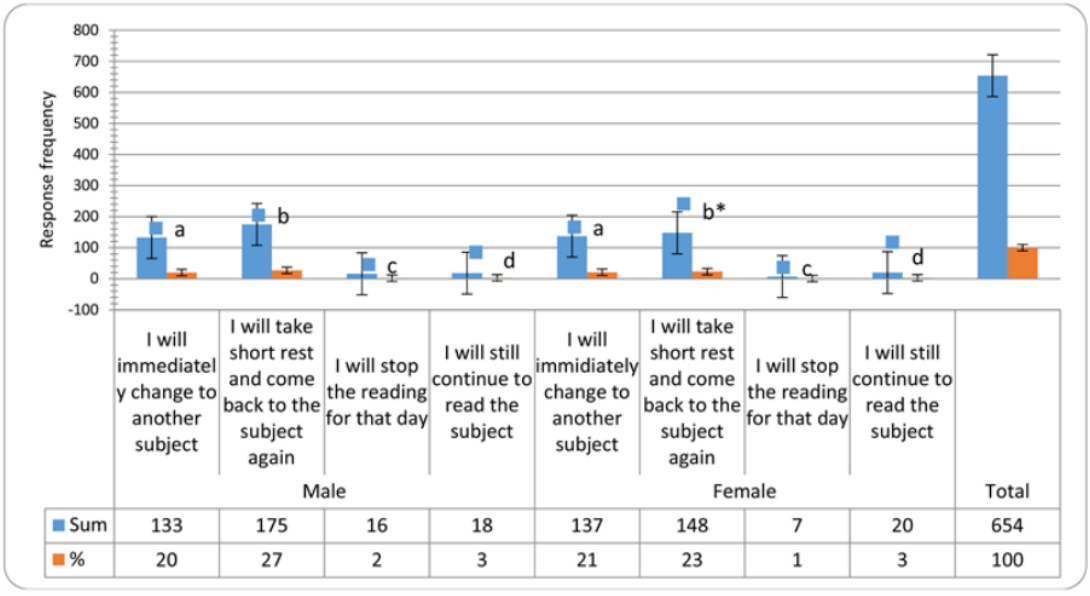
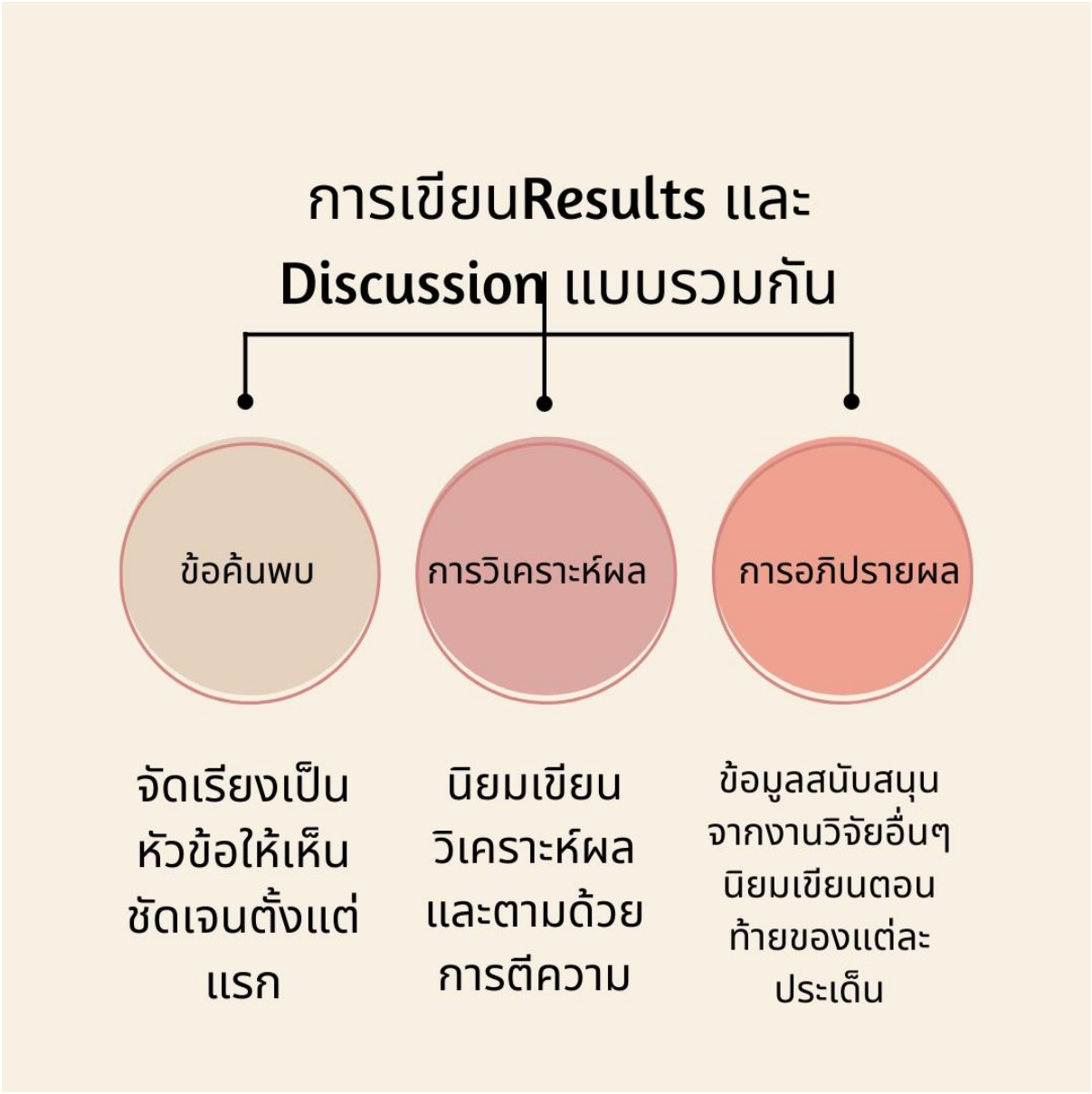


Figure 5. Learners' overall attitudes during personal reading time (n = 654) Bars (paired means) with different alphabets are statistically significant ($p < 0.05$).

positive mood is needed to facilitate complex cognitive functions requiring flexibility, integration, as well as utilization of cognitive material such as memory, categorization, creative problem solving, decision-making, and learning (Febrilia & Warokka, 2011).


การเขียนResults และ
Discussion แบบรวมกัน
ข้อค้นพบ
การวิเคราะห์ผล
การอภิปรายผล
จัดเรียงเป็นหัวข้อให้เห็นชัดเจนตั้งแต่แรก
นิยมเขียนวิเคราะห์ผลและตามด้วยการตีความ
ข้อมูลสนับสนุนจากงานวิจัยอื่นๆ นิยมเขียนตอนท้ายของแต่ละประเด็น

Tenses

The use of tenses in the Results and Discussion sections of a research article can vary depending on the specific context and the nature of the information being conveyed. Here's an explanation of the commonly used tenses in these sections:

Results section:

Simple past tense: The Results section typically describes the actions or observations conducted in the past. This includes the description of data collection procedures, experimental methods, and the presentation of the findings. For example: "The data were collected from a sample of 100 participants."

Present tense for general facts and findings: Present tense is often used when stating general facts, principles, or commonly accepted knowledge that holds true regardless of time. For example: "The study shows that X is positively correlated with Y."

Present perfect tense for the relevance of past actions to the present: Present perfect tense is used to highlight the relevance or impact of past actions or findings on the current research. For example: "Previous studies have shown similar results, supporting our findings."

Discussion section:

Present tense for general statements: The Discussion section often uses the present tense to state general statements, such as summarizing the main findings or describing well-established theories or concepts. For example: "Our findings confirm the importance of X in relation to Y."

Present tense for current interpretations and conclusions: Present tense is used to discuss and interpret the results, highlighting their current implications and relevance. This includes analyzing patterns, making connections, and drawing conclusions based on the findings. For example: "The results suggest that X may be a contributing factor in the development of Y."

Past tense for specific references to results: When referring to specific results or findings from the Results section, the past tense may be used. This helps maintain consistency with the reporting of the actual data and findings. For example: "As mentioned earlier, the data showed a significant relationship between X and Y."

Results are separately written from Discussion.

ideas, systems, services, and processes (Cropley, 2016).

The sustainable competitive advantage indicators refer to the conditions of the research place and are adopted from Awaad, Al khattab & Anchor (2013); Li & Liu (2014); Stefanikova & Masarova (2014); Gautam & Ghimiee (2016); and Li & Liu (2018). The indicators of commitment and

4. RESULTS

4.1. Descriptive Analysis

The business actors who became respondents in this study included 384 people with a male composition of 46%, and a predominance of ages between 36 to

45 years. The education level of the majority was at middle school level (56%). Most of the businesses owned were small businesses (84%) with a business age of 6 to 10 years (43%). The results of the descriptive statistics analysis are shown in Table 1.

4.2 Outer Model Test Results

0.728; 0.766; 0.756; and 0.732, while the Process dimension revealed values of 0.770; 0.812; 0.798; 0.721; and 0.812. Results for Press included 0.762; 0.814; 0.777; 0.723; and 0.728, and the Product dimension had values of 0.767; 0.734; 0.812; 0.801; and 0.782. The advantages of sustainable competitiveness indicated by dimensions SCA1, SCA2, SCA3, SCA4 and SCA5, generated convergent validity results of

Source:

http://www.assumptionjournal.au.edu/index.php/abacjournal/article/view/6613/3719

5. DISCUSSION

Explicit knowledge sharing has a significant effect on creativity, in line with the findings form several experts in relevant studies (Wang & Wang, 2008; Wang & Noe, 2010; Panahi, Watson, & Partridge, 2013; Scheibe & Gupta,2017; Zhang et., al., 2020; De Clercq & Pereira, 2020). Explicit knowledge sharing will stimulate organizations to think critically and creatively (Lindsey, 2006; Haeli, 2020). Additionally, this study finds that tacit knowledge sharing has a positive and significant direct effect on creativity indicating that business actors should improve this aspect of their businesses, and supporting a number of relevant prior studies (BaldÃ, Ferreira, & Maynard, 2018; Zhang et., al.,2020; De Clercq & Pereira, 2020). Smith (2001) states that tacit knowledge is the most valuable organizational knowledge as it is internal, studies (McFadyen & Canella, 2004; Chuang, 2004; Nguyen & Neck, 2008; Zaied, 2012). Additionally, tacit knowledge sharing has a direct effect on sustainable competitive advantage studies (relevant studies with Ambrosini & Bowman, 2001; Wang & Wang, 2008; Rahimli, 2012). The effectiveness of tacit and explicit knowledge sharing as part of knowledge management can be used as a strategy to increase organizational competitiveness (Duan, Yang, Huang, Chin, Fiano, Nuccio & Zhou, 2022).

Furthermore the results of other studies stated that creativity has a positive and significant effect on sustainable competitive advantage, which is in line with the findings of Johanessen & Olsen (2009); Ren, Xie, & Krabbendam (2009); Nuryanti & Nurjaman (2017); and Azzahra, Suyanto & Darmayanti (2021). This study shows that the higher the level of creativity in the business, the higher the level of competitiveness of the company.

Source:

http://www.assumptionjournal.au.edu/index.php/abacjournal/article/view/6613/3719

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Author Guidelines

Authors' Guide

For Paper Submission and Manuscript Preparation

General Instructions

The ABAC JOURNAL accepts research papers, academic articles, and review articles written in Standard British or American English, not a mixture. Poorly written English may result in rejection or return of the submission for language editing.

The articles must fall within the aim and scope of the Journal, that is, business management & economics as a priority and their related fields in social sciences.

Business Management encompasses all areas of business practices, new insights and/or development in business theories with a specific focus on tourism, marketing, business management, finance, or economics.

ISSN 0858-0855
e-ISSN 2730-3543

For research papers, the author is advised to include all elements of the structure below:

- **Title** of paper must be clear, concise, and informative, all in uppercase, not exceeding 15 words or within three typeset lines.

- **Abstract** (150-200 words)Abstracts must include sufficient information for readers to judge the nature and significance of the topic, the adequacy of the investigative strategy, the research results and conclusions. The abstract should summarize the major results of the work and not merely list topics to be discussed. It is an outline or brief summary of your paper in a well-developed paragraph, should be exact in wording, and understandable to a wide audience.

- **Keywords** (3-5)**,** immediately after the abstract**,** keywords are for indexing purposes, and ideally should be different from the title.

- **Introduction** This section provides necessary background of the paper and a brief review the existing knowledge, and importance of the problem.

- **Literature Review** Discussion of the research work of others in the field or topic area and how your work will enhance and contribute to the field. Citation of work by others should follow APA (6th edition) style e.g. Ojie (2007) asserts that…; Kessler (2003) found that...; ..... (Kessler, 2003).; Smith and Jones (2019).....; .... (Smith & Jones, 2019).

- **Methodology** This section indicates clear research objectives, conceptual framework(s) (if any), research question(s), hypotheses, population and sample, research instruments, and the data collection process. This section provides clear steps used in conducting your research. It means all procedures need to be described in sufficient detail to allow someone to replicate it.

- **Results and Discussion** This section covers the analysis of the data. It should include statistics in tables, charts, graphs, or pictures analyzed against hypotheses or in answering the research question(s) in quantitative research, or descriptive analyses of categories in qualitative research. **Results** is purely descriptive. **Discussion** describes and interprets the findings, placing them in a bigger context, relating them to other work(s) and issues outlined in the Introduction.

- **Conclusion and Recommendations** This section summarizes your study's key findings and implications. It should not be long and repetitive, but capture the essence of the study discussed in all previous sections. It should briefly cover the limitations of your research and suggested future direction for further research.

- **For academic articles,** there are no set rules. We recommend the structure below:

1. Introduction

2. Discussion

2.1 subheading

2.2 subheading

3. Conclusion

- **Tables and Figures**

  - Line drawings should be of high resolution and high contrast. For color or grayscale photographs (halftones), use a minimum of 300 dpi (.TIFF or .JPG).
  - Provide captions to figures
  - Use the table function of Microsoft Word.
  - Figure and tables should be placed as close as possible to where they are mentioned in the text

Source: https://so01.tci-thaijo.org/index.php/APST

Asia-Pacific Journal of Science and Technology (APST)

The Asia-Pacific Journal of Science and Technology (APST), formerly known as the KKU Research Journal, is a peer-reviewed journal published by the Research and Technology Transfer Affairs Division of Khon Kaen University. The journal's title was changed in order to attract more international readers and authors.

The journal accepts English-language manuscripts of original research and review articles which have never been published elsewhere. The main focus of the journal is to publish work that leads to creative practical applications, environment preservation, and human well-being. Research areas covered by the journal include engineering science, technology, agricultural science, and health science. Manuscripts reporting on research that integrates any of the aforementioned fields are especially encouraged. Our core interest is in the use of engineering, scientific, and technological knowledge to assist, co-operate with, and enhance other fields, such as health and agricultural science, in order to improve human well-being. We particularly welcome research that integrates various fields, including plant science and pharmaceutical science or plant science, agricultural engineering, automatic control, and energy technology.

Make a Submission

Home ThaiJo

THAIJO

Manual

For Author

For Reviewer

Instructions

Instructions for authors

The journal employs a double-blind review process, in which authors and reviewers are anonymous to each other throughout the process.

Journal Abbreviation: Asia Pac J Sci Technol
Online ISSN: 2539-6293
Start Year: 1996
Language: English (since Vol. 20 No. 1, 2015)
Publication Fee: Free
Issues per Year: 6 Issues (start Vol. 27 No. 1, 2022)

Notification of changes in the submission system

Dear Authors of APST, please be informed that from December 9th, 2022, onward, the journal will change its submission and reviewing platform from the Editorial Manager (EM) to the Thailand Editorial System (Thai ES). For manuscripts submitted via EM system before December 9th, 2022, the review will continue to be carried out using the Editorial Manager (EM) until the process is completed.

Download Template Guidelines Here

Title (Time New Roman, Font 12, Bold)

1st author name[1], 2nd author name[1, *] and Last author name[1] (Time New Roman, Font 10)

[1] Affiliation (Time New Roman, Font 10)

[*]Corresponding author: Please_fill_in@email.

Abstract

Abstract must be written in Time New Roman, font 10. Abstract should not exceed 250 words.

Keywords: A maximum of 4-11 words, In alphabetical order, Separated by comma ",". (Time New Roman, font 10, upper case at the beginning of each keyword)

1. Introduction (Time New Roman, Font 10, Bold)

This document is a Microsoft Word template. Please do not use other templates. The author(s) must strictly follow instructions so as to maintain the journal's high standard.

The text must be typed in word format size A4 not more than 15 pages with top, bottom, left and right margin of 1 inch from the border. It should be typed in a single column and a double space. Time New Roman, point 10 for contents. International System of Units (SI) is used for the metric system. Authors full and last name. The middle name should be abbreviated to the initial letter accompanied by a full stop " ". Join each author's name by the symbol "," and the last author with "and". The pages should be numbered at the top right hand corner consecutively. The manuscript has to be divided into three parts. The first part includes the title, name of the author, abstract, and keywords. The second part is the main body of the paper , which includes references and nomenclature. The body of the article may consist of the following sessions.

1. Introduction
2. Materials and methods
3. Results (Results and discussion can be written in one section or separately.)

4. Discussion
5. Conclusion
6. Ethical approval (if any)
7. Acknowledgements
8. Conflicts of interest
9. References

The last part is the appendix (if necessary). This section should include a large table or figure that can not reduce the scale or size.

The main text of the article must be written in Time New Roman, font 10, and double spacing of 12 points. The font size, line spacing, and margin of the template must not be changed.

References should be listed at the end of the paper and arranged in order.

References should be cited in the main text by numerals in a square bracket [No.]. For example:

1. Citation less than 3 lists i.e. [1,2], [3], [7,11]
2. Citation have 3 lists or more i.e. [4-6], [8,13,15], [11,17-19], [12,13,20]

2. Section (Time New Roman, Font 10, Bold)

2.1 Subsection (Time New Roman, Font 10, Italic)

The second part consisting of the paper body must be edited in single column format. Figures and tables should be located at the top or bottom of each page. Clear original figures in black and white are to be used. Equations should be numbered consecutively throughout the paper and located at the right margin as shown in Equation (1) below. Figures and tables should be placed at the top or at the bottom of each column as shown in Figure. 1 and

Table 1. The term "Table" should be followed by a bold typed number. Use the table function of Microsoft Word. Avoid vertical lines and unnecessary horizontal lines. The term "Figure" should be followed by a bold typed number. Symbols, nomenclatures, abbreviations and units should match the figures and text used. The legends of the figure should not be more than 200 words. Composite figures should be used (A), (B), (C), etc. and font Time New Roman to label must be show on top left of the figure.

Table 1 The process yield and physical properties of the microcapsules.

Carriers	Samples	Gac concentrations (% w/v)	Moisture contents (%)	A_w	Process yields (%)
Maltodextrin	M1	12.5	4.42 ± 0.84^{b}	0.31 ± 0.01^{ab}	61.72 ± 2.16^{ab}
	M2	16.7	3.92 ± 1.12^{a}	0.30 ± 0.01^{ab}	65.33 ± 1.63^{b}
	M3	25.0	3.24 ± 1.13^{a}	0.27 ± 0.01^{a}	69.44 ± 1.48^{b}
Gelatin	G1	11.1	5.98 ± 1.46^{c}	0.40 ± 0.01^{c}	51.69 ± 3.52^{a}
	G2	20.0	5.53 ± 1.08^{c}	0.34 ± 0.01^{b}	53.30 ± 2.59^{a}
	G3	33.3	4.80 ± 1.29^{c}	0.30 ± 0.01^{ab}	54.19 ± 1.07^{a}
β-cyclodextrin	B1	11.1	5.96 ± 1.29^{c}	0.40 ± 0.01^{c}	68.28 ± 0.17^{b}
	B2	20.0	5.78 ± 1.66^{c}	0.36 ± 0.01^{b}	78.38 ± 1.87^{c}
	B3	33.3	5.10 ± 1.02^{bc}	0.31 ± 0.02^{ab}	75.30 ± 2.38^{c}

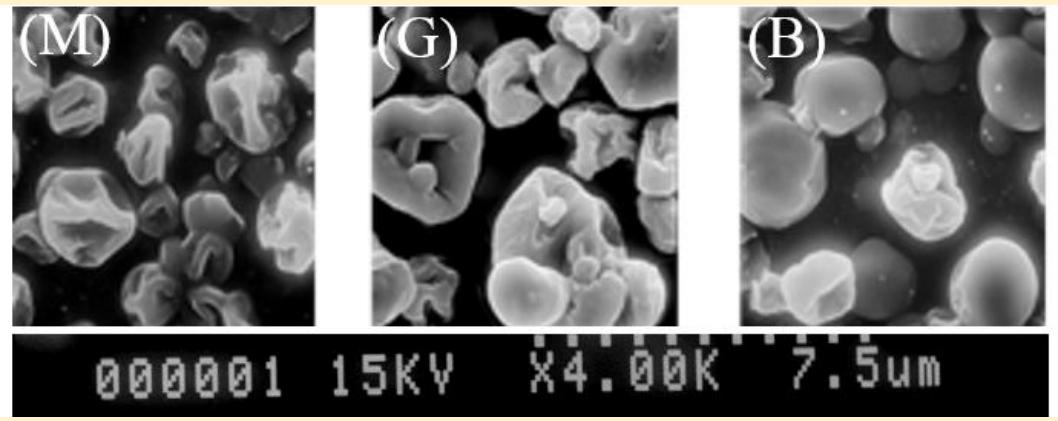

Figure 1 Micrograph of the microcapsules with different Gac aril concentrations, in which M = maltodextrin, = gelatin, and B = β-carotene**.**

3. Conclusion (Time New Roman, Font 10, Bold)

Clarity of all figures is of the utmost importance. If the final version is not prepared in a format or does not include all the details, the publication process will be delayed.

Acknowledgements (Time New Roman, Font 10, Bold)

This work supported by Research Program supported by the Department of Education and Technology (program name), Country Name. Please also include the Grant number.

References (Time New Roman, Font 10, Bold)

References should be in the Vancouver style, and only in English. Please ensure that all references in the text are also included in the reference list. Use the Arabic number in parentheses after the statement. The maximum number of references shall not exceed 35 articles for Full Length Original Article/Research Article), and 50 articles for Review Article. "Unpublished observations" and "personal communications" are not allowed to be the references. The journal abbreviation can be checked from https:/www.ncbi.nlm.nih.gov /nlmcatalog/journals

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3. Results

Two hundred and eighty participants with neck pain were included in the current study. General participant characteristics are presented in Table 1. Their average age was 38.85±10.63 years. There were 57 males (20.36%) and 223 females (79.64%). The mean body mass index (BMI) was 24.47±4.48 kg/m. No history of smoking was reported by 95.36% of participants.

The prevalence of clinical myelopathic signs is shown in Table 2. The prevalence of positive signs from high to low was biceps reflex at 32.5%, patellar tendon reflex at 27.14%, inverted supinator reflex at 20.36%, tricep reflex at 17.86%, Hoffman sign at 15%, Tromner sign at 13.57%, Achilles tendon reflex at 10.36%, finger escape sign at 10%, and Babinski sign at 3.21%, respectively. Next, participants were grouped according to the number of positive clinical myelopathic signs; these were divided into four groups, where participants showed (i) ≥ 1 positive signs, (ii) ≥ 2 positive signs, (iii) ≥ 3 positive signs, and (iv) ≥ 4 positive signs (Table 2). The grouping revealed the largest group to be positive, with ≥ 1 of any clinical myelopathic sign.

Table 1 Baseline demographic characteristics of neck pain participants (n=280).

Factors	n (%)	Mean ±SD	Range
Age (years)		38.78±10.63	20 to 59
• 20-40	152 (54.29)		
• 40≥ 59	128 (45.71)		
Sex			
• Female	223 (20.36)		
• Male	57 (79.64)		
Body mass index (kg/m^2)		24.74±4.48	13.6 to 40.06
• Normal (<25)	162 (57.86)		
• Overweight (≥25)	118(42.14)		
Smoker			
• No	267 (95.36)		
• Yes	13 (4.64)		
Education level			
• Primary to High School	46 (16.43)		
• University to Postgraduate	234 (85.57)		
Occupation			
• Sedentary Worker	226 (80.71)		
• Others	54 (19.29)		
Laptop usage (h per day)			
• <4	207 (73.93)		
• ≥4	73 (26.07)		
Smartphone usage (h per day)			
• <4	195 (69.64)		
• ≥4	85 (30.36)		

Table 2 Prevalence of clinical myelopathic signs in patients with neck pain (n=280).

Name of Signs	Numbers of positive signs	Percentage of positive signs
Hoffman reflex	42	15.00
Tromner sign	38	13.57
Finger escape sign	28	10.00
Inverted supinator reflex	57	20.36
Babinski sign	9	3.21
Biceps reflex	91	32.50
Triceps reflex	50	17.86
Patellar tendon reflex	76	27.14
Achilles tendon reflex	29	10.36
Any (≥ 1) Myelopathic sign	119	42.5
Any (≥ 2) Myelopathic sign	109	38.93
Any (≥ 3) Myelopathic sign	89	31.79
Any (≥ 4) Myelopathic sign	63	22.50

Table 3 The intra-rater reliability of clinical myelopathic signs.

Clinical myelopathic signs	Agreement	Kappa value
Hoffman sign	90	0.62
Tromner sign	90	0.62
Finger escape sign	90	0.62
Inverted supinator reflex	90	0.74
Babinski sign	100	1.00
Biceps reflex	100	1.00
Triceps reflex	90	0.74
Patellar tendon reflex	90	0.78
Achilles tendon reflex	100	1.00

The univariate regression analyses between the four groups of participants with positive clinical myelopathic signs and associated factors are shown in Table 4. Six factors reached a $p < 0.2$. They were smartphone usage >4 h per day, age ≥ 40 years, smoking, adopting a neck flexion posture during smartphone use, university to postgraduate education level, and neck pain score ≥ 7. These factors were then analyzed using multivariate regression analyses.

Table 5 shows three factors associated with the four groups of patients with positive clinical myelopathic signs using a process of backward stepwise elimination. They were smartphone usage > 4 h per day, university to postgraduate education level, and neck pain score ≥ 7 with a difference-adjusted odds ratio (OR) threshold.

Table 5 Clinical myelopathic sign and associated factors in multivariate analysis.

Factors	≥One sign Adjusted OR (95%CI)	≥Two signs Adjusted OR (95%CI)	≥Three signs Adjusted OR (95%CI)	≥Four signs Adjusted OR (95%CI)
Smartphone usage				
< 4 h per day	1.00	1.00	1.00	1.00
≥ 4 h per day	2.33 (1.38 to 3.94)*	2.57 (1.52 to 4.36)*	2.33 (1.36 to 4.00)*	2.26 (1.23 to 4.13)*
Education level				
Primary to High School				1.00
University to Postgraduate				3.35 (1.14 to 9.89)*
Severity of neck pain				
<7				1.00
7≥10				2.31 (1.07 to 4.99)*

*Significant at p <0.05 level.

RESULTS

สรุปขั้นตอนการเขียน

01

STEP ONE จัดเรียงผลตามที่บอกไว้ในMETHODOLOGY

02

STEP TWO

คัดสรรผลวิจัยที่น่าสนใจ หรือ อาจรวบรวมมาแสดงในตาราง หรือเขียนอธิบายโดยรวม และผลการวิจัยต้องไม่ผิดหรือทุจริต

03

STEP THREE

สอดคล้องและนำไปสู่การเขียนการอภิปรายผล (DISCUSSION)

04

STEP FOUR

สอดคล้องไปกับนโยบายของวารสารนั้น ๆ

05

STEP FIVE

พยายามยั้งตนเองไม่ให้เขียนความคิดตนเองลงไป รวมทั้งต้องเสนอผลการทดลองโดยสุจริต รอบด้าน ไม่มีความลำเอียง และข้อมูลต้องถูกต้องตรงกันทั้งในบทวิจัยและวิจัยเล่มจริง

4. Discussion

The purpose of the current study was to investigate the prevalence of clinical myelopathic signs in patients with neck pain. The results showed that the biceps reflex had the highest prevalence followed by the patellar tendon reflex, inverted supinator reflex, tricep reflex, Hoffman sign, Tromner sign, Achilles tendon reflex, finger escape sign, and Babinski sign.

The prevalence of hyperreflexia in the deep tendons of biceps, triceps, patellar, and Achilles was 32.5%, 17.86%, 27.14%, and 10.36%, respectively. In our study, most participants with clinical myelopathic signs had more than one positive sign. Ten participants (3.57%) had only one positive myelopathic sign. Thirty-two participants (11.43%) had four positives clinical myelopathic signs, the highest number of signs in the current study. Cook et al. (2010) reported that a combination of three or four myelopathic signs may be useful in screening for cervical myelopathy in patients with neck pain [14]. In the current study, participants with neck pain also had a combination of clinical myelopathic signs. Neck pain may be associated with spinal cord pathology because clinical myelopathic signs represent a pathological spinal cord condition [22].

The prevalence of the inverted supinator reflex in the current study was 20.36%. This result is consistent with the prevalence reported by Rhee et al. in their study (19%) [15]. Both studies involved participants with neck pain. However, the setting was different; the study by Rhee et al. was hospital based. In our study, neck pain participants were outpatients who went to either the hospital or clinic to get treatment. The inverted supinator reflex represents cervical cord dysfunction, especially at the C5-C6 level. Therefore, neck pain with inverted supinator reflex may be a risk factor for cervical spinal cord dysfunction at the C5-C6 level.

The current study found that the prevalence of the Hoffman sign was 15%, which is similar to the prevalence of the positive Hoffman sign in the study by Rhee et al. [15]. The average mean age of participants in the current study was 38.78±10.63 years, while the average mean age of those in Rhee et al.'s study was 48 years. These findings are very similar. In contrast, the prevalence of a positive Hoffman sign (1.7%) in the general population was significantly lower than in the present study [18]. This difference may be because Nagata et al. tested an older normal population with an average age of 67 years. In older adults, exaggerated reflexes are uncommon, as reflexes may be reduced by peripheral neuropathy or other causes [18]. Therefore, age is important, as different age groups have different prevalences of myelopathic signs.

The prevalence of the Tromner sign in the current study was 13.57%, in contrast to Chiyamongkol et al [16], who reported a much higher prevalence of 71% (in an axial neck pain group). The difference in results could be accounted for by two factors. First, their participants had a confirmed diagnosis of cervical spondylosis with axial neck pain, and second, the number of participants in the axial pain group was small (n=14).

In the current study, the prevalence of finger escape signs was 10%. The prevalence of finger escape signs in the study by Wang et al [21] was 55%. The higher prevalence in their study may be due to the fact that all the participants were included from a hospital-based study, and all of them had already been diagnosed with cervical myelopathy by MRI.

This study found that nine (3.12%) participants had a positive Babinski sign, which is higher than that reported in Rhee et al [15]'s study at 0%. The number of participants included in the current study was 280, and the larger number of participants in our study may have enabled the finding of positive Babinski signs.

The current study also aimed to determine associated factors among neck pain participants. In this study, age was not associated with clinical myelopathic signs in patients with neck pain. Among the elderly, clinical myelopathic signs are not uncommon and can be caused by peripheral neuropathy or various other causes [37]. In their study, the prevalence of myelopathic signs in elderly participants was only 4.9%. In our study, participants were aged less than 60 years on average [37]. Therefore, as expected, age was not associated with clinical myelopathic signs in patients with neck pain.

In this study, smartphone usage of ≥ 4 h per day was associated with ≥1-4 (≥1, ≥2, ≥3, and ≥4) clinical myelopathic signs. When participants using a smartphone for more than 4 h per day had at least two positive clinical signs, they had the highest adjusted OR 2.57 (95% CI: 1.52-4.36) (Table 4). The participants who had ≥4 clinical myelopathic signs were also associated with university to postgraduate-level education and an OR of 3.35 (95% CI: 1.14-9.89), and pain score ≥7 on the VAS scale with an OR of 2.31 (95% CI: 1.07-4.99). In our study, approximately 80% of participants reported using their smartphones in a flexed position. A longer length of smartphone use reportedly leads to a higher neck flexion angle [38,39]. Neck flexion causes lengthening of the cervical spinal cord [40,41]; it also causes the narrowing of the anteroposterior cord diameter [42,43]. These indicate that neck flexion positions can indirectly affect the cervical spinal cord. Ligamentous edema in the cervical spine can occur in patients with clinical myelopathic signs [25]. From our results, we suggest that smartphone usage of more than 4 h per day could not only indirectly affect the cervical spinal cord but also cause ligamentous edema in the cervical spine, and this may produce positive clinical myelopathic signs. Having more than one, two, or three clinical myelopathic signs may arise from prolonged smartphone use through aggravation of the spinal cord in the cervical spine. According to these results, the current study highlighted that prolonged smartphone usage may affect the spinal cord. Long durations (≥4 h per day) of smartphone use were found to be associated with clinical myelopathic signs. Therefore, smartphone users need to keep their duration of smartphone use to less than 4 h per day. Although >1 sign got the adjusted OR 2.43, we caution against the use of an isolated test for the diagnosis of cervical myelopathy in patients with neck pain [25,44]. Therefore, >2 positive signs are the recommendation from this study.

Participants with university or postgraduate level education had a greater risk of developing cervical myelopathy by up to 3.35 times (95%CI: 1.14-9.89) when they have ≥ 4 positives clinical myelopathic signs. According to Mohammadyari et al [45], the higher the education level, the more likely the person will use technologies like computers and the internet. Research has proven that with an increase in education level, the perceived ease of use also increases. Thus, the postgraduate education level was associated with clinical myelopathic signs.

The last factor associated with ≥ 4 positive clinical myelopathy signs was a pain score ≥ 7 on the VAS scale with an OR of 2.31 (95%CI: 1.07-4.99). At present, most spinal researchers state that mechanical compression is not the main cause of spinal and referred pain, for example, lumbago and leg pain; instead, chemical stimulation plays a key role [46]. Peng et al. studied 17 patients with discogenic lower back pain and reported that the nucleus pulposus of the outer ring of fibers along the intervertebral disc fissures, where there is a vascular granulation tissue region, has an abnormal abundance of substance P, prostaglandin E2, and bradykinin, which can lead to pain [47]. It also found a variety of inflammatory regulators in the discogenic lower back pain of the intervertebral discs, such as carbon albumin matrix metalloproteinase, prostaglandin E2, tumor necrosis factor, and various cytokines, which have been found in degenerative intervertebral discs. Nitric oxide synthase was also reported in the spinal fluid of these patients [48]. For these reasons, concomitant with an increasing pain score, one might expect that ligamentous edema will occur in the cervical spine.

The current study has some limitations. First, we did not measure cervical flexion angle, and second, our sample consisted of a low number of smokers; the crude OR in smokers was high. All the participants had no MRI information to confirm they had cervical cord compression. However, we cannot establish the association between clinical myelopathic signs and smoking in our final model due to the low number of smokers. In future studies, it would be useful to study a specific smoker-only sample to confirm this finding. Third, there was an unequal gender ratio. Fourth, our study did not ask about other electronic device usage, such as tablets, personal computers, etc. Our study method was useful as a starting point to determine clinical myelopathic signs and associated factors in smartphone users with subclinical neck pain. In our study, we selected only one time period in only one area of the country. In the future, it would be interesting to repeat our study after providing health education about smartphone usage hours. Further studies should aim to determine the sensitivity of clustered clinical myelopathic signs in smartphone users to rule out false positives of these myelopathic signs because most of them occur together.

DISCUSSION
CHECKLIST

DISCUSSION ของท่านมีลักษณะต่อไปนี้หรือไม่

01	แบ่งประเด็นเป็นพารากราฟ หรือเขียนทุกอย่างรวมกัน	YES ☐	NO ☐
02	เรียงประเด็นการอภิปรายผลตามวัตถุประสงค์ของงานวิจัยหรือไม่	YES ☐	NO ☐
03	ประเด็นที่เขียนในการอภิปรายผลมีงานวิจัยก่อนๆสนับสนุนหรือแย้งบ้างหรือไม่	YES ☐	NO ☐
04	การค้นพบใหม่ที่ได้จากงานวิจัยได้เขียนลงไปหรือไม่	YES ☐	NO ☐
05	ข้อมูลต่าง ๆ เช่น ตัวเลข ค่าสถิติ ตรงกับRESULTSหรือไม่	YES ☐	NO ☐
06	อ้างอิงในการอภิปรายผลทันสมัยหรือไม่	YES ☐	NO ☐
07	ชื่อนักวิจัยหรือผลวิจัยที่นำมาสนับสนุนมีการตีความถูกต้องหรือไม่	YES ☐	NO ☐
08	การค้นพบในงานวิจัยของท่านใช้HEDGESบ้างหรือไม่	YES ☐	NO ☐