DOI: https://doi.org/10.70656/ijcse.v3i01.927

Analysis and Redesign of the AJAK BESTIE Interface Integrated with BKD Using the User-Centered Design Method

1st Elisabeth Eka Daninta
Information System Study Program
Department of Engineering
University of Bengkulu
Bengkulu, Indonesia
elisabetheka07@gmail.com

2nd Julia Purnama Sari
Information System Study Program
Department of Engineering
University of Bengkulu
Bengkulu, Indonesia
juliapurnamasari@unib.ac.id

3rd Krisna Wahyudi
Department of Communication, Informatics, and Statistics of Bengkulu Province
Bengkulu, Indonesia
krisnawahyudibkl@gmail.com

Abstract*— The AJAK BESTIE system was developed as a human resources management system for the Bengkulu Provincial Office of Communication, Information Technology, and Statistics; however, during its implementation, several issues were identified, including a less-than-intuitive interface, as well as redundancies and inconsistencies with BKD data, resulting in users having to rely on manual data corrections. This study aims to analyze usability issues in the existing system, propose integration requirements with the BKD to improve data management efficiency, and redesign the interface to make it more user-friendly. The method used is User-Centered Design (UCD), with data collection through observation and semi-structured interviews during the exploration phase, as well as a System Usability Scale (SUS) questionnaire administered to 10 respondents during the evaluation phase. The results indicate that the proposed interface design accommodates the need for integration with the BKD to reduce potential data redundancy and support data synchronization. Additionally, the redesign yields a simpler and more intuitive layout, potentially making it easier for users to understand the interaction flow. The designed prototype received a SUS score of 71, which falls into the "Good" category with an "Acceptable" rating, indicating promising usability performance for the respondents involved in this study. The contribution of this research is the availability of a more intuitive, structured, and user-centered design for the civil service information system, serving as a foundation for the development of a more optimal system in the future.

Keywords- User-Centered Design, UI/UX, Usability, System Usability Scale, Prototype, E-Government System

I. INTRODUCTION

Advances in information technology have prompted government agencies to adopt integrated, efficient, and user-friendly systems for managing personnel data. At the Bengkulu Provincial Office of Communication, Informatics, and Statistics, the AJAK BESTIE system—developed as a self-managed personnel management system—still faces various challenges in the field, such as data redundancy and inconsistencies with data from the Regional Civil Service Agency (BKD), which result in inaccurate personnel information. Additionally, the non-intuitive interface and complex workflow make it difficult for users to operate the system, resulting in data management processes that still rely on time-consuming manual corrections and are prone to recurring errors.

These issues indicate that the existing system does not yet fully meet usability standards. To address this, a design approach is needed that not only produces a new interface but also ensures that every design decision is truly grounded in the users' actual needs. User-Centered Design (UCD) offers this approach by placing the user at the center of the entire design process, from problem exploration to solution evaluation [1][2].

Several studies have shown that the application of UCD can significantly improve usability and user experience [3][4][5]. Additionally, user-based evaluations such as the System Usability Scale (SUS) have proven effective in quantitatively measuring usability following a redesign [6][7][8]. The use of prototypes in UCD also allows users to provide direct feedback before the system is fully developed, enabling iterative improvements to the design quality [9][10].

Based on these conditions, this study proposes a redesign of the AJAK BESTIE system interface integrated with BKD using a UCD approach. This study focuses on designing an interface prototype as the primary output, without fully building the system. The objectives of this study are to analyze usability issues, redesign a more intuitive interface, and evaluate usability using the SUS to ensure the quality of the resulting design.

II. RESEARCH METHOD

A. User-Centered Design (UCD) Method

This study employs the User-Centered Design (UCD) method as the primary approach for redesigning the AJAK BESTIE system interface. This approach was chosen because it directly involves users in every design phase, ensuring that the resulting solutions truly align with users' real-world needs in the field [1][2]. In this study, the scope is focused on designing an interface prototype and proposing system integration with the BKD, without undertaking full- scale system development.

The UCD process is iterative, where the results of evaluations at each stage serve as the basis for improvements in the next cycle until the design meets the established feasibility criteria [11]. The stages carried out in this study consist of four main stages, as follows [12]:

Understanding the Context of Use

This stage aims to obtain a realistic picture of the conditions of use of the AJAK BESTIE system, including user characteristics, the work environment, and problems encountered in the daily use of the system.

Data collection was conducted through direct observation of user activities while interacting with the system, as well as semi-structured interviews with three respondents selected through purposive sampling. The respondents in this study were employees of Diskominfotik, consisting of one operator responsible for data entry, one human resources staff member handling data management and updates, and one system administrator managing system access and maintenance.

Semi-structured interviews were chosen because they allow for a deeper exploration of information while providing space for users to express ideas beyond the prepared list of questions, without losing focus on the main topic. Questions focused on challenges in using the system, users' daily workflows, and the need for a more effective system. The interview question guide was developed based on initial findings from observations, ensuring that every question asked was directly relevant to the system usage conditions previously observed.

User Needs Identification

Data from observations and interviews were analyzed using a qualitative descriptive approach with thematic grouping techniques. This process involved re-reading the interview and observation notes, marking statements with recurring patterns, and then grouping them into themes of needs that emerged consistently [13][14].

Findings from operators, staff, and administrators were compared to identify common patterns of issues, ensuring that the resulting needs reflect the overall system usage conditions. The analysis results were then categorized into two groups: functional and non-functional requirements.

Design Solution Development

Based on the identified needs, this phase produces a redesign of the interface using Figma. The design process begins with the creation of wireframes to map out the overall structure and flow of the interface, which are then developed into interactive prototypes. The design focuses on simplifying the data input process, reducing inefficient steps, and improving the clarity of navigation between features, so that users can complete tasks more quickly and minimize errors.

Additionally, the design includes a visualization of the data integration between the AJAK BESTIE and BKD systems, incorporated into the interaction flow of the prototype, so that users can understand how the data integration process is designed within a unified interface [9][10].

Design Evaluation

Unlike the initial exploration phase, which involved three respondents selected through purposive sampling to explore user needs in depth, this evaluation phase involved 10 respondents to obtain a broader picture of usability. The evaluation involved 5 university students as substitute users and 5 operational stakeholders from Diskominfotik. The operational stakeholders included one operator, one human resources staff member, one system administrator, one BKD-related personnel staff member, and one managerial representative.

The inclusion of operational stakeholders was intended to obtain contextual usability feedback regarding personnel management workflows, reporting needs, and BKD-related data synchronization activities. Meanwhile, university student respondents contributed broader general usability perceptions after completing predefined task scenarios based on real operational contexts.

Before completing the evaluation, respondents were asked to try out the system prototype first by following predefined task scenarios. The SUS score was calculated using standard rules, namely by subtracting 1 from the scores on odd-numbered statements and subtracting the scores on even-numbered statements from 5. All scores were then summed and multiplied by 2.5 to obtain a final score in the range of 0–100, as introduced by Brooke [15].

In addition to quantitative analysis, respondent feedback was also analyzed qualitatively to identify interface aspects that were not yet optimal and required improvement. The results of this evaluation were subsequently used as the basis for iterative design development until a better interface design was obtained.

B. Research Workflow

This research was conducted through interconnected and iterative stages. The process began with data collection through observation and interviews to understand system issues, followed by user needs analysis, prototype design, and concluded with evaluation using the System Usability Scale (SUS). If the evaluation results indicated that the prototype did not meet the feasibility criteria, the process returned to the design stage for improvements.

This cycle continues until the prototype is deemed viable. Viability is determined based on two criteria: a SUS score indicating a good level of usability and confirmation from users that the interaction flow aligns with operational needs.

III. Result And Discussion

A. Old System

In the initial phase of the research, an assessment was conducted of the system previously in use. This analysis aimed to identify the issues experienced by users as a basis for the system redesign process.

Old System Interface

Figures 1 through 4 show the old system interface used prior to the redesign process.



Fig. 1. Old System Interface on the Dashboard and Data Management Pages (Users, OPD, Competency, Job Factors, and Structural Positions)

In Figure 1, the old system exhibits inconsistent structures and layouts across pages, as well as disorganized data presentation. This results in suboptimal navigation and understanding of the system workflow for users.



Fig. 2. Old System Interface on the Job Factor Information Management, Job Competency Standards, and Job Analysis Pages

In Figure 2, the old system displays data that is not well-organized and lacks consistency in interface elements. This results in suboptimal navigation and user experience when operating the system.



Fig. 3. Old System Interface on the Job Biodata, Job Information, and Job Recapitulation Pages

In Figure 3, the old system displays features that are not well-structured and lacks consistency in the interface. This results in suboptimal interaction and usability for users.



Fig. 4. Old System Interface on the Job Factor Information, Competency Standards, Biodata Report, and Job Mapping Pages

In Figure 4, the old system displays features that are not yet well integrated and data presentation that is still unstructured. This results in suboptimal consistency in display, navigation, and ease of access to information for users.

Issues With Old System

Based on the observations, several issues were identified in the old system, namely inconsistencies in the user interface, evidenced by differences in layout and visual elements across pages, which required users to readjust every time they switched pages. Additionally, the system's navigation was unclear because the menu structure was not organized systematically, and the presentation of information was not well-structured, making it difficult to understand. User interaction was also deemed inefficient, as action features such as add, edit, and delete were not displayed directly but were hidden and could only be accessed by scrolling in a specific direction.

B. Requirements Analysis

A needs analysis was conducted to identify user requirements for the system interface design to be developed. The data were obtained through interviews with system users to understand both the problems encountered and the users' needs in interacting with the system.

Thematic Grouping

The interview results were then grouped into several main themes as shown in Table 1.

Table 1 Thematic Grouping

No	Theme	User Needs
1	Ease of Use	Interface is easy to learn and use
2	Navigation	Clear and well-organized menu structure
3	Appearance	Neat and consistent interface design
4	Information	Information is clearly presented and easy to understand
5	Efficiency	Simple and straightforward interaction flow

The grouping of interview results into several main themes indicates that user needs are focused on ease of use, clear navigation, consistent interface design, and easily understandable information presentation. In addition, users expect an interface design that supports work efficiency through faster and more straightforward processes. Users also expect integration with BKD so that data can be properly synchronized and redundancy can be avoided. However, in this study, the integration aspect is only considered as part of user needs and is represented within the interface design, without actual system implementation.

C. New Design (UCD Design Results)

New Design Interface

Figures 5 to 8 present the interface design results developed based on user needs and the analysis conducted in the previous stage.

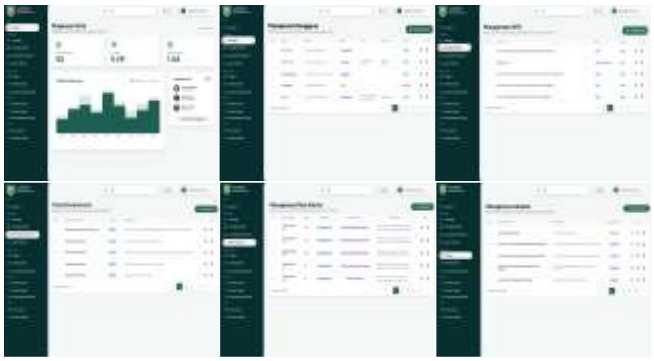


Fig. 1. New System Design Interface for Dashboard and Personnel Management Features

In Figure 5, the new design presents the main page and data management features with a more modern interface and consistent layout across the entire system. The dashboard and main page are designed to provide a quick overview of information and facilitate easy access to various key features.

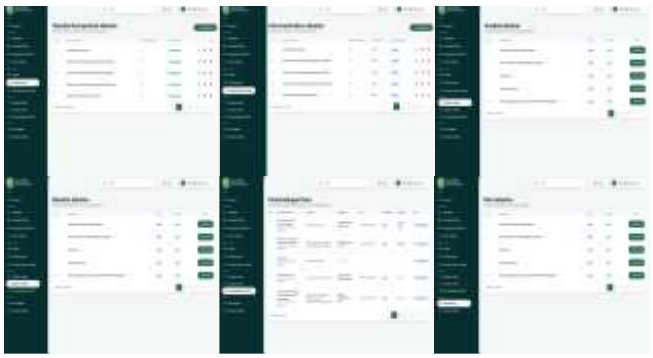


Fig. 2. New System Design Interface for Job Analysis and Personnel Data Processing

In Figure 6, the new design focuses on analysis and job data processing pages, which are presented in a more structured and informative tabular format. Each page is designed to support the analysis process through clear data presentation and easily accessible action features for users.



Fig. 7. New System Design Interface for Data Comparison and BKD Integration Features

In Figure 7, the proposed interface design emphasizes consistency in data management pages through a uniform table structure that is easy for users to understand. Interaction elements such as action buttons and navigation are arranged more intuitively, thereby supporting efficiency in data processing. On the data comparison page, the interface is also designed to accommodate integration with the Regional Personnel Agency (BKD), allowing users to compare personnel data within a single view. This feature helps users identify data discrepancies, reduce potential redundancy, and support data consistency between the AJAK BESTIE system and BKD.

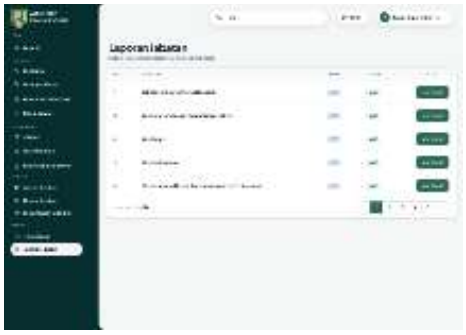


Fig. 8. New System Design Interface for Job Report Page

In Figure 8, the job report interface presents data in a well-organized and easily readable tabular format, with clear status information. In addition, action features such as viewing details are arranged in a simple manner, making it easier for users to access reports.

Design Concept

The developed design adopts several key concepts to improve interface quality and user experience. Layout consistency is implemented through the use of a fixed structure consisting of a sidebar, topbar, and main content area across all pages, allowing users to navigate without the need to readapt when switching between pages. In addition, the information hierarchy is clearly structured based on priority levels to ensure that data is easier to understand. The use of reusable components such as tables, action buttons, badges, and pagination is consistently applied to maintain visual uniformity. The design also follows a minimalist approach by reducing unnecessary elements, enabling users to focus on essential information. Furthermore, interaction efficiency is enhanced by placing key actions such as add, edit, and delete in easily accessible positions.

D. Comparison of Existing System and New Design

The comparison was conducted to identify improvements achieved by the new design compared to the existing system. In the existing system, the layout across pages is inconsistent, navigation is poorly structured, the interface appears less organized, and both information presentation and user interaction are inefficient. In addition, the existing system is not integrated with BKD, which may lead to data redundancy and inconsistencies.

In contrast, the new design improves these aspects through the implementation of a consistent layout, clearer and more structured navigation, a more modern interface, and better-organized information presentation. Integration with BKD is also supported through a data comparison feature that enables faster and more accurate synchronization of personnel data. Based on this comparison, it can be concluded that the new design provides significant improvements in terms of usability and data management efficiency.

E. Usability Evaluation (SUS)

Usability testing in this study was conducted using the System Usability Scale (SUS), which consists of 10

statements measured on a Likert scale from 1 to 5, where 1 indicates Strongly Disagree and 5 indicates Strongly Agree. The SUS method was chosen because it is simple, quick to administer, and capable of providing reliable evaluation results regarding interface usability [16][15]. The evaluation involved 10 respondents consisting of 5 university students and 5 operational stakeholders from Diskominfotik. The operational stakeholders included one operator, one human resources staff member, one system administrator, one BKD-related personnel staff member, and one managerial representative. The SUS questionnaire items are presented in Table 2.

Table 1. SUS Questionnaire Items

No.	Statement
1	I think that I would like to use this system frequently.
2	I found the system unnecessarily complex.
3	I thought the system was easy to use.
4	I think that I would need the support of a technical person to be able to use this system.
5	I found the various functions in this system were well integrated.
6	I thought there was too much inconsistency in this system.
7	I would imagine that most people would learn to use this system very quickly.
8	I found the system very cumbersome to use.
9	I felt very confident using this system.
10	I needed to learn a lot of things before I could get going with this system.

The SUS score calculation was performed by converting respondents' answers based on standard rules. For odd-numbered statements (1, 3, 5, 7, 9), the score is obtained by subtracting 1 from the response value, while for even-numbered statements (2, 4, 6, 8, 10), the score is obtained by subtracting the response value from 5. All scores are then summed and multiplied by 2.5 to obtain a final score ranging from 0 to 100 [8][17][18].

Table 2. SUS Score Calculation Results

Respondent	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	SUS Score
R1	4	2	4	1	4	2	5	1	5	1	87.5
R2	4	3	4	2	4	2	3	2	4	4	65.0
R3	4	2	4	2	4	2	4	2	4	2	75.0
R4	4	2	4	3	4	2	3	2	4	3	67.5
R5	4	3	5	3	4	3	5	2	4	3	70.0
R6	4	2	4	2	4	2	4	2	4	2	75.0
R7	4	3	4	3	4	3	4	3	4	3	62.5
R8	4	3	4	3	4	3	4	3	4	3	62.5
R9	4	2	4	2	4	2	4	2	4	3	72.5
R10	4	2	4	2	4	2	4	2	4	2	72.5
Average											**71**

Based on the calculation results in Table 3, the average SUS score obtained is 71. This score falls into the Good category with an Acceptable level, indicating that the proposed interface design demonstrates promising usability performance and provides a more intuitive interaction experience for the respondents involved in this study [16]. This result indicates that the proposed interface design has the potential to improve the overall user experience compared to the previous system.

The evaluation results show that most respondents provided positive feedback regarding the ease of use of the interface, particularly in terms of learnability, clarity of presentation, and consistency of interface elements. This indicates that users can understand the interaction flow more quickly and complete tasks more efficiently. However, some respondents still experienced minor difficulties related to initial adaptation, suggesting that further improvements are needed to enhance the overall user experience.

Overall, these findings indicate that the implementation of the User-Centered Design (UCD) method successfully improves the usability quality of the AJAK BESTIE interface design. A user-focused approach has proven effective in producing a more intuitive, structured, and user-appropriate design [11][5][3].

F. Limitations of The Study

This study has several limitations. Although the usability evaluation involved operational stakeholders from Diskominfotik, the number of professional respondents was still limited and the evaluation was conducted on an interactive prototype rather than a fully implemented operational system. Therefore, future studies are recommended to involve more operational stakeholders and evaluate the system in real operational environments.

IV. CONCLUSION

Based on the results of this study, it can be concluded that the previous AJAK BESTIE system still had several issues, such as interface inconsistency, unclear navigation, and poorly structured information presentation. Through the implementation of the User-Centered Design (UCD) method, a process involving user needs analysis, interface redesign, and iterative evaluation was carried out, resulting in a prototype that better aligns with user needs. The redesign successfully improves the visual quality, layout consistency, and ease of navigation, enabling users to understand and interact with the system more effectively in supporting personnel data management.

The results of the usability evaluation using the System Usability Scale (SUS) with 10 respondents show an average score of 71, which falls into the Good category with an Acceptable level [16]. This indicates that the proposed interface design demonstrates promising usability performance and provides a more intuitive interaction experience for the respondents involved in this study. Therefore, this study successfully produces a more intuitive, structured, and usable interface design, which can serve as a foundation for future system development and further usability evaluation in real operational environments.

ACKNOWLEDGMENT

The authors would like to express their gratitude to the Department of Communication, Informatics, and Statistics (Diskominfotik) of Bengkulu Province for the opportunity, experience, and support provided during the internship. The authors also extend their appreciation to the Information Systems Study Program, Faculty of Engineering, University of Bengkulu for the guidance and academic support provided.

REFERENCES

[1] W. D. P. Rahayu, A. A. Hendriadi, and T. Ridwan, "Perancangan UI UX aplikasi website sistem informasi menggunakan metode user centered dsign (studi kasus Desa Losari Kidul)," Jurnal Informatika dan Teknik Elektro Terapan, vol. 12, no. 3, 2024, doi: 10.23960/jitet.v12i3.4994.

[2] R. B. Solichuddin, "Perancangan User Interface Dan User Experience Dengan Metode User Centered Design Pada Situs Web 'Kalografi,'" Automata, 2022.

[3] A. Subiyakto et al., "Investigating user experience to redesign user interface using user-centered design approach," ICIC Express Letters, Part B: Applications, vol. 13, no. 8, 2022, doi: 10.24507/icicelb.13.08.861.

[4] D. S. Mubiarto, R. Rizal Isnanto, and I. P. Windasari, "Perancangan User Interface dan User Experience (UI/UX) pada Aplikasi 'BCA Mobile' Menggunakan Metode User Centered Design (UCD)," Jurnal Teknik Komputer, vol. 1, no. 4, 2023.

[5] A. Muktamar B, C. S. Lumingkewas, and A. Rofi'i, "The Implementation of User Centered Design Method in Developing UI/UX," Journal of Information System, Technology and Engineering, vol. 1, no. 2, 2023, doi: 10.61487/jiste.v1i2.13.

[6] Fachri Munandar and Harry Budi Santoso, "User Interface Improvement by Evaluating Usability and User Experience: Case Study of Indonesia's Government Financial Management Information System," The Indonesian Journal of Computer Science, vol. 14, no. 1, 2025, doi: 10.33022/ijcs.v14i1.4630.

[7] M. P. Eugenia, M. Abdurrofi, B. Almahenzar, and A. Khoirunnisa, "Pendekatan Metode User-Centered Design dan System Usability Scale dalam Redesain dan Evaluasi Antarmuka Website," Seminar Nasional Official Statistics, vol. 2022, no. 1, 2022, doi: 10.34123/semnasoffstat.v2022i1.1454.

[8] A. Ilyas, S. H. Wajid, and A. Muhammad, "Usability Evaluation of E-Government Website: A Use of System Usability Scale," Pakistan Journal of Engineering and Technology, vol. 5, no. 1, 2022, doi: 10.51846/vol5iss1pp11-15.

[9] S. Ernawati and A. D. Indriyanti, "Perancangan User Interface dan User Experience Aplikasi Medical Tourism Indonesia Berbasis Mobile Menggunakan Metode User Centered Design (UCD) (Studi Kasus: PT Cipta Wisata Medika)," Journal of Emerging Information System and Business Intelligence (JEISBI), vol. 3, no. 4, 2022, doi: 10.26740/jeisbi.v3i4.49296.

[10] A. Haidar Luthfi and I. Arfiani, "Perancangan UI/UX Aplikasi Sampahocity Menggunakan Pendekatan UCD (User Centered Design)," Jurnal Ilmu Komputer dan Sistem Informasi (JIKOMSI), vol. 7, no. 1, 2024, doi: 10.55338/jikomsi.v7i1.2175.

[11] R. D. Cahyani and A. D. Indriyanti, "Penerapan Metode User Centered Design dalam Perancangan Ulang Desain Website MAN 1 Pasuruan," Journal of Emerging Information System and Business Intelligence (JEISBI), vol. 3, no. 2, 2022, doi: 10.26740/jeisbi.v3i2.46197.

[12] International Organization for Standardization, "Human-centred design for interactive systems (ISO Standard No. 9241-210:2019)," in Ergonomics of human-system interaction, 2019.

[13] E. Tarigan, D. Damayanti, and F. Pratama, "Pengembangan Sistem Inventory Control Dengan Metode User-Centered Design Dan Evaluasi Usability," Jurnal Jaringan Sistem Informasi Robotik (JSR), vol. 8, no. 2, 2024.

[14] Ronni Sahat Hutabarat and Ketut Sudaryana, "User-Centered Design pada User Interface (UI) / User Experience (UX) Prototyping Aplikasi E-Commerce," Jurnal Penelitian Teknologi Informasi dan Sains, vol. 2, no. 4, 2024, doi: 10.54066/jptis.v2i4.2781.

[15] J. R. Lewis, "The System Usability Scale: Past, Present, and Future," Int. J. Hum. Comput. Interact., vol. 34, no. 7, 2018, doi: 10.1080/10447318.2018.1455307.

[16] A. Bangor, P. T. Kortum, and J. T. Miller, "An empirical evaluation of the system usability scale," Int. J. Hum. Comput. Interact., vol. 24, no. 6, 2008, doi: 10.1080/10447310802205776.

[17] M. R. Roosdhani, J. Widagdo, and E. A. Amelia, "Usability analysis in Paasaar.com application using the System Usability Scale (SUS) approach," International Journal of Economics, Business and Accounting Research (IJEBAR), vol. 6, no. 1, 2022, doi: 10.29040/ijebar.v6i1.4065.

[18] I. G. P. Yada Giri, L. J. E. Dewi, and I. M. G. Sunarya, "The Evaluation of Usability and Website Development using Cognitive Walkthrough, Performance Measurement, and System Usability Scale," Journal of Computer Networks, Architecture and High Performance Computing, vol. 5, no. 2, 2023, doi: 10.47709/cnahpc.v5i2.2511.