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Development of Website-Based Tool for Nursing Data Analysis

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ABSTRACT

Background. Analysis of nursing data has been carried out manually based on the knowledge and experience of nurses with the main reference being the Indonesian Nursing Diagnosis Standards (SDKI). This has limitations, namely that the nursing diagnosis determined is not comprehensive and requires a relatively long time to validate with the SDKI. Even though the hospital has Hospital Management Information System (SIMRS) for documentation of nursing care, the selection of nursing diagnoses is still manual and there are no tools for nurses to analyze nursing data based on the SDKI at the early stages of the nursing process. Therefore, it is important to develop nursing data analysis tools that can be accessed online.
Methods. The aim of this research is to develop a website to automate nursing data analysis. The design of this research is the waterfall method which consists of communication, planning, modeling, construction and deployment.
Results. The research results show that the website-based tool for nursing data analysis can be accessed via https://bit.ly/ramutnursingdataanalysis or https://rnda.ramut.my.id.
Conclusion. Website-based tool for nursing data analysis can be accessed and used by nurses anywhere and at any time to analyze nursing data so that nurses can determine nursing problems more quickly and precisely according to the Indonesian Nursing Diagnosis Standards.

KEYWORDS
Website; tool; nursing data analysis

INTRODUCTION

Nurses in providing nursing care to patients theoretically should always carry out the nursing process. However, in practice, there are still many nurses who have not implemented the nursing process correctly when caring for patients. This is due to various factors including: level of education, nurse knowledge, nurse skills, workplace atmosphere, lack of tools and materials to carry out the nursing process, as well as the high number and burden of patient care (Baraki et al, 2017; Akhu-Zaheya, 2018). The nursing process is a systematic method including nursing concepts and theories, nursing assessment, nursing planning, nursing implementation, and nursing re-evaluation (Doenges & Moorhouse, 2012; Herdman & Kamitsuru, 2018). The planning stage consists of determining nursing diagnoses, nursing outcomes, and nursing interventions (Herdman & Kamitsuru, 2018). Determining the nursing diagnosis is a very important part for nurses to be able to provide holistic and comprehensive nursing care for patients. Nursing diagnosis is determined based on the analysis of nursing data from the results of the previous nursing assessment (Hariyati et al, 2021).

Nursing data analysis has been done manually by nurses. Nurses based on their knowledge and experience can directly determine the nursing diagnosis from the signs and symptoms that have been assessed or it can also be with the nursing data analysis table. The weakness of this manual analysis

can be that it is very dependent on the knowledge and experience of nurses and requires a relatively long time if using a data analysis table. Nurses' knowledge about nursing diagnosis and how to analyze patient data is also lacking (Bittencourt & Crossetti, 2013). Validating the accuracy of data analysis with the Indonesian Nursing Diagnosis Standards (SDKI) also requires additional time. SDKI is a guidebook for nursing diagnoses in Indonesia that contains signs and symptoms grouped into major data and minor data so that nurses can determine nursing diagnoses from 149 existing nursing diagnoses (PPNI, 2016). This causes the process of analyzing data with tables and the implementation of SDKI so far to be inefficient and still requires evaluation (Hariyati et al, 2021). Nurses who do not use SDKI will increase the risk of errors in determining nursing problems. Analyzing nursing data and determining nursing diagnoses for nurses remains a difficult process and requires more tools to be more accurate and fast (Lubis et al, 2020).

Nursing data analysis is also studied and carried out by nursing students since the academic education phase (NEDU Department of Nursing, 2021). Based on empirical experience, the data analysis process carried out by nursing students takes a relatively long time even to analyze nursing data on simple patient cases. Analyzing nursing data and determining nursing diagnoses are difficult stages (Bittencourt & Crossetti, 2013). There are differences in nursing diagnoses determined by students even though students with the same level of knowledge analyze nursing data with the same conventional method (Wong & Chung, 2002).

There are Intan's Screening Diagnoses Assessment (ISDA) books and applications developed to help the nursing data analysis process more accurately based on subjective data and objective data according to NANDA-I (Bittencourt & Crossetti, 2013; Lubis et al, 2020, Nurjannah, 2012; Nurjannah, 2013; Nurjannah & Warsini, 2016). However, the use of ISDA books has not been able to make the data analysis process faster and easier. The database and nursing diagnosis in the ISDA application have also not been adjusted to the SDKI which has been established as a national standard for nurses in Indonesia (PPNI, 2016; Nurjannah & Warsini, 2016). The Hospital Information and Management System (SIMRS) and other computerized systems in hospitals have provided electronic nursing diagnosis options but have not been able to analyze nursing assessment data (Hariyati et al, 2021; Lima et al, 2018). SIMRS is still focused on being used for nursing documentation, not yet widely used for nursing data analysis. SIMRS can also only be used on certain devices locally in the hospital. There is no method or tool in the process of analyzing nursing data according to the SDKI that is scientifically proven to speed up and facilitate this process to make it more efficient but still accurate and effective to determine nursing diagnoses.

Nurses need supporting tools in the nursing data analysis process to make nursing diagnoses more accurate (Suarni et al, 2015). A system is needed that guides nurses in analyzing data in determining the right nursing diagnosis and carrying out care professionally (Hariyati et al, 2021). Electronic-based systems are proven to be better in process and structure than paper-based systems (Akhu-Zaheya, 2018).

Therefore, it is important to conduct research on the development of web-based tools for nursing data analysis.

METHODS

The research was conducted at the Department of Nursing, Faculty of Health Sciences, Universitas Jenderal Soedirman from November 2021 to March 2022. The research consists of 5 stages, namely communication, planning, modeling, construction, and deployment (Pressman, 2015).

Communication

Researchers asked 5 nurses in Indonesia randomly about the process of analyzing nursing data so far. Nurses use their knowledge, experience, or nursing data analysis tables to determine nursing diagnoses. There is no online tool for nurses to analyze nursing data. Indonesian nurses need online tools to analyze nursing data more easily and quickly in the process of planning patient care.

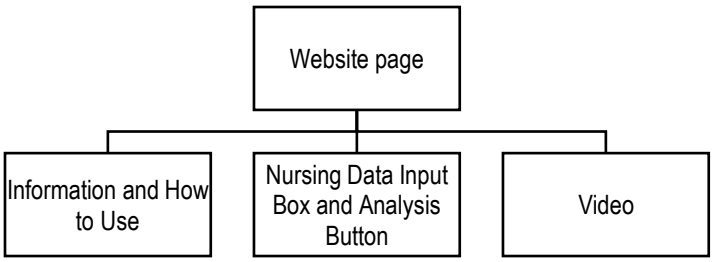
Planning

1. Create a database of nursing signs and symptoms in a spreadsheet and set up a website.
2. Connecting the database with the website using app script.
3. Determining the name of the service.

Modeling

Web-based services are more easily accessed by nurses via mobile phones.

Picture 1. Modeling



Construction

1. A database of nursing signs and symptoms from the SDKI and additional data by the researcher was created in a Google Spreadsheet (https://docs.google.com/spreadsheets).
2. The website was set up in Google Site (https://sites.google.com).
3. App script created in Google App Script (https://script.google.com).
4. Nursing data analysis function was tested.

Deployment

Information about the web-based tool for nursing data analysis was shared via Instagram, Facebook, and WhatsApp.

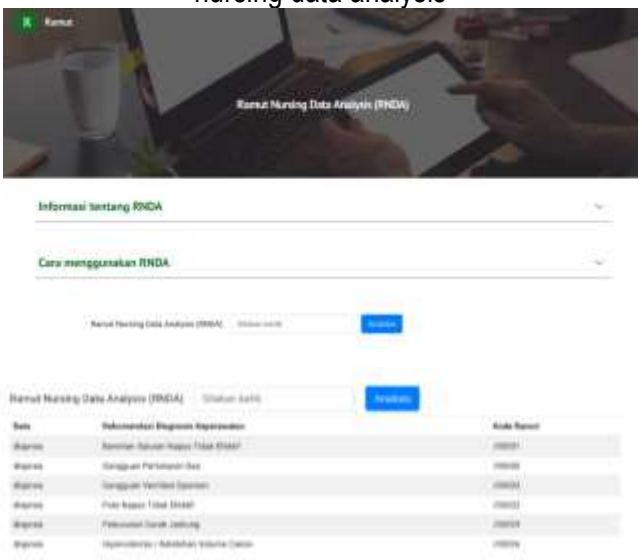
Picture 2. Information about a web-based tool for nursing data analysis.

Regular monitoring of website access and function is carried out at least once a month to ensure that the website-based tool service for nursing data analysis can be accessed by nurses anywhere and anytime online. There is an obstacle that the web-based tool for nursing data analysis cannot be accessed with a browser that has multiple accounts. This solution has been conveyed in the instructions on how to use a web-based tool for nursing data analysis, namely users are asked to access https://bit.ly/ramutnursingdataanalysis or https://rnda.ramut.my.id on the incognito tab of the Chrome browser or use other browsers such as Via, Opera, Firefox, or Edge (Choiruna & Ramadhan, 2022).

RESULTS AND DISCUSSION

The results showed that the web-based tool for nursing data analysis can be accessed through https://bit.ly/ramutnursingdataanalysis or https://rnda.ramut.my.id. The web-based tool for nursing data analysis was able to analyze 3655 nursing data and recommend 149 nursing diagnoses.

Picture 3. Display of web-based tool for nursing data analysis



Information on web-based tools for nursing data analysis

Web-based tools for nursing data analysis are the first and free nursing data analysis services in Indonesia that can help nurses, lecturers, & nursing students to more easily and quickly analyze nursing data and determine nursing diagnoses from nursing assessment results. Web-based tools for nursing data analysis are tools so that the determination of nursing diagnoses must still pay attention to the condition of the client / patient and is the responsibility of the nurse (Choiruna & Ramadhan, 2022).

How to use a web-based tool for nursing data analysis

Check for the “Please type” box and blue “Analyze” button below how to use RNDA. If the “Please type” box and blue “Analyze” button do not

appear on Telegram or Chrome browser, please access bit.ly/ramutnursingdataanalysis in the incognito tab of Chrome browser or use another browser such as Via, Opera, Firefox, or Edge.

Type a non-capitalized word/phrase such as dyspnea, infection, head injury, stroke, or diabetes mellitus into the “Please type” box.

Select the blue “Analyze” button.

Look at the table that appears under the blue “Analyze” button.

Consider and select the priority nursing diagnosis according to the client/patient situation (Choiruna & Ramadhan, 2022).

The web-based tool for nursing data analysis is an Indonesian-language online service offered to nurses, nursing lecturers, and nursing students to help them analyze nursing data easily, quickly, and accurately.

LIMITATION

This research is a development research so the user response is not yet known. The waterfall method prevents researchers from repeating the next stage of research.

The typed nursing data must be in lowercase (non-capital) and cannot analyze data for more than one sign or symptom, so users must press the analysis button more than once if they want to analyze some nursing data. This is a limitation of the current web-based tool for nursing data analysis. Hopefully, in the future, web-based tools for nursing data analysis can be further developed with input from users.

CONCLUSION AND RECOMMENDATION

Web-based tools for nursing data analysis can be accessed and used by nurses anywhere and anytime to analyze nursing data so that nurses can determine nursing problems more quickly and precisely according to the Indonesian Nursing Diagnosis Standards. Hopefully, in the future, web-based tools for nursing data analysis can be further developed with input from users.

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