



Web-Based Nursing Practice Recommendation Letter Application System

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Abstract

In the digital era, the demand for efficiency and security in administrative services is increasing, particularly in the healthcare sector. One of the challenges faced is the manual process of applying for nursing practice recommendation letters, which often leads to delays, lack of transparency, and the risk of document loss. This study aims to design a web-based information system equipped with a digital signature to simplify the process for nurses to apply for recommendation letters online. The development method used is the waterfall model, which includes the stages of requirement analysis, system design, implementation, and testing planning. This system is expected to streamline administrative processes, enhance document authenticity through digital signatures, and provide a more efficient service experience for nurses. The study will focus on DPD PPNI Sabu Raijua Regency as the case study location.

Keywords: *Administrative efficiency, digital signature, information system, nursing practice, recommendation letter.*

1. Introduction

The rapid development of digital technology in Indonesia has significantly transformed various sectors, including healthcare. The Indonesian Internet Service Providers Association reported 210.03 million internet users during 2021–2023, with a penetration rate of 77.02% [1].

This development presents opportunities for healthcare institutions to enhance administrative efficiency through information technology adoption. Furthermore, the Covid-19 pandemic since late 2019 accelerated the shift to online administrative services such as registration, payment, and document processing [2].

In practice, nurses as professionals require quick access to administrative documents, particularly recommendation letters for clinical practice. However, manual processes still widely applied often lead to delays, risks of document loss, and lack of transparency [3]. These challenges may hinder nurses' schedules and reduce overall service effectiveness.

To address these issues, the development of web-based information systems offers a promising solution. The adoption of web-based systems in education and healthcare institutions has proven effective in improving administrative efficiency and transparency [4]. Additionally, integrating digital signatures provides an essential security layer that ensures document validity and reduces the risk of forgery.

This study aims to design and implement a web-based information system for nurse recommendation letters integrated with digital signatures. The proposed system is expected to accelerate administrative processes, strengthen user trust, and support the overall improvement of healthcare service quality in Sabu Raijua Regency.

2. Methodology

The research methodology applied in this study is the Waterfall software development method. This process is carried out sequentially through stages of requirements analysis, system design, implementation, integration, and operation with maintenance. In the requirements analysis stage, data were collected through observation, interviews, and literature studies to identify the administrative process of submitting nursing practice recommendation letters at DPD PPNI. The results of this analysis were used to determine hardware, software, network requirements, as well as database and interface design.

The next stage is implementation, where the system is built based on the completed design. Each module is tested using unit testing before being integrated into the overall system. After integration, system testing is conducted to ensure all features, from registration and

submission to the printing of recommendation letters, function as required. The final stage, operation and maintenance, involves real-world system use accompanied by monitoring, troubleshooting, and optimization to ensure the system effectively and efficiently supports the administration of nursing practice recommendation letters.

3. Result and Discussion

3.1. Analysis system

At the analysis and design stage, system requirements were identified and an initial design was created as the foundation for system development. This stage ensures that the system meets user needs while providing an easy-to-use interface. The system architecture was designed to illustrate the main components and their interactions, including the front-end, back-end, and database, in order to support the digital submission process of nursing practice recommendation letters.

The architecture consists of three main components: the admin, the nurse (applicant), and the server, all connected through the internet. The admin manages user data, verifies submissions, and provides digital signatures for approved recommendation letters. Nurses submit requests via computer or mobile devices, which are then processed by the server. The server functions as the central hub for data storage, request processing, and digital signature management, while the internet serves as the communication medium to ensure accessibility from various locations.

3.2. Design

3.2.1. Use case diagram

A use case diagram is a graphical representation that illustrates the interaction between users and the system, as well as the main functions provided by the system. This stage aims to provide a visual and technical understanding of how users will interact with the system and the role of each actor in performing the available functions.

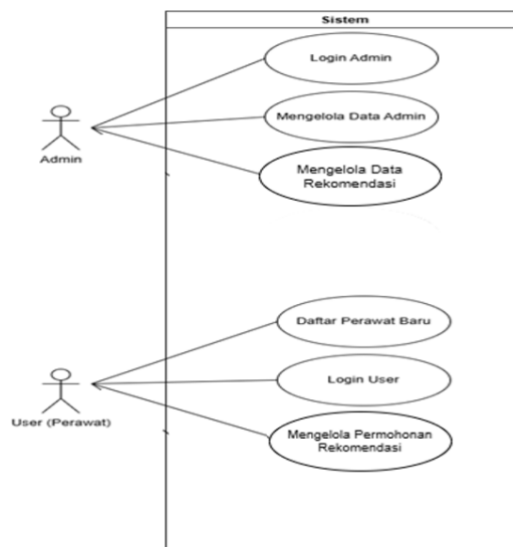


Fig. 1: Use Case Diagram

3.2.2. Class diagram

The class diagram in the web-based information system is designed to simplify the submission process of nursing practice recommendation letters. It illustrates the main system classes and their relationships, including the user interface for admin and user login, data processing for admins, nurses, and recommendations. Each class is managed by specific controllers such as AdminControl, UserControl, PerawatControl, and RekomendasiControl, which handle related functions. This diagram provides an overview of how system components interact to support efficient administration and facilitate the submission and management of recommendation letters.

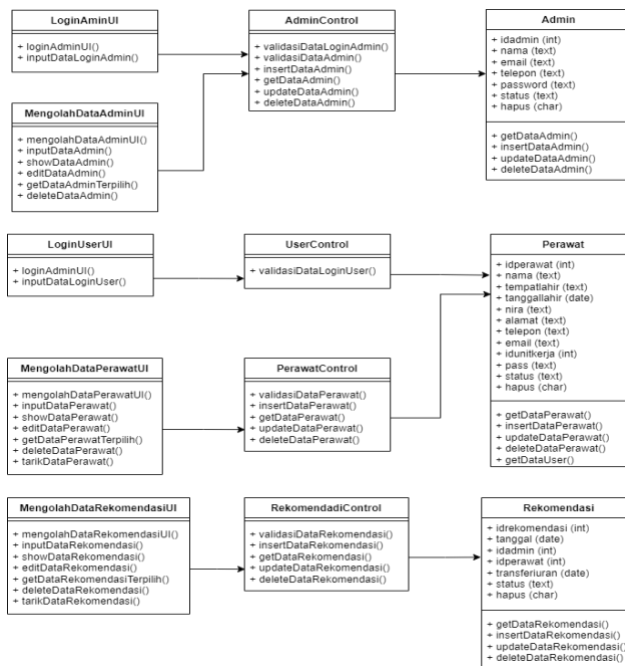


Fig. 2: Class diagram

3.3. System Implementation

In the implementation stage, the user interface (UI) design is focused on enabling users to interact with the system intuitively and efficiently. UI elements such as buttons, forms, menus, and main pages are designed with attention to aesthetics, readability, and consistency in colors, icons, and fonts, ensuring easy access to key features while enhancing user comfort in interacting with the system.

1. Homepage Display

The homepage contains the system name, a description of its function as a Nursing Practice Recommendation System, and the address information of DPD PPNI Sabu Raijua Regency, accompanied by an illustration of medical staff interaction as a symbol of healthcare services. On this page, users, namely nurses, are provided with instructions to choose one of two action buttons: Login for users who already have an account, or Register for nurses who have not yet created an account.

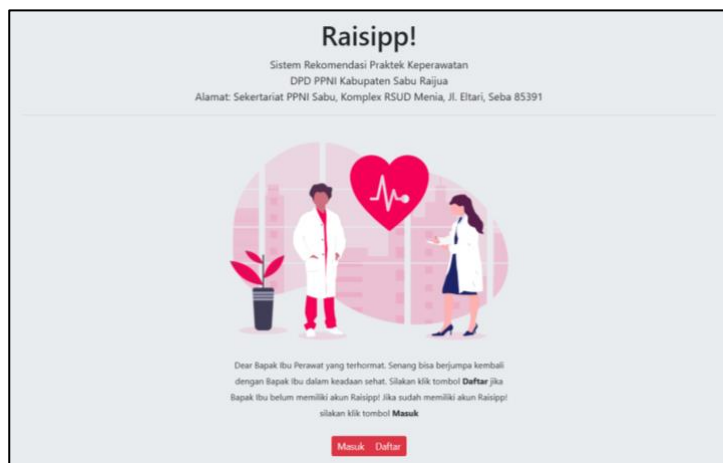


Fig. 3: Homepage display

2. Nurse registration page display

The nurse registration interface on the Raisipp! system is designed in the form of a simple and easy-to-understand input form to facilitate the new account registration process. Nurses are required to fill in several data fields, including Full Name, Place of Birth, Date of Birth, NIRA, Address, Phone Number, Email, Work Unit, and Password.

Fig. 4: Nurse registration page display

3. Nurse login page display

The nurse login interface on the Raisipp! system is provided to facilitate nurses who already have an account to access the system's features. In this login form, users are asked to enter their Email and Password in the provided fields. There is additional information in the form of a help message directing nurses to contact the admin if they forget their email or password.

Fig. 5: Nurse login page display

4. Nurse homepage display

The nurse homepage interface in the Raisipp! system is the main page accessed by nurses after successfully logging in. On this page, the system displays the nurse's complete profile data, including name, place of birth, date of birth, NIRA, address, phone number, email, work unit, and active status. There is also an Edit Data option that allows nurses to update personal information if needed.

Fig. 6: Nurse homepage display

5. Nurse data edit page display

The nurse data update interface in the Raisipp! system provides a form to facilitate nurses in updating certain personal data already stored in the system. Nurses can update information such as Full Name, Place of Birth, Date of Birth, Address, Work Unit, and Password through this form.

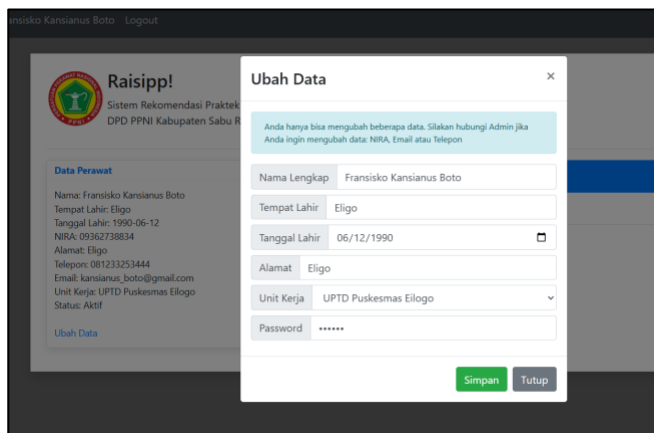


Fig. 7: Nurse data edit page display

- 6. Display page for managing nursing practice recommendation letters
 The interface for managing nursing practice recommendation letters in the Raisipp! system presents the steps that nurses must follow to apply for a recommendation letter, whether for a new application or an extension. On this page, in addition to displaying the nurse's personal data on the left side, there is a list of process stages on the right side, starting from ensuring that they already have a Raisipp! account.

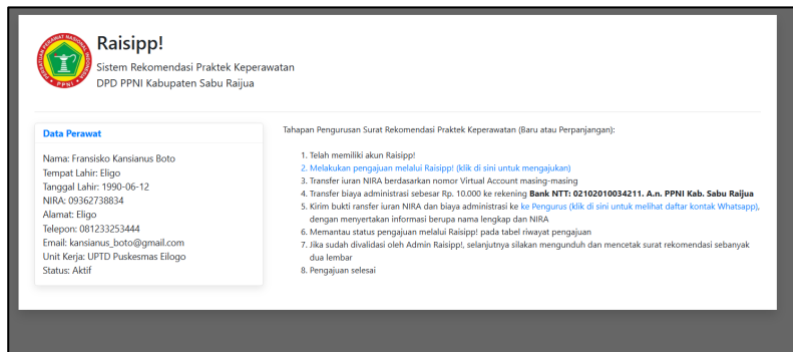


Fig. 8: Display page for managing nursing practice recommendation letters

- 7. Submission page view
 The submission interface in the Raisipp! system serves as the final confirmation before nurses submit a request for a nursing practice recommendation letter. On this screen, the system displays a warning message asking nurses to ensure they are ready to submit, noting that processed submission data can only be canceled by an admin.

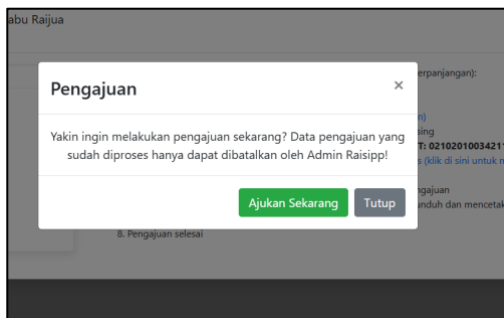


Fig. 9: Submission page view

- 8. Submission history page view
 The submission history interface on the Raisipp! system displays a list of nursing practice recommendation letter requests that have been submitted by nurses. On this page, in addition to personal data information of the nurse, there is a history table containing information such as Submission Date, NIRA and Administration transfer Status, Submission Status, and Actions that can be taken.

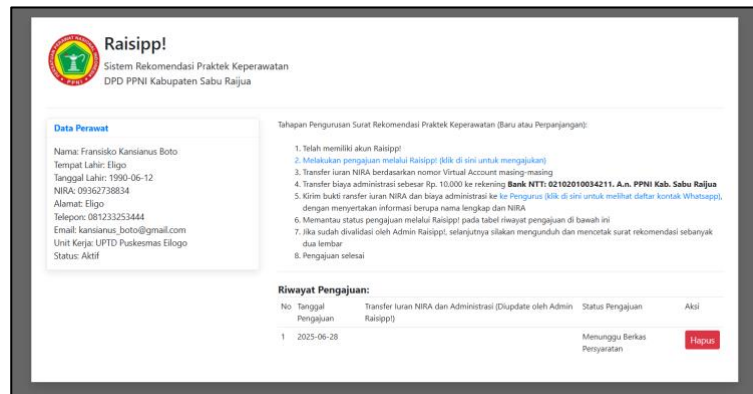


Fig. 10: Submission history page view

9. Contact page display of the management

The management contact interface in the Raisipp! system functions to provide contact information that can be reached by nurses regarding the process of submitting a recommendation letter for nursing practice. This display provides a table containing a list of Management Names along with their respective WhatsApp Numbers, which can be contacted for verification or administrative confirmation purposes, such as sending proof of NIRA contribution payments.



Fig. 11: Contact page display of the management

10. Admin login page display

The admin login interface on the Raisipp! system is specifically provided for admins to access the management features of the nursing practice recommendation system. On this page, the admin is required to enter their Email and Password in the provided fields, then press the Login button to process authentication.

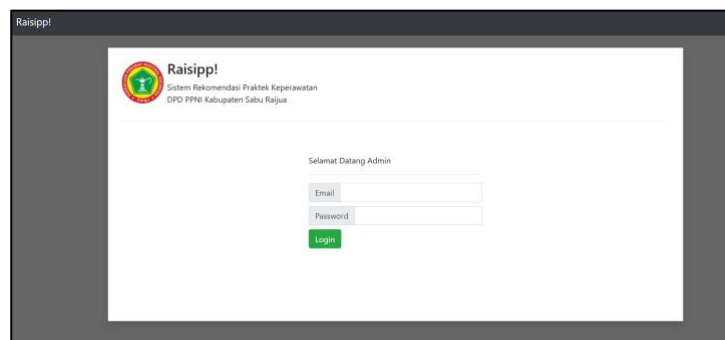


Fig. 12: Admin login page display

11. Admin homepage view

The admin homepage interface in the Raisipp! system is the main page accessed by the admin after successfully logging in to manage data within the nursing practice recommendation system. This page displays three main tabs, namely Admin, Nurse, and Recommendation, each of which is used to manage data according to its category.

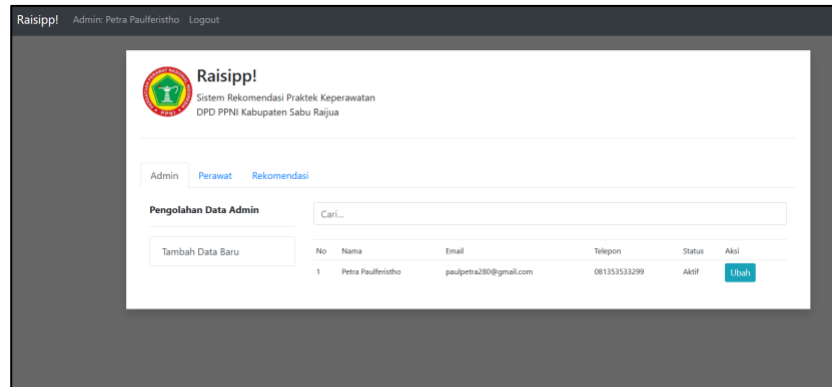


Fig. 13 : Admin homepage view

12. Add admin data page view

The add admin data interface in the Raisipp! system is used to add admin data into the system. This form contains input fields including Name, Email, Phone, and Password, which must be filled out by the admin when they want to enter new admin data.

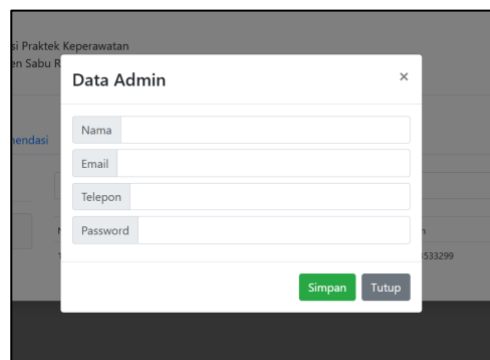


Fig. 14: Add admin data page view

13. Nurse data processing page display

The nurse data management interface in the Raisipp! system is used by the admin to manage the data of nurses registered in the system. This page displays a table containing information such as Name, Place and Date of Birth, NIRA, Phone, Email, and Work Unit of each nurse. The admin can search for data through the search column, add new nurse data using the Add New Data button, and export data using the Export Data button.

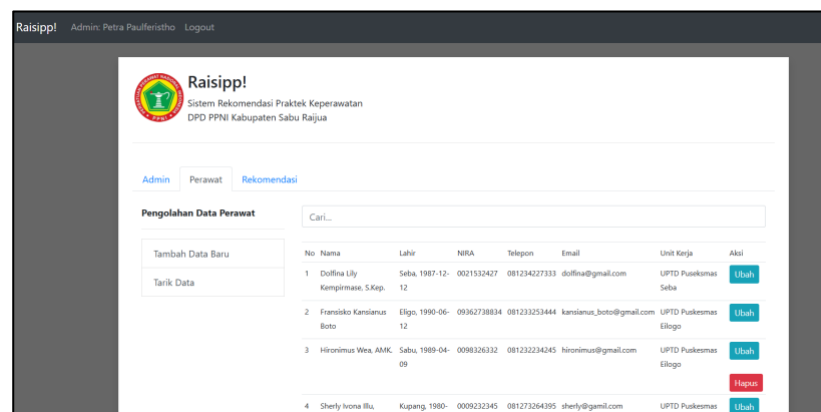


Fig. 15: Nurse data processing page display

14. Nurse data report

The nurse data report in the Raisipp! system is the result of exporting data from the system into a file format, which is used for documentation or further administrative purposes by the DPD PPNi of Sabu Raijua Regency. This report presents complete nurse data in a table format, including information such as Name, Place of Birth, Date of Birth, NIRA, Address, Phone, Email, Work Unit, and Status.

No	Nama	Tempat Lahir	Tanggal Lahir	NIRA	Alamat	Telepon	Email	Unit Kerja	Status
1	Dolfinia Lily Kempirmase, S.Kep.	Seba	12/12/1987	21032427	Seba	81254227335	dolfinia@gmail.com	UPTD Puskesmas Seba	Aktif
2	Franciska Kurniamas Boto	Seba	12/06/1990	8082738054	Seba	81232323444	franciska_boto@gmail.com	UPTD Puskesmas Eliogo	Aktif
3	Hocimus Wus ANK	Seba	09/04/1989	98282823	Seba	81232324242	hocimus@gmail.com	UPTD Puskesmas Eliogo	Aktif
4	Shery Ivona Iliu, A.Md., Keb.	Kupang	05/01/1980	8232345	Erusake	81272084395	sheryli@gmail.com	UPTD Puskesmas Erusake	Aktif
5	Widyanti Honesty, A.Ni., Kep.	Ledeneu	05/03/1979	988232323	Ledeneu	81232327777	widyanti@gmail.com	UPTD Puskesmas Ledeneu	Aktif
6	Yudi Arianto Mone, S.Kep., Ns.	Mambusa	10/12/1986	836239323	Seba	81283423098	yudi@gmail.com	UPTD Puskesmas Dandak	Aktif

Fig. 16: Nurse data report

- The page view for adding nurse data by the admin
The interface for adding nurse data by the admin in the Raisipp! system is used to input new nurse data into the system by the DPD PPNi admin. This form consists of fields for Name, Place of Birth, Date of Birth, NIRA, Address, Phone, Email, Work Unit, and Password, which must be filled in to ensure the completeness of the nurse's data.

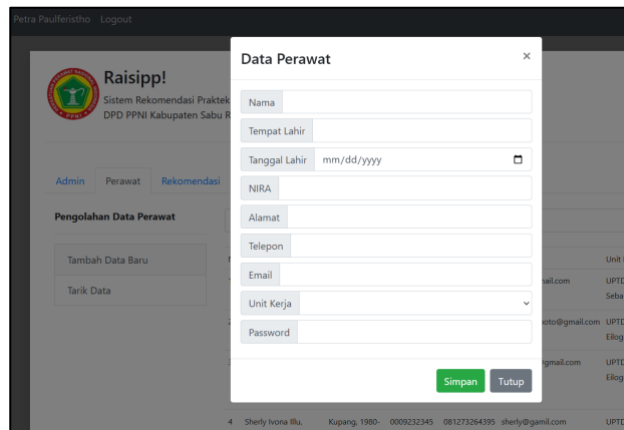


Fig. 17: The page view for adding nurse data by the admin

- Admin's page view for editing nurse data
The nurse data editing interface by the admin in the Raisipp! system is used to facilitate the admin in updating the information of nurses who are already registered in the system. This form contains fields that display the nurse data to be edited, such as Name, Place of Birth, Date of Birth, Address, Work Unit, Password, and Status, which can be updated as needed.

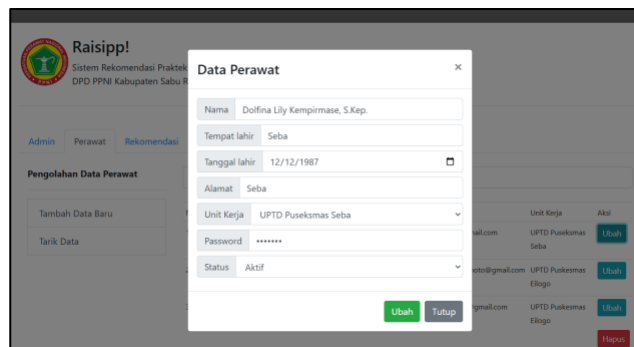


Fig. 18: Admin's page view for editing nurse data

- Data recommendation processing page display
The data processing interface for recommendations in the Raisipp! system is used by the admin to manage the process of submitting practice nursing recommendation letters. On this page, a table is displayed containing information on Date, NIRA and Nurse Name, NIRA and Administration Fees, as well as the submission Status, allowing the admin to monitor the progress of each application.

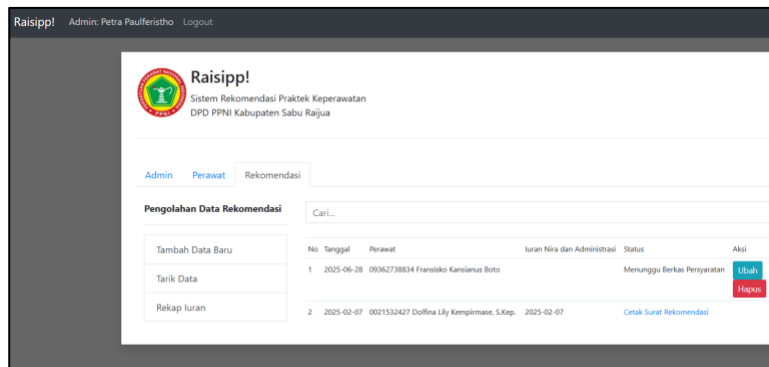


Fig. 19: Data recommendation processing page display

18. Submission page display for recommendations by admin

The recommendation submission interface by the admin in the Raisipp! system is used to process data for the submission of nursing practice recommendation letters requested by nurses. This form contains fields for Submission Date, Nurse selection from the available list, and Contribution Transfer Date to record payment administration.

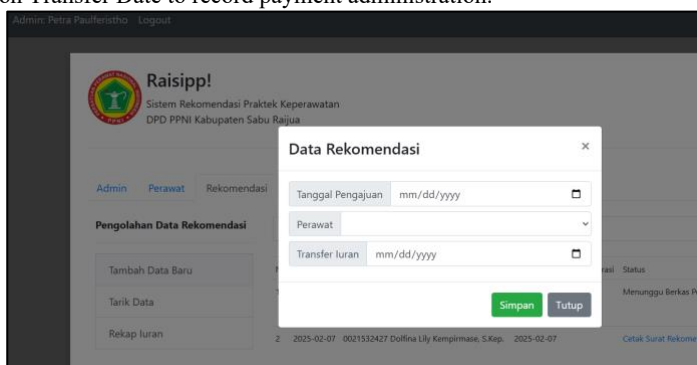


Fig. 20: Submission page display for recommendations by admin

19. Recommendation list report

The report of the recommendation list in the Raisipp! system is the result of exported data on nursing practice recommendation letter submissions facilitated by the system for documentation and administrative purposes by the DPD PPNI of Sabu Raijua Regency. This report contains complete information including Submission Date, Admin, Nurse Name, NIRA, Email, Phone, Place of Birth, Date of Birth, Work Unit, Contribution Transfer Date, and Submission Status.

No	Tanggal Pengajuan	Admin	Perawat	NIRA	Email	Telepon	Tempat Lahir	Tanggal lahir	Unit Kerja	Transfer Iuran	Status Pengajuan
1	28/08/2025	1	Fransisko Kemasius Boto	0962738834	fransisko_boto@gmail.com	8123333444	Sido	22/08/1988	UPD Puskesmas Eleng		Menunggu Berkas Penyerahan
2	07/02/2025	1	Dofina Lily Kempimase, S.Kep.	2523427	dofinad@gmail.com	81234217323	Saba	13/12/1967	UPD Puskesmas Saba	07/02/2025	Surat Rekomendasi Ditransfer

Fig. 21: Recommendation list report

20. Contribution recap page display

The contribution summary interface in the Raisipp! system is used to assist admins in creating reports on the recap of contributions paid by nurses within a certain period. In this form, the admin can select the period based on month and year, then press the Process button to generate contribution summary data according to the selected criteria.

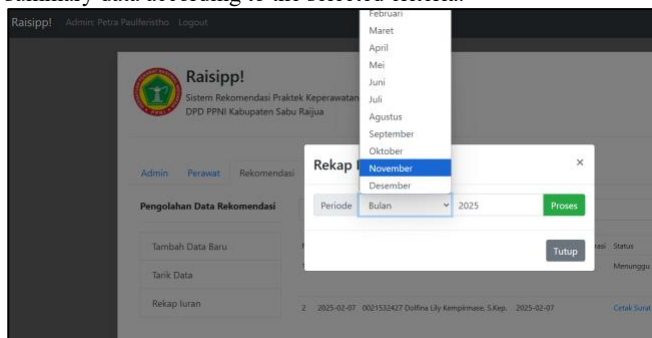


Fig. 22: Contribution recap page display

21. Contribution recap report

The contribution recapitulation report in the Raisipp! system is a printed summary of contributions paid by nurses within a certain period, generated through the contribution recap feature in the system. This report contains information such as Payment Date, NIRA,

Nurse Name, and Contribution Amount, as well as the total contributions collected during that period. The report is accompanied by a print date and system source information to ensure the authenticity of the data.

Raisipp!				
Sistem Rekomendasi Praktek Keperawatan				
DPD PPNI Kabupaten Sabu Raijua				
Rekap Iuran Bulan 6 Tahun 2025				
No	Tanggal	NIRA	Nama	Iuran
1	2025-06-28	09362738834	Fransisko Kansianus Boto	Rp10.000
Total iuran: 10000				
Dicetak Tanggal 28 June 2025, 7:47 Am, Melalui: www.raisipp.my.id				

Fig. 23: Contribution recap report

22. Recommendation letter

The nursing practice recommendation letter in the Raisipp! system is an official document generated by the system as the final output of the nursing practice recommendation application process. This letter contains complete nurse data, such as Name, Place/Date of Birth, NIRA, Home Address, Phone, Email, and Place of Practice. The letter is issued by the Regional Board of the Indonesian National Nurses Association of Sabu Raijua Regency as proof of meeting the eligibility requirements for nursing practice. This document is equipped with digital signatures and QR codes from the Chairperson and Secretary, which function to validate the authenticity of the letter. This recommendation letter is used as a requirement for obtaining a Nurse Practice License (SIPP) at relevant institutions such as the One-Stop Investment and Integrated Service Office of Sabu Raijua Regency, and can be printed directly through the system for official purposes.

 <p>DEWAN PENGURUS DAERAH PERSATUAN PERAWAT NASIONAL INDONESIA KABUPATEN SABU RAIJUA Alamat: Sekretariat PPNI Sabu, Komplek RSUD Menia, Jl. Eltari Seba-85391</p>	
<p>SURAT REKOMENDASI Nomor: 1/DPD.PPNI/R/K.S/II/2025</p>	
<p>Dewan Pengurus Daerah Kabupaten Sabu Raijua, atas nama Pengurus Pusat Persatuan Perawat Nasional Indonesia menerangkan bahwa:</p>	
<p>Nama : Dolfina Lily Kempirmase, S.Kep. Tempat/Tanggal Lahir : Seba/12-12-1987 NIRA : 0021532427 Alamat Rumah : Seba Telepon : 081234227333 Email : dolfina@gmail.com Tempat Praktik : UPTD Puseksmas Seba</p>	
<p>Oleh karena yang bersangkutan telah memenuhi kelayakan melakukan praktek keperawatan di Indonesia dan ketentuan lain yang dipersyaratkan dalam rangka penerbitan dokumen berupa: SURAT IZIN PRAKTIK PERAWAT (SIPP) di UPTD Puseksmas Seba. Dengan ini, kepadanya direkomendasikan untuk mendapatkan SIPP seperti dimaksud diatas kepada Pemerintah Kabupaten Sabu Raijua c/q Kepala Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu Kabupaten Sabu Raijua.</p>	
<p>Demikian rekomendasi ini diberikan untuk digunakan sebagaimana mestinya.</p> <p style="text-align: right;">Seba, 07-02-2025</p>	
<p>Dewan Pengurus Daerah Persatuan Perawat Nasional Indonesia Kabupaten Sabu Raijua</p>	
<p>Ketua</p>  <p><u>Yulius K. Boimau, S.Kep.</u> Ns. NIRA: 53200402207</p>	<p>Sekretaris</p>  <p><u>Firdaus Nawa Hoke, A.Md.Kep.</u> NIRA: 53200406951</p>
<p>Silakan scan QRCode di atas jika ingin membuktikan bahwa dokumen ini adalah benar-benar sah dan bukan merupakan dokumen palsu. Dicetak Tanggal 28 June 2025, 7:18 am, melalui: www.raisipp.my.id.</p>	

Fig. 24: Recommendation letter

4. Conclusion

Based on the design, implementation, and testing, it can be concluded that the Raisipp! (Nursing Practice Recommendation System) web-based application developed for DPD PPNI Sabu Raijua has been successfully built and functions as intended. The system simplifies nurse registration, recommendation requests, status tracking, and digital-signed recommendation letters with QR codes, while ensuring efficiency, transparency, and document authenticity. Despite some limitations, such as reliance on stable internet and the absence of automatic notifications, the system contributes significantly to the digital transformation of nursing practice recommendation services in Sabu Raijua.

Acknowledgement

I would like to thank my parents for always supporting me. I would also like to thank Mr. MENHYA SNAE as the supervisor who has guided me in conducting this research.

References

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