

Web-Based Healthcare Personnel Scheduling Information System at Hidayah General Hospital, Boyolali

Ubaid Syaiful Anwar

Duta Bangsa University, Surakarta

Corresponding Author e-mail: ubaidnyaifulanwar@gmail.com

Article History:

Received: 27-08-2026

Revised: 11-09-2026

Accepted: 28-09-2026

Keywords: Health Information Systems, Healthcare Personnel, Hospital Management, Scheduling, Web-Based Systems

Abstract: Manual scheduling of healthcare personnel at Hidayah General Hospital, Boyolali, presents challenges in schedule management, information accessibility, and the potential occurrence of scheduling errors. This study aimed to describe the existing healthcare personnel scheduling process and develop a web-based scheduling information system to support schedule management at the hospital. This study employed a descriptive approach with a cross-sectional design. Data were collected through observation, interviews, and documentation involving the head of the medical records unit, the head of the nursing unit, and the head of the midwifery unit. The system was developed using the Software Development Life Cycle (SDLC), which included planning, analysis, design, implementation, and maintenance stages. The resulting system provides role-based access for human resource administrators, unit heads, and healthcare personnel. Its main features include healthcare personnel data management, schedule input and monitoring, daily and monthly schedule access, schedule printing and reporting, and submission and approval of shift exchange requests. The implementation demonstrates that the system can provide more structured access to healthcare personnel scheduling information and support the administrative management of work schedules. However, this study did not quantitatively evaluate the system's effectiveness or usability among a broader group of users. Further research is therefore recommended to conduct comprehensive functionality, usability, and user acceptance evaluations.

How to Cite: Ubaid Syaiful Anwar. (2026). Web-Based Healthcare Personnel Scheduling Information System at Hidayah General Hospital, Boyolali.5(3). Pp 446-455
<https://doi.org/10.61536/ambidextrous.v5i03.789>



<https://doi.org/10.61536/ambidextrous.v5i03.789>

This is an open-access article under the [CC-BY-SA License](https://creativecommons.org/licenses/by-sa/4.0/).



Introduction

Advances in information technology have influenced the management patterns of healthcare organizations, including hospitals. The use of information systems has become a crucial requirement to support the effectiveness and efficiency of healthcare services, including

in human resource management. One aspect that relies heavily on information management is the scheduling of medical personnel. Medical personnel play a strategic role in the provision of healthcare services, therefore, appropriate, structured, and easily accessible work schedules are crucial to ensure continuity of care, patient safety, and the well-being of medical personnel. Ineffective scheduling can lead to medical personnel absenteeism, shift scheduling errors, unbalanced workloads, and a decline in the quality of healthcare services.

In practice, some hospitals still use manual scheduling methods, such as paper-based record-keeping, simple spreadsheets, or photo-based schedule distribution via WhatsApp. This approach is suboptimal, as it can lead to difficulties in tracking schedules, misinformation, workload imbalances, and delays for medical personnel completing shifts. This situation demonstrates the growing need for more structured and accessible schedule management, along with the growing demand for fast, accurate, and high-quality healthcare services.

The problem of manual scheduling is also supported by research by Little & Choudhury (2022), which revealed that implementing a manual scheduling system in hospitals generally requires a significant amount of time to prepare and is prone to schedule conflicts and dissatisfaction among medical personnel. Irregularity in scheduling can also increase stress and fatigue levels among medical personnel, which ultimately has the potential to reduce the quality of health services provided to patients. These findings show that manual methods are not only related to technical issues in conveying information, but can also be related to the working conditions of medical personnel and the quality of health services.

This problem was also identified based on initial interviews with healthcare workers at Hidayah General Hospital in Boyolali. The scheduling process for medical personnel is still manual and does not utilize an integrated information system. The prepared schedule is then sent to medical personnel in the form of photos and saved to their mobile phone gallery. This situation presents a challenge when medical personnel need to retrieve their work schedules, especially as the number of photos in the gallery increases. Delivering schedules in the form of photos also increases the likelihood of errors or forgetting shift schedules, whether for morning, afternoon, or night shifts.

These issues indicate the need to utilize information systems that can support more effective management of medical staff scheduling. Previous research by Panjaitan (2022) focused on the design and development of a web-based scheduling information system as a technical solution to reduce the potential for human error and the level of inefficiency in manual scheduling systems. Meanwhile, Safitri & Puspitorini (2020) studied a web-based teacher scheduling information system to address schedule conflicts and delays in information delivery, while Mustofa et al. (2018) studied the design and implementation of a computer-based scheduling information system to replace less efficient manual scheduling methods. These previous studies share similarities in the use of information systems in scheduling, but differ from this study in the object, context, and approach, as this study specifically focuses on scheduling medical staff in hospitals with a descriptive quantitative approach.

This study aims to determine and describe the web-based medical personnel scheduling information system at Hidayah General Hospital, Boyolali, to determine the current health personnel scheduling process, and to design and build a web-based health personnel scheduling information system. The urgency of this study lies in the need to facilitate medical personnel in accessing work schedule information quickly, accurately, and in a structured manner so as to minimize scheduling errors and improve work discipline. The novelty of this study lies in the focus of the object and research approach, namely medical personnel at Hidayah General Hospital, Boyolali, with a descriptive quantitative approach, which differs from previous studies that are more oriented towards the development or design of scheduling information

systems. Thus, this study is directed to provide an overview of the condition and utilization of medical personnel scheduling information systems in the context of hospital management.

Research Methods

This study employed a descriptive method with a cross-sectional approach. Descriptive methods were used to describe existing phenomena, while cross-sectional approaches were conducted by collecting data simultaneously through observation, interviews, and documentation to obtain an overview of the scheduling conditions of medical personnel at Hidayah Boyolali General Hospital (Adipati et al., 2021:44; Adiputra et al., 2021:47).

The research instruments consisted of observation guidelines, interview guidelines, and documentation guidelines. These instruments were used to obtain information regarding scheduling flows, procedures, constraints, healthcare worker data, work shifts, work units, work days and holidays, and leave data (Abubakar, 2021:117; Ratnawati et al., 2025:121). Data were analyzed descriptively by reviewing, categorizing, compiling, and describing the data from observations, interviews, and documentation as the basis for designing a new system (Sutikno, 2020:136).

This study involved the head of the medical records room, the head of the nursing room, and the head of the midwife room as research subjects. The research object was the healthcare worker scheduling system at Hidayah Boyolali General Hospital, which includes data management of healthcare workers, work shifts, work units, work days and holidays, and leave data. Based on the research materials, the population and sample size were not included quantitatively, so the study used the parties responsible for the scheduling process as sources of information.

The research procedure was conducted through the stages of the Software Development Life Cycle (SDLC), namely planning, analysis, design, implementation, and maintenance (Abdullah, 2017:16-17). The planning stage was carried out by identifying manual scheduling problems, followed by needs analysis through interviews and observations, and then designing the database, interface, and system components. The system was then implemented and tested to ensure its suitability to user needs. Maintenance was then performed to ensure optimal system operation.

Results and Discussion

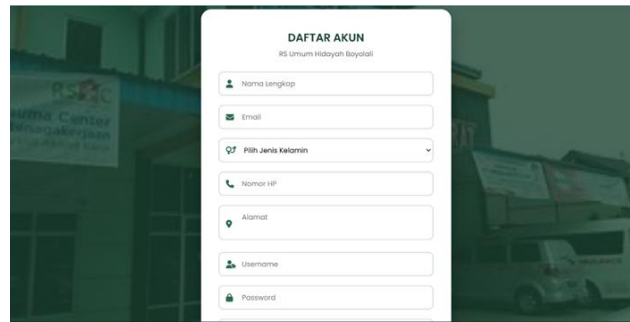
System Implementation

1. System access



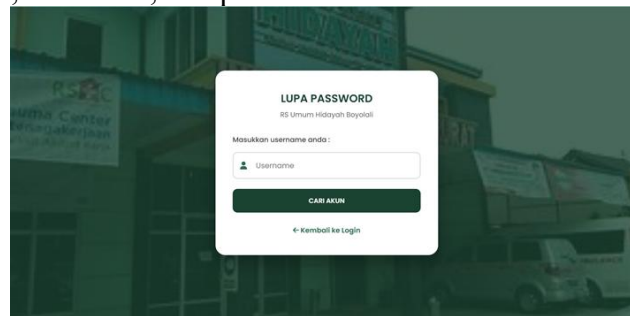
Picture1 Login Menu Display

The program begins with users accessing the system through a pre-designed website, <https://jadwalnakes-rsuhidayah.page.gd>. Users must be connected to the hospital's local network. On the login page, users must enter a username and password to access the system. The login process is designed to ensure that each user has secure and protected authorized access with a single user account.



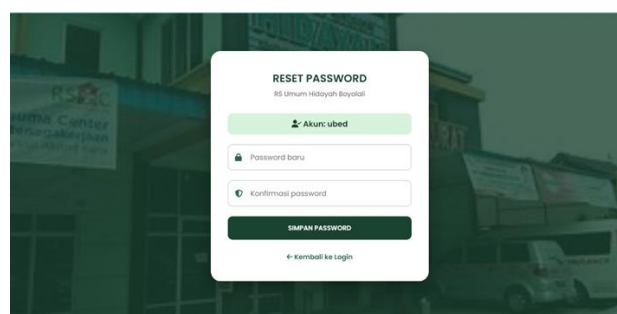
Picture2New Account Registration Menu Display for HR Admin

If a user doesn't have an account yet, they can register first by clicking "Register Account" at the bottom. This is for HR admins who don't have an account yet. Then, the user completes the form as instructed, including their full name, email address, gender, mobile phone number, home address, username, and password.



Picture3Forgot Password Menu Display

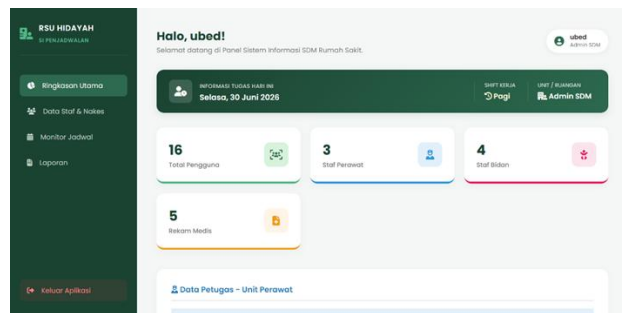
For ward heads and healthcare workers, account creation will be handled by the admin, who will then receive a username and password. They can then change their passwords in the "Forgot password?" menu.



Picture4Reset Password Menu Display

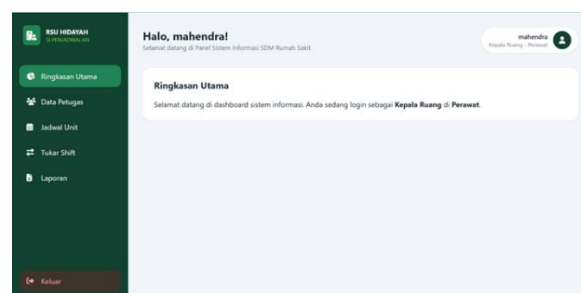
After logging in, the administrator, head of the room, and health worker will enter their username to check whether it's registered or not. Once the account is found, they'll be directed to create a new password.

2. Dashboard



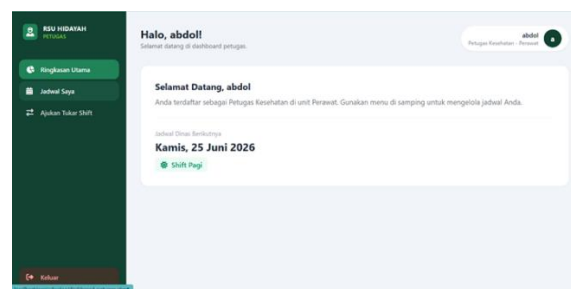
Picture5Admin Dashboard View

The admin dashboard contains staff data, schedule monitoring, and monthly reports. This feature is designed to keep staff informed about healthcare worker scheduling, the number of healthcare workers, monthly schedules, those responsible, and monthly reports.



Picture 6Head of Room Dashboard View

The ward head's dashboard contains staff data, schedule monitoring, shift changes, and monthly reports. This feature is designed to keep staff informed about healthcare worker scheduling, the number of healthcare workers, monthly schedules, those in charge, shift change requests, and monthly reports.



Picture7Health Officer Dashboard View

The healthcare worker dashboard contains information on daily schedules, monthly schedules, and shift swap requests. This feature is designed to keep staff informed about healthcare worker scheduling, shift swap requests, and whether or not they've been accepted.

3. System Implementation for HR Admin Team

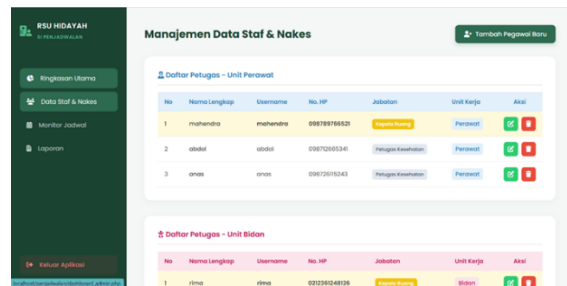


Figure 6. Staff & Healthcare Worker Data Menu Display

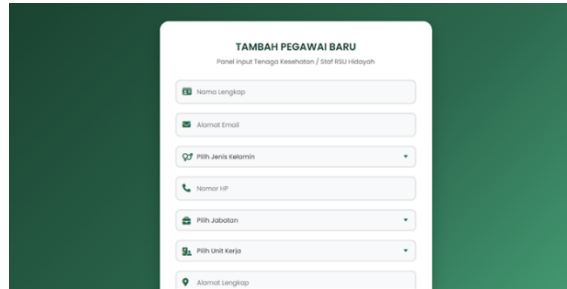


Figure 7 Display of the Add Officer Menu in Staff & Health Worker Data

This view displays data for all healthcare workers in the system and separates them by unit. From this view, the administrator can edit and delete staff data. To add a new healthcare worker, the administrator can do so from the "Add New Employee" menu. Enter their full name, email address, gender, mobile phone number, job title, work unit, full address, username, and password.

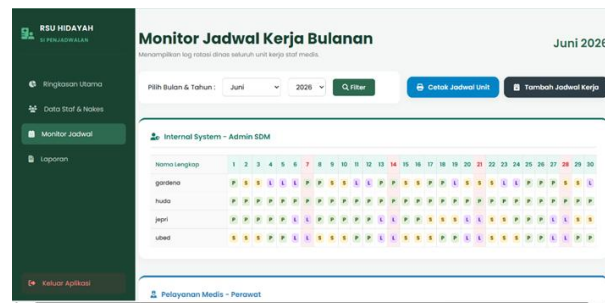


Figure 8 Admin Schedule Monitor View

In this view, the admin can see all the schedules currently running in each unit that have been created by the head of the room.

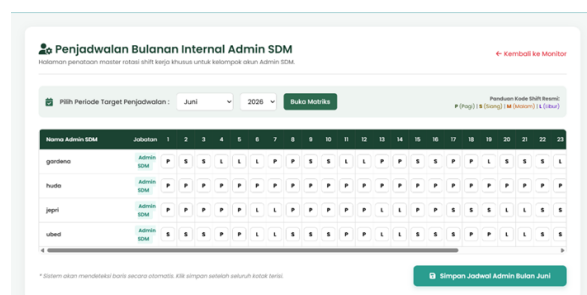


Figure 9 Display of the Add Schedule Menu on the Schedule Monitor

The "Add work hours" menu can be filled in by the admin, but only for their own schedule. For staff within their respective units, the head of the unit is responsible for creating this.

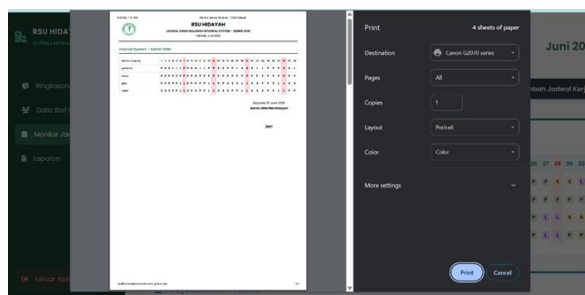


Figure 10 Display of the Print Schedule Menu on the Schedule Monitor

Admin can print work schedule report, unit schedule print view.

No	Nama Lengkap	Pekerjaan	Pagi (P)	Siang (S)	Malam (M)	Libur (L)
1	Rinda	Kepala Ruang	0	0	0	0
2	Rouzan	Petugas Kesehatan	0	0	0	0
3	radja	Petugas Kesehatan	0	0	0	0
4	syafidul	Petugas Kesehatan	0	0	0	0
5	zaidi	Petugas Kesehatan	0	0	0	0

Figure 11 Admin Report View

Figure 12 Display of the Print PDF Report Menu

In this report menu, the admin can print reports on staff data and incoming shifts. This makes it easier for the admin to summarize the number of shifts for each healthcare worker on duty.

4. System Implementation for Head of Room

No	Nama Lengkap	Username	Pekerjaan	Aksi
1	mahendra	mahendra	Kepala Ruang	[Edit] [Delete]
2	abdol	abdol	Petugas Kesehatan	[Edit] [Delete]
3	anas	anas	Petugas Kesehatan	[Edit] [Delete]
4	ferma	ferma	Petugas Kesehatan	[Edit] [Delete]

Figure 13 Officer Data Display

Figure 14 Add Officer View

This view displays the healthcare worker data in the system, according to the logged-in ward head. From this view, the ward head can edit and delete staff data. If the ward head wishes to add a healthcare worker, they can do so by entering their full name, email address, gender, mobile phone number, full address, username, and password.

Figure 15 Unit Schedule Display

In this view, the room head can see all the schedules currently running on the unit that have been created by the room head.

Figure 16 Unit Schedule Input Display

The Add schedule menu can be filled in by the head of the room in each unit.

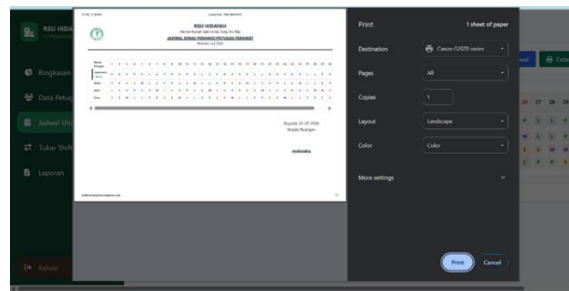


Figure 17 Unit Schedule Print View

The head of the room can print the schedule report, print the unit schedule view.

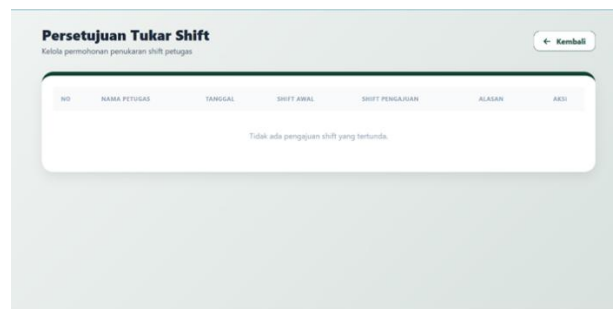


Figure 18 Head of Room Shift Exchange View

The head of the room receives a shift change request submitted by a health worker, the head of the room has the right to approve or reject.

No	Nama Petugas	Pagi	Siang	Malam	Libur
1	mahlendra	23	0	0	8
2	abdol	10	9	4	8
3	anas	8	8	5	10
4	firma	8	10	5	8

Boyolali, 01 July 2026
Kepala Ruang/Unit,

Figure 19 Head of Room Report Display

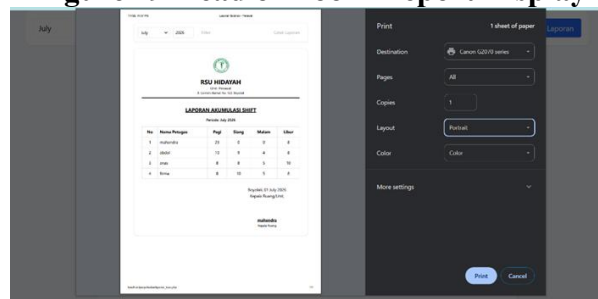


Figure 20 Print Report View

In this report menu, the ward head can print reports on staff data and incoming shifts. This makes it easier for the ward head to summarize the number of shifts for each healthcare worker on duty.

5. System Implementation for Health Workers

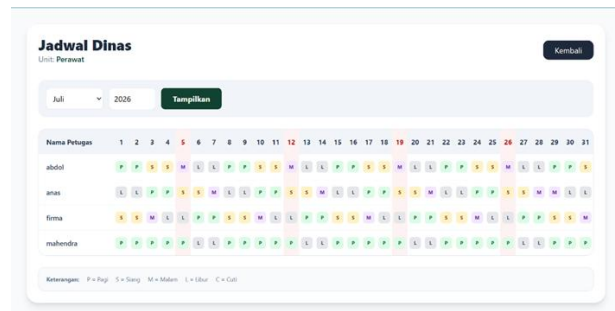


Figure 21 Display of Health Worker Schedule

In this display, health workers can see all the schedules currently running in each unit that have been created by the head of the room.

Figure 22 Shift Change Request View

Healthcare workers request a shift change. After entering the request, it will be sent to the ward manager's dashboard. The ward manager can accept or reject the request. During the waiting process, the request will be displayed as pending.

Conclusion

This research resulted in a Web-Based Healthcare Personnel Scheduling Information System at Hidayah General Hospital, Boyolali, developed to address the previously manual scheduling process. The system provides access for HR administrators, ward heads, and healthcare workers, with features for managing staff data, monitoring and inputting schedules, daily and monthly schedules, printing reports, and submitting and approving shift swaps. Implementation results indicate that the system can be used to support more structured healthcare worker schedule management and facilitate access to schedule information according to the needs of each user.

A limitation of this study is that the results presented still focus on the system's implementation at Hidayah Boyolali General Hospital and do not include quantitative measurements of the system's effectiveness more broadly. Therefore, further research is recommended to conduct system testing and evaluation by involving a wider user base and measuring the system's effectiveness and usability. Practically, the resulting system can serve as a tool for hospitals to manage healthcare worker data and schedules in a structured manner, facilitate schedule access, support shift swap requests, and assist in the recapitulation of healthcare worker shift reports.

References

- Abdullah, D. (2017). *Merancang aplikasi perpustakaan menggunakan SDLC*. Sefa Bumi Persada.
- Abubakar, R. (2021). *Pengantar metodologi penelitian*. SUKA-Press UIN Sunan Kalijaga.
- Adipati, I. M. S., Trisnadewi, N. W., Oktaviani, N. P. W., Munthe, S. A., Hulu, V. T., Budiastutik, I., Farida, A., Ramdany, R., Fitriani, R. J., Tania, P. O. A., Rahmiati, B. F., Lusiana, S. A., Susilawaty, A., Sianturi, E., & Suryana. (2021). *Metodologi penelitian kesehatan*. Yayasan Kita Menulis.
- Adiputra, I. M. S., et al. (2021). *Metodologi penelitian kesehatan*. Yayasan Kita Menulis.
- Little, C., & Choudhury, S. (2022). A review of the scheduling problem within Canadian healthcare centres. *These Authors Contributed Equality to This Work*, 11146(2), 12.
- Mustofa, A. S., Prasetyo, D. A., & Irmawan, A. N. (2018). *Sistem informasi penjadwalan kegiatan berbasis web pada Senkom Mitra Polri Kabupaten Magelang*.
- Panjaitan, D. J. (2022). *Sistem informasi penjadwalan mata pelajaran berbasis web menggunakan algoritma genetika*.
- Ratnawati, H., Rafi, I., Akjura, A. N., Apino, E., Rosyada, M. N., Tuanaya, R., Safitri, R., & Widyastuti, P. (2025). *Desain penelitian*. UNY Press.
- Safitri, & Puspitorini, S. (n.d.). Sistem informasi penjadwalan guru pada SMP Negeri 9 Muaro Jambi berbasis web. *Program Studi Informatika*.
- Sutikno, M. S. (2020). *Penelitian kualitatif*. Holistica Lombok.