ANALYSIS OF READINESS FOR IMPLEMENTING ELECTRONIC MEDICAL RECORDS USING THE DOQ-IT METHOD

Wa Ode Alma Yana[1],Mega Ermasari Muzuh[2], Niska Salsiani Sinta[3]*

[1,2,3] *Politeknik Baubau, Baubau, Indonesia*

CORRESPONDING AUTHOR

Nama   : Mega Ermasari Muzuh

Address: Strret Cokroaminoto, Baubau

E-mail : megaermasarimuzuh@poltekbaubau.ac.id

A B S T R A C T

This study aims to evaluate the readiness of the Wajo Community Health Center to implement Electronic Medical Records (RME). The background of this reseaech is based on the importance of digital transformation in the health service system to improve the efficiency and quality of health service through digitizing medical records. The research method used is descriptive with a qualitatif approach. Data was collected through interviews, observation. The research resulths show that the readiness of the Wajo Community Health Center in implementing RME using the portable DOQ-IT method studies is the readiness aspect: human resources, organizational work culture, and infrastructure. The researh results show that the human resources at the wajo Even Community Health Center are in the"not ready" category. Work culture and organization in the "fairly prepared" category. Governance and ladership in the "ready" category. Infrastucture in the" fairly ready" category, this isdue to a lack of HR training, specific SOPs for RME have not been prepared, infrastructure support is not yet optimal. Apart from that, further socialization and education needs to be carried out regarding the importance of RME and technology. Based on these findings, it is recommended that the Wajo Community Health Center conduct an intensive and comprehensive training program for all staff, prepare and implement clear and detailed SOPs regarding the use of RME, and increase infrastructure support by adding computer eqiupment in important locations. With this step, it is hoped that the implementation of RME at the Wajo Community Health Center can more effectively improve the quality of health services. In conclusion, although the Wajo community health centers are not yet fully ready, they are on the right track towards full implementation of RME with some necessary improvements.

INTRODUCTION

According to the Regulation of the Minister of Health of the Republic of Indonesia Number 43 of 2019 states that Phc is a health facility that provides public and individual health services at the first level, with priority on promotive and preventive efforts in its work area. In order to realize an effective, efficient and accountable community health center in the implementation of quality and sustainable first-level health services in achieving effective and efficient health services in its work area, the health center is required to carry out the implementation of medical records.(Kemenkes RI No 43, 2019)

Medical records are files that contain patient data, namely examinations, treatments, actions and other services that have been provided to patients. And electronic medical records are medical records made using an electronic system intended for the implementation of medical records. And all health service facilities must provide electronic medical records in accordance with the provisions of the ministerial regulation no later than December 31, 2023. Health service facilities as one of them is the Health Center, Electronic Medical Records (RME) are part of the information system subsystem in health service facilities that are integrated with other information subsystems in the facility.(Permenkes No 24, 2022)

Electronic medical records (RME) are becoming widely known in Indonesia, Medical records are needed for quality services and access to timely, complete and accurate patient information. Some of the advantages of RME implementation include data management management, accurate data access and reliability. The use of RME when transmitting data quickly and makes it easier to find lost data so that it is very efficient to use (Khasanah & Budiyanti, 2023).

This is in line with research Mega Ermasari Muzuh & Niska Salsiani Sinta (2023), that the implementation of the provision of medical record files starts from the time the patient registers to the patient to the polyclinic which takes 1-3 minutes for the speed of time.

In the research of Sudi rahayu et al., (2018) It has been stated that a readiness assessment needs to be carried out prior to the implementation of the RME. This will help in identifying key processes and priorities, as well as support the establishment of the operational functions necessary to optimize the implementation of the RME The readiness assessment must be comprehensive covering human resources, organizational work culture, governance, leadership and infrastructure (Eka Siti Hastuti et al., 2023)

Based on initial observations at the Wajo Health Center in March 2024, researchers obtained the results that the Wajo Health Center has tried to implement RME but the implementation has not been comprehensive and only includes outpatient services. As an effort to support the strategic plan of the Ministry of Health for the 2020-2024 period, one of which includes digitizing medical records. In the plan to implement electronic medical records at the Wajo Health Center, several obstacles are still found, namely the lack of facilities and infrastructure such as computers and other hardware. In addition, information was also obtained that human resources at the Wajo Health Center, such as doctors, have not been able to run RME. Therefore, based on the existing problems, the researcher is interested in finding out about the analysis of the readiness of the implementation of electronic medical records using *the Doctor's Office Quality Standardization Technology* (*DOQ-IT*) method which is a method to evaluate the readiness of the implementation of electronic medical records.

METHODOLOGY

This study uses descriptive with a qualitative method. Qualitative research is a research approach that is used to describe in detail and in depth events, individual behaviors or certain conditions in a location through narratives. The subjects in this study are the Head of Medical Records, the Administrative coordinator as a triangulation and patient registration officer. The object of this research is an analysis of the readiness of the implementation of electronic medical records at the Wajo Health Center in the areas of organizational culture, human resources, governance and leadership, and infrastructure. The research was carried out in April-June at the Wajo Health Center

RESULTS & DISCUSSION

Table 1. Results of Observation of Human Resource Readiness Aspects

Aspects observed	Yes	Not	Information
Availability of Medical Record personnel	✓		There are 6 medical record officers, 1 medical record graduate and 5 others from other departments
There is training related to RME	✓		Training has been carried out but not yet comprehensive
Knowledge of officers in using computers	✓		Understand the use of computers
The presence of RME-specific IT staff		✓	IT staff, especially RME, do not exist yet

Based on the results of observations made, it shows that the aspect of workforce readiness in the implementation of electronic medical records at the Wajo Health Center, is quite ready in the implementation of electronic medical records, this is supported by the availability of medical record personnel, the training that has been carried out, and the basic knowledge of officers in using computers is a good readiness to implement electronic medical records. However, there is still training that does not cover all medical staff and the absence of IT staff, this is an obstacle that needs to be overcome to achieve maximum readiness in the implementation of electronic medical records at the Wajo Health Center.

By *Wold Healt Organization* (2006) One of the most important issues that requires careful planning is related to the availability of human resources and their capabilities. For this reason, HR planning must be documented and proposed to the personnel (Faida & Ali, 2021)

Based on the results of research at the Wajo Health Center regarding readiness a (HR), it is said that it is quite ready, this is because the Wajo Health Center already has 6 medical record personnel, but only has one person with a medical recorder education background. Based on the number of manpower, this is enough to support the overall implementation of RME in all health center service units. According to research (Alfian, 2020) which states that (HR) is a component to influence the success of the implementation of a system. This is supported by proprietary research (Faida & Ali, 2021) stated that the development of RME will be highly dependent on human resources (HR) as RME users and policy makers.

Training related to RME has often been carried out at the Wajo Health Center, but this training only includes medical record staff and administrative staff, while training for all medical staff such as doctors has not been carried out. This uneven training can be a barrier to the implementation of RME because all medical staff must have adequate ability to operate the system. Thorough training is important to ensure that all staff have sufficient ability and confidence in using the RME. Without sufficient training, there is a risk of errors in the use of the system and unwillingness to take advantage of all the features offered by RME.

According to research (Hapsari et al., 2023) stated that training is the process of pursuing the needs of employees to carry out their work where employee training will provide practical knowledge and its application in the world of work. With training, it will improve the shortcomings of each individual.

Table 2. Results of Observation of Cultural and Organizational Readiness

Aspects observed	Yes	Not	Information
The existence of SOPs used as guidelines for the implementation of electronic medical records		✓	There is no specific SOP for RME yet
There was a meeting that was held to discuss the implementation of RME	✓		The meeting to discuss the RME has been held

Based on the results of observations made on the aspects of cultural readiness and leadership at the Wajo Health Center, overall the Wajo Health Center has taken significant steps in the implementation of RME. However, some improvements are still needed, such as the creation of a special SOP for RME so that the implementation of electronic medical records can run more effectively.

Based on the results of the research conducted at the Wajo Health Center, it is seen from the readiness of the work culture and organization consisting of culture, workflow and patient involvement. It was found that for cultural and organizational readiness in the category of quite ready, this is supported by officers who have known and understood the benefits of electronic medical records which are considered to be able to facilitate work, reduce the use of paper so that it is very effective and efficient by applying electronic medical records (RME).

In terms of patient involvement, the results are obtained that there are many benefits obtained from the implementation of RME, one of which is that in addition to simplifying patient services, the service process provided to patients also does not take a long time so that the time used is more effective.

Based on research (Wirajaya & Dewi, 2020) It shows that organizational culture leads to the transformation of the system that was initially manual to electronic medical records and create an effective and efficient work system. The Wajo Health Center has held an internal meeting involving various related parties to discuss the implementation of electronic medical records (RME). In the meeting, various important aspects were discussed, including patient data security and responsibilities related to the management of electronic medical records.

This shows the awareness and efforts of the Wajo Health Center to prepare themselves for the implementation of RME. However, even though the health minister's regulation on RME already exists, the Wajo Health Center still does not have a Standard Operating Procedure (SOP) workflow that specifically regulates RME. For now, the Wajo Health Center is still using the old medical record SOP that is not specific to RME. This shows that there are still things that need to be completed by the Wajo Health Center to be really ready to implement electronic medical records (RME) effectively and in accordance with existing regulations.

This is similar to the research conducted by (Delfina Darianti., 2021) which states that the implementation of digitization of medical records at the National Eye Center of Cicendo Eye Hospital

has obstacles, namely the absence of fixed procedures, where the function of SOPs is to facilitate the duties of officers/employees or work units, as a legal basis if there are irregularities, clearly knowing the obstacles are easily traced, and directing officers to be equally disciplined in their work, as well as a guideline in carrying out routine work.

Table 3. Governance and Leadership Observation Results

Aspects observed	Yes	Not	Information
There is support from the leadership for the implementation of the RME	✓		The leadership fully supports the implementation of RME, as evidenced by the RME implementation process that has begun to be carried out in outpatient clinics
There is a team responsible for electronic medical records	✓		A dedicated team has been formed and is active in the implementation process
The health center has carried out services using computers	✓		The service using computers has been carried out
The existence of a decree on the implementation of RME	✓		Decree on the implementation of RME is already in place

Based on the results of observations that have been made on the aspects of governance and leadership, it is known that leadership support, the existence of a special team, and integration in the strategic plan show good readiness in terms of governance and leadership. However, to achieve maximum readiness, there are still several things that need to be overcome, such as network and electricity problems.

Based on the results of the research conducted at the Wajo Health Center, it was found that the leaders of the Wajo Health Center showed a ready attitude to fully support the implementation of electronic medical records (RME). This support is evidenced by the initiation of the implementation of RME which is running gradually and the formation of a special team and already understands the pros and cons of RME implementation. This step reflects the leadership's commitment to ensuring that the transition to electronic systems runs smoothly and effectively.

According to research (Wirajaya & Dewi, 2020) which states that leaders have a role as a policy determinant which will include strategically to develop an innovation, take an opportunity, negotiate and implement a decision consistently. Therefore, leadership support is very important in the successful implementation of RME.

The Wajo Health Center can be categorized as "ready" for the implementation of the Electronic Medical Record (RME) with the support of the leadership of the Wajo Health Center who supports and is committed to the implementation of the electronic medical record (RME) by forming a special team to supervise and ensure the smooth implementation of the RME which is carried out in stages. This shows that there is a structure that is responsible for the implementation of the system and there is a mechanism to ensure that the system runs according to plan.

Table 4. Results of Observation of Infrastructure Aspects

Aspects observed	Yes	Not	Information
Availability of computers, mice and printers to support the implementation of RME	✓		Computers at the Wajo Health Center are available, but there is still a shortage of computers, printers are also available
The existence of a budget related to the implementation of electronic medical records	✓		Initial budget is already available
There is a sustainable budget for IT vision		✓	There is no analysis and allocation of sustainable budget
The existence of *software* used to access data	✓		*Software* is available (E-puskesmas) and is connected to BPJS and one healthy ministry of health
Wifi network availability	✓		Wifi network is available

Based on the results of the observations made, seen from the aspect of infrastructure readiness at the Wajo Health Center, it is not fully ready to implement Electronic Medical Records (RME).

Although computers and printers are available, additional computers are still needed to improve service efficiency. The initial budget for RME already exists, but there is no ongoing budget allocation for IT maintenance. E-puskesmas software is available and connected to BPJS and Satu Sehat of the Ministry of Health, but the existing wifi network is still often disrupted and needs repairs. With the addition of computers, sustainable budget allocation, and wifi network improvements, the Wajo Health Center can increase readiness and effectiveness in the implementation of RME.

According to (Wirajaya and Dewi, 2020) stated that basically the common obstacles encountered in the development of electronic medical records (RME) are related to finance and budget to provide an information technology infrastructure in health centers so that IT infrastructure is limited.

Based on the results of research at the Wajo Health Center, it shows that the readiness is "quite ready" in terms of budget related to the implementation of electronic medical records, the availability of available hardware, namely laptops, computers, wifi networks and the existence of *sotware* which is used for RME in the form of E-puskesmas and is linked to BPJS and one health ministry of health. However, there is still a need to increase the number of hardware and add special IT staff to manage the RME system more effectively so that the RME service can run smoothly. This is supported by research (Sudirahayu, 2016) finding that Dr.H.Abdul Moeloek regional general hospital is ready to implement RME which is linked to the budget for the implementation of electronic medical records. This research is in line with the research (Hidayat & Sari, 2017) that the PKU Muhammadiyah Pakem inpatient clinic does not have adequate IT infrastructure.

With the addition of adequate infrastructure, the Wajo Health Center can improve operational efficiency, reduce medical errors, and provide better and responsive health services to the community.

CONCLUSION

The readiness of human resources at the Wajo Health Center is categorized as quite ready. This is because the number of medical record personnel in the Wajo Health Center is 6 medical record officers and is ready to run RME and has adequate basic skills in using computers which is one of the important components in the implementation of RME, this readiness is supported by the training that has been obtained related to the use of RME. However, to achieve maximum readiness, improvements are needed through intensive and continuous training for medical staff, this is because medical staff have not received training related to the use of RME.

The cultural and organizational readiness at the Wajo Health Center is categorized as quite ready. This is because RME is seen as a solution and can minimize the use of paper and in planning RME has involved related parties by discussing the implementation of RME and has held a meeting to discuss the framework and discuss related to the use of patient data and the security of patient data, but in the implementation of RME currently the Wajo Health Center does not have SOPs related to RME.

The readiness of governance and leadership at the Wajo Health Center is categorized as ready. This is due to the support from the Leadership of the Wajo Health Center who shows commitment and supports the implementation of RME as evidenced by the implementation of RME that has been running so far as well as consistent decision-making and strategies by the leadership in implementing which are important factors in supporting the successful implementation of RME as well as the formation of a special team for the implementation of electronic medical records.

The readiness of infrastructure at the Wajo Health Center is categorized as quite ready, in the implementation of the RME Wajo Health Center uses the E-puskesmas application and collaborates with BPJS and one health ministry of health, but this readiness is not optimal. This is because several supporting infrastructures in the current Wajo Health Center, such as computer networks and hardware in the form of computers, still require the improvement and addition of computers in poly rooms, emergency rooms, patient registration and labs to support the effective and efficient implementation of RME.

The limitation of the research during conducting the study is that the data is not fully accessible due to privacy policies, which limits the analysis to more in-depth.

ACKNOWLEDGMENTS

this research. And once again thank you to Baubau Polytechnic for all the knowledge and experience that has been given during the lecture process until now.

REFERENCES

Alfian, R. A. and M. U. B. (2020). Analysis of the Implementation of E-Puskesmas at the Ikur Koto Padang Health Center. *Ejournal.Lldikti10.Id*, *5*(2), 395–402. http://doi.org/10.22216/jen.v5i2.5043

Delfina Darianti, Vina Ervina Destiana Dewi, & Leni Herfiyanti. (2021). Implementation of Medical Record Digitization in Supporting the Implementation of Electronic Medical Records at Cicendo Hospital. *Scientific Journal of Human and Health*, *4*(3), 403–411. https://doi.org/10.31850/makes.v4i3.975

Eka Siti Hastuti, Sri Sugiarsi, & Sri Mulyono. (2023). Analysis of the Level of Readiness for the Implementation of Electronic Medical Records in the Boyolali Regency Health Center. *Journal of Indonesia Health Information Management (JMIKI), 11*(2). https://doi.org/10.33560/jmiki.v11i2.570

Faida, E. W., & Ali, A. (2021). Analysis of the Readiness of the Implementation of Electronic Medical Records with the DOQ-IT (Doctor's Office Quality-Information Technology) Approach. *Journal of Health Information Management Indonesia*, *9*(1), 67. https://doi.org/10.33560/jmiki.v9i1.315

Hapsari, D. A., Andriani, R., & Igiany, P. D. (2023). Analysis of the Readiness of the Implementation of Electronic Medical Records Using CAFP (California Academy of Family Physicians) Instruments at the Kartasura Health Center. *Imelda Scientific Journal of Health Recorders and Information (JIPIKI), 8*(2), 242–252. https://doi.org/10.52943/jipiki.v8i2.1342

Hidayat, A. R., & Sari, W. E. (2017). Readiness Assessment of the Implementation of Electronic Medical Record at PKU Muhammadiyah Pakem Inpatient Clinic. *Indonesian Journal On Medical Science*, *4*(1), 147–155.

Kemenkes RI, 2022, Travel, O. F., Expenses, O., Hancock, A. D., Formation, A. F., Armstrong, N., Le, F., Faso, B., Le, F., On, F., Le, L. L. L. P. L., Kone, I., Ou, I., Laquelle, I., Quelle, T., Scheme, N. G., Pizer, W. A., Weintraub, S., Formation, A. F., … Gh, E. (2022). Peraturan Menteri Kesehatan Republik Indonesia Nomor 24 Tahun 2022 Tentang Rekam Medis. *Journal of Economic Perspectives*, *2*(1), 1–4.

Khasanah, L., & Budiyanti, N. (2023). Readiness for the Implementation of Electronic Medical Records at the Cirebon City Regional Health Center in 2021. *Journal of Health Information …*, *9*(2), 192–201. https://ojs.poltekkes-malang.ac.id/index.php/JIKI/article/download/3836/652

Maha Wirajaya, M. K., & Made Umi Kartika Dewi, N. (2020). Analysis of the readiness of Dharma Kerti Tabanan Hospital to implement electronic medical records. *Journal of Vocational Health*, *5*(1), 1. https://doi.org/10.22146/jkesvo.53017

Muzuh, M. E., & Sinta, N. S. (2023). Review of the System for the Storage and Provision of Medical Records at the Bungi Health Center in Baubau City. *Journal of Preventive Promotive*, *6*(6), 948–952. http://journal.unpacti.ac.id/index.php/JPP

Ningsih, K. P., Purwanti, E., Markus, S. N., Santoso, S., Husin, H., & Zaini, M. (2022). Efforts to Support the Successful Implementation of Medical Records

Permenkes. (n.d.).*Regulation of the Minister of Health. 2*. https://dinkes.jatimprov.go.id/userfile/dokumen/pmk-nomor-43-tahun-2019-tentang-puskesmas.pdf

Praptana, Puspita Ningsih, K., Santoso, S., & Sevtiani, I. (2021). Assistance in Assessing the Readiness of the Implementation of Electronic Medical Records Using the DOQ-IT Method at Condong

Catur Sleman Hospital

Satria Indra Kesuma. (2023). Electronic Medical Records in Hospital Services in Indonesia: Legal Aspects and Implementation. *ALADALAH: Journal of Politics, Social, Law and Humanities*, *1*(1), 195–205. https://doi.org/10.59246/aladalah.v1i1.188

Wulansari, I., Purnami, C. T., & Prasetijo, A. B. (2023). Challenges and Support in the Readiness of the Implementation of Electronic Medical Records in Hospitals. *VISIKES: Journal of Public Health*, *22*(1), 39–47. https://doi.org/10.33633/visikes.v22i1supp.7790