

International Journal of Nursing and Midwifery Science (IJNMS)

This is an Open Access article distributed authors retain copyright licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-sa/4.0/) that allows others to share the work commercially with an acknowledgement of the work's authorship and initial publication in this journal.

<http://ijnms.net/index.php/ijnms>

ORIGINAL RESEARCH

e- ISSN: 2686-2123
p- ISSN: 2686-0538



“THE EFFECT OF THE IMPLEMENTATION OF THE MENTARI CERAH INNOVATION ON PATIENT SATISFACTION WITH OUTPATIENT REGISTRATION SERVICES AT PROF. DR. SOEKANDAR MOJOKERTO REGIONAL HOSPITAL”

Erni indrawati¹ Sulis Diana² Yusuf Alamudi³

Sekolah Tinggi Ilmu Kesehatan Majapahit Mojokerto

Corresponding Email: erniindrawatidrg@gmail.com

ABSTRACT (200 kata)	Keywords
The problem of outpatient registration at Prof. Dr. Soekandar Regional General Hospital is the existence of a registration queue that takes a long time if you have to register manually, the timeliness of service is not appropriate because of the long queue at registration, patient data when input is not appropriate causing long queues. This study aims to analyze the application of the influence of Mentari CERAH innovation (speed of registration process, ease of use of innovation, ease of access to services) on the satisfaction of registration patients in outpatient registration at Prof. Dr. Soekandar Regional General Hospital with service quality as a moderator variable. This research is an analytical observational study with a cross-sectional research design conducted in June 2025 at the Registration of outpatient installation. The research sample consisted of 246 respondents determined taken using the simple random sampling technique. Data were collected through a structured questionnaire and then analyzed using the Chi-square bivariate test and multivariate analysis	Patient satisfaction with registration, speed of registration process, ease of use of innovation, ease of access to services, quality of service, outpatient registration, SEM-PLS

with SEM-PLS. The results of the study showed that the speed of the registration process had a direct influence on patient satisfaction and service quality ($p > 0.05$). Ease of access to innovation had a direct influence on patient satisfaction ($p = 0.006$) while ease of access did not have a direct influence on service quality ($p = 0.776$). Ease of use of innovation on patient satisfaction was not significant but had a positive influence ($p = 0.418$) while on service quality it had a direct/significant influence ($p = 0.009$). The conclusion is that the speed of the registration process and the quality of service are important determinants of patient satisfaction, while the quality of service is a mediator rather than a moderator. Hospitals need to improve the efficiency of registration administration procedures and maintain overall service quality to improve patient satisfaction during outpatient registration	
Contact Correspondent Author Nama : Erni indrawati Nomor Handphone /WA:081217217730	
Email Author erniindrawatidrg@gmail.com	

INTRODUCTION

The admission process is the first step for patients to enter health services. In the admission/registration process at Prof. Dr. Soekandar Regional General Hospital, it can be done manually, namely by going directly to the registration counter or through the self-registration machine, namely through the Mentari CERAH innovation. Registration for outpatient care at Prof. Dr. Soekandar Regional General Hospital can be done in the following ways: Offline Registration or directly Offline registration is divided into two, namely manually through the Outpatient Registration Center/TPPRJ and registration through the Self-Registration Machine (APM). The second is Online Registration or indirectly. Online registration is done through the JKN mobile application and through the registration number. The function of the admission/registration section at the hospital is: As a coordinator for the admission of inpatients both from outpatients (Polyclinics) and emergency care, Carrying out referral instructions from outpatients

and emergency care, Arranging the destination of sending patients to the inpatient room according to the existing referral and conditions.

The Mentari Cera Innovation at Prof. Dr. Soekandar Regional General Hospital is one of the facilities owned by the hospital with the aim of making it easier for patients to register or register without meeting directly with the registration officer. The Mentari Cera Innovation has an APM form almost the same as an Automated Teller Machine (ATM). The function of the APM machine in the hospital is as a patient registration machine which includes patients being able to enter personal data and information needed for registration such as name, NIK number, type of service and referral number (for BPJS participants), in addition the APM can also function to select the service to be addressed and can verify the data that has been filled in. The advantages of using APM are: reducing waiting times and long queues at registration admission, providing comfort for patients who do not want to interact directly with officers and speeding up the registration process so that patients can immediately get medical services.

Patient satisfaction is a key indicator in assessing the quality of hospital care, from the registration process to patient discharge. Various patient complaints relate to aspects of administration, competence, healthcare personnel, facilities and infrastructure, medication availability, costs, and comprehensive healthcare services (Haerudin et al., 2023).

Outpatient visits at Prof. Dr. Soekandar Regional Hospital in 2023, the total number of outpatients was 100,112 with details of patients who registered at the registration counter as many as 67,460 patients and those who registered through the Self-Registration Machine (APM) as many as 32,652 patients. While outpatient visits at Prof. Dr. Soekandar Regional Hospital in 2024, the total number of outpatients was 146,569 with details of patients who registered at the registration counter as many as 94,577 and patients who registered through the Self-Registration Machine (APM) as many as 51,992 patients. Patient visits increased from 2023 compared to 2024 by 146%. The use of APM Machines also increased by 159% with details of 2023 as many as 32,652 patients and 2024 as many as 51,992 patients using the APM machine. Registration through the registration counter/admission when compared with registration through the APM machine, namely in 2023 as many as 20.6% of patients used the APM machine, while in 2024 as many as 18.2% of patients used the APM machine

METHOD

This study is an observational analytical study. The cross-sectional design utilizes simultaneous measurements of independent and dependent variables, using a quantitative descriptive approach. This approach describes and analyzes patient satisfaction with the Mentari Cera innovation.

Population and sample : The population in this study was all patients who visited to register using the Self-Registration Kiosk at the Outpatient Unit of Prof. Dr. Soekandar General Hospital, Mojokerto

Regency, in June 2025. The sample in this study was patients who visited to register using Mentari Cerah at the Outpatient Unit of Prof. Dr. Soekandar General Hospital, Mojokerto Regency, in June 2025.

The inclusion criteria for this sample were as follows:

- a. Patients who visited to register at the Outpatient Unit using Mentari Cerah
- b. Respondents who could register using Mentari Cerah
- c. Sample size: 246 respondents

Research Variables

a) Independent Variables

The independent variables in this study are speed of the registration process, ease of use, ease of access, and patient characteristics.

b) Dependent Variables

The dependent variable in this study is patient satisfaction.

RESULTS

1. Bivariate Test

- a. Effect of Registration Process Speed on Patient Satisfaction at the Outpatient Unit of Prof. Dr. Soekandar Regional Hospital, Mojokerto Regency

Table 1 Effect of Registration Process Speed on Patient Satisfaction

Speed of registration process	Patient satisfaction				Total		P-Value
	Poor		Good				
	f	%	f	%	f	%	
Poor	101	41	35	14,2	136	55,5	0,000
Good	22	9	88	35,8	110	44,8	
Total	123	50	123	50	246	100	

In Table 1 above, out of 136 poor registration process speeds, the majority of respondents reported poor patient satisfaction (101 respondents (41%)), while 35 respondents (14.2%) reported good satisfaction. Of the 110 registration process speeds, the majority reported good patient satisfaction (88 respondents (35.8%)), while 22 respondents (9%) reported poor patient satisfaction. Based on statistical tests, a p-value of 0.000 was obtained, meaning there is a relationship between registration process speed and patient satisfaction.

- b. The Effect of Ease of Use of the Mentari Cerah Innovation on Patient Satisfaction in the Outpatient Unit of Prof. Dr. Soekandar Regional Hospital, Mojokerto Regency

Table 2 Effect of Ease of Use of the Mentari Cerah Innovation on Patient Satisfaction

Ease of use Mentari Cerah	Patientr satisfaction				Total		P-Value
	Poor		Good				
	f	%	f	%	f	%	
Poor	87	35,4	51	20,7	138	56,1	0,000
Good	36	14,6	72	29,3	108	43,9	
Total	123	50	123	50	246	100	

In Table 2 above, out of 138 respondents, the ease of use of Mentari cerah innovation is poor. Most respondents reported poor patient satisfaction (87 respondents (35.4%), while 51 respondents (20.7%) reported good satisfaction. Of the 108 respondents, the ease of use of Mentari cerah innovation is poor. 108 respondents (43.9%), while 36 respondents (14.6%) reported poor patient satisfaction. Based on statistical tests, a p-value of 0.000 was obtained, meaning there is a relationship between the ease of use of Mentari cerah innovation and patient satisfaction.

c. The Effect of Ease of Access to Mentari Cerah Innovation on Patient Satisfaction in the Outpatient Unit of Prof. Dr. Soekandar Regional Hospital

Table 3 Effect of Ease of Access to Mentari Cerah Innovation on Patient Satisfaction

Ease of accessi Mentari Cerah	Patient satisfaction				Total		P- Value
	Poor		Good				
	f	%	f	%	f	%	
Poor	84	34,1	50	20,3	134	54,4	0,000
Go	39	15,9	73	29,7	112	45,6	
Total	123	50	123	50	246	100	

Table 3 above, out of 134 respondents, the ease of access to Mentari cerah innovation is poor. Most respondents reported poor patient satisfaction (84 respondents (34.1%), while 50 respondents (20.3%) reported good satisfaction. Of the 112 respondents, the ease of access to Mentari cerah innovation is poor, with 73 respondents (29.7%), and 39 respondents (15.9%) reporting poor patient satisfaction. Based on statistical tests, a p-value of 0.000 was obtained, meaning there is a relationship between the ease of access to Mentari cerah innovation and patient satisfaction.

d. The Effect of Service Quality on Patient Satisfaction at the Outpatient Unit of Prof. Dr. Soekandar Regional Hospital, Mojokerto Regency

Table 4.Effect of Service Quality on Patient Satisfaction

Service Quality	Patient satisfaction				Total		P- Value
	Poor		Good				
	f	%	f	%	f	%	
Poor	97	39,4	29	11,8	126	51,2	0,000
Good	26	10,6	94	38,2	120	48,8	
Total	123	50	123	50	246	100	

respondents reporting poor service quality, the majority reported poor patient satisfaction (97 respondents (39.4%), while 29 respondents (11.8%) reported good satisfaction. Of the 120 respondents reporting good service quality, the majority reported good patient satisfaction (94 respondents (38.2%), while 26 respondents (10.6%) reported poor patient satisfaction. Based on statistical tests, a p-value of 0.000 was obtained, indicating a relationship between service quality and patient satisfaction.

In Table
the 126

4 above, of

2. Multivariate Test

Table 5 Path Coefficient of the Effect of the Implementation of the Mentari CERAH Innovation on Patient Registration Satisfaction

No		Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Direction of influence
1.	Registration process speed → Patient satisfaction	0.419	0.420	1.073	5.771	0.000	Moderate positive effect
2.	Registration process speed → Service Quality	0.700	0.705	0.044	15.902	0.000	Strong positive effect
3.	Ease of access Mentari CERAH → Patient safety	0.227	0.227	0.083	2.741	0.006	Weak positive effect
4.	Ease of access Mentari CERAH → service quality	-0.027	-0.030	0.096	0.285	0.776	Not significant
5.	Ease of use Mentari CERAH → patient safety	0.077	0.077	0.095	0.811	0.418	Not significant
6.	Ease of use Mentari CERAH → Service quality	-0.267	-0.267	0.102	2.621	0.009	Negative, quite strong
7.	Moderating Effect 1 → Patient safety	0.215	0.212	0.055	3.917	0.000	Positive weak to moderate
8.	Moderating Effect 2 → Patient safety	0.077	0.077	0.079	0.973	0.331	Not significant
9.	Moderating Effect 3 → Patient safety	-0.298	-0.299	0.077	3.881	0.000	Moderate negative
10.	Service quality → Patient safety	0.372	0.370	0.058	6.434	0.000	Moderate positive

Based on Table 5 it can be explained that:

- The speed of the registration process has a significant effect on patient satisfaction with 0.419 and a p-value of 0.000, indicating a significant effect. The speed of the registration process has a positive and significant effect on patient satisfaction.
- The speed of the registration process has a significant effect on service quality with 0.700 and a p-value of 0.000, indicating a significant effect. The speed of the registration process has a very strong and significant impact on service quality.
- The ease of access to Mentari CERAH innovation has a significant effect on patient satisfaction with 0.227 and a p-value of 0.006, indicating a significant effect. The ease of access to innovation has a positive effect on patient satisfaction.
- The ease of access of the Mentari CERAH innovation on service quality has a value of -0.027 and a p-value of 0.776, indicating it is not significant, meaning there is no significant effect of ease of access on service quality.

- e) The ease of use of the Mentari CeraH innovation on patient satisfaction has a value of -0.077 and a p-value of 0.418, indicating it has a positive but insignificant effect on patient satisfaction.
- f) The ease of use of the Mentari CeraH innovation on service quality has a value of -0.267 and a p-value of 0.009, indicating it is significant, meaning there is a significant negative effect on service quality.
- g) Moderating effect 1 on patient satisfaction has a value of 0.215 and a p-value of 0.000, indicating it is significant, meaning the moderating effect has a positive and significant effect.
- h) Moderating effect 2 on patient satisfaction has a value of 0.77 and a p-value of 0.331, indicating it is not significant, meaning the moderating effect does not show a significant effect.
- i) Moderating effect 3 on patient satisfaction has a value of $O = -0.298$ and a p-value of 0.000, meaning it is significant, namely a negative but significant moderating effect, this reduces the influence of other variables on patient satisfaction.

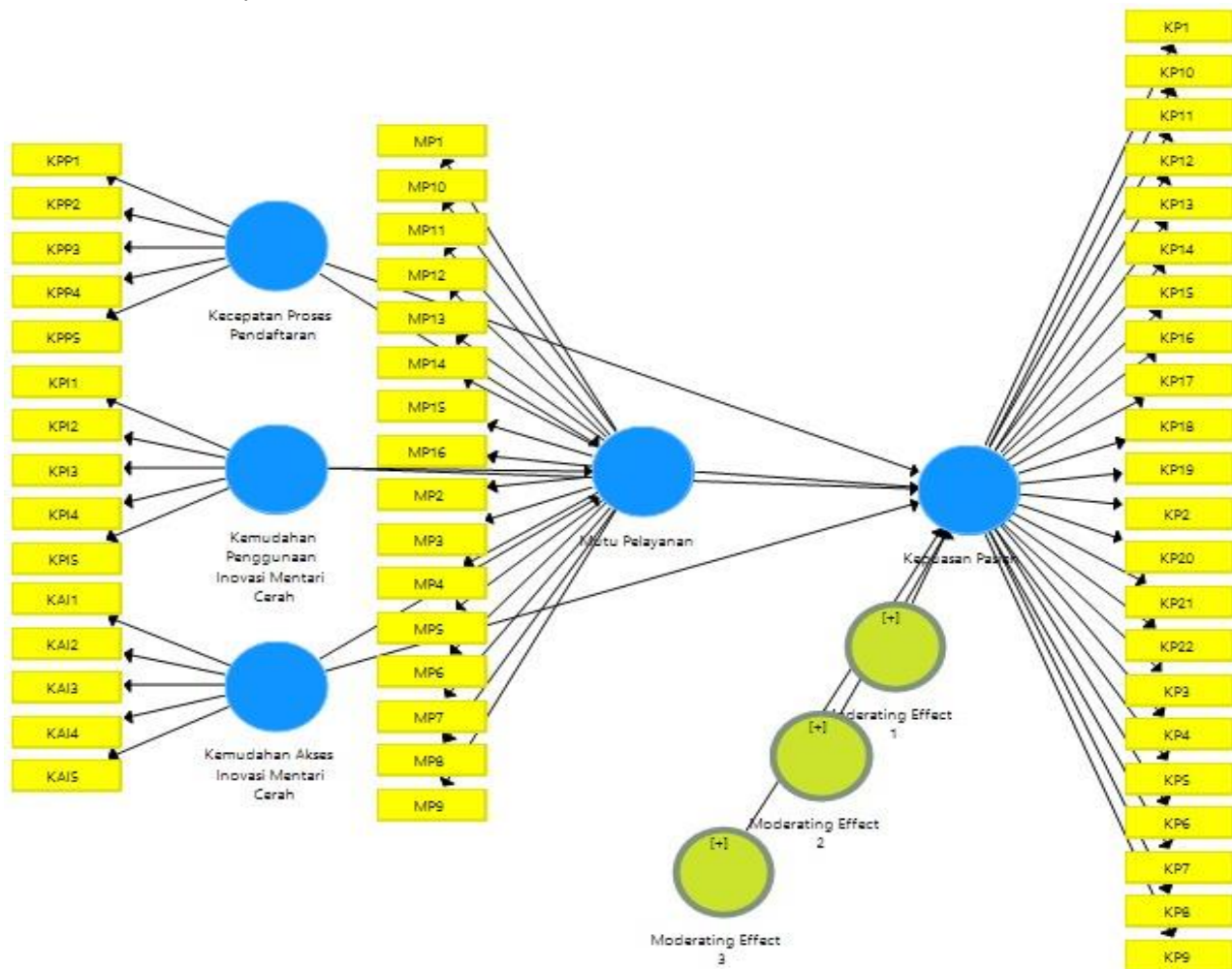


Figure. Path Diagram after VIF Adjustment in the Statistical Test
Factors Influencing Patient Satisfaction

DISCUSSION

The Influence of Registration Process Speed on Patient Satisfaction. Based on the research data, the Chi-square test showed a statistically significant effect between registration process speed and patient satisfaction. However, in the SEM-PLS analysis, registration process speed had a significant positive effect on patient satisfaction. This means that registration process speed significantly increases patient satisfaction. This indicates that the faster and more efficient the registration process, the higher their level of satisfaction with the overall service received. Registration process speed generally has a positive effect on patient satisfaction, especially when supported by friendly service and adequate facilities. However, other variables also influence this, such as staff attitude and overall service quality. Research conducted by Marlina (2023) found that the timeline variable influences patient satisfaction using the Self-Registration Machine (APM) system. Patients who register using the APM can expedite the registration process, thus contributing to patient satisfaction. Research conducted by Cahyani (2024) found that patients using the Self-Registration Machine (APM) service register faster than those registering at the Outpatient Registration Center (TPPRJ). Waiting times for outpatient services using the Self-Registration Machine (APM) are more efficient than those using the registration counter system. Research conducted by Mulyana (2025) found that the APM machine can simplify the registration process and is proven to be more effective in increasing service efficiency, particularly in reducing waiting times for BPJS patients. The research findings revealed that the speed of the registration process directly influences patient satisfaction with the Mentari Ceren innovation. **The Effect of Ease of Access to Mentari Ceren Innovations on Patient Satisfaction**

The study found that ease of access to Mentari Ceren innovations significantly impacted patient satisfaction with a p-value of 0.227 and a p-value of 0.006. This indicates that ease of access to innovations has a positive effect on patient satisfaction. This indicates that the easier it is for patients to access the innovations offered by Mentari Ceren, the higher their perceived satisfaction. Ease of access is a crucial factor in healthcare services that influences patient experience. Innovations that make it easier for patients to access services, such as a fast registration system, readily available information, or effective technology to support services, can reduce waiting times and streamline the service process. This contributes to patients feeling more valued and having their needs met

Based on research results, easy access to innovative services has a significant influence on increasing patient satisfaction. Mentari Ceren Innovation is expected to develop and facilitate access to innovation in healthcare services so that patient satisfaction is maintained and increased. Based on Atinga, R.A., Abekah-Nkrumah, G., & Domfeh, K.A (2011), it is stated that emphasizing the importance of ease in the service system is a factor in patient satisfaction. Focusing on providing user-friendly and responsive services will provide competitive added value for institutions. Ease of access to Mentari Ceren Innovation directly affects patient satisfaction.

The Effect of Ease of Use of the Mentari Ceren Innovation on Patient Satisfaction. The study found that the ease of use of the Mentari Ceren innovation on patient satisfaction had a p-value of 0.077 and a p-value of 0.418, indicating an insignificant positive effect on patient satisfaction. This means that ease of use has a positive but insignificant effect on patient satisfaction, or that ease of use of the registration process does not contribute to patient satisfaction.

Research conducted by Marlina (2023) stated that registration using the APM machine is still not easy enough for some patients, such as elderly patients and mental patients who are not accompanied by family. The results showed a significant relationship between ease of use of the Mentari Ceren innovation and patient satisfaction, as indicated by a p-value of 0.000. This indicates that the easier an innovation is to use, the more likely patients are to be satisfied with the service provided. However, when analyzed using regression, a positive coefficient of 0.071 with a p-value of 0.280 (>0.05) was

obtained, indicating that ease of use does not significantly affect patient satisfaction. Thus, although ease of use has a positive relationship, the influence on satisfaction is not strong enough to be declared statistically significant.

The Effect of Service Quality on Patient Satisfaction During Registration. A Chi-square test showed a statistically significant effect between service quality and patient satisfaction during registration. In the SEM-PLSM analysis, service quality had a moderate positive effect on patient satisfaction. This means that service quality had a moderate and significant effect on patient satisfaction during registration.

CONCLUSION

Research on the impact of the implementation of the Mentari Cerah innovation on outpatient satisfaction at Prof. Dr. Soekandar Regional General Hospital (RSUD) shows that the speed of the registration process has a positive impact on patient satisfaction and service quality. This indicates that fast and efficient administrative services through the Mentari Cerah Innovation (APM) can improve service quality and user satisfaction. Ease of access to the Mentari Cerah innovation has a positive and significant impact on patient satisfaction but does not significantly impact service quality. This means that easy access can improve patient comfort but is not sufficient to improve overall perceptions of service quality. Ease of use of the Mentari Cerah innovation demonstrated a positive but insignificant effect on patient satisfaction and a significant negative effect on service quality. This indicates a difference in expectations, where ease of use is not accompanied by improvements in other service quality aspects, such as staff interaction, speed of service, and data accuracy, which can reduce perceived service quality. Research on the impact of implementing the Mentari Cerah innovation on patient satisfaction in outpatient care indicates that technological innovation alone is not sufficient to improve service quality. It must be supported by system readiness, staff training, and a comprehensive service approach. Non-technical factors such as staff attitude, interpersonal communication, and empathy in service delivery are important aspects in determining perceived quality and patient satisfaction.

REFERENCE

1. Abdurahman, D., & Budiman, B. (2020). Analisa Kepuasan Pengguna Aplikasi Rumah Sakit Majalengka Mobile Menggunakan Metode End- User Computing Statisfaction. *INFOTECH Journal*, 6, 10–17.
2. Agus Widiantera, IP., Karuniati, N.N., & Noor, M. (2023). Efektivitas Penggunaan Anjungan Pendaftaran Mandiri Untuk Pasien Rawat Jalan Pada Rumah Sakit Mata Bali Mandara di Denpasar. *Jurnal ilmu sosial dan ilmu politik*, 37 (1), 9-24). <https://doi.org/10.52318/jisip.2023.v37.1.2>
3. Aprileny, I., Wati, W. T., & Emarawati, J. A. (2020). Pengaruh Kualitas Pelayanan, Kepuasan Konsumen dan Promosi Terhadap Loyalitas Pelanggan The Media Hotel & Towers Jakarta. *Jurnal Akuntansi Dan Manajemen*, 17(02), 39–47. <https://doi.org/10.36406/jam.v17i02.330>
4. Ar-Rasyid, T. Y. R., Hanggara, B. T., & Rachmadi, (2021). Evaluasi Kepuasan Pengguna Pada Website Beasiswa Universitas Brawijaya Menggunakan Metode End-User Computing Satisfaction (EUCS). *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer*, 5(6), 2308–2317. <http://j-ptiik.ub.ac.id>

5. Depkes RI. 2009. UU no.44 Tahun 2009 *Tentang Rumah Sakit. Undang-Undang Republik Indonesia*,1,41
6. Fitriansyah, A and Harris, I (2018). *Penerapan Dimensi EUCS (End User Computing Satisfication) untuk mengevaluasi Tingkat Kepuasan Pengguna Situs Web*. Konferensi Nasional Sistem Informasi (KNSI) 2018, 6,pp 9-17. Available at : <http://jurnal.atmaluhur.ac.id/index.php/knsi2018/article/view/334>
7. Haerudin, D.S., Suryani, Ruhyat, E, Dwi Tamara, M. Pamungkas, G 9n.d). Hubungan Kualitas pelayanan rujukan BPJS Kesehatan dengan kepuasan pasien di Puskesmas Pamaeungpeuk Kabupaten Bandung -e44. <http://links.Iww.com/JPS/A303>
8. Kotler, P., Keller, L. terjemahan Bob Sabran (2016). *Manajemen Pemasara*. Edisi 14 Jilid 1 dan 2, Erlangga, Jakarta
9. Listiyono, R.A (2015). *Studi Deskriptif Tentang Kualitas Pelayanan di Rumah Sakit Umum Dr. Wahidin Sudirohusodo Kota Mojokerto Pasca Menjadi Rumah Sakit Tipe B. Kebijakan dan Manajemen Publik*, 1 (1), 2
10. Listyorini, Puguh Ika and Rezky Paska Kalbuadi. 2017 “*Faktor-faktor yang mempengaruhi kecepatan pelayanan*” *Jurnal ilmiah Rekam Medis dan Informatika Kesehatan* 7 (2): 36-43
11. Menteri Kesehatan RI (2018). *Peraturan Menteri Kesehatan RI Nomor 82 Tahun 2013 tentang Sistem Informasi Manajemen Rumah Sakit* (Issue 04, pp. 1-35)
12. Pratiwi, R. D. (2020). *HUBUNGAN KEPUASAN PENGGUNA ANJUNGAN PENDAFTARAN ANISA NURSAFITRI, Rita Dian Pratiwi, S.Kep., M.P.H.*
13. Purba, P. P. (2022). Analisis Kepuasan Pasien Terhadap Sistem Pendaftaran Rawat Jalan Online di RSUP Dr. Sardjito Yogyakarta. *Infoke*
14. Rahayu, S. (2018). Evaluasi Persepsi Kepuasan Pasien Rawat Jalan terhadap Pelayanan Penggunaan Anjungan Pendaftaran Mandiri di RSUD Wates Kulon Progo. *Karya Tulis Ilmiah*, 1–68
15. Rumana, N. A., Putra, D. H., Widjaja, L., Maharami, I., & Hidayat, R. (2021). *Kepuasan Pasien terhadap Aplikasi Pendaftaran Online Menggunakan Metode EUCS (End User Computing Satisfaction) di RSUP Fatmawati*. 4(1).
16. Sabdana, I. W. G. (2019). Analisis Kepuasan Pengguna Sistem Informasi Rumah Sakit (Sirs) Jiwa Propinsi Bali Dengan Metode End-User Computing Satisfaction (EUCS). *Jurnal Ilmu Komputer Indonesia*, 4(1), 3–4.
17. Sabrina, M., Ulfa, H. M., & Azlina. (2021). Gambaran Dukungan Penggunaan APM (Anjungan Pendaftaran Mandiri) Pada Pelayanan Rawat Jalan Di Rumah Sakit Umum Daerah Arifin Achmad Provinsi Riau Tahun 2020. *Jurnal Rekam Medis (Medical Record Journal)*, 1(2), 159–170. <https://doi.org/10.25311/jrm.vol1.iss2.398>

