

Research Article

Association Between Door-to-Doctor Time and Discharge Against Medical Advice in Patients with COVID-19 from the ED

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Abstract.

The cause of Discharge Against Medical Advice (DAMA) is a long response time/door-to-doctor time, which is not according to the recommendation of 5 minutes. This study aimed to determine the association between Door to Doctor Time and DAMA incidence in patients with COVID-19 from the ED. The research design used is a cross-sectional study. This study used a purposive sampling technique (n = 414) in patients with COVID-19 symptoms who came or were referred to the ED in December 2020-April 2021. The data analysis used the Spearman correlation test. The results of this study indicate that most response times with response time indicators arrive until the initial action is not according to recommendations, namely 75 patients (18.1%). In contrast, the response time (response time for initial treatment to supporting laboratory examinations) is dominated by the same response time as many as 54 patients (13.0%). The results of the Spearman correlation show a positive correlation between the two waiting times / Door to Doctor time with an indicator (response time to achieve initial action) with the incidence of DAMA in COVID-19 patients. The correlation value is 0.000 (sig < 0.05), which is 0.436, and (the response to initial handling time until laboratory examination) has a correlation value of 0.413 with the same relationship, namely positive and unidirectional. At the same time, the strength of associations was moderate. The door to Doctor Time / Response time with indicators (response time from arrival to initial action and response time to initial treatment to supporting laboratory tests) is associated with the incidence of DAMA in patients with Covid-19 in the ED. The longer the response time will affect the incidence of DAMA in COVID-19 patients.

Keywords: discharge against medical advice, door to the doctor time, COVID-19, ED

1. INTRODUCTION

Discharge Against Medical Advice (DAMA) is a common problem worldwide. DAMA in Emergency Department refers to the discharge of patients to unfinished emergency care, often occurring in 1–3% of Emergency Room (IGD) visits (1). The prevalence rate ranges from 0.07 to 20% in the ED. During the pandemic period, DAMA cases increased

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by 24.5% in the ED compared to the previous period(2). The patient's condition is relevant to several problems, including an increased risk for adverse health side effects, re-admission to the ED, and hospitalization(3,4). DAMA harms patient safety and has medicolegal and socioeconomic implications (5,6). The results of previous studies have identified several predictors for DAMA. In addition to the male gender, younger age, low socioeconomic status, and substance abuse (7), other relevant factors include the triage category, type, and arrival time. The arrival of patients during high-traffic accidents has been found to increase the likelihood of patients leaving the ED prematurely. DAMA may be due to longer waiting times (8–10). Door-to-doctor time and length of stay with patients are the leading quality indicators for patient management in the ER(11,12). There was data limitation regarding the incidents of DAMA in COVID-19 patients and their predictors.

Factors that cause DAMA include age, gender, low economic status, lack of health insurance, a triage scale which is a predictor of forced discharge or DAMA problems themselves, substance history, and diagnosis. According to Hoyer the door to the doctor's response time/long time is the cause of leaving the emergency room (1). In addition, the time from the patient's arrival at the facility to the time the health care provider sees the patient is critical to patient satisfaction. Many studies have shown that a reduction in this time is often referred to as the "door-to-doctor" or "door-to-provider" time metrics. When benchmarks demonstrate the positive impact of placing a class provider in triage, providers present in triage may evolve, further enhancing the positive impact on patient care (13).

Time to the doctor is a potential component and becomes an aspect obtained by patients who consider health services bad and harmful to their illness but do not improve or recover (14). Efficient response time also plays a vital role in every action taken from the time the patient comes to the ED until the initial transfer from the ED. The causes of forced discharge in Indonesia are one of the reasons for the response time (response time) or the door to the doctor handling is 5 minutes. During the COVID-19 epidemic, patients depart the hospital against medical advice due to a conflict between avoidance and avoidance (15). In this study, we aimed to examine the association between Door to Doctor Time and Discharge Against Medical Advice (DAMA) in Patients with COVID-19 from the ED.

2. MATERIALS AND METHODS

The design of this study was analytically observational with a cross-sectional approach, non-probability sampling technique, and purposive sampling technique, with a sample of 414 emergency department patients with COVID-19. Data were collected using an instrument in the form of a DAMA master table in the form of excel carried out from medical records in the period December 2020 - April 2021 with the criteria for COVID-19 patients who came alone to the hospital or doctor's referral. Data analysis was carried out by the goals and objectives using the spearman rank test. Ethics research permit obtained from the ethics committee of the University of Muhammadiyah Malang (No. E.5.a/175/KEPK-UMM/VII/2021).

3. RESULTS

3.1. Patients' Characteristics

TABLE 1: COVID-19 Patients' Characteristics December 2020-April 2021.

Patient's Characteristic	Category	DAMA (N=91)		Non-DAMA (N=323)	
		f	%	f	%
Age (years)	children: 1-10	2	2.19	9	2.78
	adolescents: 11-20	1	0.09	6	1.85
	adult: 21-60	73	80.2	220	68.1
	elderly: > 61	15	16.4	88	27.24
Gender	Male	44	48.3	161	49.9
	Female	47	51.6	162	50.1
Symptom	Fever	72	79.1	219	67.8
	Cough	77	84.6	241	74.6
	Flu	40	43.9	123	38
	Nausea	43	47.3	114	35.3
	Vomit	39	42.8	84	26
	Anosmia	10	10.9	24	7.5
	Diarrhea	12	13.2	23	7.1
	Short of breath	34	37.4	116	35.9
Triage (ESI)	1 (Resuscitation)	0	0.0	1	0.3
	2 (Emergency)	4	4.4	9	2.8
	3 (Urgency)	30	33	32	9.9
	4 (less urgent)	57	62.6	274	84.8
	5 (not urgent)	0	0.0	7	2.2

Secondary data analysis for this study was taken through the medical records of the UMM Hospital with a period starting from December 2020 to April 2021 with the criteria for patients who came to the ER UMM Hospital independently or were referred and had symptoms of COVID-19. The data collected were 414 medical records of patients with DAMA, as many, as 91.

In the DAMA group, the majority of patients were adults, amounting to 73 people or 80.2%, and in the Non-DAMA group, the majority of patients were adults, amounting to 220 people or 68.1%. Most patients in the DAMA group were female, amounting to 47 people or 51.6%, while in the Non-DAMA group, the majority were of the same sex, namely 162 people or 50.1%.

In the DAMA group, the majority of the symptoms of COVID-19 patients were 77 people with cough symptoms or 85.6%, while in the Non-DAMA group, the majority of Covid-19 patients had the same symptoms, namely 241 people or 74.6%. Most of the DAMA group's triage (ESI) in the emergency room, including the level 4 category (less urgency), amounted to 57 people, or 62.6%. As in the Non-DAMA group, most triage (ESI), level 4 (less urgency), amounted to 274 people or 84,8%.

3.2. DAMA incident

TABLE 2: DAMA incident.

DAMA case	Overall Population	Incidence
91	414	21,9%

Based on table 2, DAMA in COVID-19 patients occurred at a rate of 21.9%.

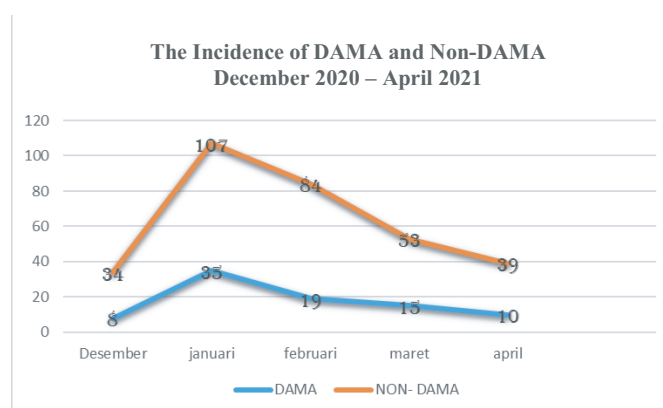


Figure 1: The Incidence of DAMA and Non-DAMA.

Based on Figure 1, the trend of DAMA in COVID-19 patients rose in January.

3.3. Door-to-Doctor Time in Patients with COVID-19 from the ED

TABLE 3: Door-to-Doctor Time in Patients with COVID-19 from the ED.

Response time	DAMA (N=91)				Non-DAMA (N=323)			
	Mean	Min.	Max.	SD	Mean	Min.	Max.	SD
Response time of initial arrival until initial management	18.73	1	60 min	11.921	31.33	15	60 min	9.030
Response Time initial management until the diagnostic test	16.60	3	60 min	11.749	24.57	11	60 min	9.282

In the Response Time category from Coming to Early Action, in the DAMA group, the average time is 18.73 with the category Response Time from Coming to Early Action, the lowest is 1 minute, and the maximum is 60 minutes, the standard deviation value is 11.921 which is lower than the mean value (18, 73) which shows that the data tend to be homogeneous and not by the recommended response time, which is 5 minutes while in the Non-DAMA group the average time is 31.33 with Response Time from Early Coming to Initial Action, the lowest is 15 minutes and the longest time is 60 minutes. Its standard deviation is 9.030, which is lower than the mean (31.33), indicating that the data tends to be homogeneous.

In the Response time category from initial treatment to supporting examinations, in the DAMA group, the average was 16.60 minutes, with the lowest time being 3 minutes and the longest/maximum 60 minutes, the standard deviation value being 11.749 which is lower than the mean (16.60) which indicates that data tends to be homogeneous; in the Non-DAMA group, the average was 24.57 with the most down time being 11 and the longest/maximum 60 minutes with a standard deviation of 9.282, which was lower than the mean (24.57) which indicates that the data tend to be homogeneous.

Based on Table 3, response time from arrival to initial action with DAMA status was obtained from 16 people with a percentage (3.9%) having a response time according to the recommendations and 250 people with a rate (60.4%) having non-DAMA status. Of 148 people with a percentage (35.7%) had a response time that did not match the recommendation, there were 75 (18.1%) people with DAMA status and 73 (17.6%) people with the non-DAMA group. The response time to the initial management until the diagnostic test with DAMA status was obtained from 37 people with a percentage (8.9%) having a response time according to the recommendations and 150 people with a rate (36.2%) having non-DAMA status, then from 227 (54.8%) of people have a

TABLE 4: Door-to-Doctor Time in Patients with COVID-19 from the ED.

Response time	DAMA			Total n (%)
	DAMA (%)	N Non DAMA (%)	n	
Response time of initial arrival until initial management				
Follow recommendation	16 (3,9)	250 (60,4)	266 (64,3)	
Not follow recommendation	75 (18,1)	73 (17,6)	148 (35,7)	
Response Time initial management until the diagnostic test				
Follow recommendation	37 (8,9)	150 (36,2)	187 (45,2)	
Not follow recommendation	54 (13,0)	173 (41,8)	227 (54,8)	
Overall	91 (22,0)	323 (78,0)	414 (100)	

response time that is not according to the recommendation, there are 54 (13.0%) people with DAMA status and 173 (42.8%) people with the non-DAMA group.

3.4. Association between Door to Doctor Time and Discharge Against Medical Advice (DAMA) in Patients with COVID-19 from the ED

The results showed that Spearman’s rank correlation coefficient for the Response time of initial arrival until initial management was 0, 436. p values are <0.05. (p =0.000). The Spearman’s rank correlation coefficient for the Response time of initial arrival until initial management was 0 413. p values are <0.05. (p =0.000).

4. DISCUSSION

4.1. DAMA incident

According to previous research, this study showed a higher incidence than the normal range (16), showing the global prevalence of DAMA in emergency departments ranging from 0.07 to 20%. The results of this study contradict the Minimum Service Standards, which should not be more than 5% because the increase in forced discharge has implications for hospitals, especially in the emergency department of the hospital; forced discharge also includes a form of patient dissatisfaction with hospital services (17). Based on research Wati et al. (2021), it is in line that every year the trend of Forced Returns of One’s own volition continues to increase, so it is a concerning problem that must be the concern of every health worker around the world, especially those who work in

the emergency department or IGD(17). The incidence of forced return has a percentage of 5.55%. According to KepMenKes No. 129/Menkes/SK/II/2008, the Minimum Service Standards for forced discharge patients is 5% each.

4.2. Door-to-Doctor Time in Patients with COVID-19 from the ED

Based on the results of research that has been carried out, this study supports the results of previous studies conducted by Mahyudin et al. (2021) (18), the majority of patients who choose DAMA, namely patients with a service time of 5 minutes or can be said to be not according to recommendations. According to the Decree of the Minister of Health Number 129 of 2008 concerning Minimum Service Standards for Hospitals, service response times in emergency departments have dimensions of safety quality and effectiveness; namely, the response time has a maximum standard five minutes in each case. Service response time needs to be considered so that services are fast, responsive, and able to save emergency patients. Patients dominate the response time of the initial treatment patient to the supporting laboratory with a response time of 5 minutes or not by the recommendations. These results are not in line with research by Syahnas (2020) (19) that the service response time or response time in the emergency room must be 5 minutes because, according to the Indonesian Ministry of Health, doctors and nurses have standard emergency services in hospitals in less than 5 minutes from the patient's initial arrival. The. All patients in the ED who experience an emergency condition with a non-urgency label must get a healthcare response time with a professional within 5 minutes of the patient's arrival.

4.3. Association between Door to Doctor Time and Discharge Against Medical Advice (DAMA) in Patients with COVID-19 from the ED

This study showed the relationship between response time and the incidence of DAMA in a positive direction. This means that the longer the response time until the initial action will significantly affect patients with non-DAMA status. In comparison, the faster response time until the initial step will substantially impact patients with DAMA status. With moderate relationship strength. The response time of each hospital is different, but generally, according to the minimum service standard, namely the response time for the services of doctors and nurses in the emergency department, the bar is the speed in handling patients, calculated from the time the patient arrives until treatment is carried out, good response time for patients is 5 minutes served after the patient came.

The results of the Spearman correlation relationship. Response time to initial treatment to supporting laboratory examinations with the incidence of DAMA with a positive correlation direction means that the longer response time to initial treatment to the supporting laboratory will significantly affect patients with non-DAMA status. In comparison, the faster response time to initial treatment until the supportive laboratory will have an impact significant for patients with DAMA status. With a moderate relationship strength with a coefficient range of 0.40-0.599. Each hospital, especially the emergency department, has a goal to achieve optimal health services for patients quickly and accurately and in an integrated manner in handling the emergency level to prevent the risk of disability and death (to save life and limb) with a response time of 5 minutes, so that The relationship between the initial response time to the supporting laboratory is closely related to the hospital emergency room service time, because the longer the service response time, the more DAMA patients. As an ER referral hospital, the standard response time must be 5 minutes because a fast response time can affect patient survival. It can be concluded that the results of the bivariate correlation between the door-to-doctor time/response time with indicators of initial response time to initiate action and initial treatment to supporting laboratory examinations have a relationship with the incidence of DAMA in the hospital emergency room.

5. CONCLUSION

Based on the results of research and discussion on the relationship between Door To Doctor Time and the Incident of Discharge Against Medical Advice (DAMA) in Patients with Covid-19 in the ER, it was concluded that from 414 patients with Covid-19 symptoms who came to the ED from December 2020 to April 2021 with the incidence of DAMA not being more than 5% according to the Minimum Service Standards (MSS) in a hospital as a whole.

References

- [1] Hoyer C, Stein P, Alonso A, Platten M, Szabo K. Uncompleted emergency department care and discharge against medical advice in patients with neurological complaints: a chart review. *BMC Emerg Med.* 2019 Oct;19(1):52.
- [2] Aydin H, Doğan H. COVID-19 outbreak impact on discharge against medical advice from the ED: A retrospective study. *Am J Emerg Med.* 2022 Jul;57:21–6.

- [3] Garland A, Ramsey CD, Fransoo R, Olafson K, Chateau D, Yogendran M, et al. Rates of readmission and death associated with leaving hospital against medical advice: a population-based study. *CMAJ*. 2013 Oct;185(14):1207–14.
- [4] Geirsson OP, Gunnarsdottir OS, Baldursson J, Hrafnkelsson B, Rafnsson V. Risk of repeat visits, hospitalisation and death after uncompleted and completed visits to the emergency department: a prospective observation study [Internet]. *Emerg Med J*. 2013 Aug;30(8):662–8. Available from: <http://emj.bmj.com/content/30/8/662>
- [5] Devitt PJ, Devitt AC, Dewan M. An examination of whether discharging patients against medical advice protects physicians from malpractice charges [Internet]. *Psychiatr Serv*. 2000 Jul;51(7):899–902.
- [6] Yong TY, Fok JS, Hakendorf P, Ben-Tovim D, Thompson CH, Li JY. Characteristics and outcomes of discharges against medical advice among hospitalised patients [Internet]. *Intern Med J*. 2013 Jul;43(7):798–802.
- [7] Alfandre DJ. “I’m Going Home”: Discharges Against Medical Advice REVIEW [Internet]. Vol. 84, *Mayo Clin Proc*. 2009. Available from: www.mayoclinicproceedings.com
- [8] Ashrafi E, Nobakht S, Keykaleh MS, Kakemam E, Hasanpoor E, Sokhanvar M. Discharge against medical advice (DAMA): causes and predictors. *Electron Physician*. 2017 Jun;9(6):4563–70.
- [9] Crilly J, Bost N, Thalib L, Timms J, Gleeson H. Patients who present to the emergency department and leave without being seen: prevalence, predictors and outcomes [Internet]. *Eur J Emerg Med*. 2013 Aug;20(4):248–55. Available from: https://journals.lww.com/euro-emergencymed/Fulltext/2013/08000/Patients_who_present_to_the_emergency_department.4.aspx
- [10] van der Linden MC, Lindeboom R, van der Linden N, van den Brand CL, Lam RC, Lucas C, et al. Walkouts from the emergency department: characteristics, reasons and medical care needs [Internet]. *Eur J Emerg Med*. 2014 Oct;21(5):354–9. Available from: https://journals.lww.com/euro-emergencymed/Fulltext/2014/10000/Walkouts_from_the_emergency_department_7.aspx
- [11] Casalino E, Choquet C, Bernard J, Debit A, Doumenc B, Berthoumieu A, et al. Predictive variables of an emergency department quality and performance indicator: a 1-year prospective, observational, cohort study evaluating hospital and emergency census variables and emergency department time interval measurements [Internet]. *Emerg Med J*. 2013 Aug;30(8):638–45. Available from: <http://emj.bmj.com/content/30/8/638>
- [12] Otto R, Blaschke S, Schirrmeyer W, Drynda S, Walcher F, Greiner F. Length of stay as quality indicator in emergency departments: analysis of determinants in the German

- Emergency Department Data Registry (AKTIN registry). *Intern Emerg Med*. 2022 Jun;17(4):1199–209.
- [13] Visser LS, Montejano AS, Grossmann VA. *Fast Facts For The Triage Nurse: An Orientation And Care Guide. A Nutshell*. 1st ed. Springer Publishing Company; 2015. 270 pp.
- [14] Dewi A, Eravianti E, Putri DK. HUBUNGAN LAMA WAKTU TUNGGU PASIEN DENGAN KEPUASAN PASIEN DI PUSKESMAS LUBUK BEGALUNG. *Prosiding Seminar Nasional Stikes Syedza Saintika*. 2021;1(1):45–54.
- [15] Demir MC, Ağaçkiran i, Özdamar Y, Boğan M; DEMİR MC. AĞAÇKIRAN i, ÖZDAMAR Y, BOĞAN M. The pandemic's effect on discharge against medical advice from the emergency department. *Journal of Surgery and Medicine*. 2021 May;5(5):433–8.
- [16] Abuzeyad FH, Farooq M, Alam SF, Ibrahim MI, Bashmi L, Aljawder SS, et al. Discharge against medical advice from the emergency department in a university hospital. *BMC Emerg Med*. 2021 Mar;21(1):31.
- [17] Wati L, Fadhilah U, Hastuti ED. Kejadian Pasien Pulang Atas Permintaan Sendiri (PAPS) Di RSUD Raja Ahmad Thabib Provinsi Kepulauan Riau. *Menara Medika*. 2021;4(1).
- [18] Mahyudin M, Deli H, Erwin E. Gambaran Respon Time Pasien Pada Masa Pandemi COVID-19 Di Instalasi Gawat Darurat (IGD) RSUD Arifin Achmad Provinsi Riau. *Health Care: Jurnal Kesehatan*. 2021;10(1).
- [19] Syahnas TL. *Response Time Pelayanan Kesehatan di Instalasi Gawat Darurat Rumah Sakit Haji Medan Tahun 2018 [Medan]Universitas Sumatera Utara*; 2020.