



Discharge Against Medical Advice from Neonatal Intensive Care Unit and Some Influencing Factors in an Academic Center

Sadroddin Mahdipour ¹, Reyhaneh Shahrokhi Rad ², Misa Naghdipour Mirsadeghi ³, Gelareh Biazar ^{2,*}, Mandana Javanak ⁴, Mahin Tayefeh Ashrafiyeh ², Mohadese Ahmadi ², Alireza Bakhtiari Lafmejani ⁵

¹ Pediatric Diseases Research Center, Guilan University of Medical Sciences, Rasht, Iran

² Department of Anesthesiology, Anesthesiology Research Center, Alzahra Hospital, Guilan University of Medical Sciences, Rasht, Iran

³ Department of Gynecology, School of Medicine, Alzahra Hospital, Guilan University of Medical Sciences, Rasht, Iran

⁴ Medical Education Research Center, Education Development Center, Guilan University of Medical Sciences, Rasht, Iran

⁵ School of Medicine, Guilan University of Medical Sciences, Rasht, Iran

*Corresponding author: Anesthesiology Research Center, Alzahra Hospital, Guilan University of Medical Sciences, Namjoo Street, P.O. Box: 4144654839, Rasht, Iran. Tel: +98911350987; Email: gelarehbiazar1386@gmail.com

Received 2023 April 11; Revised 2024 January 8; Accepted 2024 January 27.

Abstract

Background: Early discharge from the hospital against medical advice poses a significant threat to the health of patients, particularly neonates, who are a vulnerable population.

Objectives: This study aimed to determine the frequency of neonatal discharge with personal consent and identify the most influential factors.

Methods: This retrospective cross-sectional study was conducted at Alzahra Hospital in Rasht from 2020 to 2021. Using a census method, information on all infants discharged against medical advice was extracted from the hospital's clinical records available in the information system. Data on the reason for neonatal hospitalization and discharge against medical advice, neonatal age, weight, maternal education, and insurance status were recorded.

Results: Among 2327 neonates, 581 (24.96%) were discharged from the hospital against medical advice. The primary cause of early discharge was related to family problems (64.4%), followed by dissatisfaction with the hospital and treatment process (15.3%), prolonged hospitalization (11%), and financial problems (9.3%). A significant association was found between neonatal age, weight, type of delivery, maternal education, insurance status, and the reason for hospitalization with the reason for discharge against medical advice (all $P < 0.001$).

Conclusions: The rate of discharge against medical advice in this study was notably higher compared to other studies, possibly due to the timing of the study coinciding with the peak of COVID-19 and the different reasons for hospitalization, such as icterus versus sepsis. Family problems were identified as the main cause of discharge against medical advice, while financial problems were the least common. Therefore, practical and preventive solutions should be provided to families whenever possible.

Keywords: Patient Discharge, Neonatal Intensive Care Unit, Hospital

1. Background

Discharge against medical advice (DAMA) occurs when a patient chooses to leave a hospital before completing the prescribed course of treatment without the permission of the attending physician. This decision often reflects patient dissatisfaction and poses a significant challenge for healthcare system managers (1,

2). Discharge against medical advice can also negatively impact patients' clinical outcomes.

The issue is particularly critical in pediatric and neonatal care, as decisions for early discharge are typically made by parents who may not fully grasp the potential consequences (3, 4), leading to ethical and legal dilemmas (5, 6). Neonates are especially vulnerable, and early discharge can have severe

consequences, including unreported instances of mortality (7, 8). Certain conditions, such as being born to diabetic mothers, further increase the risk (9,10).

Neonates discharged early are more prone to adverse medical events, readmissions (occurring in 9 to 13% of DAMA cases), longer hospital stays, increased costs, and higher mortality rates (6, 11, 12). Studies have shown alarming mortality rates among preterm infants discharged against medical advice, particularly in middle- or low-income countries, where DAMA significantly contributes to mortality and morbidity (13).

To mitigate this public health issue, it is crucial to raise awareness about the potential consequences of DAMA and to implement strict oversight by government agencies (5, 14). The reasons for DAMA vary across different regions and are influenced by cultural, social, and economic factors (15). Additionally, the approach of physicians, the adequacy of facilities and medical staff, and hospital type (private, educational, general, or specialized) all play significant roles in the DAMA process (16, 17). Therefore, findings from similar studies may not be universally applicable to other areas.

2. Objectives

To the best of our knowledge, the topic has not been investigated in Guilan province. Given the importance of the issue and the fact that each region has its own unique pattern, this study was planned as a fundamental step to determine the status of DAMA in an academic and referral center. The findings of this survey could serve as a practical guide to improving the current situation.

3. Methods

After receiving approval from the Ethics Committee of Guilan University of Medical Sciences (GUMS), this retrospective cross-sectional study was conducted at Alzahra Hospital, a public academic and referral center, during the period of 2020 - 2021. Medical records of neonates discharged from the neonatal intensive care unit (NICU) without the responsible physician's permission were sorted out and reviewed using a census method.

3.1. Exclusion Criteria

Files with incomplete data (more than 15% missing in the main variables of the study) were excluded. Information including gender, gestational age (weeks), infant weight, type of delivery, level of maternal education, residential area, insurance status, reason for hospitalization, number of hospitalization days, and reasons for discharge with personal consent were gathered. The data were recorded by the NICU nursing system in the neonates' files. These data were carefully entered into questionnaires by a trained medical student under the supervision of the thesis supervisor. Finally, after completing the questionnaires, they were handed over to the statistical consultant for further analysis.

3.2. Statistical Analysis

The collected data were analyzed using SPSS 21 software (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, v. 21 Armonk, NY: IBM Corp). The Kolmogorov-Smirnov test was used to define normality distribution, and frequency and frequency percentages were analyzed and tested using the chi-square test. A P-value less than 0.05 was considered significant.

4. Results

In this study, data from 581 files out of 2327 that were discharged against medical advice were analyzed. The highest frequency was among infants born between 40 and 37 weeks (48%), with weights ranging from 4 000 to 2 500 g (56.1%). Of these infants, 52.2% were male and 47.8% were female. Cesarean delivery accounted for a higher frequency (72.8%) compared to vaginal delivery (27.2%). Additionally, 83.3% of mothers had a high school diploma level of education, and 60.6% resided in urban areas. Most of these infants were covered by insurance (54.7%). The most common reason for hospitalization was jaundice (71.8%) (Table 1). The primary reason for early discharge was attributed to family problems (64.4%), followed by dissatisfaction with the treatment process (15.3%), long-term hospitalization (11%), and financial problems (9.3%) (Table 2). The study results also indicated a significant relationship between neonatal age ($P < 0.001$), weight ($P < 0.001$), type of delivery ($P <$

Table 1. Demographic Data of Neonates Discharged Against Medical Advice from Alzahra Hospital (n = 581)

Variables	Values ^a
Age (week)	
26 - 27	8 (1.4)
28 - 31	113 (19.4)
32 - 36	176 (30.3)
37 - 40	279 (48)
< 40	5 (0.9)
Gender	
Male	303 (52.2)
Female	278 (47.8)
Weight	
1000 - 1500	18 (3.1)
1500 - 2500	221 (38)
2500 - 4000	326 (56.1)
< 4000	16 (2.8)
Type of delivery	
Vaginal	423 (72.8)
Cesarean	158 (27.2)
Mother's education	
Illiterate and elementary	50 (8.6)
Middle school to diploma	484 (83.3)
College education	47 (8.1)
Mother's residency place	
Urban	352 (60.6)
Rural	229 (39.4)
Insurance status	
Yes	318 (54.7)
No	263 (45.3)
Cause of hospitalization	
Respiratory distress syndrome	127 (21.9)
Transient respiratory tachypnea	34 (5.9)
Abnormality at birth	3 (0.5)
Jaundice	417 (71.8)

^a Values are expressed as No. (%).**Table 2.** Causes of Neonate Discharge Against Medical Advice Hospitalized in Alzahra Hospital

Causes of Discharge	Values ^a
Long-term hospitalization	64 (11)
Financial Problems	54 (9.3)
Dissatisfaction with the hospital and treatment process	89 (15.3)
Family issues	374 (64.4)

^a Values are expressed as No. (%).

0.001), maternal education ($P < 0.001$), insurance status ($P < 0.001$), and reason for hospitalization ($P < 0.001$) with DAMA, as analyzed using the Chi-square test (Table 3). Some categories of variables were merged due to low frequency.

5. Discussion

Discharging patients with personal consent signifies satisfaction with healthcare services. However, it can also pose a threat to patients' health, particularly concerning neonates, who are a sensitive and vulnerable population. In this study conducted during 2020 - 2021, the prevalence of neonatal discharge with personal consent was 24.96%, which was higher

compared to similar studies in Nigeria (9.1%) (4), Haiti (10%) (18), and Saudi Arabia (1.6%) (3). The most common reason for neonatal hospitalization in our study was jaundice, consistent with findings from a study by Roodpeyma and Hoseyni (19). Other studies have indicated that sepsis was the most frequent diagnosis among neonates discharged with personal consent (3, 4, 14, 20). The increased prevalence of neonatal discharge with personal consent in our study could be attributed to differences in study timing, and our data collection period coincided with the COVID-19 outbreak, leading to fears of infection that may have prompted early DAMA.

Additionally, the variation in reasons for hospitalization, with our study focusing on less severe

Table 3. Comparison of Reasons for Discharge Against Medical Advice According to Demographic Variables^a

Variables	Long-Term Hospitalization	Financial Problems	Dissatisfaction with the Hospital and Treatment Process	Family Issues	P-Value ^b
Age (week)					< 0.001
26 - 31	31 (5.3)	30 (5.2)	2 (0.3)	58 (10)	
32 - 36	25 (4.3)	17 (2.9)	16 (2.8)	118 (20.36)	
< 37	8 (1.4)	7 (1.2)	71 (12.2)	198 (34.1)	
Gender					0.064
Male	36 (6.2)	31 (5.3)	35 (6)	201 (34.6)	
Female	28 (4.8)	23 (4.0)	54 (9.3)	173 (29.8)	
Weight					< 0.001
1000 - 1500	12 (2.1)	2 (0.3)	0	4 (0.7)	
1500 - 2500	36 (6.2)	44 (7.6)	12 (2.1)	129 (22.2)	
2500 - 4000	13 (2.2)	8 (1.4)	73 (12.6)	232 (39.9)	
< 4000	3 (0.5)	0	4 (0.7)	9 (1.5)	
Type of delivery					< 0.001
Vaginal	12 (7.6)	26 (4.5)	30 (5.2)	90 (15.5)	
Cesarean	52 (12.3)	28 (4.8)	59 (10.2)	284 (48.9)	
Mother's education					< 0.001
Illiterate and elementary	9 (1.5)	18 (3.1)	0	23 (4)	
Middle school to diploma	41 (7.1)	31 (5.3)	81 (13.9)	331 (57)	
College education	14 (2.4)	5 (0.9)	8 (1.4)	20 (3.4)	
Mother's residency place					0.307
Urban	40 (6.9)	29 (5)	48 (8.3)	235 (40.4)	
Rural	24 (4.1)	25 (4.3)	41 (7.1)	139 (23.9)	
Insurance status					< 0.001
Yes	36 (6.2)	356 (6)	84 (14.5)	163 (28.1)	
No	28 (4.8)	19 (3.3)	5 (0.9)	211 (36.3)	
Cause of hospitalization					< 0.001
Respiratory distress syndrome	40 (6.9)	19 (3.3)	6 (1)	62 (10.7)	
Transient respiratory tachypnea	8 (1.4)	4 (0.7)	0	22 (3.8)	
Abnormality at birth	2 (0.3)	0	0	1 (0.2)	
Jaundice	14 (2.4)	31 (5.3)	83 (14.3)	289 (49.7)	

^a Values are expressed as No. (%).^b P < 0.05 was considered statistically significant.

conditions like jaundice compared to life-threatening conditions like sepsis in other studies, could contribute to this disparity. According to our findings, the primary reason for neonatal discharge with personal consent was related to family problems, followed by dissatisfaction with hospital performance, prolonged hospitalization, and financial constraints. This contrasts with most similar studies where economic issues significantly influenced parental decision-making, highlighting a notable difference in our results (4, 14, 21). Staff misbehavior, frustration due to poor prognosis, lack of improvement in neonatal conditions, and inadequate facilities for parents were reported as reasons for discharge. However, in many studies, a high percentage of parents did not provide any reason (11, 15, 20). The gender of the neonates studied did not significantly affect the reasons for discharge. Similarly, residency had no impact on the rate of early neonatal discharge in this study. In Pokhrel and Bhurtel study, neonates were term and of normal weight (14), which was similar to our findings, suggesting these factors may influence parents' decision to DAMA. Additionally, according to the study by Onankpa, families who had natural childbirths were more inclined to discharge the

baby with personal consent (12), consistent with our findings.

Based on the results of this study, family problems, such as being a single parent, inability to have accompaniment at the hospital, having other young children at home, poor physical or medical conditions of the mother, and lack of family cooperation, were the most common cause of early discharge. When a family requests early discharge for neonates, it is necessary to investigate these factors and, if necessary, seek the assistance of a family counselor. To reduce the prevalence of DAMA, it is essential to increase awareness and knowledge in the community and improve communication between medical staff and parents.

Studies have indicated that DAMA status is affected when medical services are provided by the government or covered by health insurance. In this study, most discharged neonates were covered by insurance, suggesting that most medical services in this center are provided by the government. Therefore, it is crucial to communicate the results of this study to hospital authorities and the deputy director of treatment to minimize such cases through effective planning.

5.1. Suggestions

It is recommended that prospective studies be conducted to investigate the consequences of early discharge. Additionally, conducting similar studies with a multi-center approach involving the participation of private sectors would provide valuable insights.

5.2. Limitations

Despite the valuable information obtained from this research, we acknowledge some limitations inherent in retrospective studies. Medical files with incomplete information were excluded, and our data were limited to what was documented in the files. The inability to conduct long-term follow-ups of infants after discharge is another limitation of this study. Furthermore, it should be noted that the study period coincided with the COVID-19 pandemic, and this situation undoubtedly influenced its results.

5.3. Conclusions

According to this research's results, the DAMA rate was higher than in other studies. This can be attributed to the timing of the research, which coincided with the COVID-19 outbreak, and the differences in causes of hospitalization. In this study, neonatal jaundice was the primary reason for hospitalization, which posed a lower risk compared to causes such as sepsis in other studies. The most common reason for DAMA was related to family problems, such as the presence of other children needing care at home, while financial problems were the least common. Therefore, efforts should be made to identify these cases and provide practical and preventive solutions to families to prevent endangering the safety of neonates. The fact that only a limited percentage consented to DAMA due to financial problems is indicative of acceptable insurance coverage within the system. However, given the importance of the issue, efforts should be made to minimize financial obstacles from influencing such decisions as much as possible. This research also underscores the need for the hospital supervisory system to emphasize the importance of recording more accurate information in medical files. Access to more data could lead to more

valuable results and enable follow-up of neonates after DAMA.

Acknowledgements

The authors would like to thank the personnel of the Anesthesiology Research Center of Guilan University of Medical Sciences for their collaboration in this study.

Footnotes

Authors' Contribution: Study concept and design: S.M. and M.N.; drafting of the manuscript: M.T. and A.B.; acquisition, analysis, or interpretation of data: R.S. and G.B.; statistical analysis: M.J.; editing & review: G.B. and M.A.; investigation and resources: S.M. and R.S.; study supervision: S.M. and G.B.

Conflict of Interests: The authors declared no conflict of interest.

Ethical Approval: This study was approved by the Ethics Committee of the Guilan University of Medical Sciences (code: [IR.GUMS.REC.1400.624](#)). All ethical principles were considered in this research. The study participants were aware of the research process. The patient's information was kept confidential.

Funding/Support: No support/funding was received from any organization for the present study.

References

1. Ravanshad Y, Golsorkhi M, Bakhtiari E, Keykhosravi AL, Azarfar A, Shoja M, et al. [Evaluation of causes and outcomes of discharge with the personal consent of patients admitted to Dr. Sheikh Hospital of Mashhad]. *Journal of Sabzevar University of Medical Sciences*. 2021;**28**(2):183-8. Persian. <https://doi.org/10.32598/hdq.8.2.441.1>.
2. Raja A, Trivedi PD, Dhamoon MS. Discharge against medical advice among neurological patients: Characteristics and outcomes. *Health Serv Res*. 2020;**55**(5):681-9. [PubMed ID: [32578887](#)]. [PubMed Central ID: [PMC7518816](#)]. <https://doi.org/10.1111/1475-6773.13306>.
3. Al-Turkistani HK. Discharge against medical advice from Neonatal Intensive Care Unit: 10 years experience at a University Hospital. *J Family Community Med*. 2013;**20**(2):113-5. [PubMed ID: [23983563](#)]. [PubMed Central ID: [PMC3748645](#)]. <https://doi.org/10.4103/2230-8229.114774>.
4. Duru CO, Peterside O, Ududua AO. Paediatric discharges against medical advice at a tertiary health centre in Bayelsa State, Nigeria. *Niger J Paediatr*. 2014;**41**(2):90. <https://doi.org/10.4314/njp.v4i12.2>.

5. Kumar R. Leave against medical advice from SNCU of a teaching hospital in Garhwal, Uttarakhand, India. *Int J Contemp Pediatr*. 2018;**6**(1):176. <https://doi.org/10.18203/2349-3291.ijcp20185204>.
6. Abdullahi U. Neonatal discharge against medical advice: Experience from a rural tertiary hospital in North Western Nigeria. *Sahel Med J*. 2017;**20**(2):64. <https://doi.org/10.4103/1118-8561.215035>.
7. Ndu I, Asinobi I, Ekwochi U, Amadi O, Ayuk A; Osuorah C. Discharge against medical advice (DAMA) among the paediatric age group in Enugu State University Teaching Hospital Parklane, Enugu. *J Exp Res*. 2016;**4**((1)):55-62.
8. Yang S, Cai S, Liao J, Peng X, Huang J. Risk Factors and Reasons for Discharge Against Medical Advice for Newborns With Neonatal Surgical Diseases: A Preliminary Study From a Tertiary Care Hospital in Beijing, China. *Front Pediatr*. 2020;**8**:576270. [PubMed ID: 33134233]. [PubMed Central ID: PMC7562829]. <https://doi.org/10.3389/fped.2020.576270>.
9. Ambasta A, Santana M, Ghali WA, Tang K. Discharge against medical advice: 'deviant' behaviour or a health system quality gap? *BMJ Qual Saf*. 2020;**29**(4):348-52. [PubMed ID: 31888955]. <https://doi.org/10.1136/bmjqs-2019-010332>.
10. Tan SY, Feng JY, Joyce C, Fisher J, Mostaghimi A. Association of Hospital Discharge Against Medical Advice With Readmission and In-Hospital Mortality. *JAMA Netw Open*. 2020;**3**(6). e206009. [PubMed ID: 32525546]. [PubMed Central ID: PMC7290410]. <https://doi.org/10.1001/jamanetworkopen.2020.6009>.
11. Alphonsus N. Pediatric discharge against medical advice; experience from a Nigerian secondary healthcare institution. *Med J Islam Repub Iran*. 2011;**25**(4):194-9.
12. Onankpa BO, Ali T, Abolodje E. A study on prevalence of discharge against medical advice in a tertiary care hospital in Nigeria. *Int J Med Sci Public Health*. 2014;**3**(2):297. <https://doi.org/10.5958/j.2319-5886.3.2.063>.
13. Jiang S, Huang X, Zhang L, Han J, Yang Y, Wang W, et al. Estimated Survival and Major Comorbidities of Very Preterm Infants Discharged Against Medical Advice vs Treated With Intensive Care in China. *JAMA Netw Open*. 2021;**4**(6). e2113197. [PubMed ID: 34137828]. <https://doi.org/10.1001/jamanetworkopen.2021.13197>.
14. Pokhrel RP, Bhurtel R. Discharge Against Medical Advice from NICU in a Tertiary Hospital of Central Nepal: A Descriptive Cross-Sectional Study. *Pediatric Health Med Ther*. 2020;**11**:307-11. [PubMed ID: 32904699]. [PubMed Central ID: PMC7457557]. <https://doi.org/10.2147/PHMT.S268100>.
15. Bosco AN, A S, Rees CA, Wheeler AD, Britto CD, P N. Reducing rates of discharge against medical advice in the neonatal intensive care unit in a tertiary care hospital in South India: a mixed-methods study. *Trop Med Int Health*. 2021;**26**(7):743-52. [PubMed ID: 33780591]. <https://doi.org/10.1111/tmi.13578>.
16. Bidgoli AK, Momtaz YA, Khamsehchian M, Mansouri T, Borhaninejad V. The factors associated with discharge against medical advice: Comparing older and younger patients in ShahidBeheshti Hospital Complex, Kashan-Iran. *Bali Med J*. 2018;**8**(1):120. <https://doi.org/10.15562/bmj.v8i1.828>.
17. MohammadiKojidi H, Fayazi HS, Badsar AR, Rostamali N, Attarchi MS. Assessment of the Causes of Discharge against Medical Advice in Hospitalized Patients in Emergency Department. *Journal of Guilan University of Medical Sciences*. 2020;**29**(1):33-42.
18. Valcin J, Jean-Charles S, Malfa A, Tucker R, Dorcelus L, Gautier J, et al. Mortality, morbidity and clinical care in a referral neonatal intensive care unit in Haiti. *PLoS One*. 2020;**15**(10). e0240465. [PubMed ID: 33052937]. [PubMed Central ID: PMC7556516]. <https://doi.org/10.1371/journal.pone.0240465>.
19. Roodpeyma S, Hoseyni SA. Discharge of children from hospital against medical advice. *World J Pediatr*. 2010;**6**(4):353-6. [PubMed ID: 20549419]. <https://doi.org/10.1007/s12519-010-0202-3>.
20. Devpura B, Bhadesia P, Nimbalkar S, Desai S, Phatak A. Discharge against Medical Advice at Neonatal Intensive Care Unit in Gujarat, India. *Int J Pediatr*. 2016;**2016**:1897039. [PubMed ID: 28003834]. [PubMed Central ID: PMC5143712]. <https://doi.org/10.1155/2016/1897039>.
21. Ibekwe RC, Muoneke VU, Nnebe-Agumadu UH, Amadife MA. Factors influencing discharge against medical advice among paediatric patients in Abakaliki, Southeastern Nigeria. *J Trop Pediatr*. 2009;**55**(1):39-41. [PubMed ID: 19060307]. <https://doi.org/10.1093/tropej/fmn100>.