ORIGINAL ARTICLE

Survey on Factors Considered at Hospital Discharge by Physicians Working in Stroke Units in Argentina

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ABSTRACT

Introduction: Patients receiving care in stroke units are more likely to survive their stroke, become independent, and return home. Discharge decision-making is more influenced by nonclinical factors than clinical factors. This study aimed to analyze the factors considered in discharge decisions and how stroke patients are assessed by physicians who make decisions in stroke units in Argentina.

Materials and methods: An observational, analytical, cross-sectional survey study was conducted. The recommendations provided by the Checklist for Reporting of Survey Studies were used. The survey was addressed to all physicians in Argentina who work in stroke units and who influence discharge decisions.

Results: Eighty-two physicians completed the survey. The majority of them practice in Buenos Aires (CABA) (42.68%), followed by Buenos Aires (26.82%), and Córdoba (8.53%). The main predictors of hospital discharge considered were function prior to the stroke (96.34%), living conditions (92.68%), and comorbidities (86.58%). 68.29% indicated they receive pressure to be discharged.

Conclusion: The majority of respondents mentioned that they consider almost all prognostic factors when making a referral, except for sex. Furthermore, a large part of the sample reported receiving pressure to discharge.

Keywords: surveys and questionnaires, process and outcome evaluation, health care, patient discharge, clinical decision-making, stroke.

Encuesta sobre los factores que son considerados al alta por médicos de las unidades de ACV en la Argentina

RESUMEN

Introducción: los pacientes que reciben atención de las unidades de accidente cerebrovascular tienen más probabilidades de sobrevivir a él, volverse independientes y regresar al hogar. La toma de decisiones para determinar el lugar del alta se ve más influenciado por factores no clínicos que clínicos.

Objetivo: analizar los factores que se consideran para dar el alta y la manera en que son medidos los pacientes con ACV por los médicos que toman las decisiones en las unidades de ACV en la Argentina.

Materiales y métodos: se realizó un estudio observacional, analítico, transversal del tipo encuesta. Se utilizaron las recomendaciones dadas por la *Checklist for Reporting of Survey Studies*. La encuesta estuvo destinada a todos aquellos médicos en la Argentina que trabajan en las unidades de ACV y que influyen en la toma de decisiones del alta.

Resultados: ochenta y dos médicos completaron la encuesta. La mayoría de ellos ejerce en Ciudad Autónoma de Buenos Aires (CABA) (42,68%), seguida por Buenos Aires (26,82%) y Córdoba (8,53%).

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Los principales factores considerados al alta de internación fueron la función previa al ACV (96,34%), la situación habitacional (92,68%) y las comorbilidades (86,58%). El 68,29% indicó que recibe presión para dar el alta.

Conclusión: la mayoría de los encuestados mencionó que considera casi todos los factores pronósticos al momento de realizar la derivación, salvo el género. Además, gran parte de la muestra informó presión institucional para dar el alta.

Palabras clave: encuestas y cuestionarios, evaluación de procesos y resultados, cuidados de salud, alta del paciente, reglas de decisión clínica, accidente cerebrovascular.

INTRODUCTION

Stroke is classically defined as a neurological deficit attributable to an acute focal injury of the central nervous system of vascular origin, including cerebral infarction, intracerebral hemorrhage, and subarachnoid hemorrhage[1]. In 2016, there were 80.1 million prevalent cases of stroke worldwide[2]. The age-adjusted prevalence of stroke in Argentina is estimated at 1,974 per 100,000 inhabitants older than 40 years and is higher in men than in women[3].

In recent years, the concept of the stroke unit has emerged, characterized by a multidisciplinary team that includes specialized nursing staff and provides exclusive care to patients with stroke[4]. It has been demonstrated that patients treated in stroke units are more likely to survive a stroke, regain independence, and return home[4]. Regarding the latter, patients and their families should be fully involved in discharge planning and be able to choose and make decisions about both the timing of discharge and the services received[5]. Caregivers' perspectives and needs should be considered, and appropriate training should be provided[5].

In the Autonomous City of Buenos Aires (CABA), the first public stroke unit began operating in 2015[6]. The incorporation of centers with rehabilitation capabilities into the city's network system should be considered in order to address stroke care from the subacute stages onward[6].

In recent years, multiple predictors of discharge destination have been described, with home or a rehabilitation facility being the main options. Becker et al. found that pre-stroke disability, rather than stroke severity, is the strongest predictor of discharge destination[7]. However, Thorpe et al. reported that the degree of independence and lesion severity are the determining factors for discharge location[8]. Other factors have also been shown to play a role at the time of discharge, including marital status, pre-event housing situation, cognitive status at discharge, absence of prior comorbidities, use of mechanical ventilation during hospitalization, admission to the intensive care unit, and feeding modality[9,10]. Another relevant factor is pressure from the health care system to free up beds, which may cause some patients to lose opportunities for recovery[11].

To our knowledge, the only study in the literature evaluating factors considered by decision-makers in discharge planning for patients with stroke was conducted in the northeastern United States. Most respondents were nurses and social workers, and non-clinical factors were found to have greater influence than clinical ones[12]. However, in Latin America, there are no data regarding the factors considered by physicians who make discharge decisions in stroke units.

The findings of this study may provide key information for health policy planning and the development of clinical practice guidelines adapted to the regional context. Identifying predictors that influence discharge decisions after stroke could allow the design of protocols to improve standardization of discharge processes, thereby reducing uncertainty in decision-making.

OBJECTIVES

To analyze the factors considered for hospital discharge and the way in which patients with stroke are assessed in stroke units in Argentina by physicians responsible for decision-making.

Hypotheses

1. Physicians in the Autonomous City of Buenos Aires (CABA) who have access to an in-house rehabilitation service take into account most of the predictors considered at discharge.
2. Physicians in CABA who have referral agreements with rehabilitation centers take into account most of the predictors assessed at discharge when making discharge decisions.
3. Physicians working in the public health sector place greater emphasis on the patient's economic situation at the time of discharge.
4. Physicians working in the private health sector report greater pressure to discharge patients compared with those working in the public sector.
5. Physicians working in stroke units that include residents, trainees, or fellows consider a greater number of predictors than those assessed using standardized discharge tools.

MATERIALS AND METHODS

Study Design

An observational, analytical, cross-sectional study was conducted. Reporting followed the recommendations of the Checklist for Reporting of Survey Studies (CROSS)[13].

Sample Characteristics

All physicians practicing in Argentina who work in stroke units and are responsible for the discharge referral process of hospitalized patients were included. Surveys with missing data were excluded. A non-probability snowball sampling method was used.

Data Collection Methods

An online survey was designed by the investigators of the present study. It consisted of 36 items divided into two sections (Appendix A). Each item included a mandatory response option to prevent unanswered questions. Only participants who met all inclusion criteria were able to access the survey.

A pilot test was conducted at the beginning of the study to assess survey comprehension. This phase included four experts in the field, who were provided with a questionnaire aimed at identifying difficulties encountered when completing the survey in general or specific items in particular (Appendix B). Modifications were made by consensus among the authors.

Survey Administration

Participants were invited to take part in the study by distributing the survey through department heads of stroke units. The invitation was also extended via different medical societies. The invitation included the study objective and the corresponding link to access the survey, which was administered using the SurveyMonkey™ platform.

The survey link remained active for a period of three months. To prevent multiple submissions by the same participant, the SurveyMonkey™ platform restricted duplicate responses. In addition, all questions were set as mandatory, thereby preventing unanswered items.

Sample Size

The sample size consisted of a fixed available sample, as all physicians involved in discharge decision-making for patients with stroke in stroke units across Argentina were invited to participate in the survey.

Study Preparation

Prior to activation of the survey link, outreach was conducted throughout the preceding month with various Argentine medical societies in order to increase awareness of and interest in the survey at the time of study initiation. This outreach was carried out through different social media platforms (Facebook™, Twitter™, and Instagram™). The procedures manual is provided in Appendix C.

Ethical Considerations

Given the voluntary and anonymous nature of the study, written informed consent was not required. Participant identity and data confidentiality were protected at all times, in accordance with international regulations as established by the Declaration of Helsinki.[14] The study was conducted following approval by an Ethics and Research Committee in Argentina.

Variables

The following variables were collected: age, sex, nationality, years of professional practice, healthcare institution, highest academic degree attained, workplace setting, perceived importance of assessments, working with residents/trainees/fellows, referral agreements, postgraduate training in stroke, access to a rehabilitation service, shared decision-making, discharge destination, assessment methods, neurological sequelae, pre-stroke functional status, age at the time of the event, level of independence, family support network, instability, psychological/psychiatric factors, cognitive dysfunction, housing situation, comorbidities, patient complexity, length of hospital stay, admission to the intensive care unit/use of mechanical ventilation, sex considered at discharge, health insurance coverage, rehabilitation service, session duration, economic situation, prognosis for improvement, pressure to discharge, type of stroke, and dysphagia.

In addition, respondents who selected "yes" for the following variables –comorbidities, neurological sequelae, psychological/psychiatric factors, cognitive dysfunction, level of independence, instability, and dysphagia– were provided with an open-text field to specify which factors were considered or how prognostic factors were assessed.

Data Analysis

Quantitative variables were described using mean and standard deviation when the distribution was parametric, or median and interquartile range (IQR) when the distribution was non-parametric.

Categorical variables were expressed as proportions, along with their corresponding absolute values for each category.

Data analysis was performed using Stata® software, version 15 (StataCorp, College Station, TX, USA).

Hypotheses were tested using the chi-square (χ^2) test or Fisher's exact test, as appropriate. A p value ≤ 0.05 was considered statistically significant. Responses categorized as "other," "which," and "method of assessment" were analyzed using deductive content analysis.[15] Coding was performed using predefined categories previously reported in the literature.

RESULTS

Pilot Test

Four experts in the field participated in the pilot test; all were Argentine nationals and neurologists. The remaining demographic variables are presented in Table 1.

All four invited experts completed the comprehension questionnaire. All suggested modifications related to the institution conducting the survey, the study objective, survey duration, semantic changes, inclusion of additional response options, questions and examples, and removal of certain questions. The sections that received the highest number of suggested modifications were those related to medical specialty, sex, and the introductory paragraph.

Characteristics of Respondents

Figure 1 (flow diagram) depicts the final number of respondents and the reasons for exclusion.

Descriptive Results

A total of 82 responses were included in the analysis. The median age was 44 years (IQR 36–52), and the median number of years in professional practice was 17 (IQR 11–27). The remaining characteristics of the respondents are shown in Table 2.

Main Findings

The main factors considered at hospital discharge by respondents for patients with stroke are detailed in Table 3.

Hypotheses Testing

1. Physicians in the Autonomous City of Buenos Aires (CABA) with access to a rehabilitation service considered a greater number of predictors at discharge. No statistically significant association was observed (Fisher's exact test, p = 0.279).
2. Physicians in CABA with referral agreements with rehabilitation centers considered a greater number of predictors at discharge. No statistically significant association was found ($\chi^2(1) = 1.2464$, p = 0.264).
3. Physicians working in the public health sector placed greater emphasis on the patient's economic situation at discharge. No statistically significant association was observed (Fisher's exact test, p = 0.630).
4. Physicians working in the private health sector reported greater pressure to discharge patients compared with those working in the public sector. No statistically significant association was found (Fisher's exact test, p = 0.144).
5. Physicians working in stroke units that included residents, trainees, or fellows evaluated a greater number of predictors than those assessed using standardized discharge tools. No statistically significant association was observed (Fisher's exact test, p = 1.000).

DISCUSSION

Nearly 70% of respondents reported having experienced pressure to discharge patients. In addition, the main factors considered at discharge were pre-stroke functional status, housing situation, comorbidities, family support network, neurological sequelae, level of independence at discharge, and health insurance coverage. Conversely, the place of care, the existence of referral agreements, geographic region, and the presence of residents, trainees, or fellows were not associated with improved decision-making when selecting the discharge destination.

Although almost 60% of respondents considered assessment using standardized tools to be very important, several prognostic factors were not evaluated in a standardized manner or were assessed by other services.

In Argentina, the selection of the post-discharge referral destination depends on both clinical and non-clinical factors. In a survey conducted in hospitals in the northeastern United States, Magdon-Ismail et al. reported that patient and family preferences were more influential than the opinions of other health care professionals.[12] In contrast to our findings, those authors identified patient insurance coverage, quality of post-acute care facilities, prognosis for recovery, and stroke severity as the main factors considered at discharge.[12]

Nearly 70% of respondents in our study reported having experienced pressure to discharge patients. This pressure may be related to the need to free hospital beds and could potentially influence stroke recovery.[11]

Table 1. Characteristics of the experts

	Expert 1	Expert 2	Expert 3	Expert 4
Age (years)	33	49	57	46
Sex	Male	Female	Male	Female
Years of experience	4	24	32	19
Practice setting	Private	Private	Private	Public and private
Academic training	RCB	Master's degree	Master's degree	Specialty training program
Place of practice	CABA	CABA and Province of Buenos Aires	Córdoba	CABA

RCB: residency, trainee position, and fellowship; **CABA**: Autonomous City of Buenos Aires.

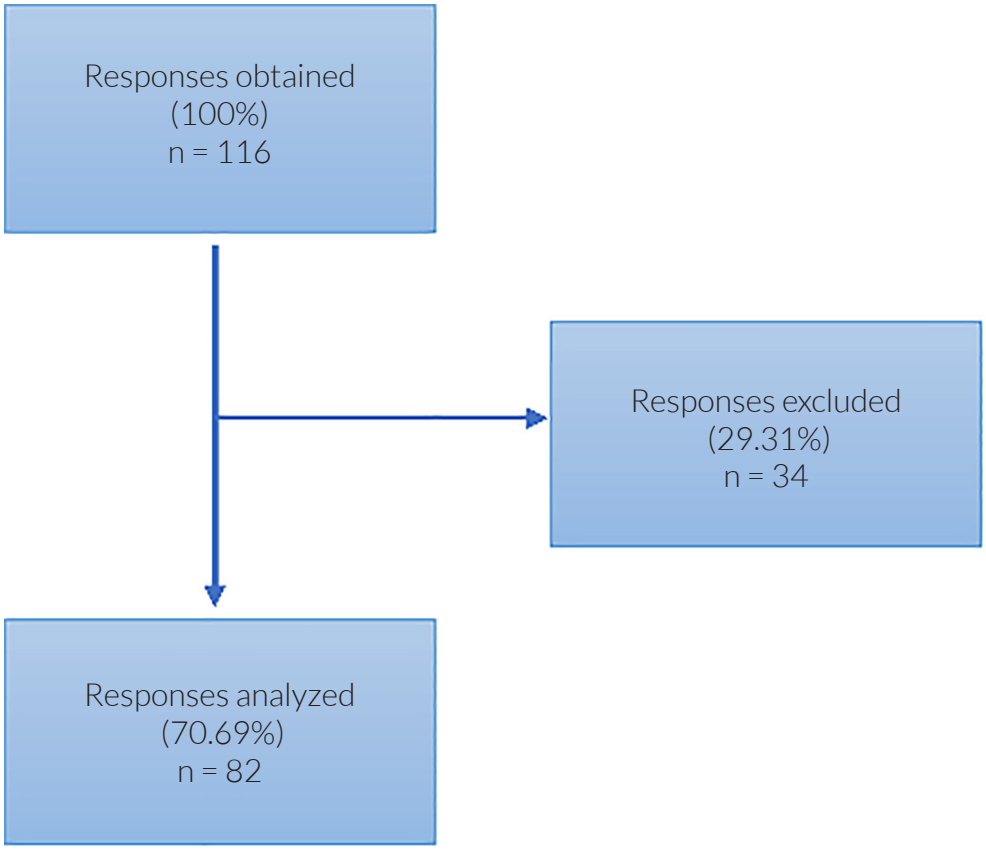

Figure 1. Flow diagram.

Early discharge or rapid referral may lead to clinical deterioration, which in turn could result in hospital readmission.[16]

Meanwhile, Magdon-Ismail et al. reported that nearly *55%* of respondents experienced pressure to discharge patients, a proportion lower than that observed in our study. However, it should be noted that the sample analyzed by Magdon-Ismail et al. was composed entirely of non-physician professionals, predominantly female, and not all of them worked in stroke units, although they had a similar number of years of professional experience.[16]

The behavior of different medical specialties may be influenced by multiple factors. One possible explanation is the lack of undergraduate training in the care of people with disabilities.[17] Currently, skills related to the management of patients with disabilities appear to be undervalued in medical education.[18] Lee et al. reported that the scope of training in disability-related competencies varies across medical programs, with most offering limited opportunities for in-depth understanding of disability.[19] In addition, from the perspective of people with disabilities, changes have been recommended in both the format and content of medical training sessions, as well as improvements in specific areas of knowledge.[20]

Limitations and strengths

As this was a survey-based study, selection bias may have occurred, since older individuals may be less likely to use mobile devices to complete online surveys. In addition, the results should be interpreted with caution due to the potential presence of social desirability bias in respondents' answers. The use of a non-validated instrument, such as the survey developed by the authors, may have resulted in imperfect measurement of the intended constructs. Recall bias may also have influenced the findings.

Despite having contacted the Argentine Society of Physical Medicine and Rehabilitation and having the survey promoted by this organization, no physiatrists responded to the survey. Given that this specialty is primarily dedicated to rehabilitation, their absence may affect the representativeness of the results. Furthermore, because there is no census of the number of physicians working in institutions with stroke units in Argentina, it was not possible to determine the response rate. Finally, due to the small sample size, it was not feasible to perform analyses of individual predictive factors according to level of training or geographic region. Additionally, the snowball sampling method limits the generalizability of the findings, which should therefore be interpreted with caution.

Table 2. Caracteristicas de los encuestados

Variables	n (%)
Gender	
Femenino	35 (42.68)
Nationality	
Argentina	78 (95.12)
Paraguaya	2 (2.43)
Ecuatoriana	2 (2.43)
Medical specialty	
Neurology	41 (50)
Neurosurgery	36 (43.9)
Internal Medicine	3 (3.65)
Clinical Medicine	2 (2.43)
Academic training	
Specialty training	44 (53.65)
RCB*	16 (19.51)
Master's degree	10 (12.19)
Postgraduate course	7 (8.53)
Doctorate	3 (3.65)
Undergraduate degree	2 (2.43)
Practice setting	
Private	33 (40.24)
Public	11 (13.41)
Both	38 (46.34)
Stroke unit training	
Yes	82 (100%)
Currently practicing in*	
CABA	35 (42.68)
Buenos Aires Province	22 (26.82)
Córdoba	7 (8.53)
Santa Fe	5 (6.09)
Entre Ríos	3 (3.65)
Chaco	3 (3.65)
Corrientes	3 (3.65)
San Luis	3 (3.65)
San Juan	3 (3.65)
Neuquén	3 (3.65)

Variables	n (%)
Works with RCB	
Yes	72 (87.8)
Has a rehabilitation service	
Yes	76 (92.68)
Shared decision-making	
No	49 (59.75)
Discharge destination	
Rehabilitation center	51 (62.19)
Home	18 (21.95)
Inpatient rehabilitation	8 (9.75)
Day hospital	3 (3.65)
Outpatient clinic	2 (2.43)
Importance of standardized asessment	
Not important	47 (57.31)
Very important	48 (58.53)
Important	32 (39.02)
Somewhat important	2 (2.43)
Assessment performed	
Clinical evaluation	28 (34.14)
Standardized tool	4 (4.87)
Both	47 (57.31)
Other	3 (3.65)
Pressure to discharge	
Yes	56 (68.29)

* More than one response possible.

* **RCB**: residency, traineeship, or fellowship. **CABA**: Autonomous City of Buenos Aires.

On the other hand, the strengths of the present study include: 1. the availability of a procedures manual, which improved data quality; 2. the implementation of a pilot test, which enhanced survey comprehension; 3. wide dissemination of the survey through multiple social media platforms and communication channels; 4. data entry through a digital platform, which minimized typing errors; 5. the use of an anonymous survey, which may reduce social desirability bias; 6. the use of a platform that prevented duplicate entries, thereby avoiding multiple responses; and 7. adherence to the Checklist for Reporting of Survey Studies (CROSS).

Generalizability

To our knowledge, this is the first survey-based study conducted in South America addressing this topic. Although only 70% of responses could be analyzed, comparison with the study by Magdon-Ismail et al.[12] is not feasible, as the exact number of stroke units currently operating in Argentina remains unknown. These results

Tabla 3. Predictive factors considered by respondents

Category	Variable	n (%)
Clinical factors	**Previous functional status**	79 (96.34)
	Comorbidities	71 (86.58)
	Which were considered*	
	Cardiovascular disease	23 (32.39)
	Diabetes	11 (15.49)
	Cognitive dysfunction	11 (15.49)
	Previous level of dependence	11 (15.49)
	Respiratory capacity	8 (11.26)
	Previous motor sequelae prior to stroke	7 (9.85)
	Obesity	7 (9.85)
	Medical/nursing requirements	4 (5.63)
	COPD	4 (5.63)
	Degenerative spinal disease	3 (4.22)
	Malnutrition	3 (4.22)
	Amputations	2 (2.81)
	Life expectancy	2 (2.81)
	Coagulation disorders	2 (2.81)
	Instability	2 (2.81)
	Polypharmacy	2 (2.81)
	Depression	2 (2.81)
	Cancer	2 (2.81)
	Language disorders	2 (2.81)
	Respiratory support requirement	2 (2.81)
	Feeding support requirement	2 (2.81)
	Neurodegenerative diseases	2 (2.81)
Neurological sequelae	**Neurological sequelae**	79 (96.34)
	How evaluated*	
	No scale / based on on-call physician	56 (70.88)
	Rankin Scale	16 (20.25)
	NIHSS	12 (15.18)
	Glasgow Outcome Scale (GOS)	3 (3.79)
	Karnofsky Scale	3 (3.79)
	Barthel Index	2 (2.53)
	EQ-5D	2 (2.53)
	MoCA	2 (2.53)
Type of stroke	**Stroke type**	56 (68.29)
Instability	**Instability**	69 (84.14)
	How evaluated*	
	No scale / based on on-call physician	62 (89.85)
	Berg Balance Scale	4 (5.79)
	Romberg test	3 (4.34)

(continue)

(continuation table 3)

Categoría	Variable	n (%)
	Clinical factors Prognosis of improvement	71 (86.58)
	Swallowing disorders Dysphagia	72 (87.80)
	How evaluated*	
	Not evaluated / assessed by another service	53 (73.61)
	GUSS	10 (13.88)
	Videofluoroscopic swallowing study	5 (6.94)
	IDDSI	2 (2.77)
	Blue dye test	2 (2.77)
	FEES	
Other clinical factors	**Age**	63 (76.82)
	Sex	9 (10.98)
	Tolerance to therapy	59 (71.95)
	Patient complexity	78 (95.12)
Cognitive factors	Cognitive dysfunction	76 (92.68)
	How evaluated*	
	No scale / based on on-call physician	56 (73.68)
	MoCA	15 (19.73)
	Mini-Mental State Examination	10 (13.15)
	Clock Drawing Test	2 (2.63)
Functional factors	Level of independence	79 (96.34)
	How evaluated*	
	No scale / based on on-call physician	42 (53.16)
	Rankin Scale	31 (39.24)
	Barthel Index	10 (12.65)
	Functional Independence Measure	2 (2.53)
Institutional and administrative factors	Housing situation	76 (92.68)
	Health coverage	78 (95.12)
	Length of hospital stay	47 (57.31)
	ICU admission	50 (60.97)
	Rehabilitation service availability	82 (100)
Socio-family factors	Family support	79 (96.34)
Psychological/psychiatric factors	Psychological/psychiatric factors	76 (92.68)
	How evaluated*	
	No scale / based on on-call physician	70 (92.10)
	Beck Depression Inventory	2 (2.63)
	EQ-5D	2 (2.63)
	Functional Independence Measure	2 (2.63)

*Multiple responses allowed

COPD: Chronic Obstructive Pulmonary Disease; **NIHSS:** National Institutes of Health Stroke Scale; **GOS:** Glasgow Outcome Scale; **EQ-5D:** EuroQol; **MoCA:** Montreal Cognitive Assessment; **ICU:** Intensive Care Unit.

should therefore be interpreted with caution, particularly due to the higher proportion of neurologists from the Autonomous City of Buenos Aires (CABA) included in the sample.

Implications for Research

Future studies should investigate the reasons why some physicians do not perform a comprehensive assessment of the factors considered at discharge, as well as whether lack of awareness or insufficient adaptation of the mentioned scales to Argentine Spanish influences decision-making. In addition, the economic impact of the absence of standardized protocols to determine the most appropriate discharge destination for each patient should be explored.

CONCLUSION

This exploratory study suggests that most respondents experience pressure to proceed with hospital discharge. The factors most frequently considered were pre-stroke functional status, housing situation, comorbidities, family support network, neurological sequelae, level of independence, and health insurance coverage. In contrast, place of care, the presence of referral agreements, residents/trainees/fellows, and geographic region were not associated with improved decision-making.

These findings are preliminary and should be confirmed by future studies with larger sample sizes and validated assessment tools.

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Author Contributions

Formal analysis, data curation (GC). Validation (GC, FSR). Conceptualization, investigation, original draft writing, review and editing (GC, FSR, JC).

Conflicts of Interest

The authors declare no conflicts of interest related to the content of this work.

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APPENDIX A. SURVEY

Dear participant,

You are being invited to voluntarily participate in the following survey entitled "Survey on Predictive Factors Considered at Discharge from Stroke Units in Argentina."

The objective of this study is to analyze the factors considered when determining hospital discharge and the way in which patients with stroke are assessed in stroke units in Argentina by physicians responsible for decision-making.

This study is conducted by Clínica La Sagrada Familia. The results will be used for scientific purposes, and the estimated time required to complete the survey is less than 15 minutes.

If you agree to participate, the survey will be anonymous, and your data will be protected in accordance with Argentine Law No. 25,326 (Personal Data Protection), in compliance with international regulations as established by the Declaration of Helsinki.

You may obtain further information about the study by contacting the principal investigator (Gerardo Candoni, Licensed Health Professional, National Registration No. 15784, contact number: +54 11 3270-8207) or the Ethics and Research Committee of Fundación Huésped (comitedebioetica@huesped.org.ar).

Inclusion Criteria

1. Are you a physician or do you hold a related professional degree?
   ☐ Yes | ☐ No
2. Are you currently practicing in Argentina in a stroke unit?
   ☐ Yes | ☐ No
3. Are you involved in making discharge decisions for patients in the stroke unit?
   ☐ Yes | ☐ No
4. What is your age?
5. What gender do you identify with?
   ☐ Male | ☐ Female | ☐ Non-binary | ☐ Other (please specify)
6. What is your nationality?
   ☐ Argentine | ☐ Other (please specify)
7. How many years of professional practice do you have (counting from the time you first obtained professional licensure)?
8. What medical specialty do you practice?
   ☐ Neurology | ☐ Internal Medicine | ☐ Neurosurgery | ☐ Physical Medicine and Rehabilitation | ☐ Other (please specify)
9. The institution where you practice is:
   ☐ Public | ☐ Private | ☐ Both
10. Indicate your highest level of academic training completed:
    ☐ Undergraduate degree
    ☐ Postgraduate course
    ☐ Residency / Fellowship / Traineeship
    ☐ Specialist degree program
    ☐ Diploma program
    ☐ Master's degree
    ☐ Doctoral degree
    ☐ Postdoctoral training
11. Have you completed any postgraduate training specifically related to stroke?
    ☐ Yes | ☐ No
12. Where in the country are you currently practicing? (More than one option may be selected)
    ☐ CABA (Autonomous City of Buenos Aires)
    ☐ Buenos Aires
    ☐ Mendoza
    ☐ Córdoba
    ☐ Santa Fe
    ☐ Misiones
    ☐ Entre Ríos
    ☐ La Pampa
    ☐ Jujuy
    ☐ Salta
    ☐ Tucumán
    ☐ Catamarca
    ☐ Santiago del Estero
    ☐ Tierra del Fuego
    ☐ Santa Cruz
    ☐ Chubut
    ☐ Neuquén
    ☐ Chaco
    ☐ Río Negro

☐ Corrientes
☐ San Luis
☐ San Juan
☐ La Rioja
☐ Formosa

13. At the institution where you work, are there residents, trainees, or fellows?
☐ Yes |
14. At the institution where you work, is there an inpatient rehabilitation service available (physical therapy, speech therapy, occupational therapy, physical medicine and rehabilitation, etc.)?
☐ Yes | ☐ No
15. If your answer to the previous question was "yes": Is decision-making regarding discharge from the stroke unit shared with the rehabilitation service?
☐ Yes | ☐ No
16. Please indicate the destination to which you refer the majority of your patients discharged from a stroke unit:
☐ Rehabilitation center
☐ Day hospital
☐ Home hospitalization
☐ Outpatient clinic
☐ Discharge home
☐ Other (please specify)
17. Does the institution where you work have a referral agreement with a rehabilitation center?
☐ Yes |☐ No
18. Please rate the level of importance you assign to using standardized assessments (patient performance quantified in a specific manner and not dependent on the evaluator's judgment) to improve discharge decision-making in a stroke unit:
☐ Very important | ☐ Important | ☐ Somewhat important | ☐ Slightly important | ☐ Not important

B. PREDICTORS CONSIDERED BY THE RESPONDENT

19. You perform patient assessment using:
☐ Clinical assessment
☐ Standardized tools
☐ Both
☐ I do not assess
20. Do you consider a history of previous stroke or pre-stroke functional status important in determining the discharge destination?
☐ Yes | ☐ No
21. Do you consider pre-stroke housing conditions important in determining the discharge destination (transfer to another institution, home discharge, etc.)?
☐ Yes | ☐ No
22. Do you consider the presence of comorbidities important in determining the discharge destination?
☐ Yes | ☐ No
23. If you answered "yes" to the previous question, please specify which comorbidities:
24. Do you consider sex to be important in determining the discharge destination?
☐ Yes | ☐ No
25. Do you consider health insurance coverage important in determining the discharge destination?
☐ Yes | ☐ No
26. Do you consider the patient's economic situation important in determining the discharge destination?
☐ Yes | ☐ No
27. Do you consider the presence of a family support network (spouse/partner, family caregiver, companion, etc.) important in determining the discharge destination?
☐ Yes | ☐ No
28. Do you consider neurological sequelae important in determining the discharge destination?
☐ Yes | ☐ No
29. If you answered "yes" to the previous question, please indicate how you assess neurological sequelae:
30. Do you consider age important in determining the discharge destination?
☐ Yes | ☐ No
31. Do you consider psychological/psychiatric factors (depression, hallucinations, impulsivity, etc.) important in determining the discharge destination?
☐ Yes | ☐ No
32. If you answered "yes" to the previous question, please indicate how you assess these factors:
33. Do you consider the type of stroke important in determining the discharge destination?
☐ Yes | ☐ No
34. Do you consider patient complexity (diagnostic imaging, wound care for pressure ulcers, tracheostomy, etc.) important in determining the discharge destination?
☐ Yes | ☐ No

35. Do you consider length of hospital stay important in determining the discharge destination?
☐ Yes | ☐ No
36. Do you consider admission to the intensive care unit and/or use of mechanical ventilation during hospitalization important in determining the discharge destination?
☐ Yes | ☐ No
37. Do you consider cognitive dysfunction important in determining the discharge destination?
☐ Yes | ☐ No
38. If you answered "yes" to the previous question, please indicate how you assess cognitive dysfunction:
39. Do you consider the level of independence at the time of discharge important in determining the discharge destination?
☐ Yes | ☐ No
40. If you answered "yes" to the previous question, please indicate how you assess level of independence:
41. Do you consider instability (e.g., balance or gait instability) important in determining the discharge destination?
☐ Yes | ☐ No
42. If you answered "yes" to the previous question, please indicate how you assess instability:
43. Do you consider prognosis for improvement important in determining the discharge destination?
☐ Yes | ☐ No
44. Do you consider dysphagia important in determining the discharge destination?
☐ Yes | ☐ No
45. If you answered "yes" to the previous question, please indicate how you assess dysphagia:
46. Do you consider the availability of a rehabilitation service (physical therapy, speech therapy, occupational therapy, etc.) within a stroke unit important in determining the discharge destination?
☐ Yes | ☐ No
47. Do you consider the patient's ability to tolerate a rehabilitation session of at least 20–30 minutes important in determining the discharge destination?
☐ Yes | ☐ No
48. Have you experienced pressure to discharge a patient from a stroke unit?
☐ Yes | ☐ No

APPENDIX B. DIFFICULTY QUESTIONNAIRE

1. Did you experience any difficulty understanding the questions in the survey?
2. If so, which questions?
3. Why?
Please explain: ----------

APPENDIX C. PROCEDURES MANUAL

Introduction

The research question is: Which factors are considered, and how are they assessed, by physicians responsible for discharge decisions in stroke units in Argentina for patients with stroke?

The objective of this study is to analyze the factors considered for hospital discharge and the way in which patients with stroke are assessed in stroke units in Argentina by physicians responsible for decision-making.

All physicians practicing in Argentina who work in stroke units and are responsible for the referral process of hospitalized patients will be included. Surveys with missing data will be excluded.

Participants / Roles

Participant	Roles
G.C.	Questionnaire development
	Pilot testing
	Contact with institutions
	Survey link activation
	Link deactivation
	Data processing
	Report writing
F.R.S.	Questionnaire development
	Pilot testing
	Report writing
J.C.	Questionnaire development
	Pilot testing
	Report writing
	Contact with institutions

Study Flowchart

Activity	M1	M2	M3	M4	M5	M6	M7	M8	M9
Questionnaire development	x								
Pilot testing	x	x							
Coordination with the Argentine Society of Neurolog		x							
Survey launch (activation of the online link)			x	x	x				
Survey closure (deactivation of the link)						x			
Data processing and analysis						x	x		
Report writing and dissemination								x	x

Abbreviation: M = month

Resources

Gerardo Candoni covered the annual subscription to the SurveyMonkey™ software.

Sampling

A non-probabilistic snowball sampling method was used. Recruitment was carried out through direct contact and dissemination of the survey link via heads of service, a process coordinated by Gerardo Candoni.

Recruitment

The invitation to participate was disseminated through the Argentine Society of Neurology and the heads of stroke units in Argentina. The invitation included the study objectives and the corresponding link to access the online survey, which was administered using the SurveyMonkey™ platform.

The survey link remained active for a period of two months. To prevent multiple submissions by the same participant, the SurveyMonkey™ platform restricts duplicate responses when the same device is used.

Process Standardization

1. Training

Gerardo Candoni is certified in Good Clinical Practice and research ethics. In addition, the same investigator completed self-training in survey design using the SurveyMonkey™ platform; this activity lasted approximately two hours.

2. Pilot Study

Prior to survey launch, a pilot test was conducted to assess feasibility and comprehension of the questionnaire. The pilot study involved four experts in the field. Participants were provided with a structured form containing questions aimed at identifying any difficulties encountered when completing the survey, either overall or with specific items (Appendix B). Modifications were made based on consensus among the authors.

Quality Control

1. Data Collection

To avoid multiple submissions, the SurveyMonkey™ platform prevents duplicate responses when the same device is used. Additionally, response validation was applied to each item, preventing unanswered questions.

2. Data Entry

Data were stored on the SurveyMonkey™ platform and exported once the survey link was deactivated by Gerardo Candoni. Responses corresponding to the options “other,” “specify,” and “method of assessment” were analyzed using deductive content analysis and subsequently exported to Stata® software, version 15 (StataCorp, College Station, TX, USA). This process was carried out by Gerardo Candoni and Federico Scaminaci Russo.

Database Validation

Responses selected by participants were directly recorded in the SurveyMonkey™ database, minimizing potential data entry and typographical errors. Throughout the data processing stage, Gerardo Candoni and Federico Scaminaci Russo applied a coding system. If any collected data did not match the predefined coding system, the value was classified as missing to avoid potential bias in the final analysis. All survey questions were mandatory, thereby minimizing the presence of missing data.