Stroke rehabilitation in Fiji: are patients receiving services?

M. Waloki,¹ C. Roseveare,² L. Tikolevu,³ S. Ram,¹ K. Bissell⁴

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Setting: The national hospital and stroke rehabilitation services of the Fiji Ministry of Health.

Objectives: To describe patients admitted with stroke to the Fiji Colonial War Memorial Hospital (CWMH) from January 2010 to December 2012, and to report on rehabilitation services accessed during and after admission.

Design: Retrospective descriptive study using patient records.

Results: Of the 328 patients admitted with stroke, 54% were male, 55% *i-Taukei* and 16% aged <50 years; 75% had hypertension, 41% diabetes and 37% both; 23% ($n = 76$) died. Of the survivors, 58% (146) received rehabilitation therapy during admission at the CWMH. After discharge, 10% ($n = 26$) received therapy at the National Rehabilitation Hospital; six accessed the services of the community rehabilitation assistants. Just over half of stroke survivors (52%) remained in CWMH for <1 week (median stay 6 days, IQR 4–11).

Conclusion: The length of stay and access to rehabilitation was inadequate for over half of the stroke survivors. After discharge, very few accessed the available rehabilitation services of the Ministry of Health. It will be crucial to review procedures for tracking patient use of rehabilitation services and to explore why patients are not accessing these services, which are vital to recovery and restoration of function.

Low- and middle-income countries, such as Fiji and the Pacific Islands, have a prevalence of non-communicable diseases (NCD) of epidemic proportions, particularly ischaemic heart disease and stroke. Among adults in Fiji, stroke is one of the most common causes of death and severe long-term disability. In 2000, 82% of deaths recorded in Fiji were attributed to NCD, with coronary heart disease and stroke being responsible for 55% of deaths in the 40–59 year age groups.¹ The actual number of Fijians living with stroke and its consequences is unknown; however, it is estimated that annually there are 300 new stroke patients.¹

Studies show that ongoing long-term rehabilitation of stroke patients at home or at rehabilitation centres contributes to the maintenance of their independent functional status and delays the decline in quality of life.^{2,3} It is thus important for health services to know whether stroke survivors are receiving the rehabilitation services available. In addition to quality of life considerations, there is also an economic argument. The economic burden caused by insufficient rehabilitation of people who have suffered a stroke is believed to be very high for a developing country such as Fiji. Most of those who suffer from stroke are aged between

40 and 59 years, with at least 10 years of productivity remaining until retirement age at 55.⁴

Stroke rehabilitation in Fiji is predominantly provided by physiotherapists at acute and rehabilitation facilities run by the Ministry of Health (MOH). In most cases, patients are supposed to be referred to the National Rehabilitation Hospital (NRH) after an acute hospital phase. Government-employed community rehabilitation assistants (CRAs), as well as private sector physiotherapists, traditional healers and non-governmental organisations for disabled people, provide rehabilitation services in the community. There is currently no routine follow-up of stroke patients to track whether or not they are receiving rehabilitation services in the acute services in hospital and following discharge, nor has there been any operational research or evaluation of access to rehabilitation services in Fiji. There are concerns that although stroke patients might be receiving some rehabilitation during their admission at the Colonial War Memorial Hospital (CWMH), they are not reaching the NRH, and that few are receiving rehabilitation services once back in the community. No research on stroke rehabilitation has been undertaken previously in Fiji.

The aim of the present study was to determine whether stroke patients admitted to Fiji's largest hospital were assessing MOH rehabilitation services during and after admission. Specific objectives were 1) to describe the characteristics and exit outcome of patients admitted with stroke to CWMH; 2) to determine, among stroke survivors, the percentage of patients who received rehabilitation and which services they accessed; and 3) to determine, among those who accessed services, the number of days in-patient services were received and the number of sessions received.

METHODS

Design

Retrospective descriptive study reviewing data in patient registers.

Setting

General

Fiji's total population is estimated at 881 553, and Suva's population at 200 000. Governmental health services in Fiji are divided into three divisions — Central Eastern, serving approximately 40% of the population, including Suva; Northern (30%); and Western (30%). Suva hosts Fiji's main national referral hospital, CWMH, which has 500 beds and offers all standard in- and out-patient health care services. Suva also hosts the NRH, which is a 20-bed multi-disability re-

AFFILIATIONS

- 1 College of Medicine, Nursing and Health Sciences, Fiji National University, Suva, Fiji
- 2 Regional Public Health Service, Hutt Valley, Lower Hutt, New Zealand
- 3 Colonial War Memorial Hospital, Fiji Ministry of Health, Suva, Fiji
- 4 International Union against Tuberculosis and Lung Disease, Paris, France

CORRESPONDENCE

Maria Waloki
College of Medicine, Nursing and Health Sciences
Fiji National University
Hoodless House
Brown Street
Suva, Fiji
e-mail: maria.waloki@fnu.ac.fj
Tel: (+679) 323 3703
Fax: (+679) 330 3469

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habilitation hospital established in the 1980s, with a 6-bed ward for stroke patients established in 2012. Stroke patients can receive in- and out-patient therapy from physiotherapists at the hospitals. About 50 physiotherapists and nine CRAs provide MOH rehabilitation services for stroke and disability populations throughout the country. In the Suva area, seven private practitioners also provide rehabilitation services for patients with stroke.

Study setting

This study was conducted at MOH facilities that provide stroke rehabilitation services in Fiji's capital city, Suva, and covered the CWMH, NRH and the Suva and Valelevu Health Centres. Of the 15 physiotherapists and two CRAs in the Central Eastern division, 13 physiotherapists work at the CWMH, serving Suva and its suburbs, and the two CRAs at the Suva and Valelevu health centres. Two physiotherapists work at the NRH.

Patient population

All patients registered with stroke in any of the CWMH wards (Men's Medical, Women's Medical, Paying, Acute Medical) between 1 January 2010 to 31 December 2012 were included in the study.

Data variables, sources of data and data collection

Structured forms were used to collect data on stroke patients from registers in the CWMH medical wards, the NRH and the health centres in Suva and Valelevu. Variables included hospital number, name, age, sex, ethnicity, type of stroke, hypertension and diabetes mellitus status, outcome following admission, rehabilitation services accessed, length of in-patient stay and number of sessions received. Data were double-entered into EpiData version 3.1 (EpiData Association, Odense, Denmark) by the principal researcher and a co-researcher. The two data files were compared for discordances. Corrections were made by cross-checking completed data collection forms, from which a final data set was produced.

Data analysis

Data were analysed using EpiData Analysis v 2.2.1.170 (EpiData Association). Frequencies, means, medians and interquartile ranges were calculated as appropriate. The Kruskal-Wallis test was used to test the significance of differences between medians.

Ethics approval

Ethics approval was obtained from the Ethics Advisory Group of the International Union Against Tuberculosis and Lung Disease, Paris, and the National Health Research Committee and the Fiji National Research Ethics Review Committee, Ministry of Health, Suva.

RESULTS

The characteristics and outcomes of 328 stroke patients admitted to CWMH are shown in Table 1. Of these, 54% (177) were male and 55% (179) were *i-Taukei* (indigenous Fijian). The majority (84%) were aged >60 years; however, 16% were aged <50 years. The mean age of the patients was 62 years. The admis-

TABLE 1 Characteristics and outcomes of stroke patients admitted to the Colonial War Memorial Hospital, Suva, Fiji, 2010–2012

Variable	Total (n = 328) n (%)
Sex	
Male	177 (54.0)
Female	151 (46.0)
Age, years	
<40	13 (4.0)
40–50	39 (11.9)
51–60	95 (29.0)
61–70	97 (29.6)
>70	84 (25.6)
Ethnicity*	
<i>i-Taukei</i>	179 (54.6)
Indo-Fijian	137 (41.8)
Other	12 (3.7)
Type of stroke	
Left hemiplegia	129 (39.3)
Right hemiplegia	150 (45.7)
Not recorded	49 (14.9)
Hypertension	
Yes	247 (75.3)
Not recorded	81 (24.7)
Diabetes mellitus	
Yes	135 (41.2)
Not recorded	193 (58.8)
Hypertension and diabetes	122 (37.2)
Length of stay, weeks†	
<1	122 (51.5)
1–2	69 (29.1)
2–3	28 (11.8)
3–4	10 (4.2)
>4	8 (3.4)
Outcome	
Discharged	208 (63.4)
Referred	26 (7.9)
Died	76 (23.2)
Not recorded	18 (5.5)

* *i-Taukei* = ethnic Fijian; Indo-Fijian = Fijian of Indian origin.

† Data on 237 survivors only.

sion of stroke patients varied by year, from 79 in 2010 to 148 in 2011 and 101 in 2012.

High levels of hypertension (75%), diabetes (41%) and both (37%) were observed. Seventy-six patients died during the period of admission, 50 of these (76%) within the first week. Half of the patients who survived the stroke (52%) stayed in CWMH for <1 week; the median length of stay was 6 days (interquartile range [IQR] 4–11).

The MOH rehabilitation services received by stroke survivors are shown in the Figure. Of the 252 patients, 58% underwent physiotherapy at CWMH only and 10% received therapy at both CWMH and NRH. Only six persons (3%) were recorded as having received CRA services. The remaining patients (29%) did not receive any rehabilitation at all. All but two of the persons who received CWMH physiotherapy services were in-patients at the time.

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FIGURE Percentage of stroke survivors who accessed Ministry of Health rehabilitation services, by type of service, Suva, Fiji, 2010–2012. *Patients accessed no Ministry of Health rehabilitation services. CWMH = Colonial War Memorial Hospital; NRH = National Rehabilitation Hospital; CRA = community rehabilitation assistant.

Details of the physiotherapy and community rehabilitation services accessed by stroke patients, for whom data are available are shown in Table 2. A total of 153 patients received in-patient physiotherapy at the CWMH and were seen a total of 1040 times in the first 2 weeks of admission. The 11 in-patients at the NRH received a total of 533 rehabilitation sessions. The median number of sessions received for patients at CWMH was 4 (IQR 3–7) and at NRH 30 (IQR 15–52). The study found that over 1500 sessions of rehabilitation were provided to stroke in-patients over the study period.

DISCUSSION

Our study evaluating stroke patient access to MOH rehabilitation services in Fiji confirmed our hypothesis that patients were not receiving adequate rehabilitation following a stroke. Clinical practice guidelines and many studies strongly propose that intensive early mobilisation out of bed within 24 h after stroke onset and a minimum of 16 h (i.e., 1000 min) of exercise therapy is

needed for any significant improvement in functional activities in the short and long term.^{2,3,5,6} Just over half of stroke survivors received rehabilitation during their admission, and of these, 58% had access to rehabilitation sessions for <1 week. The majority of the stroke patients (63%) were discharged home in the first 6 days after the stroke. There was no significant difference in the receipt of rehabilitation between men and women or by ethnicity or race; however, there were significant differences in length of stay at the CWMH. Overall, women had longer stays than men (median 8 vs. 6 days, $P < 0.001$) and *i-Taukei* had longer stays than Indo-Fijians (median 7 vs. 6 days, $P = 0.02$). Early discharge home may be due to the ongoing challenge of bed shortages at the national referral hospital. However, it is unclear why more patients were not referred to the NRH for intensive therapy at this crucial time of their recovery.

The very small number of patients who received rehabilitation at NRH and from CRAs is of great concern. For those discharged home from CWMH, very few managed to access the available MOH rehabilitation services in the greater Suva area. Only 10% of stroke survivors received any services in the NRH, which is supposed to provide both intensive in-patient as well as out-patient rehabilitation services for stroke patients. The very low rate of use of CRA services indicates major problems in access to community-based rehabilitation and that patients are not receiving adequate care. Although 1500 sessions of rehabilitation were provided to stroke in-patients over the study period, the routine recorded data provided insufficient information for us to determine how long these sessions were and how appropriate they were for each patient. It is also possible that patients in more isolated areas of the country are facing much greater barriers to care, and this requires further assessment.

It is impossible from this study, given its design and the incompleteness and poor quality of some of the routine data, to understand why the numbers accessing rehabilitation after discharge are so low. It is possible that the number of physiotherapists and CRAs employed by the MOH is not sufficient. The early discharge of patients and lack of referral to rehabilitation services may be due to the heavy workloads of CWMH staff and a lack of specialised training in assessing and treating patients. There may also be

TABLE 2 Length of time spent by stroke survivors accessing Ministry of Health rehabilitation services and number of sessions received, Suva, Fiji, 2010–2012 ($n = 212$)

	Rehabilitation services			
	PTCWMH* n (%)	NRH*	CRA Suva	CRA Valelevu
Number of days in-patient services were received	$(n = 153)$	$(n = 11)$	NA	NA
0–6	90 (55.8)	1		
7–13	41 (26.8)	4		
14–20	15 (9.8)	1		
≥21	7 (4.6)	5		
Total	153 (100)	11		
Number of sessions	$(n = 200)$	$(n = 16)$	$(n = 4)$	$(n = 1)$
Total in-patients	1040	533	NA	NA
Total out-patients	10	56	—	—
Total	1050	589	23	6
Range	1–20	10–96	2–10	
Median [IQR]	4 [3–7]	30 [15–52]	5.5 [2–10]	

*Length of time for in-patients is time between first rehabilitation session and date of discharge from hospital. Not all patients had a discharge date recorded.

PTCWMH = Physiotherapy Service, Colonial War Memorial Hospital; NRH = National Rehabilitation Hospital; CRA = community rehabilitation assistant; NA = not applicable, as out-patient service only; IQR = interquartile range.

a lack of clarity in stroke management guidelines, and criteria and algorithms for transferring stroke patients to the NRH as soon as they are safe to be moved.^{2,3,7,8} The next important step is to assess the referral and follow-up phases of patient care. Some patients are being referred by the medical doctors in CWMH, but face multiple barriers, such as costs and transport, to presenting at the NRH. If they do present, there may be barriers to their being accepted by the NRH. It seems clear that if there is no procedure for following up patients after discharge and referral, many patients may essentially be 'lost' by the health services. For effective, long-term community-based rehabilitation, adequate management, referral and monitoring procedures, and human and financial resources are required to deliver the services.^{3,7,8}

Gaps in the delivery of essential rehabilitation services to stroke patients are common in the health systems of many developing countries that are struggling to cope with the increasing burden of diseases and their debilitating consequences, such as disability.⁵ The finding that stroke patients received the most rehabilitation at CWMH during the acute stage of admission is in line with reports from other low-income countries.^{5,8,9,10} However, Fiji does have a dedicated stroke unit and staff with job descriptions for providing stroke rehabilitation services, unlike many developing countries. It will be critical to explore the reasons why patients are not receiving these services.

This study has a number of strengths. First, to our knowledge it is the first formal evaluation of stroke patients accessing MOH rehabilitation services in Fiji. Second, we used data from the largest, main referral hospital in Fiji, the national rehabilitation hospital and the MOH community rehabilitation services, which are responsible for the nation's capital and most populated city and its suburbs; the study can thus be considered representative of the situation in Fiji. Third, a standardised method was used to identify stroke patients in the records maintained in wards and rehabilitation services.

The study also has some limitations. A number of patient records were incomplete, illegible or missing, and the study design did not include any systematic enquiry of physiotherapy and community rehabilitation staff about these data discrepancies. The amount various services were accessed may thus have been underestimated. Data were collected by two researchers, but were

double-entered and cross-checked to minimise any collection and entry discrepancies. A further limitation is that the severity of stroke of those in the study was not included.

CONCLUSION

Only just over half of people admitted with stroke received rehabilitation services during their admission to CWMH, and the majority of stroke patients did not receive adequate rehabilitation after discharge. It would be advisable for Fiji's MOH to review their procedures and data information systems for managing the rehabilitation of stroke patients and for tracking their use of rehabilitation services. Further research, including qualitative methods, is recommended to explore why patients are not receiving services that are vital to recovery and restoration of function.

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Contexte : Hôpital national du Ministère de la santé des Fidji et services de rééducation post accident vasculaire cérébral (AVC).

Objectifs : Décrire les patients admis pour AVC à l'hôpital Colonial War Memorial (CWMH) de janvier 2010 à décembre 2012 et les services de rééducation fréquentés pendant et après l'hospitalisation.

Schéma : Etude rétrospective descriptive grâce aux dossiers des patients.

Résultats : Sur 328 patients admis pour AVC, 54% étaient des hommes, 55% appartenaient à l'ethnie *i-Taukei* et 16% était âgés de <50 ans ; 75% avaient une hypertension, 41% un diabète et 37% les deux pathologies ; 23% ($n = 76$) sont décédés. Parmi les survivants, 58% ($n = 146$) ont bénéficié d'une rééducation pendant leur séjour

au CWMH. Après leur sortie, 10% ($n = 26$) ont bénéficié d'une rééducation à l'hôpital national de rééducation et six ont bénéficié de l'aide de rééducateurs communautaires. Un peu plus de la moitié des survivants (52%) sont restés au CWMH moins d'une semaine (séjour médian 6 jours ; IQR 4–11).

Conclusion : La durée de séjour et l'accès à la rééducation ont été insuffisants pour plus de la moitié des survivants d'AVC. Après leur sortie, très peu ont eu accès aux services de rééducation disponibles du Ministère de la santé. Il est crucial de revoir les procédures de suivi de l'utilisation de la rééducation par les patients et de chercher pourquoi ils n'accèdent pas à ces services, qui sont vitaux en termes de guérison et de restauration de leurs fonctions.

Marco de referencia: El hospital y los servicios nacionales del Ministerio de Salud en Fiji que ofrecen rehabilitación posterior a los accidentes cerebrovasculares.

Objetivos: Describir las características de los pacientes hospitalizados por accidente cerebrovascular en el hospital Colonial War Memorial (CWMH) entre enero del 2010 y diciembre del 2012 y evaluar el acceso a los servicios de rehabilitación durante la hospitalización y después de la misma.

Método: Fue este un estudio descriptivo retrospectivo a partir de las historias clínicas.

Resultados: De los 328 pacientes hospitalizados por accidente cerebrovascular, el 54% era de sexo masculino, el 55% era *i-Taukei* y el 16% de edad de <50 años; se observó que el 75% de los pacientes sufría hipertensión arterial, el 41% diabetes y el 37% de los pacientes padecía ambas enfermedades; la mortalidad fue de 23% ($n = 76$). De los pacientes que sobrevivieron, el 58% ($n = 146$) recibió

rehabilitación durante su estadía en el CWMH. Después del alta hospitalaria, el 10% ($n = 26$) acudió al Hospital Nacional de Rehabilitación y seis pacientes consultaron los servicios comunitarios de auxiliares de rehabilitación. Un poco más de la mitad de los sobrevivientes (52%) permaneció en el hospital menos de 1 semana (la mediana de la estadía fue 6 días; IQR 4–11).

Conclusión: La duración de la hospitalización y el acceso a los servicios de rehabilitación fueron insuficientes en más de la mitad de los pacientes que sobrevivieron a un accidente cerebrovascular. Después del alta hospitalaria, muy pocos pacientes acudieron a los servicios de rehabilitación del Ministerio de Salud. Sería primordial analizar los mecanismos de seguimiento del acceso de los pacientes a los servicios de rehabilitación e investigar las razones por las cuales las personas no acuden a estos servicios. La rehabilitación es esencial en la recuperación y el restablecimiento de las funciones.