



HEMIPLEGIC SHOULDER PAIN: PREVALENCE AND ASSOCIATED FACTORS IN POST-STROKE PATIENTS AT THE BAFOUSSAM REGIONAL HOSPITAL

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ABSTRACT

A cerebrovascular accident (CVA) or stroke is a serious damage to the brain due to bleeding or ischemia. It is responsible for multiple functional consequences, on the neuropsychological and locomotor levels, where the upper limb is particularly affected. The functional rehabilitation of the hemiplegic upper limb is a real challenge, especially when there is pain in the shoulder.

The aim of this study was to identify factors associated with post-stroke shoulder pain in order to improve effective management. This is a cross-sectional study in which a case-control analysis will be performed on 63 vascular hemiplegic patients with a stroke of at least one month old followed in the physiotherapy department of the Bafoussam Regional Hospital (HRB). Socio-demographic, clinical, rehabilitation, socio-economic and clinical evaluation characteristics were studied.

During the study period 78 stroke patients were registered, of which 63 agreed to participate in the study, 05 declined and the remaining 15 patients did not meet the inclusion criteria. Of the 63 patients registered and analysed, we had 41 (65%) cases, and 22 (35%) controls. The number of females was 37 (58.76%) and the number of males 26 (41.24%). Age ranged from 32 to 76 years, with the most affected age group being 50-59 (37%) with an average age of 59 years two months. Ischaemic stroke was described in 80.95% of patients and haemorrhagic stroke in 19.05% of patients. The prevalence of shoulder pain was 65%. It is therefore a complication to be feared and special attention should be paid to this complication.

Keywords: Stroke - functional rehabilitation - painful shoulder - hemiplegia - HRB.

INTRODUCTORY

Stroke is a condition that affects many people in our populations. It can be defined as the rapid development of localized or global clinical signs, cerebral dysfunctions with symptoms lasting more than 24 hours and can lead to death, without any apparent cause other than a vascular origin. It is the third leading cause of death worldwide (one stroke every five seconds) and the leading cause of disability in developed countries. In addition, stroke is the leading cause of disability requiring rehabilitation in North America and the third most common condition requiring hospitalization (1). The main risk factors associated with the development of stroke are: high blood pressure, diabetes, obesity, smoking and physical inactivity. In sub-Saharan Africa, most studies are biased and poorly estimate the prevalence and incidence of stroke. Compared to industrialised countries, sub-Saharan Africa has several differences such as high mortality rate; early age of onset and high blood pressure (2).

Several consequences can result from a stroke including hemiparesis, tone disorders, coordination disorders and perceptual disorders that impact on the patient's functional recovery. Chronic pain is also a problem secondary to stroke that can affect patients' rehabilitation. It has also been shown in one study that shoulder pain following a stroke increases the time it takes for patients to be rehabilitated and thus increases healthcare costs (3,4).

The functional impact in terms of additional impairments and increased disability justifies the special attention given to this joint. The prevalence of post-stroke shoulder pain varies from 5% to 84% (5,6). This wide variability reflects the difficulty in pinpointing the exact factors causing this pain. This makes it difficult for clinicians to optimise their assessments and interventions to effectively treat this pain. This problem represents the current and future reality with the ageing of the population. One may be confronted with a pain manifestation that prevents physiotherapy and may become the primary symptom.

The present project aims to improve effective management through the identification of factors associated with post-stroke shoulder pain at the Bafoussam Regional Hospital. Several works have been published on stroke but no work has been particularly focused on the painful shoulder of the hemiplegic to date in Cameroon. Our study is a contribution to the effective management of the painful shoulder in hemiplegics in Cameroon.

More specifically, the work will deal with:

- To describe the socio-demographic, socio-economic, clinical, rehabilitation and clinical assessment characteristics of post-stroke patients at the Bafoussam Regional Hospital;
- To determine the prevalence of painful shoulder in vascular hemiplegics at the Bafoussam Regional Hospital;
- To identify the factors associated with painful shoulder in vascular hemiplegic patients at the Bafoussam Regional Hospital.

MATERIAL AND METHOD

II.1 Material

Data collection was done using information sheets, informed consent forms, questionnaires which are all presented in the appendix and didactic material such as pencil, eraser, ballpoint pens, markers, register and others. Patients were clinically assessed on a massage table or chair in one of the physiotherapy cubicles at the Bafoussam Regional Hospital (HRB). The clinical evaluation was done using the goniometer.

II.2 Methods

This is a cross-sectional study in which a case-control analysis will be performed. The cases are: post-stroke patients with shoulder pain.

The controls are: post-stroke patients without shoulder pain.

The factors studied were: age, sex, etiology of hemiplegia, injured side, spasticity according to Ashworth, global autonomy, phase of hemiplegia according to Brunnström stage, motor skills according to Demeurisse motor index, measure of functional independence, sensitivity, muscle assessment, proprioception, prevention, subluxation, MADRS scale, hemineglect and joint assessment

Patient recruitment and data collection took place from February to July 2015 at the physiotherapy department of the HRB. The Regional Hospitals is a third category and second referral hospital, therefore very well attended; it has specialised services; qualified staff for its services; and has the largest physiotherapy department in the region.

Target and study population: stroke patients followed at the HRB physiotherapy department. Patients with a CT-confirmed stroke for at least one month; Patients followed at the HRB physiotherapy department who agree to participate in the study;

Excluded from the study were: stroke patients with impaired alertness or comprehension that prevented the completion of the clinical and functional assessment;

- Stroke patients followed at the HRB who refuse to participate in the study.

After obtaining ethical clearance and authorisation from the study sites, an informed consent form was signed by the patients who responded favourably. Then a questionnaire was submitted to them followed by a clinical evaluation

After obtaining informed consent and filling in the questionnaires, a clinical evaluation is carried out in one of the physiotherapy department's cubicles. This evaluation includes: a skin examination, a muscular examination, a circulatory examination, an articular examination through the measurement of the amplitude of the active movement by the goniometer and all the movements that the shoulder can make; an examination of the sensitivity, a morpho-static examination: on the frontal examination, see the height of the shoulders; on the back examination, see the balance of the scapula, degrees of protrusion or detachment of the scapulas; a functional assessment: it studies the possibilities of independence of the patient by the measure of functional independence (MIF) and Barthel's index; the VAS (visual analogue evaluation) rated from 0 to 10, the patient scores the number according to the intensity of his pain.

The evaluation of the patient was completed by specific tests (Neer, Speed, Jobe: see attached photo) and scales (Brunnström stage, MADRS scale, Demeurisse motor index, MIF, Barthel index, Ashworth, hemineglect,).

It is at the end of this evaluation that the diagnosis is made.

The ethical issues associated with the implementation of this project are the respect of the autonomy of the patients and the respect of the confidentiality of the participants' personal files.

OUTCOME

III.1 Socio-demographic characteristics

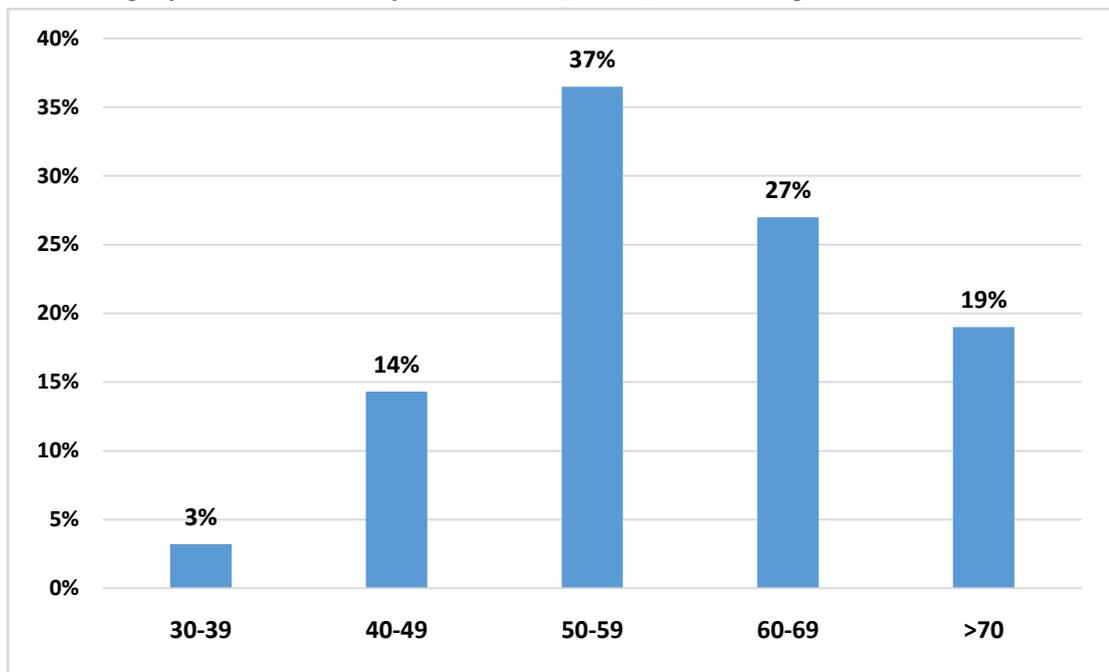
- Our study included 58.76% (n=37) female and 41.24% (n=26) male patients, of which 56.10% were female and 43.90% male for the cases, compared with 63.60% female and 36.40% male for the controls (Table I).
- 78% (n=32) of the cases were at home and 22% (n=9) were hospitalised. 72.70% (n=16) of the controls were at home and 27.30% (n=6) were hospitalised.

In summary 76.19% (n=48) of the stroke patients were at home and 23.81% (n=15) were hospitalised (Table I).

Table I Socio-demographic characteristics of post-stroke patients in the HRB

Features	Cases (N in %)	Controls (N in %)	Total (N in %)
<u>Gender</u>			
Male	18 (43,90)	8 (36,40)	26 (41,24)
Female	23 (56,10)	14 (63,60)	37 (58,76)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Level of study</u>			
No	6 (14,60)	2 (9)	8 (12,69)
Primary	10 (24,50)	4 (18,20)	14 (22,22)
Secondary	11 (26,80)	8 (36,40)	19 (30,15)
Superior	14 (34,10)	8 (36,40)	22 (34,94)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Participating venue</u>			
Hospitalized	9 (22)	6 (27,30)	15 (23,81)
At home	32 (78)	16 (72,70)	48 (76,19)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)

The age of the patients ranged from 32 to 77 years with an average of 59 years 2 months. The category most affected by stroke was [50-59] (37%) (Figure 2).

**Figure 2: Age distribution of stroke**

III.2 Clinical characteristics of post-stroke HRB patients.

For the history of the stroke,

- The rate of hypertension was 64.06% (n=41), i.e. 64.59% (n=31) for cases and 62.50% (n=10) for controls.
- Followed by diabetes which is 28.12% (n=18); thus 27.08% (n=13) for cases and 31.25% (n=5) for controls.
- Ischaemic stroke was 80.95% (n=51) followed by haemorrhagic stroke 19.05% (n=12), of which 73.20% (n=30) were cases and 95.50% (n=21) were controls for ischaemic stroke and 26.8% (n=11) were cases and 4.50% (n=1) were controls for haemorrhagic stroke.

- Left hemiplegia was 79.36% (n=50) of which 87.80% (n=36) was for cases and 63.60% (n=14) for controls, followed by right hemiplegia which was 20.64% (n=13).
- The majority of participants had a stroke within one month 28.57% (n=18) so 29.30% (n=12) for cases and 27.30% (n=6) for controls, followed by a stroke older than one year which is 26.99% (n=17) so 26.80% (n=11) for cases and 27.30% (n=6) for controls. Regarding precautions (primary prevention) during hospitalisation, 85.40% (n=35) of cases did not receive precautions compared to 95.50% (n=21) who received precautions for controls.
- The patients who had shoulder pain before the assessment were 100% (n=40) for cases, 50% (n=11) for controls and all had 100% shoulder pain on movement (n=51). On assessment, 95.10% (n=39) responded that their shoulder hurt during movement and 4.90% (n=2) that their shoulder hurt spontaneously (Table II).

Table II below also shows that 100% (n=41) of the patients had current shoulder pain for the cases compared to 100% (n=22) of the post-stroke patients who did not have shoulder pain for the controls. A total of 65% (n=41) of the post-stroke patients had current shoulder pain and 35% (n=22) of the post-stroke patients had no current shoulder pain. Thus the prevalence of shoulder pain in post-stroke patients is 65% of the 63 post-stroke patients (figure 8).

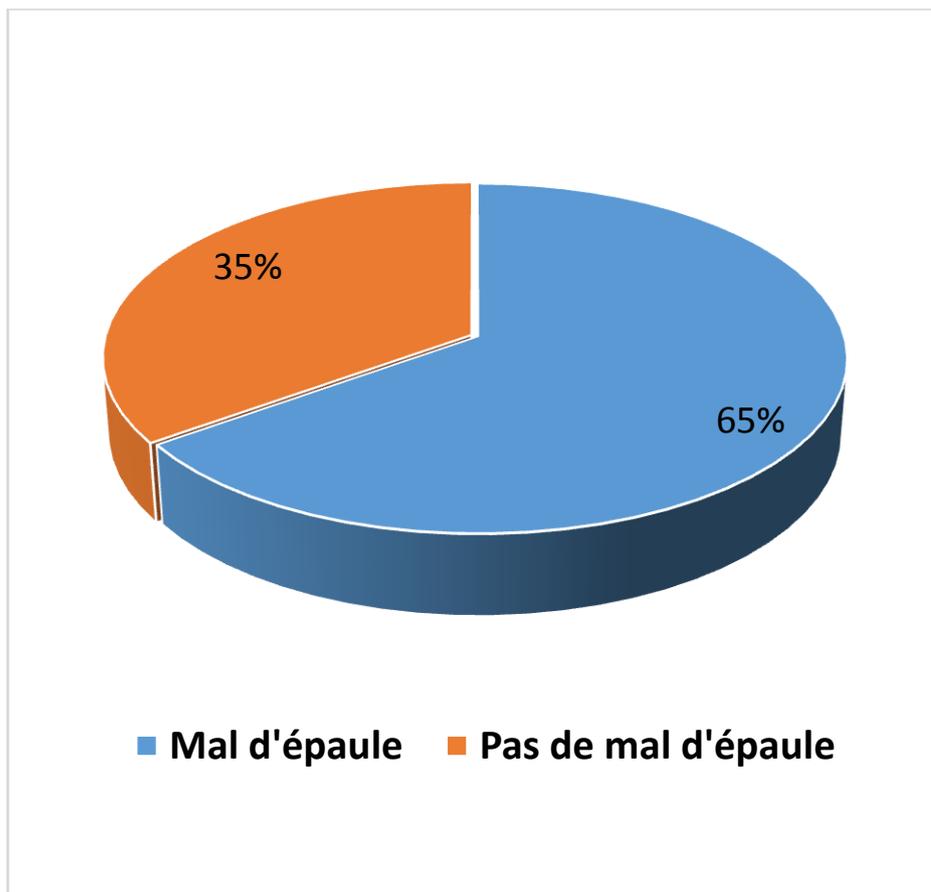


Figure 1 Prevalence of shoulder pain in post-stroke patients at HRB

Table II Clinical characteristics of post-stroke HRB patients.

Features	Cases (Nen %)	Controls (N in %)	Total (N in %)
<u>Background</u>			
HTA	31 (64,59)	10 (62,50)	41 (64,06)
Diabetes	13 (27,08)	5 (31,25)	18 (28,12)
Other	4 (8,33)	1 (6,25)	5 (7,82)
TOTAL (N in %)	48 (100)	16 (100)	64 (100)
<u>Type of stroke</u>			
Ischemic	30 (73,20)	21 (95,50)	51 (80,95)
Hemorrhagic	11 (26,80)	1 (4,50)	12 (19,05)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Side reached</u>			
Left hemiplegia	36 (87,80)	14 (63,60)	50 (79,36)
Right hemiplegia	5 (12,20)	8 (36,40)	13 (20,64)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Date of stroke</u>			
1 month	12 (29,30)	6 (27,30)	18 (28,57)
2 to 4 months	8 (19,50)	2 (9,10)	10 (15,87)
4 to 6 months	5 (12,20)	2 (9,10)	7 (11,12)
6 to 8 months	1 (2,40)	3 (13,60)	4 (6,34)
8 to 10 months	2 (4,90)	1 (4,50)	3 (4,77)
10 to 12 months	2 (4,90)	2 (9,10)	4 (6,34)
More than 1 year	11 (26,80)	6 (27,30)	17 (26,99)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Precautions</u>			
Yes	6 (14,60)	21 (95,50)	27 (42,85)
No	35 (85,40)	1 (4,50)	36 (57,15)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Front shoulder pain</u>			
Yes	40 (100)	11 (50)	51 (82,25)
No	0	11 (50)	11 (17,75)
TOTAL (N in %)	40 (100)	22 (100)	62 (100)
<u>Shoulder condition1</u>			
Rest	0	0	0
Movement	41 (100)	22 (100)	63 (100)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Shoulder pain at present</u>			
Yes	41 (100)	0	41 (65)
No	0	22 (100)	22 (35)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Shoulder condition 2</u>			
Rest	2 (4,90)		2 (4,90)
Movement	39 (95,10)		39 (95,10)
TOTAL (N in %)	41 (100)		41 (100)

III.3 Characteristics of rehabilitation for post-stroke HRB patients

The start of physiotherapy starting mostly at one week after the stroke is 41.26% (n=26), 36.58% (n=15) for cases and 50% (n=11) for controls.

During rehabilitation, pain decreased to 75.61% (n=31) for cases. The patients who do the exercises at home are 58.73% (n=37) of which 51.40% (n=18) are cases and 86.36% (n=19) are controls. And in 99% (n=40) of cases the pain prevents them from doing something. The ability to perform body care was average in 53.65% (n=22) of the cases and good in 77.27% (n=17) of the controls. 60.97% (n=25) of case patients think to come back to physiotherapy even if there is no more pain in the shoulder and 39.03% (n=16) think not to come back to physiotherapy if the pain is over (table III).

Here we can add that pain intensity 1 varies from 1 to 8 with an average of 5.31 and pain intensity 2 varies from 0 to 8 with an average of 3.83.

Table III Characteristics of post-stroke patients during rehabilitation

Features	Cases (Nen %)	Controls (N in %)	Total (N in %)
<u>Start of physiotherapy</u>			
Less than a week	9 (21,95)	7 (30,80)	16 (25,39)
One week	15 (36,58)	11 (50)	26 (41,26)
Two weeks	12 (29,27)	1 (7,60)	13 (20,63)
Three weeks	2 (4,88)	3 (11,60)	5 (7,93)
More than four weeks	3 (7,32)	0	3 (4,79)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Reduced pain?</u>			
Yes	31 (75,61)	11 (100)	42 (80,76)
No	10 (24,39)	0	10 (19,23)
TOTAL (N in %)	41 (100)	11 (100)	52 (100)
<u>Do you do all the exercises at home?</u>			
Yes	18 (51,40)	19 (86,36)	37 (58,73)
No	9 (21,95)	3 (13,64)	12 (19,04)
Sometimes	14 (26,65)	0	14 (22,23)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Pain prevents you from doing something?</u>			
Yes	40 (99)	17 (89,50)	57 (90,47)
No	1 (1)	5 (10,50)	6 (9,53)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Body care capacity</u>			
Good	2 (4,89)	17 (77,27)	19 (30,15)
Average	22 (53,65)	2 (9,10)	24 (38,09)
Wrong	17 (41,46)	3 (13,63)	20 (31,76)
TOTAL (N in %)	41 (100)	22 (100)	63 (100)
<u>Return to physiotherapy if pain is over?</u>			
Yes	25 (60,97)		25 (60,97)
No	16 (39,03)		16 (39,03)
TOTAL (N in %)	41 (100)		41 (100)

III.4 Socio-economic characteristics of post-stroke HRB patients

Regarding socio-economic characteristics, the impact on the quality of life of case patients is poor for: leisure 68.29% (n=28), sexuality 88.90% (n=40), return to home activities 60.97% (n=25). And the impact on the quality of life of control patients is: good for leisure 77.27%

(n=17); average for sexuality 38.88% (n=7); good to 7 for return to home activities 72.72% (n=16). Care is a burden for 92.68% (n=38) of the cases and no burden for the controls at 59.10% (n=13). The majority of these cases found the cost of rehabilitation to be high at 100% (n=38), as 38 of the 41 cases answered this question. In addition, 65.85% (n=27) of the cases were dependent on their families and 72.73% (n=16) of the controls were not dependent on their families (Table IV).

Table IV Socio-economic characteristics of post-stroke HRB patients

Features	Cases (Nen %)	Controls (N in %)	TOTAL (N in %)
<u>Impact on quality of life</u>			
<i>Leisure</i>	1 (2,45)	17 (77,27)	18 (28,57)
Good	12 (29,26))	0	12 (19,04)
Average	28 (68,29)	5 (22,75)	33 (52,39)
Wrong	41 (100)	22 (100)	63 (100)
TOTAL (N in %)			
<i>Sexuality</i>	0	6 (33,33)	6 (10,16)
Good	1 (11,10)	7 (38,88)	8 (13,55)
Average	40 (88,90)	5 (27,79)	45 (76,29)
Wrong	41 (100)	18 (100)	59 (100)
TOTAL (N in %)			
<i>Back to home activities</i>	1 (2,45)	16 (72,72)	17 (26,98)
Good	15 (36,58)	1 (4,56))	16 (25,39)
Average	25 (60,97)	5 (22,72)	30 (47,63)
Wrong	41 (100)	22 (100)	63 (100)
TOTAL (N in %)			
<u>Is your care a burden?</u>	38 (92,68)	9 (40,90)	47 (74,60)
Yes	3 (7,30)	13 (59,10)	16 (25,39)
No	41 (100)	22 (100)	63 (100)
TOTAL (N in %)			
<u>High cost?</u>	38 (100)	9 (30,90)	47 (81,03)
Yes	0	11 (60,90)	11 (18,97)
No	38 (100)	20 (100)	58 (100)
TOTAL (N in %)			
<u>Dependent on your family?</u>	27 (65,85)	6 (27,27)	33 (52,38)
Yes	2 (4,88)	16 (72,73)	18 (28,57)
No	12 (29,27)	0	12 (19,05)
Sometimes	41 (100)	22 (100)	63 (100)
TOTAL (N in %)			

III.5 Characteristics of the clinical assessment of post-stroke HRB patients

The clinical assessment shows that for global autonomy, the patients have a relative dependence of 36.60% (n=15) for the cases and a partial autonomy for the controls of 77.30% (n=17). Brunnström stage 1 is 53.30% (n=16) for cases and 77.30% (n=17) for controls. The Demeurisse motor index scored from 0 to 25 was 46.30% (n=19) for cases and 51 to 100 at 77.30% (n=17) for controls. Spasticity rated at 2 was 39% (n=9) for the cases. The Neer test was positive in the majority of 40 patients for the cases at 99%. The Speed test was positive in 90% (n=9) of the cases. The Jobe test was 90% positive (n=9). Mild depression is 56.10% (n=23) for cases and healthy patients for depression to 90.90% (n=20) for controls. Proprioception is impaired at 61% (n=25) for cases and good at 77.30% (n=17) for controls.

No sensory impairment was observed in 68.30% (n=28) of cases and 86.40% (n=19) of controls. Regarding complications, the conclusion of pathology gave: 46% (n=19) for spasticity, 23.50% (n=10) for subluxation, 18.50% (n=5) for flaccidity and 12% (n=5) for central (Table V).

Table V Characteristics of clinical assessment of post-stroke patients

	Features	Cases (N in %)	Controls (N in %)	Total (N in %)
<u>Over all autonomy</u>	Bedridden subject			
	Relative dependence	12 (29.30)	3 (13.60)	15 (23,80)
	Partial autonomy	15 (36.60)	2 (9.10)	17 (26,98)
	TOTAL (N in %)	14 (34.10)	17 (77.30)	31 (49,22)
	<u>Brunnstrôm Stadium</u>	41 (100)	22 (100)	63 (100)
	1	16 (53.30)	5 (22.7)	21 (40,41)
	2	5 (16.70)	0	5 (9,60)
	3	1 (3.30)	0	1 (1,92)
	6	8 (26.70)	17 (77.3)	25 (48,07)
	TOTAL (N in %)	30 (100)	22 (100)	52 (100)
	<u>Demeurissement index</u>	19 (46.30)	4 (18.2)	23 (36,50)
	0 à 25	13 (31.70)	1 (4.5)	14 (22,22)
	26 à 50	9 (22)	17(77.3)	26 (41,28)
	51à 100	41 (100)	22 (100)	63 (100)
	TOTAL (N in %)			
	<u>Spasticity according to Ashworth</u>	5(19)	17 (100)	22 (52,38)
	1	9 (39)	0	9 (21,42)
	1	4 (15)	0	4 (9,52)
	2	7 (27)	0	7 (16,68)
	3	25 (100)	17 (100)	42 (100)
	4			
	TOTAL (N in %)	40 (99)	0	40 (63,49)
	<u>Neer test</u>	1 (1)	22 (100)	23 (36,51)
	Positive	41 (100)	22 (100)	63 (100)
	Negative			
	TOTAL (N in %)	9 (90)	0	9 (31,04)
	<u>Speed test</u>	2 (10)	18 (100)	20 (68,96)
Positive	11 (100)	18 (100)	29 (100)	
Negative				
TOTAL (N in %)	9 (90)	0	9 (31,04)	
<u>Jobe test</u>	2 (10)	18 (100)	20 (68,96)	
Positive	11 (100)	18 (100)	29 (100)	
Negative				
TOTAL (N in %)	10 (24.40)	20 (90.90)	30 (47,61)	

	<u>Depression</u>	23 (56.10)	0	23 (36,50)
	Healthy patient	8 (19.50)	2 (9.10)	8 (15,89)
	Mild depression	0	0	0
	Medium depression	41 (100)	22 (100)	63 (100)
	Severe depression			
	TOTAL (N in %)	2 (4.90)	3 (13.60)	5 (7,93)
	<u>Muscle assessment</u>	11 (26.80)	1 (4.50)	12 (19,04)
	0	12 (29.30)	0	12 (19,04)
	1	5 (12.10)	1 (4.50)	6 (9,52)
	2	4 (9.80)	0	4 (6,34)
	3	7 (17.10)	17 (77)	24 (38,13)
	4	41 (100)	22 (100)	63 (100)
	5			
	TOTAL (N in %)	5 (12.20)	17 (77.30)	22 (34,92)
	<u>Proprioception</u>	11 (26.80)	1 (4.50)	12 (19,04)
	Good	25 (61)	4 (18.20)	29 (46,04)
	Decreased	41 (100)	22 (100)	63 (100)
	Altered			
	TOTAL (N in %)	28 (68,30)	19 (86,4)	47 (74,60)
	<u>Sensitivity</u>	10 (24,40)	0	10 (15,87)
	No disorder	3 (7,30)	3 (13,6)	6 (9,53)
	Minor disorder	41 (100)	22 (100)	63 (100)
	Major disorder			
	TOTAL (N in %)	19 (46)		19 (46)
	<u>Shoulder pathology</u>	10 (23,50)		10 (23,50)
	Spasticity	7 (18,50)		7 (18,50)
	Subluxation	5 (12)		5 (12)
	Flaccidity	41 (100)		41 (100)
	Central			
	TOTAL (N in %)			

III.6 Identification of factors associated with shoulder pain in post-stroke patients

Factors such as: type of stroke, injured side, spasticity, global autonomy, Brunnström stage, Demeurisse motor index, MIF, muscle assessment, proprioception, caution, MADRS scale for depression, pain, hypertension, subluxation are factors associated with painful shoulder (as Odds ratio > 1 and p-value < 0.05). Factors such as age, sex, tenderness, diabetes, are not factors associated with painful shoulder (Odds ratio < 1 and p-value > 0.05). Hemineglect was a factor associated with shoulder pain but was not significant as the Odds ratio > 1 and p-value > 0.05 (Table VI).

For the combination of two factors :

- Subluxation and Brunnstrom stage are related (p-value=0.02 and Odds ratio=2.598).
- Proprioception is related to a decrease in motor strength (muscle balance) as p-value=0.04 and Odds ratio=1.522.
- Spasticity and rotator cuff injury are related (p-value=0.001 and Odds ratio=4.652).

Is an associated factor if p-value < 0.05 and Odds ratio > 1.

Table VI Chi-square test results for factors associated with shoulder pain in post-stroke patients

Factors	Odds ration	P value
Age	0,602	0,106
Gender	0,076	0,569
Stroke type	1,047	0,032
Injured side	1,160	0,023
Spasticity	4,412	0,000
Overall autonomy	1,687	0,005
Brunnström Stadium	2,843	0,000
Demeurisse motor index	2,924	0,000
MIF	1,031	0,033
Sensitivity	0,107	0,499
Muscle assessment	2,502	0,555
Joint assessment	1,045	0,000
Proprioception	4,749	0,000
Precaution (prevention)	8,678	0,000
MADRS scale	3,606	0,000
Hemineglect	1,005	0,661
Pain	5,878	0,000
HTA	1,301	0,016
Diabetes	0,128	0,460
Subluxation	3.522	0.001

DISCUSSION

The present study reveals that shoulder pain is found in 65% of our stroke patients. These results are similar to those obtained by Kalichman and Ratmansky which vary from 4 to 84%. Women were more affected by stroke (58.76%) compared to men (41.24%). These results are contrary to those obtained by Wyller *et al* (1999), which are 52.03% for men and 47.97% for women. This can be explained by the fact that during the study period women were more affected by stroke(6,7).

Ischaemic stroke predominates (80.95%) compared to haemorrhagic stroke (19.04%). This confirms the data in the literature, which are 80% haemorrhagic stroke and 20% ischaemic stroke(1).

78% of cases are at home, involving patients during transfers, hence the importance of handling. This corroborates the results obtained by Wanklyn *et al.* who in their study showed that 75% of stroke patients with shoulder pain were at home(8).

The majority of patients (29.30%) for cases with a stroke date of one month implying acute pain, followed by patients (26.80%) for cases with a stroke date of more than one year implying chronic shoulder pain as this is prolonged up to three months. These results are similar to those obtained by Elliot *et al* (9).

The results showed that 85.80% of cases did not receive preventions during hospitalisation, hence the need for nursing assistant and nurse interventions for the management of the upper limb in the initial phase (10,11).

Mild depression was found in 56.10% of cases. This is comparable to Sengler's result of 40%(12).

The results also show that subluxation is found in 23.50% of patients with shoulder pain. The work of Turner-Stokes and Jackson is comparable to these results and obtained results that vary from 17 to 81%(5,11).

This study found that age and gender were not factors associated with painful shoulder, which is consistent with the results of Suethanapornkul. Sensitivity was also not a factor associated with shoulder pain which is contradictory to the findings of Hadianfard and Hadianfard, and may be explained by the condition of the patient and the time period during which the clinical assessment was done. Hemineglect is a factor associated with shoulder pain but is not significant, this may be because the sample size is not so large as the p-value is used for large sample sizes. Factors such as: injured side, spasticity, global autonomy (Barthel index), the Demeurisse motor index, MIF, muscle assessment, proprioception, precaution, MADRS scale, pain, hypertension, subluxation are the factors associated with painful shoulder what the literature says. The type of stroke and Brunnström stage are factors associated with painful shoulder which does not corroborate with the results obtained by Suethanapornkul (13,14).

Decreased proprioception is related to decreased motor function which is consistent with the findings of Huang *et al.* Subluxation is related to Brunnström stages which is similar to the findings of Suethanapornkul. Spasticity and rotator cuff injury are related which is consistent with the findings of Wanklyn *et al* (7,13,15).

It is important to consider the limitations of this study. There are two types of limitations: those of the literature and those of the authors.

Within the limitations of the literature, even if all patients recruited for the studies have had a stroke, there may be considerable variability in the impairments, making it difficult to create homogeneous groups. This neurological reality makes each patient unique, so a hemiplegic patient encountered in the clinic may differ greatly from an individual who participated in the study. There is also great variability in the methodology used, both in terms of inclusion and exclusion criteria and the assessment and treatment tools used. There is no standard measure available for assessing post-stroke shoulder pain. This leads to a decrease in efficiency in the assessment of all the factors associated with this pain, making the choice of treatment difficult and less adapted to the patient's condition.

For the limitations of the authors, little clinical experience with post-stroke patients with shoulder pain has to be taken into consideration. However, to overcome this limitation, the opinion and recommendations of experienced clinicians were taken into account.

We can also add that during the analysis of the collected data, some were missing because some patients did not answer all the questions asked, which influences the final interpretation of the studied parameter.

CONCLUSION

Our study entitled "Painful shoulder in hemiplegics: prevalence and associated factors in post-stroke patients" which took place from February to July 2015 at the HRB, had as its main objective to identify the factors associated with painful shoulder in post-stroke patients. The value of this research was amply demonstrated through the literature review. The literature

review revealed that shoulder pain in post-stroke patients is a health problem that concerns not only Cameroon, but all African countries and even the world. The research was based on data from the physiotherapy department of the HRB. To achieve our objectives, a two-part study was conducted: the first aimed at determining the prevalence of shoulder pain in post-stroke patients, and the second at identifying the factors associated with this condition. After analysis and interpretation of the results, the prevalence and factors associated with shoulder pain in post-stroke patients were identified.

This study highlighted the importance of determining the factors associated with this pathology. Knowing these factors would undoubtedly allow clinicians to make a more judicious choice of assessment and intervention modalities as well as to have a preventive approach better adapted to this problem. This study shows that 65% of post-stroke patients have a painful shoulder. Shoulder pain in vascular hemiplegics is a complication to be feared. The responsibility for the onset, the major role of non-health professionals (family) in nursing has an impact. Particular attention must be paid to these complications in the initial management and throughout the course of the disease.

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