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Original Article

The activity assessment instruments of the upper limbs do contemplate the most accomplished tasks at home by people with hemiparesis?[1]

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Abstract: Introduction: There is still no consensus on the recommendation of instruments for evaluation of the upper limb (UL) after Stroke. Objective: Identify the tasks most performed at home by people after stroke, and among these, which are contemplated in the instruments of assessments of UL activity identified in the literature. Method: Direct observation during four hours at the home of 40 participants (57,2±13,0 years old) with hemiparesis, the basic activities of daily life (BADL) and instrumental (IADL) were recorded, identifying those performed by a larger number of participants. Results: From the 247 observed tasks, 70,5% were related to IADL. In the literature we identified six instruments of capacity evaluation: *Arm Motor Ability Test* (AMAT); *Action Research Arm Test* (ARAT); *Chedoke Arm and Hand Activity Inventory* (CAHAI); JEBSEN-TAYLOR; *Test d'Evaluation des Membres Supérieurs de Personnes Agées* (TEMPA) and *Wolf Motor Function Test* (WMFT) and four Performance: *Motor Activity Log* (MAL); *Manual Ability Measure* (MAM-16 and MAM-36) and ABILHAND. Of the 64 tasks performed by a larger number of participants, the capacity instrument that contemplated the largest number of these was CAHAI (15%) and performance was MAL (33%). The instruments with the greater proportion of tasks observed at home in relation to the total number of the instrument were the TEMPA (all eight) and the MAL (21/30) tasks. Conclusion: Performance instruments contemplate greater proportion of tasks observed directly at home, however the capacity instruments assess distinct tasks. The combination of capacity and performance tools for UL assessment in this population is recommended.

Keywords: *Stroke, Daily Activities, Upper Extremity, Hemiplegia, Disability Evaluation.*

Os instrumentos de avaliação de atividade dos membros superiores contemplam as tarefas mais realizadas em domicílio por pessoas com hemiparesia?

Resumo: Introdução: Ainda não há consenso sobre a recomendação de instrumentos para avaliação do membro superior (MS) pós-Acidente Vascular Encefálico (AVE). Objetivo: Identificar as tarefas realizadas no domicílio por pessoas pós-AVE e, dentre estas, quais estão contempladas nos instrumentos de avaliação de atividade do MS identificados na literatura. Método: Por observação direta, durante quatro horas no domicílio de 40 participantes (57,2±13,0 anos) com hemiparesia, foram registradas as atividades básicas de vida diária (ABVD) e instrumentais (AIVD), identificando aquelas executadas por maior número de participantes. Resultados: Das 247 tarefas observadas, 70,5% foram relacionadas às AIVD. Na literatura, identificamos seis instrumentos de avaliação da capacidade: *Arm Motor Ability Test* (AMAT); *Action Research Arm Test* (ARAT); *Chedoke Arm and Hand Activity Inventory* (CAHAI); JEBSEN-TAYLOR; *Test d'Evaluation des Membres Supérieurs de Personnes Agées* (TEMPA) e *Wolf Motor Function Test* (WMFT), e quatro de desempenho: *Motor Activity Log* (MAL); *Manual Ability Measure*

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(MAM-16 e MAM-36) e ABILHAND. Dentre as 64 tarefas realizadas por um maior número de participantes, o instrumento de capacidade que contemplou maior número destas foi o CAHAI (15%) e de desempenho foi o MAL (33%). Os instrumentos com maior proporção de tarefas observadas em domicílio, em relação ao número total do instrumento, foram o TEMPA (todas as oito) e o MAL (21/30 tarefas). Conclusão: Os instrumentos de desempenho contemplam maior proporção das tarefas observadas em domicílio, entretanto os instrumentos de capacidade avaliam tarefas distintas destas. Recomenda-se a combinação de instrumentos de capacidade e desempenho para avaliação do MS nessa população.

Palavras-chave: *Acidente Vascular Cerebral, Atividades Cotidianas, Extremidade Superior, Hemiplegia, Avaliação da Deficiência.*

1 Introduction

Appropriate outcome measures are essential components to choose the best intervention and depend on the quality of the measurement properties of an assessment tool (GADOTTI; VIEIRA; MAGEE, 2006). The assessment instruments of upper limb (UL) activity, that is, the execution of a task or action by an individual, can be distinguished in capacity and performance. The capacity instrument measures what the individual is capable of doing in a controlled and standardized environment and the performance instrument is spontaneously performed in his daily life in a real situation, as at home (LEMMENS et al., 2012).

A systematic review study by Alt Murphy et al. (2015) on measurement properties and clinical usefulness of outcomes of UL-related interventions in post-stroke patients concluded that there is still no common thinking about which instruments should be used to assess UL after a stroke. According to the International Classification of Functioning, Disability and Health constructs (ICF) (ORGANIZAÇÃO..., 2003) one aspect that has been debated in the literature is that the activity level assessments specifically the capacity of what paretic UL is capable of doing in a controlled environment as in the clinic, do not represent what the individual actually performs in everyday activities in the real environment, such as what he or she does at home (WINSTEIN et al., 2016).

The Consensus-based Standards for Health Measurement Instruments (COSMIN) recommends the evaluation of the relevance to the target population of the items present in the assessment instrument as a necessary item to the content validity in the process of instrument construction (MOKKINK et al., 2009). Although most instruments have adequate measurement properties, the content validity is poorly reported in the validation studies of the assessment instruments identified by Alt Murphy et al. (2015). Also, few instruments provide information about their construction and development process, or how the tasks used in each instrument have been selected (LEMMENS et al., 2012).

The relevance of the items assessed in the instruments of UL activity can be verified by asking the target population to judge the importance of the tasks (BARRECA et al., 1999) or by identifying the main tasks actually performed by an individual in a real-life situation, that is, at home (KILBREATH; HEARD, 2005). Due to the great variety of tasks performed in activities of daily living that require the use of the upper limbs and to better contemplate this range of tasks, the assessment instruments of UL activity after a stroke include assessing a multiplicity of daily tasks (BARRECA et al., 2006; HACKEL et al., 1992; MICHAELSEN et al., 2008; PAZ; BORGES, 2007; PENTA et al., 2001; PEREIRA et al., 2011).

The current trend in post-stroke rehabilitation is the task-oriented therapy or repetitive task practice (POLLOCK et al., 2014; TIMMERMANS et al., 2009), although there is no consensus about the superiority of any intervention for the treatment of paretic UL after a stroke, as already mentioned (POLLOCK et al., 2014). A systematic literature review concludes that through repetitive practice of the task, the therapy has shown the improvement of independence in daily life activities. However, this treatment strategy has limited effects on the specific improvement of the level of activity of paretic UL, that is, improvement in the execution of tasks with these limbs (FRENCH et al., 2010). The lack of evidence in the literature on therapeutic interventions that improve the level of UL activity may be related to the lack of relevance of the tasks evaluated in the instruments currently available in the literature or to the difficulty in choosing the tasks to be used in the therapy.

Thus, it is believed that the direct observation of people with hemiparesis in a real-life situation at their home can provide a valuable resource to broaden the therapist's view regarding the reality experienced

by the patients and support the selection of tasks more relevant to therapy of repetitive practice in the rehabilitation of people who have suffered stroke and have the affected UL, and could guide the selection of instruments of outcome more relevant to this population. There is not enough data available on what tasks the paretic and non-paretic UL are involved during the activities performed at home. Therefore, this study aimed to explore which are the unilateral and bilateral tasks most commonly performed with paretic and non-paretic UL by post-stroke people through direct observation at home, besides identifying, among these tasks, those that are contemplated in the assessment instruments of upper limbs activity after a stroke.

2 Method

2.1 Characterization of the study

It is a descriptive and exploratory research of a qualitative approach, developed in three different steps. The first step had the selection and characterization of study participants; the second step had the direct observation of the participants in their homes for a period of the day to record the use of upper limbs during the execution of basic and instrumental activities of daily life (BADL and IADL, respectively), and the third step had the contemplation of the tasks performed by the largest number of participants in UL activities assessment instruments described in the literature.

This study was approved by the Ethics Committee on Research in Human Beings of the University under the opinion number 1,671,445/2016 and the production of the data began only after the participants signed the Free and Informed Consent Term (TCLE).

2.2 Participants of the study

The participants were selected intentionally from the recruitment of people who participated in a previous study conducted by a doctoral student at the laboratory of the research group of the university and the extension program called "Health Care to Individuals with hemiparesis after Stroke" and attended at School Clinic of the University.

From the doctoral study mentioned above, a group of 124 people were identified and 34 of them did not meet any of the eligibility criteria listed below; 21 refused to participate; four had died; 14 people could not be reached by phone contact, and 11 did not live in Florianópolis-SC. Thus, 40 people affected by chronic-stage stroke, living in Florianópolis-SC, participated in the study.

The following inclusion criteria were adopted in this study: 1) injury time of at least 6 months after the stroke (chronic phase); 2) have unilateral motor impairment (hemiparesis); 3) do not present other neurological diseases; 4) being able to remain in orthostatism independently (it was observed during clinical evaluations whether participants could stand up without the help of another); 5) did not present orthopedic problems in the upper limbs that interfered in their function; 6) reside in the great Florianópolis; 7) have a score at least equal to the cut-off point, according to the Mini-Mental State Examination (MMSE) - 18 for illiterates and 24 for people with school education (LOURENÇO; VERAS, 2006).

In the following sessions, the procedures for each of the research steps are described.

2.3 Step 1: Selection and characterization of study participants

For the selection and characterization of the study participants, the identification record of each study participant was filled out by a trained physiotherapist with the registration of sociodemographic data, followed by specific evaluations to meet the second and seventh criteria of inclusion. Regarding the second criterion, the level of motor recovery of the paretic UL was evaluated through the Fugl-Meyer Scale (MICHAELSEN et al., 2011). It is a scale of 0-66 points, in which the scores of each item range from 0 (movement that cannot be performed) to 2 (movement performed completely). Related to the seventh inclusion criterion, the participants' cognitive function was evaluated through the MEEM questionnaire (LOURENÇO; VERAS, 2006), whose scores can range from 0 (greater cognitive impairment) to 30 points (better cognitive ability).

2.4 Step 2: Direct observation of the tasks performed with the upper limbs in the participant´s home

The basic activities of daily living (BADL) and the instrumental activities of daily living (IADL) were documented using the observational method adapted from Kilbreath and Heard (2005) and Rodrigues (2016). Although the direct observation tool allows the recording of a wide range of tasks and actions, this research focused on the documentation

of tasks performed by the participants during the observation period and which required the use of the upper limbs. The observation consisted of recording the tasks performed at the home by the participant under direct observation.

Each participant was visited by the observer at his home during a four-hour period to fill out the activity record, and the observer was the same for all visits. The participants were informed that the objective of the research was to know their daily life, without emphasizing the specific observation of the use of the upper limbs, a measure adopted to avoid any type of adaptation or change in the patterns of use of paretic UL in the execution of tasks.

The direct observation was standardized from the written record every five minutes over a period of four hours, according to the participants availability. The record specified the activity and how the participant was performing it, according to the use of the upper limbs in that particular task, and distinguishing between the use of paretic and non-paretic UL, characterized as: (1) no activity of the upper limbs (if an object handling was not observed in the execution of the task or absence of movement with the upper limbs during registration); (2) unilateral activity, and (3) bilateral activity. The activities recorded as unilateral were those performed with only one hand. Those registered as bilateral were those tasks where it would originally be necessary to involve both hands to interact with the object, even when the participant did or did not use the paretic UL in the task under observation.

Among the rooms of the house, where the tasks could be observed without restriction there were the living-room, the kitchen, the laundry, and the backyard. The tasks performed in the bedroom and bathroom were observed only with the permission of the participant, who left the door open in tasks that required less privacy, such as brushing teeth.

2.5 Data analysis procedure

Descriptive statistics (sum, mean, standard deviation and percentage) were used to analyze the data on the selection and characterization of the participants, still after classification of the tasks as described below, counting the number of tasks performed by the largest number of participants, both in the Microsoft Excel 2010 program. The information from the records obtained by the direct observation was analyzed by a researcher other than the observer researcher. The data produced were categorized qualitatively as follows: accounting according to the type of task - unilateral and bilateral, and according to BADL, IADL and others.

The categorization criterion for tasks in BADL was those linked to the participants self-care, such as feeding, bathing, physiological needs, and dressing. On the other hand, the IADL categorization tasks were those performed in the community and at home, often requiring a more complex level of ability, such as purchasing, answering the phone, using transportation, clean the house, gardening, preparing meals, washing clothes, home economics, taking medicines and performing leisure activities (AMERICAN..., 2014; RIBERTO et al., 2001; CHONG, 1995).

In this way, the BADL tasks are the activities of food, personal hygiene, and clothing. The IADLs were activities related to house cleaning, meal preparation, home economics, leisure, telephone use, and transportation/car. In this study, to analyze the observations, the subcategory "leisure" was classified as IADL, unlike some researchers who consider it a type of particular scope among the activities of daily living (AMERICAN..., 2014). Each task of the BADL and IADL were segmented into "Action" and "Interacted object", such as "Serving with a jar", whose action is to serve and the interacted object is the jar. After this categorization, each task was counted by the number of participants who performed it. If a task was performed by a participant more than once during the observation, it was considered only once in the accounting. Tasks performed by a larger number of participants were considered as tasks that were common to at least two people (Tables 1 and 2). The UL who performed the task was also considered and, in the case of the unilateral ones, both paretic and non-paretic UL were counted. Also, the dominance was discriminated and it was verified if the task was performed with paretic UL when it was the dominant member. For the bilateral tasks, the classification was based on the use or not of the paretic UL during the interaction with the object. When both upper limbs participated in the execution of the task, it was classified as bilateral (Bi) and, when the use of only non-paretic UL was identified, despite being a task conventionally performed with both upper limbs, it was classified as bilateral altered (BiA). From the total number of subjects who performed the tasks, the number of women who performed the tasks was identified. According to Rand and Eng (2010), the prevalence of occupational roles, usually segmented by gender can influence the nature of the tasks in relation to the use of UL.

Table 1. Distribution of unilateral tasks in absolute and relative frequency of the total number of participants (n=40), of the main Basic Activities of daily life (BADL) and Instrumental Activities of Daily Life (IADL).

Unilateral Tasks	CLASSIFICATION SUBCATEGORY	ACTION	INTERACTIVE OBJECT	Nº (%) Total participants (n=40)/women (n=18)	Number (%) of participants who used non-paretic UL	Number (%) of participants who used the Paretic/Dominant UL (*Nº)
BADL	Food	Serving with	Jar	8(20%)/4	8(20%)	-
		Drinking	Cup	11(27%)/8	8(20%)	3(7%)*1
			Glass	8(20%)/5	7(17%)	1(3%)*0
		Eating	Fruit	4(10%)/1	3(7%)	1(3%)*1
			Bread/cake	5(12%)/3	4(10%)	1(2%)*1
	Personal Hygiene	Combing	Hair	3(7%)/3	3(7%)	-
		Brushing	Teeth	2(5%)/1	2(5%)	-
	Clothing	Putting/taking out	Glasses	4(10%)/2	3(7%)	1(3%)*1
		Putting/opening/taking	Bags	11(27%)/3	9(22%)	2(5%)*1
IADL	House cleaning	Reaching	**Object on top**	**19(47%)**/5	15(37%)	4(10%)*1
		Reaching (objects of diferente weights)	Medium weight object	10(25%)/6	8(20%)	2(5%)*1
			Light weight object	**17(42%)**/7	11(27%)	6(15%)*3
		Opening	Closet door	13(32%)/6	11(27%)	2(5%)*2
			Door/gate	**23(57%)**/6	17(42%)	6(15%)*2
			Tap	12(30%)/4	8(20%)	4(10%)*4
			Drawer	12(30%)/6	10(25%)	2(5%)*0
		Cleaning	Sink/table with a sponge/table cloth	3(7%)/3	3(7%)	-
		Holding	**Light object (except glass/ bottle)**	**25(62%)**/15	17(42%)	8(20%)*4
			Glass/bottle	15(37%)/8	12(30%)	3(7%)*0
			Household utensils	15(37%)/8	11(27%)	4(10%)*3
			Heavy object	7(17%)/2	5(12%)	2(5%)*2
	Meal preparation	Opening	Refrigerator	9(22%)/4	7(17%)	2(5%)*1
		Mixing	Liquid with spoon	4(10%)/2	4(10%)	-

In bold, the most frequently performed tasks by a greater number of participants stand out, presenting relative frequency above 40% in relation to the total number of participants observed. UL = Upper Limb.

Table 1. Continued...

Unilateral Tasks	CLASSIFICATION SUBCATEGORY	ACTION	INTERACTIVE OBJECT	Nº (%) Total participants (n=40)/women (n=18)	Number (%) of participants who used non-paretic UL	Number (%) of participants who used the Paretic/Dominant UL (*Nº)
		Turning on	Stove	2(5%)/2	2(5%)	-
	Domestic economy	Taking	Wallet/paper/money in the pocket	3(7%)/0	2(5%)	1(2%)*0
			Money in the wallet	2(5%)/0	2(5%)	-
		Writing/scribble	Paper	3(7%)/3	3(7%)	-
IADL	Leasure	Using	**Remote control of the TV/ Tablet/ Celular**	**19(47,5%)**/8	17(42%)	2(5%)*2
			Mouse	3(7%)/0	2(5%)	1(2%)*0
		Reading	Book/magazine	2(5%)/0	2(5%)	-
		Exercising with	Halteres	4(10%)/0	2(5%)	2(5%)*2
	Use of the phone	Answering	Telephone	9(22%)/6	7(17%)	2(5%)*1
		Dialing	Telephone	3(7%)/1	2(5%)	1(2%)*0
	Use of transport/car	Taking out	Security seat belt	2(5%)/0	2(5%)	-
		Opening	Car Door Handle	2(5%)/1	2(5%)	-
Others		Turning on/pressing	Light switch/lift button	8(20%)/3	7(17%)	1(3%)*1
		Pushing	Small object	6(15%)/3	4(10%)	2(5%)*0
		Handling	Object while holding	5(12%)/2	4(10%)	1(2%)*0

In bold, the most frequently performed tasks by a greater number of participants stand out, presenting relative frequency above 40% in relation to the total number of participants observed. UL = Upper Limb.

Table 2. Distribution of bilateral tasks in absolute and relative frequency, in relation to the total number of participants (n=40), of the main Basic Activities of Daily Life (BADL) and Instrumental Activities of Daily Life (IADL).

Bilateral Tasks	CLASSIFICATION SUBCATEGORY	ACTION	INTERACTIVE OBJECT	Nº (%) Total participants (n=40)/women (n=18)	Number (%) of participants (Non-Paretic UL - BiA)	Nº(%) of participants (Paretic UL Bi)
BADL	Food	Lunch/dinner	**Fork and knife**	**9(22%)**/6	6(15%)	3(7%)
		Cutting/peeling	**Food**	**9(22%)**/4	2(5%)	7(17%)
	Personal Hygiene	Brushing	Teeth/denture	2(5%)/1	-	2(5%)
		Drying	Face	2(5%)/1	1(2%)	1(3%)
			Hands	6(15%)/4	-	6(15%)
	Clothing	Opening	**Zipper/bag**	**8(20%)**/0	3(7%)	5(12%)
			Glasses holder/glasses	4(10%)/2	1(3%)	3(7%)
		Tieing	Lace/ribbon	3(7%)/0	-	3(7%)
		Putting/taking out	Pouch/Belt	4(10%)/1	2(5%)	2(5%)
AIVD	House cleaning	Moving	Objects with both hands	6(15%)/2	2(5%)	4(10%)
		Washing	**Dishes/vegetables**	**9(22%)**/5	3(7%)	6(15%)
		Drying	Dishes	5(12%)/5	2(5%)	3(7%)
		Holding	**Objects with both hands**	**13(32%)**/3	3(7%)	10(25%)
		Reaching	Object with two hands	5(12%)/2	-	5(12%)
		Folding	**Towels/clothes/paper**	**9(22%)**/4	4(10%)	5(12%)
	Meal preparation	Opening	**Bottle/pot with a screw cap**	**17(42%)**/9	4(10%)	13(32%)
		Taking	Object on top	5(12%)/4	2(5%)	3(7%)
		Mixing	Food in a pan with a spoon	4(10%)/3	2(5%)	2(5%)
			Food/juice	**7**(17%)/4	4(10%)	3(7%)
	Domestic economy	Typing	Keyboard	4(10%)/0	3(7%)	1(3%)
		Handling	Objects	5(12%)/3	-	5(12%)
	Leasure	Opening/closing	Tablet Flip	3(7%)/2	1(2%)	2(5%)
		Using	Cell phone	**7**(17%)/3	2(5%)	5(12%)
		Leafing through	Book	6(15%)/1	2(5%)	4(10%)
	Use of transport/car	Putting	Seat belt	2(5%)/0	1(2%)	1(3%)
		Driving	Car steering wheel	3(7%)/0	2(5%)	1(2%)

Bi = Bilateral (performed with the two upper limbs); BiA = Bilateral altered (performed only with non-paretic UL. In bold, the most frequently performed tasks by a greater number of participants stand out, presenting relative frequency above 20% in relation to the total number of participants observed. UL = Upper Limb.

2.6 Step 3: Identification in the literature of UL assessment instruments for people with hemiparesis and contemplation of the tasks performed in UL activities assessment instruments

Based on two systematic literature reviews in the last six years on the UL assessment instrument of people with hemiparesis (ALT MURPHY et al., 2015; LEMMENS et al., 2012) and in the neurology session of the electronic portal of the American Physical Therapy Association (APTA) (AMERICAN..., 2016), the capacity and performance assessment instruments listed in the literature were identified.

From the total number of instruments identified in the literature and in the electronic APTA portal, those UL assessment instruments that were related to the objective of this research were chosen. Thus, the following inclusion criteria were used: (1) activity instruments (capacity and perceived performance) focused on UL and (2) instruments used to evaluate people with hemiparesis after stroke. The exclusion criteria were: (1) specific evaluation instruments for children; (2) instruments that assess manual and digital dexterity, body structure and function, or participation.

After this stage of identification of the instruments of capacity and performance in the literature, all the tasks performed by a greater number of participants were compared one by one to the tasks evaluated in each one of the instruments.

3 Results

The participants were 18 women and 22 men, whose motor impairment of paretic UL according to the FMS was mild to severe (11 had mild, 20 had moderate and 9 had severe impairment). All participants had some voluntary movement, but two participants had only proximal movements (Table 3).

In total, there were 247 tasks observed and, 174 of them (70.5%) were related to the IADL.

3.1 Unilateral tasks

From the direct observation of the activities carried out at the study participants' home, 108 different unilateral tasks were initially observed, grouped in the categories BADL or IADL, of which 38 were common to at least two participants. Each time the task was performed by one of the participants, it was computed, so unilateral tasks were performed 437 times and 345 of them (79%) were performed with non-paretic UL and only 92 (21%) with the paretic UL.

Table 3. Characterization of study participants.

Characteristics of the participants	Total (n=40)
Age (years old)[a]	58.1±13.2
(Min-máx)	*(29-82)*
Time of the stroke (months)[a]	47.4±35.7
(Min-max)	*(6-144)*
FMS motor impairment (66 points)[a]	41.3±16.9
(Min-max)	*(4-65)*
MMSE[a]	25.8±3.0
(Min-max)	*(20-30)*
Affected Side (right/left) n	17/23
UL Dominance (right/left handed) n	37/3

[a] = Values represent mean ± standard deviation; FMS = Fugl-Meyer Scale; MMSE = Mini Mental State Examination; Min = Minimum; Max = Maximum.

The unilateral activities categorized as BADL were still divided into three subcategories and corresponding actions: food (three actions); personal hygiene (two actions); clothing (two actions). The quantity of participants who performed these tasks varied from two to 11, and the tasks performed by a greater number of participants were: drinking in a cup, belonging to the subcategory "feeding" and the task to place/open/pick a bag in the subcategory "clothing". Paretic UL was used in six of the nine most frequently observed BADL, mainly in the "feeding" subcategory, and the task of drinking in a cup was the most unilateral activity performed.

The unilateral activities in the IADL were divided into six subcategories and actions corresponding to: house cleaning (five actions); meal preparation (three actions); domestic economy (two actions); leisure (three actions); use of phone (two actions); use of transport/car (two actions). The tasks were performed by two to 25 participants, the tasks being to hold a light object, followed by open a door/gate, present in the subcategory "house cleaning", the most frequent among the participants. These last two tasks, along with the task of holding a light object of the same subcategory were the most accomplished with paretic UL. Another frequent task among all listed was in the subcategory "leisure" (use of TV/tablet/cell control). However, this activity was mainly performed with non-paretic UL (Table 1).

For most tasks, the use of paretic UL did not appear to depend on dominance, since they were performed by both dominant and non-dominant paretic UL.

3.2 Bilateral tasks

The activities observed at home, usually performed using both hands were classified as a bilateral task, and a total of 139 tasks were initially observed, also categorized in BADL and IADL, of which 26 were common to at least two participants. The bilateral tasks were performed 285 times by the observed participants, and more than half tasks (197 times - 69%) were performed with both hands and in 88 times (31%) they were modified, in which the participant observed use only non-paretic UL.

Among the BADL, seven actions were identified that required interaction with several objects and generated nine bilateral tasks allocated in the subcategories: food (two tasks); personal hygiene (three tasks), and clothing (four tasks). The total number of participants who performed most of these tasks ranged from two to nine, with the tasks performed by a larger number of participants (lunch/dinner using fork and knife, and cut/peel food) belonged to the subcategory "food". Among the nine tasks listed in the BADL category, the paretic UL was used, at least once in all. The task to cut/peel food present in the subcategory "food" and to wipe the hands of the subcategory "personal hygiene" were the bilateral tasks in which the paretic UL more participated.

In the bilateral activities categorized in the IADL, 16 actions were observed that required interaction with several objects and generated 17 subcategorized tasks in: house cleaning (six tasks); meal preparation (four tasks); domestic economy (two tasks); use of transportation (two tasks), and leisure (three tasks). The tasks observed ranged from two to 17 times among the participants, with the most performed by a greater number of participants: the task of opening a bottle or pot with a screw cap present in the subcategory "meal preparation", followed by the task of holding an object with both hands in the "house cleaning" subcategory. These tasks were also performed more often with two hands, followed by washing the dishes/vegetables present in the subcategory "house cleaning" (Table 2).

Considering both the bilateral and the unilateral tasks, there were almost equal men and women, and the distribution among the participants was similar for both genders (18 women/22 men). However, tasks related to "personal hygiene" such as combing hair, and tasks related to "house cleaning" such as cleaning the sink/table with a sponge/cloth were performed only by female participants. The tasks related to the "domestic economy" such as taking the wallet/paper/money in the pocket or money in the wallet and tasks related to "leisure" such as exercising with dumbbells were performed only by male participants.

3.3 From the analysis of literature instruments

In the electronic portal of the American Physical Therapy Association (APTA), in a neurology session, a total of 27 instruments of global activity were found. Six instruments of UL activity were identified that included the inclusion and exclusion criteria (AMAT = Arm Motor Ability Test, ARAT = Action Research Arm Test, CAHAI = Chedoke Arm, and Hand Activity Inventory, JEBSEN-TAYLOR, MAL = Motor Activity Log, and WMFT = Wolf Motor Function Test). In the review carried out by Alt Murphy et al. (2015), there are 32 UL assessment instruments and 17 of them evaluate UL activity. However, only seven considered the eligibility criteria of this study: the six already identified in the APTA electronic portal (AMAT, ARAT, CAHAI, JEBSEN-TAYLOR, MAL, and WMFT) plus ABILHAND. In the paper by Lemmens et al. (2012), the authors in their review identified in the capacity perceived performance and actual performance, 18, nine and three instruments, respectively. Eight of them had already been identified (ABILHAND, AMAT, ARAT, CAHAI, JEBSEN-TAYLOR, MAL, and WMFT) and the TEMPA (Test d'Evaluation des Membres Supérieurs de Personnes Agées) was the instrument included in addition to the seven already mentioned. Also, two versions of the MAM = Manual Ability Measure (16 and 36) were added, and MAM-16 was used for patients with post-stroke hemiparesis (FARIA, 2008) and, after the identification in the literature of a more complete version and due to the list of relevant tasks classified as BADL and IADL, MAM-36 was also included (CHEN; BODE, 2010; CHEN et al., 2005).

Considering the mentioned eligibility criteria, a total of 10 instruments were included, six of them assessing the capacity of the UL and four of them evaluating the perceived performance by the person in the use of the UL. Each identified instrument is briefly described below.

The (1) AMAT is among the instruments of capacity with 13 items that essentially evaluate activities related to food and clothing; (2) ARAT, which was originally developed with 19 items (currently, 15 items) constitute four dimensions that involve three types of holding and range activities (gross motor function); (3) CAHAI, with 13 bilateral functional tasks, which determines the role of paretic

UL according to the action performed as stabilizer or manipulator; (4) the Jebsen-Taylor hand function test, which presents seven daily unilateral activities, involving grasping, holding, and manipulating objects objectively and rapidly, with emphasis only on manual function; (5) TEMPA, composed of eight standardized unilateral and bilateral tasks that simulate daily activities, and (6) WMFT, which presents 17 tasks that combine time and quality of execution measures of movement in isolated movements of specific joints as well in the context of complex functional tasks (BARRECA et al., 2006; HACKEL et al., 1992; MORLIN et al., 2006; MICHAELSEN et al., 2008; PAZ; BORGES, 2007; PEREIRA et al., 2011).

In the instruments of perceived performance, there us (1) ABILHAND that evaluates the performance of people in their manual ability through an interview based on 23 bilateral tasks, estimating the difficulty of each activity as impossible, difficult or easy to be performed; (2) MAL that consists of a structured interview that evaluates the level of performance subjectively experienced by the person in his/her real environment, through standard questions of the quantity of use and quality of movement scale in 30 daily activities; (3 and 4) MAM-16 and MAM-36 that are instruments using the perspective of individual-centered assessment, according to self-report, estimating simultaneously the difficulty of the item and the individual's ability, based on a Likert scale of five points (BASÍLIO et al., 2016; CHEN et al., 2005; CHEN; BODE, 2010; SALIBA et al., 2011).

3.4 Tasks contemplated by the assessment instruments

There were 64 of the 247 unilateral and bilateral tasks observed performed by at least two participants (38 unilateral and 26 bilateral). Based on this, the presence of these 64 tasks was verified in the identified assessment instruments. No task was common across all capacity instruments (WMFT, ARAT, TEMPA, JEBSEN-TAYLOR, CAHAI, AMAT), and the same task is evaluated at most in two instruments. The same happens in the performance instruments (MAL, MAM 16 and 36, and ABILHAND), in which no task was common to all. However, tasks such as combing the hair and brushing the teeth/denture, for example, were common in two out three performance assessment instruments, respectively. When tasks were common in three of the instruments evaluated, the highest frequency was found in the list of tasks performed with both hands (Table 4).

The capacity instruments with the largest number of tasks (unilateral and bilateral) similar to those observed in a larger number of participants were CAHAI, with 15% of the total tasks, and TEMPA and AMAT, with 14% each. Although the CAHAI exclusively evaluates bilateral tasks, if part of the task was performed unilaterally in the home, it was computed. When dealing with performance instruments, MAL stands out with 33% of similar tasks among the 64 listed, followed by MAM-36, with 28%, and MAM-16, which presents 17% of tasks similar to those observed at home (Figure 1).

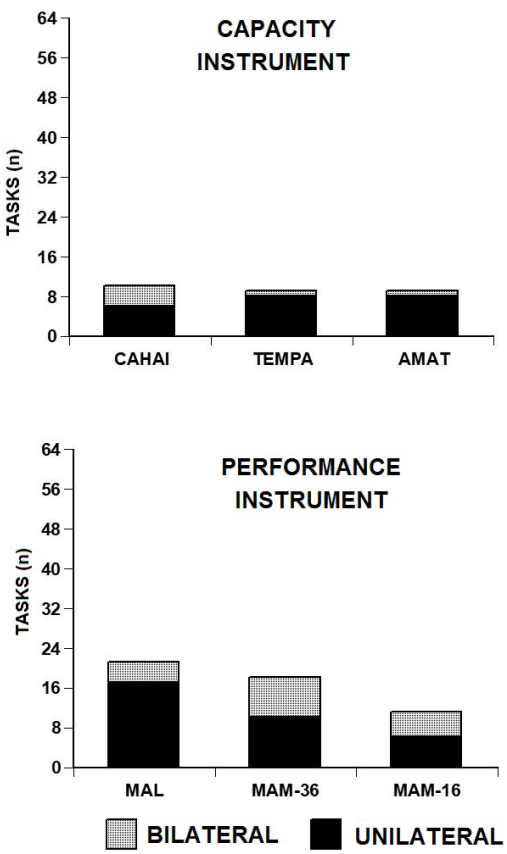

Figure 1. Number of unilateral and bilateral tasks included in the evaluation instruments of the upper limbs (UL) with the greatest number of tasks in relation to the total of 64 tasks observed at home, performed by a greater number of individuals. Capacity assessment instruments: TEMPA = *Test d'Evaluation des Membres Supérieurs de Personnes Agées*, CAHAI = *Chedoke Arm and Hand Activity Inventory* and AMAT = *Arm Motor Ability Test* and perceived performance assessment instruments: MAL = *Motor Activity Log* and MAM = *Manual Ability Measure* (versions 16 and 36).

Table 4. Unilateral and bilateral tasks carried out by a greater number of participants, represented in the instruments of capacity and performance.

Action	Interactive object	INSTRUMENTS									
		CAPACITY						PERFORMANCE			
		WMFT[1,2,3]	ARAT[1,2,3]	TEMPA[2]	JEBSEN-TAYLOR[1,2,3]	CAHAI[1,2,3]	AMAT[1,2,3]	MAL[1,2,3]	MAM[4] 16	MAM[4] 36	ABILHAND[1,2]
Unilateral											
Serving with	Jar			V					V	V	
Drinking	Cup			V			V	V			
	Glass	V				V		V		V	
Eating	Fruit							V			
	Bread/cake				V		V	V		V	
Coming	Hair					V	V	V		V	
Brushing	Teeth					V		V		V	
Putting/taking out	Glasses					V					
Putting/opening/taking	Bag										
Reaching	Object on top			V							
	Medium object				V						
	Light object (cell phone)			V							
Opening	Closet door										
	Door/gate						V	V		V	
	Tap							V			
	Drawer							V			
Cleaning	Sink/table with a sponge/ tablecloth						V	V			
Holding	Light Object							V			
	Glass/bottle		V	V				V			
	Household utensils							V			
	Heavy object				V				V		
Opening	Refrigerator							V			

WMFT = *Wolf Motor Function Test*; ARAT = *Action Research Arm Test*; TEMPA = *Test d'Evaluation des Membres Supérieurs de Personnes Agées*; CAHAI = *Chedoke Arm and Hand Activity Inventory;* AMAT = *Arm Motor Ability Test*; MAL = *Motor Activity Log*; MAM = Manual Ability Measure. The blue color represents the tasks repeated in two capacity tests and the purple color represents the tasks repeated in two or more tests of perceived performance. V = the task is contained in the instrument. Source: [1]Alt Murphy et al. (2015); [2]Lemmens et al. (2012); [3]American Physical Therapy Association (APTA); [4]Selection of authors.

Table 4. Continued...

Action	Interactive object	INSTRUMENTS									
		CAPACITY						PERFORMANCE			
		WMFT[1,2,3]	ARAT[1,2,3]	TEMPA[2]	JEBSEN-TAYLOR[1,2,3]	CAHAI[1,2,3]	AMAT[1,2,3]	MAL[1,2,3]	MAM[4] 16	MAM[4] 36	ABILHAND[1,2]
Mixing	Liquid with a spoon										
Turning on	Stove										
Taking	Wallet/paper/money in the pocket								V		
	Money in the wallet								V		
Writing/scribble	Paper			V	V			V	V	V	
Using	Remote control of the TV Tablet Cellphone							V		V	
Playin on the computer	Mouse										
Reading	Book/magazine									V	
Exercise	Dumbbell										
Answering	Telephone					V	V		V		
Dialing	Telephone					V	V			V	
Taking out	Security seat belt										
Opening	Car Harness										
Turning on/	Light switch/lift button						V	V			
pressing	Small object			V							
Handling	Object while holding			V							
Total 38 tasks	**UNILATERAL tasks**	1	1	8	4	6	8	17	6	10	0
Bilateral											
Lunch/dinner	Fork and knife				V			V	V	V	
Cutting/peeling	Food					V	V		V	V	V

WMFT = *Wolf Motor Function Test*; ARAT = *Action Research Arm Test*; TEMPA = *Test d'Evaluation des Membres Supérieurs de Personnes Agées*; CAHAI = *Chedoke Arm and Hand Activity Inventory;* AMAT = *Arm Motor Ability Test*; MAL = *Motor Activity Log*; MAM = Manual Ability Measure. The blue color represents the tasks repeated in two capacity tests and the purple color represents the tasks repeated in two or more tests of perceived performance. V = the task is contained in the instrument. Source: [1]Alt Murphy et al. (2015); [2]Lemmens et al. (2012); [3]American Physical Therapy Association (APTA); [4]Selection of authors.

Table 4. Continued...

Action	Interactive object	INSTRUMENTS									
		CAPACITY						PERFORMANCE			
		WMFT[1,2,3]	ARAT[1,2,3]	TEMPA[2]	JEBSEN-TAYLOR[1,2,3]	CAHAI[1,2,3]	AMAT[1,2,3]	MAL[1,2,3]	MAM[4] 16	MAM[4] 36	ABILHAND[1,2]
Brushing	Teeth/denture					V		V	V	V	
Drying	Face										
	Hands							V			
Opening	Zipper/bag					V			V	V	V
	Glasses holder/ glasses										
Tying	Lace/ribbon									V	
Putting/taking out	Pouch/Belt										
Moving	Object										
Washing	Dishes/vegetables										
Drying	Dishes										
Holding	Objects with both hands							V			
Reaching	Object with two hands										
Folding/unfolding	Towels/clothes/ paper	V								V	
Opening	Bottle/pot with a screw cap			V		V			V		V
Taking	Object on top									V	
	Food in the pan with a spoon										
Mixing	Food/juice										
Typing	Keyboard										
Handling	Objects										
Using	Cell phone										

WMFT = *Wolf Motor Function Test*; ARAT = *Action Research Arm Test*; TEMPA = *Test d'Evaluation des Membres Supérieurs de Personnes Agées*; CAHAI = *Chedoke Arm and Hand Activity Inventory;* AMAT = *Arm Motor Ability Test*; MAL = *Motor Activity Log*; MAM = Manual Ability Measure. The blue color represents the tasks repeated in two capacity tests and the purple color represents the tasks repeated in two or more tests of perceived performance. V = the task is contained in the instrument. Source: [1]Alt Murphy et al. (2015); [2]Lemmens et al. (2012); [3]American Physical Therapy Association (APTA); [4]Selection of authors.

Table 4. Continued...

Action	Interactive object	INSTRUMENTS									
		CAPACITY						PERFORMANCE			
		WMFT[1,2,3]	ARAT[1,2,3]	TEMPA[2]	JEBSEN-TAYLOR[1,2,3]	CAHAI[1,2,3]	AMAT[1,2,3]	MAL[1,2,3]	MAM[4] 16	MAM[4] 36	ABILHAND[1,2]
Leafing through	Book									V	
Opening/closing	Tablet flip										
Putting	Security seat belt										
Driving	Car steering wheel										
Total taks 26	**BILATERAL tasks**	1	0	1	1	4	1	4	5	8	3
	TOTAL (Unilateral+ Bilateral)	2	1	**9**	**5**	**10**	**9**	**21**	**11**	18	3
	TOTAL Number of tasks per test	17	15	**8**	**7**	**13**	**13**	**30**	**16**	36	23

WMFT = *Wolf Motor Function Test*; ARAT = *Action Research Arm Test*; TEMPA = *Test d'Evaluation des Membres Supérieurs de Personnes Agées*; CAHAI = *Chedoke Arm and Hand Activity Inventory;* AMAT = *Arm Motor Ability Test*; MAL = *Motor Activity Log*; MAM = Manual Ability Measure. The blue color represents the tasks repeated in two capacity tests and the purple color represents the tasks repeated in two or more tests of perceived performance. V = the task is contained in the instrument. Source: [1]Alt Murphy et al. (2015); [2]Lemmens et al. (2012); [3]American Physical Therapy Association (APTA); [4]Selection of authors.

Adding to the unilateral and bilateral activities of the BADL category, a total of 18 tasks was obtained, while for the IADL category there are 43 tasks (excluding those classified in the "other" subcategory). When analyzing the instruments of capacity and performance within the categories of BADL and IADL, there are MAM-36 with 10 tasks of the 18 observed, the MAL with nine tasks, and the CAHAI are highlighted in the BADL category in decreasing order, with six tasks. In the IADL category, MAL stands out again, contemplating 12 tasks of the 43 observed, the MAM-36 with eight tasks, followed by TEMPA, with seven tasks observed.

4 Discussion

The objective of this study was to identify, through direct observation, the tasks most commonly performed at home by people who suffered from stroke. Then, the objective was to identify, among the tasks performed at home, by the largest number of participants, those that are contemplated in the assessment instruments of upper limb activity after a stroke. The literature is scarce in the description of which tasks are carried out spontaneously in a situation of daily life by people after a stroke hemiparesis, especially in relation to what the paretic UL actually does in the home environment. In this way, the aspects discussed in this study are original and innovative, considering the tasks performed at home by people with hemiparesis and the availability of these tasks in assessments instruments of the UL activity found in the current literature.

Among the unilateral BADL, the most frequent tasks were identified in the subcategory "food", where drinking in a cup was the most unilateral task performed with paretic UL. This task is part of the tasks evaluated in TEMPA and AMAT, and the amount of use of paretic UL for this task is also questioned in MAL (MICHAELSEN et al., 2008; MORLIN et al., 2006; PEREIRA et al., 2012; SALIBA et al., 2011). On the other hand, the tasks related to the subcategories "personal hygiene" and "clothing" were little observed in this study, due to the difficulty of direct observation due to privacy issues, and characterized as a limitation of the study. Patient observation time (four hour period) may also have been considered relatively brief and limited to the observation of some tasks. However, the availability of the therapist and the patient was considered, so it could be observed the most active period of participants.

Both the unilateral and bilateral tasks identified in the observation are mostly composed of IADL. A study by Waddell et al. (2016) obtained similar results in the identification of the amount of IADL compared to the BADL, and the results for the population of individuals with a stroke were acquired through the participants´ reports. In this study, the tasks of IADL identified as being more frequent were holding a light object and using the remote control of the TV/tablet/cellular, being the first task most performed with the paretic UL, contemplated in TEMPA (MICHAELSEN et al., 2008). Nevertheless, the second activity involves some movement components of the task of typing on a telephone of the CAHAI instrument (BARRECA et al., 2006), which requires greater manual and digital skills. However, this task was performed primarily with non-paretic UL. Considering that part of the people evaluated is retired, spending more time at home and often in front of the television, not counting the advance of technology that stimulates the use of electronic devices, the task of using the control of the TV, tablet or cell phone is currently a common activity and occupies a large part of the leisure time of the population. Yet, they are still little evaluated in the UL activity tests, verified in only two (MAL and MAM-36) of the ten analyzed instruments (CHEN; BODE, 2010; SALIBA et al., 2011).

The study participants were equally distributed for both genders (18 women/22 men). Thus, almost all tasks were performed by both men and women. However, this was not observed in the tasks related to personal hygiene and house cleaning, which were carried out only by women, and tasks related to home economics and leisure, which were performed only by men. The data from this study suggest that, in this population, some specific tasks may be related to gender, although similar tasks are performed by both genders. Rand and Eng (2010) suggest a probable influence of the nature of the tasks in the use of UL. The authors evaluated the use of the hand in healthy elderly people for seven consecutive days and could observe that, according to the prevalence of occupational roles imposed by the society, usually segmented by gender, women perform more domestic tasks compared to men. In the study by Lago et al. (2009), which deals with gender, generations and domestic space, the relation between domestic work and work outside the home reproduces the concept that the domestic work is of less value because it is considered invisible, according to the women interviewed. They also report that the family tends to participate in home care and that men have had greater participation, even if this

work is considered only as a "help." Some of the men interviewed while saying they do everything at home, confess that other men still devalue housework and that they have no initiative to do it. In this way, we still have a moment of transition in the tasks performed by men and women.

In most of the tasks observed, dominance did not influence the use of paretic UL, since the activities were performed in a similar way, both by dominant and non-dominant paretic UL. In the tasks observed in this study, the paretic upper limb was used by a maximum of 20% of the participants (only the task of holding a light object), followed by 15% of them in the task of open a door/gate, and achieve light weight object that haft the time, these tasks were performed with the dominant UL. The task of opening the tap, performed by 10% of the participants with the paretic UL was performed at all times when it was dominant. However, gain after therapy seems to depend in part on dominance (LIMA et al., 2014). Therefore, the influence of dominance on the type of task performed by paretic UL at home could be a theme suggestion in a future study.

Although the total number of unilateral tasks performed by the upper limbs is greater than the bilateral tasks, the paretic upper limb was never used in 11 of the 38 tasks performed by a greater number of people, while in the bilateral tasks the UL was used at least once for each identified task. One factor that may justify this behavior, verified in the present study, is that unilateral tasks require greater movement control for its execution, while in the bilateral tasks, the paretic UL has the possibility of executing simpler movements, such as holding an object, while another member manipulates it. Another reason is the adaptation, in which post-stroke people begin to use their non-paretic member more in unilateral activities for greater ease in performing the action. Studies with accelerometers have shown that people with hemiparesis use more paretic UL in bilateral activities (MICHIELSEN et al., 2012).

The manipulation activities are among the manual skills preferred by post-stroke people to be performed in the rehabilitation program (MICHIELSEN et al., 2012).

Although this study did not evaluate separately the different levels of UL severity, due to the small number of participants in each group, we could notice that even those with mild and moderate severity levels use little paretic UL in unilateral tasks. Thus, tasks performed with the upper limbs by people with different post-stroke severity levels should be explored in further research, including analysis of the severity of the role played by paretic UL in bilateral tasks requiring arm manipulation and stabilization of other. It is known that motor impairment is related to the use of paretic UL in household tasks (THRANE et al., 2011) and it can have an impact on the implementation of BADL as in tasks related to food, clothing and personal care, as well as in IADL in domestic activities, leisure and community interaction (BROEKS et al., 1999; FARIA-FORTINI et al., 2011; NICHOLS-LARSEN et al., 2005).

Regarding the classification of tasks in BADL and IADL, MAM-36, MAL and CAHAI stand out among the evaluation instruments with a greater number of tasks similar to BADL. Because they are questionnaires, the first two are easily accessible instruments, do not require material resources for their application and the analysis of the results is simple. Regarding the assessment instruments with a greater number of tasks similar to IADL, the MAL, MAM-36 and now TEMPA are highlighted again, considering that the instruments of perceived performance usually bring a greater number of evaluated items and consequently, they can have a greater chance of representing more tasks performed in the home environment. However, both TEMPA and CAHAI are instruments that stand out because they have relevant tasks and, although they require different materials and a trained evaluator for their application, they are simple tasks to be carried out in daily life (BARRECA et al., 2006; CHEN; BODE, 2010; MICHAELSEN et al., 2008; PEREIRA et al., 2012; SALIBA et al., 2011). In TEMPA, the number of tasks contemplated exceeded the number of tasks evaluated in the instrument, because the tasks evaluated are sequential, that is, they involve several actions within the same task, such as the task of taking a jar, serving water and carrying the glass to the mouth (MICHAELSEN et al., 2008).

The CAHAI and the MAL were the instruments for assessing capacity and performance with a higher proportion of tasks compared to the 64 observed respectively. TEMPA and again the MAL stood out as the greater proportion of tasks observed in relation to the total number of tasks of the instrument. Despite the large number of tasks found in the instruments analyzed in this study, there is no single instrument that contemplates all the tasks identified during direct observation. Thus, it is important to consider, in the selection of the instruments of evaluation, both capacity, and performance of the UL existing in the literature, those that contemplate a greater number of tasks

relevant to each individual. The identification of the tasks that are considered more relevant for people with stroke is an aspect that helps to understand the difficulties related to the limitation in the activity (CUP et al., 2003) thus, it contributes a lot to the treatment goals and establish specific objectives.

The ABILHAND, AMAT, CAHAI, MAL, MAM-16, and MAM-36 tests show some tasks related to the subcategories "personal hygiene" and "clothing". However, none of them question, for example, the tasks related to hygiene after using the toilet, which is a task that requires the involvement of the upper limbs (BARRECA et al., 2006; BASÍLIO et al., 2016; CHEN; BODE, 2010; CHEN et al., 2005; KOOP et al., 1997; PEREIRA et al., 2012; SALIBA et al., 2011). The functional independence measure (FIM) assesses the level of independence for these activities, that despite bringing relevant daily tasks, this instrument does not assess the level of activity of the upper limbs specifically (RIBERTO et al., 2001). Thus, it is observed the importance of questioning the tasks for the evaluation of the UL activity, since they are frequently performed activities that may have been affected after the stroke.

It should be emphasized that, since the performance instruments are mostly questionnaires, they encompass a greater number of tasks, which, consequently, are more likely to represent a greater amount of tasks performed in a home environment. The maximum number of tasks identified in proportion to the number of tasks evaluated by each instrument was 70% for MAL, 69% for MAM-16, 50% for MAM-36 and 13% for ABILHAND (BASÍLIO et al., 2016; CHEN; BODE, 2010; CHEN et al., 2005; SALIBA et al., 2011). This shows the advantages of using questionnaires that evaluate performance because they are easy and quick to apply when compared to direct observation, which demands more time. In addition, both BADL and IADL categories emphasized instruments of capacity and performance, which could be used in a combined way in clinical practice, allowing the therapist to contemplate the spectrum of activities present in people´s reality who suffer from stroke, by addressing different domains of activities of daily living and, consequently, a greater number of tasks representative of this universe. For example, TEMPA, as a capacity instrument associated with MAM-36, as a performance instrument, or the CAHAI (capacity) and MAL (performance) (CHEN; BODE, 2010; BARRECA et al., 2006; MICHAELSEN et al., 2008; PEREIRA et al., 2012; SALIBA et al., 2011).

5 Conclusion

Around two-thirds of a total of 64 tasks performed by a larger number of people at home were classified as IADL. However, only a small part of these tasks is contemplated in the instruments of evaluation of UL activity found in the literature. Among the 64 tasks identified, CAHAI was the instrument that showed a greater percentage of tasks, which evaluates capacity, and MAL, which evaluates performance. All eight TEMPA tasks and 21 of the 30 tasks of the MAL were observed at home, that is the capacity and performance evaluation instruments with the highest proportion of tasks contemplated in the total number of tasks of the instrument. Therefore, it is recommended to combine the instruments of capacity and performance for evaluation of paretic UL in this population.

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Author's Contributions

Maíra Caroline de Oliveira: study design, data analysis, and text writing. Amanda Magalhães Demartino: study design, data collection and analysis, and writing of the text. Letícia Cardoso Rodrigues and Raquel Pinheiro Gomes: participation in the review of the text. Stella Maris Michaelsen: responsible for research, participation in the design of the study, analysis of data and review of the text. All authors approved the final version of the text.

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