

A qualitative study of common functional problems experienced by people with complete ulnar nerve paralysis

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Summary

Objectives To identify the most common functional problems caused by ulnar nerve palsy. This study is the first phase in the process of developing a patient-centred hand function questionnaire specific for ulnar palsy.

Design Twenty-five participants with complete irreversible ulnar nerve palsy were asked to record the five main problems they had because of their hand deformity in the week before they came to hospital. They ranked these problems in order of priority. The participants had all been referred to LEPRO-HOINA Leprosy Reconstructive Surgery Hospital, Muniguda, Orissa, India for tendon transfer surgery.

Results Thirty-nine problems were experienced by the participants; 37 of these were functional problems. Five problems had a prevalence of $\geq 40\%$, these were holding soap (68%), eating (56%), buttoning (48%), holding a glass (44%) and lifting small objects (44%). Further analysis according to whether the left or right hand was affected was performed; 92% of participants with right ulnar nerve palsy had a problem eating compared to only 20% of those with left ulnar palsy. Eating was ranked as the most important problem by 28% of participants, holding a glass by 12% and holding soap by 8%.

Conclusions Ulnar nerve palsy had an important impact on basic activities of daily living - eating, washing, and drinking. Not only are these activities themselves affected but the person with a hand deformity avoids social situations where it will be noticed. This study indicates that there is a need to identify and treat people who have ulnar nerve palsy in order that they can be integrated into society, become independent with activities of daily living and earn an income.

Introduction

There is increasing recognition of the need for patient-centred outcome measures in healthcare. 'The clinician's concept of an ideal outcome may differ significantly from

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that of the patient'.¹ Therefore the importance of the patient's perspective cannot be overemphasised. According to MacDermid, recent literature on treatment outcomes has focussed on impairment measures with little attention to activity limitations and participation restrictions.² It is extremely important for clinicians and therapists to identify and address disability that has an impact on activities of daily living for the client. There may also be related psychosocial issues that also need to be identified and addressed. Qualitative measures such as grip strength and angles of deformity may give little information about activity limitation. Rajkumar *et al.* (2002) carried out a study to investigate the relationship between measured hand strengths (grip strength and pinch strength) and disability in leprosy patients with intrinsic muscle impairment. They found that tripod pinch strength was the only significant factor influencing the basic activities of daily living score. They also looked at the association between impairment and disability and found that despite impairment 4.8% of patients did not have any disability.³ Qualitative assessment measures may be better at identifying the impact of impairment on activity limitation. Chan and Spencer (2004) have identified three important areas that are difficult to investigate using quantitative methods: – 'the meaning of experience, the influence of the social contexts in which people live and the person's view about change and how it evolves'.⁴

This study is the first phase in the process of developing a patient-centred hand function questionnaire specific for ulnar nerve palsy. A review of literature did not find any questionnaire specific for ulnar nerve palsy. As ulnar nerve paralysis is the most common paralysis affecting the hand there is a need for such a tool. The Screening Activity Limitation and Safety Awareness (SALSA) scale is a disease-specific measure developed for use in patients with leprosy, diabetes and other peripheral neuropathies. The scale covers items on eyes, hands and feet.⁵ The Karigiri Basic Activities Scale was developed to assess 12 basic activities common to both genders. It was developed specifically to evaluate people with denervated hands due to leprosy. It is not specific for any particular nerve palsy.³

Ulnar nerve palsy causes claw hand or intrinsic minus deformity. One of the most common causes of ulnar nerve palsy is primary involvement of the ulnar nerve in leprosy, the ulnar nerve being the most common nerve in the upper limb to be damaged in leprosy.⁶

Materials and Methods

Broadly the development of a self-administered questionnaire can be divided into three tasks as described by Cano SJ *et al.* '(i) Item generation, (ii) Item reduction, (iii) psychometric analysis'.⁷ This study is the first stage in the process of item generation. The remaining stages of item generation will involve testing the relevance to ulnar nerve palsy of functional questions from existing validated generic upper limb questionnaires, and consultation with hand surgeons and therapists regarding questionnaire content.

Twenty-five patients with ulnar palsy were identified according to the following inclusion and exclusion criteria. Inclusion criteria were complete ulnar palsy, mobile claw hand – free from contractures, ulcers, absorption and resorption of pulp of digits, minimum 1 year paralysis, written informed consent, normal vision. The exclusion criteria were: combined ulnar and median paralysis, stiff claw hand, less than 1 year paralysis, inability to give informed consent. The participants were referred to the LEPRA-HOINA Leprosy Reconstructive Surgical Unit, Muniguda, Orissa, India for tendon transfer surgery.

Ethical approval was granted by the ethics committee of the LEPRA-HOINA Leprosy Research Trust, Muniguda, Orissa, India.

Pre-operatively the patients were asked to list the five main functional problems they had because of hand deformity. They were asked to rank these problems in order of priority. They could include more than five problems if they wished, and the interviews were completely open-ended. When participants listed their five main problems, the interviewer sought clarification about any areas that were vague. The most common items that required clarification were eating and work. If they listed eating, they were asked if they used their hand or utensils; if they listed work, the nature of their occupation was sought. In addition, three participants were interviewed to ascertain the exact nature of their functional problems. Quotations from these participants are included in the discussion. The senior physiotherapist in the Surgical Unit conducted the interviews in the local language, Oriya. He translated the responses into English; these were translated back into Oriya by a local physiotherapy lecturer. The two Oriya versions were compared for accuracy before the English translation was analysed by the lead researcher.

Results

In total 39 different problems were listed by the study participants. Thirty seven were functional problems. Table 1 summarises the ages, gender, occupations and hand affected for the study participants.

Table 2 shows 20 of the problems listed, the number and percentage of participants who listed each problem.

It also shows the number and percentage of participants with left and right ulnar palsy respectively who listed each problem. This table does not consider the ranking of the problems in order of priority. There were 17 problems which only one participant listed and these have been omitted from Table 2. All the problems listed were classified using the World Health Organization International Classification of Functioning and Disability.⁸ This is shown in Table 3.

Ulnar nerve paralysis has an impact on the following areas: mobility – carrying, moving and handling objects, self-care, domestic life, major life areas – employment and community, social and civic life.

Table 1. Age, gender, occupation and hand affected of participants in the study

Characteristics of study participants (<i>n</i> = 25)		
Mean age	32 years	(range 12 to 50 years)
Gender	Male	23
	Female	2
Hand dominance	Right handed	25
	Left handed	0
Occupation	Student	3
	Manual worker	21
	Unemployed	1
Hand affected by ulnar palsy	Right	13
	Left	10
	Bilateral	2

Table 2. Activity limitation caused by ulnar nerve palsy

Functional problems	No of subjects listing problem; <i>n</i> = 25 (%)	No with left ulnar palsy listing problem; <i>n</i> = 10 (%)	Number with right ulnar palsy listing problem; <i>n</i> = 13 (%)	No with bilateral ulnar palsy listing problem; <i>n</i> = 2 (%)
Eating	14 (56)	2 (20)	12 (92)	
Holding soap	17 (68)	8 (80)	8 (62)	1 (50)
Buttoning	12 (48)	4 (40)	8 (62)	
Holding glass	11 (44)	4 (40)	7 (54)	
Dressing	4 (16)	2 (20)	2 (15)	
Combing	9 (36)	4 (40)	5 (38)	
Small objects	11 (44)	4 (40)	6 (46)	1 (50)
Wringing clothes	8 (32)	5 (50)	3 (23)	
Threading	3 (12)	1 (10)	2 (15)	
Wash after eating	5 (20)	2 (20)	3 (23)	
Oil massage	3 (12)	1 (10)	2 (15)	
Heavy objects	6 (24)	4 (40)	2 (15)	
Toileting	4 (16)	3 (30)	1 (8)	
Cultivation	6 (24)	3 (30)	3 (23)	
Chopping wood	4 (16)	1 (10)	3 (23)	
Writing	2 (8)	1 (10)	1 (8)	
Ironing	2 (8)	1 (10)	1 (8)	
Holding rice in fist	3 (12)		2 (15)	1 (50)
Holding rope	2 (8)	2 (20)		
Playing cards	2 (8)			2 (100)

Holding soap was the problem listed by the highest number of participants, 17 (68%). This problem was experienced by patients with both left ($n = 10$, 80%) and right ($n = 13$, 62%) hands affected, which is interesting, as holding soap is usually a left handed activity. Eating and buttoning were the next most common problems. Overall, 14 participants (56%) had a problem eating. When analysed according to which hand was affected, 12 participants (92%) with right ulnar nerve paralysis had a problem compared to only two participants (20%) with left ulnar palsy. Twelve participants (48%) had problems with buttons; both participants with left and right hands affected had this problem. Eleven (44%) had problems holding a glass. Four (40%) had left ulnar palsy and seven (54%) had right ulnar palsy. Holding a glass is usually a left handed activity. However, these figures suggest that it is acceptable to use the unaffected hand for this activity. Lifting small objects was the fifth most commonly listed problem, 11 (44%). Figure 1 shows the problems with a prevalence of $\geq 40\%$.

Figure 2 shows the problems analysed according to hand affected.

Problems with a prevalence of $\geq 40\%$ were selected and analysed further according to the ranking the participant gave each problem. Figure 3 shows the rankings for these activities.

Eating was rated as the top problem by seven participants (28%), holding a glass was ranked first by three participants (12%) and holding soap by two (8%). Buttoning or lifting small objects were not ranked first by any of the participants.

Discussion

The sample size for this study was considered adequate. After the first 20 participants were interviewed no new problems/activity limitations, not mentioned before emerged.

Table 3. Activity limitation caused by ulnar nerve palsy analysed using the World Health Organisation International Classification of Functioning

ICF – Activities and participation	Problems listed by study participants	Number <i>n</i> = 25 (%)
Mobility – carrying, moving and handling objects		
Lifting and carrying objects	Heavy objects	6 (24)
Carrying in the hands	Holding a glass	11 (44)
Fine hand use	Small objects	11 (44)
	Lifting coins	1 (4)
Picking up	Writing	2 (8)
Manipulating	Small objects	11 (44)
Self care		
Washing oneself	Holding soap	17 (68)
	Wash after eating	5 (20)
Caring for body parts	Cutting nails	1 (4)
	Combing	9 (36)
	Oil massage	3 (12)
	Shaving	1 (4)
Toileting	Toileting	4 (16)
Dressing	Buttoning	12 (48)
	Dressing	4 (16)
Eating	Eating	14 (56)
Drinking	Holding a glass	11 (44)
Domestic life		
Acquisition of goods and services	Carrying water from well	1 (4)
Preparing meals	Cutting vegetables	1 (4)
	Lifting a plate	1 (4)
	Pinching salt	1 (4)
Doing housework	Wringing clothes	8 (32)
	Sweeping	1 (4)
	Ironing	2 (8)
Caring for household objects	Threading a needle	3 (12)
	Using scissors	1 (5)
Major life areas		
Remunerative employment	Holding stick for cows	1 (5)
Non-remunerative employment	Cultivation	6 (24)
	Holding rice	2 (8)
	Holding rope	2 (8)
	Chopping wood	4 (16)
	Using screwdriver	1 (4)
	Digging	1 (4)
Basic economic transactions	Counting notes	1 (4)
	Lifting coins	1 (4)
Community, social and civic life		
Community life	Friends not talking	1 (4)
	Embarrassment	1 (4)
Recreation and leisure	Playing cricket	1 (4)
	Playing cards	2 (8)

A limitation of this study is that only two participants were female, and therefore the results may be gender biased. All the participants had ulnar nerve palsy caused by leprosy and were patients at the HOINA Leprosy Reconstructive Surgery Unit, Muniguda, Orissa, India, therefore the results cannot be generalised to patients with ulnar palsy due to other causes or to patients from other countries. Further study to investigate the problems experienced by

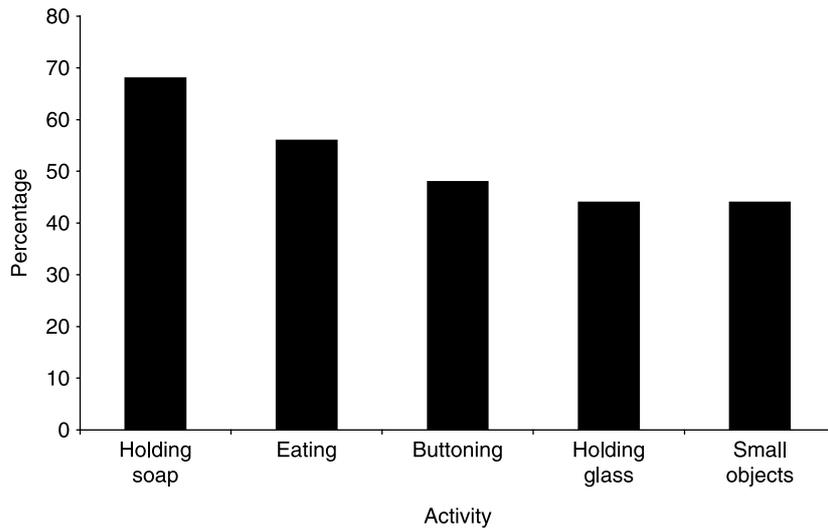


Figure 1. The five most prevalent problems caused by ulnar palsy.

patients with ulnar nerve palsy from other cultures would be interesting. This study will be extended to include more female participants. It would also be useful to include patients from other centres. However, the results do indicate that ulnar nerve palsy does have an important impact on basic activities of daily living. It also indicates a need to identify and treat those who have disabilities due to ulnar nerve palsy.

The main areas of activity limitation are interesting if considered in a cultural context. Difficulty holding soap affected 68% of participants. In rural India bathing tends to be done in public, at rivers and lakes. Not being able to hold soap, as well as being very awkward is an embarrassing problem. Alternatives to soap such as liquid soaps/gels are unavailable or very expensive in rural areas. In India the right hand is used for eating; 92% of participants with

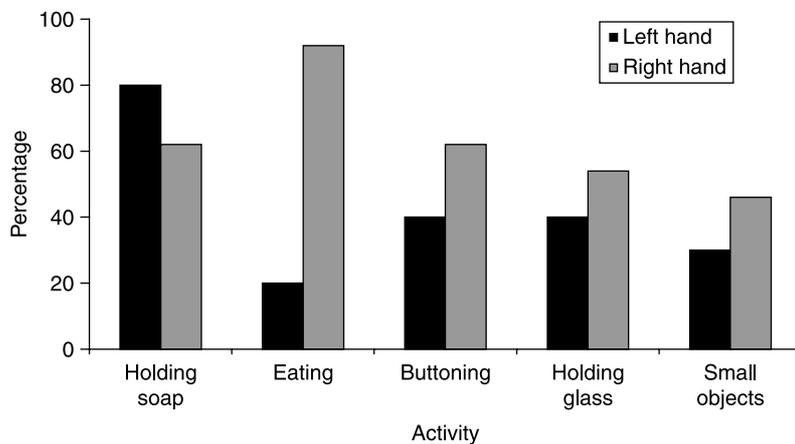


Figure 2. Percentage of participants with each problem according to hand affected.

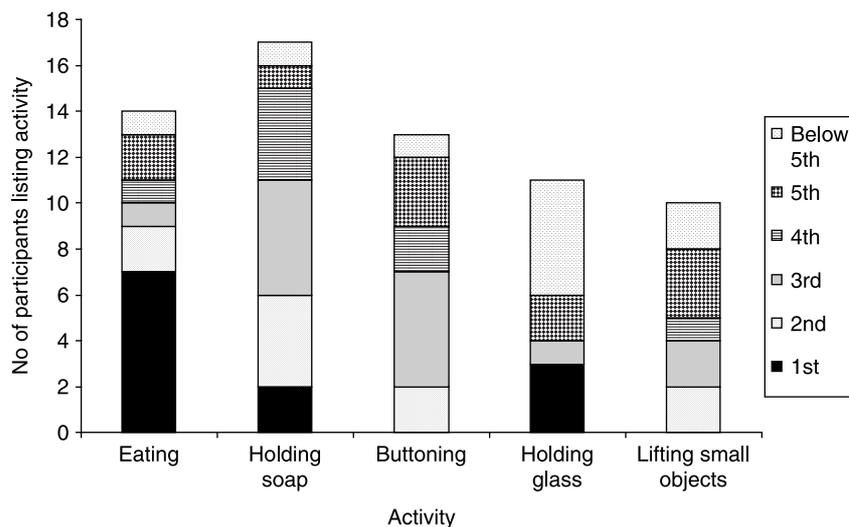


Figure 3. Percentage of participants with each problem according to hand affected.

right handed ulnar palsy had problems eating. The person with problems eating could potentially be helped with the use of a suitable spoon. However, this would not address the main problems of embarrassment and social exclusion experienced by patients who cannot eat using the hand. One participant described the impact of not being able to eat using his hand: 'I do not attend social functions, for example weddings and village celebrations, because I would be embarrassed to eat using a spoon. People would criticise me.'

Another participant did not eat in public as the deformity which he could normally hide became noticeable when he was eating and washing his hand after food.

Eating, holding soap and holding a glass are fundamental basic activities of daily living. They are essential every day activities regardless of occupation age or gender. It is possible that clothes without buttons can be worn, or help given to lift small objects. In the Indian culture where eating and washing are public activities there are the added problems of embarrassment and social stigma. Two participants listed problems not related to hand function – they were 'embarrassment' and 'friends not talking'. This study addressed hand function only, however the areas of social inclusion and participation are worthy of further study.

The next phase of item generation will use a questionnaire with questions about functional activities taken from existing validated hand/upper limb questionnaires – Disabilities of Hand, Arm and Shoulder,⁹ Michigan Hand Questionnaire,¹⁰ Patient Outcomes of Surgery – Hand/Arm,⁷ Hand Function Sort,¹¹ Karigiri Basic Daily Activities Scale,^{3,12} Screening Activity Limitation and Safety Awareness Scale (SALSA).⁵ This questionnaire will contain questions about areas of functioning such as micturition, defecation and sexual activities which may not have been captured using the open-ended approach. Detailed questions about employment will also be included. The questionnaire results combined with the results of this study will be used to generate content for an ulnar nerve paralysis specific questionnaire. Ultimately it is hoped to produce and validate an outcome measure that can be used to measure the extent to which surgical correction of ulnar claw addresses the patient's needs.

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