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## Satisfaction of patients with amputated lower limb wearing external prostheses

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### Abstract

**Objective:** To describe the level of satisfaction of patients with amputated lower limb wearing external prostheses in the town of Yaoundé.

**Methodology:** A descriptive cross-sectional study was carried out at the National Center for the Rehabilitation of Persons with Disabilities-Cardinal Paul Emile Leger and the Jamot Center in Yaoundé from 7<sup>th</sup> November 2016 to 29<sup>th</sup> March 2017. Only patients over 5 years of age were included in the study. The data collection was carried out using a data sheet derived from SAT-PRO.

**Results:** Seventy seven patients with prostheses were recruited. Their mean age was 46.02 years and they were predominantly males. The prevalence of amputated patient with prosthesis was 39.44%. The main etiology of the amputation was traumatic and the trans-tibial amputations were the most common, followed by trans-femoral amputations. Thirty-nine percent of these patients were physically dissatisfied and 11% very dissatisfied. The rate of dissatisfaction was related to the patient's weight, displacement constraints, pain and sores generated by wearing the prosthesis, the look of the prosthesis and its cost. Psychologically, 26% of the patients were dissatisfied and 17% were very dissatisfied. Dissatisfaction here was related to low self-esteem and poor acceptance of the prosthesis. Socially, nearly 17% were dissatisfied. The prosthesis however favored a better social (family and friendly) acceptance of the handicap. This encouraged a return to routine activities, although some had marital problems and others lost their jobs. Overall, 75.3% of patients were satisfied, and up to 24.7% of patients were dissatisfied.

**Conclusion:** The satisfaction of patients, with an amputated lower limb, with respect to their prosthesis was not optimal in the sense that some criteria like the appearance of the prosthesis, patient's weight, displacement constraints, price, and quality of the prosthesis still needed to be improved. Nevertheless, patients were mostly satisfied.

**Keywords:** Prostheses, lower limb, satisfaction

### Introduction

An external prosthesis is an external orthopedic appliance designed to replace an absent limb or limb segment <sup>[1]</sup>. The current context is marked by the rising frequency of road traffic accidents and vascular pathologies as major causes of amputation in developing countries <sup>[2]</sup>. Consequently, external prostheses provide a means of compensating for losses incurred during amputation <sup>[3]</sup>. It is therefore important to know the level of satisfaction of patients with external prosthesis. The satisfaction of a patient being defined as his/her opinion resulting from the difference between his/her perception of the prosthesis and his/her expectations <sup>[4]</sup>. Satisfaction encompasses the patient's experience and because of its subjective nature, it needs to be subdivided in order to be accurately measured <sup>[3]</sup>. The aim of this work was to describe the level of satisfaction of lower limb amputee patients wearing external prostheses in Yaoundé by evaluating the physical, psychological and social aspects of satisfaction.

### Methodology

The study conducted was descriptive and transversal over a period of 5 months in the National Center for the Rehabilitation of Persons with Disabilities Cardinal Paul Emile Leger (CNRPH-CPEL) and the Jamot Center of Yaoundé (CJY). Our study population was lower limb amputee patients with prostheses recruited from these centers. Included in our study were all lower limbs amputees with prostheses aged over 5 years and we excluded all lost to follow-up

patients, patients who did not complete the interview, who died and those who did not consent. The sampling was exhaustive and consecutive. The data was collected using data form readapted from the SAT-PRO questionnaire created and validated by Bilodeau *et al.* in 1999 at Quebec [3]. We divided the data form into 5 themes: Socio-demographic profile, clinical profile, physical expectations, psychological expectations, and social expectations. The interviews were conducted in households, at the CNRPH-CPEL, CJY, and via phone calls for patients who were outside the city of Yaoundé at the time of our study. After explaining to patients the purpose of our study, the data form was filled by the patient or his companion in case the patient was unable to do so. The filling time of the form was approximately 30 to 45 minutes per patient. The analysis of the results was carried out using the software Epi-info version 3.5.4. Quantitative data were reported in the form of averages, standard deviations, minimum and maximum values, and then evaluated using the Kappa coefficient.

## Results

Three hundred and sixty files of patients with amputated lower limb were identified and from these we excluded files of patients who did not give their consent and those who were not reachable (no valid phone number or death). Thus we finally retained 77 patients. The prevalence of patients with external prostheses in this sample was 39.44%. The population was dominated the youth, the most represented age group being [20-39] years, i.e. 37.70%, with an average age of 46 years and a sex ratio of 2.85 in favour of men. The main etiology of the amputations was traumatic representing 59.74% of causes. The most found amputation was trans-tibial (70.12%) explaining why we had a high number of tibial prosthesis.

With regards to the physical satisfaction, 70.10% of the patients regained their independence and 51.90% declared to have regained a good mobility but found the displacement difficult with the prosthesis (Table I). However, some complained of stump wounds and pain generated by the wearing of the prosthesis. Sixty-six (66.2%) percent of the patients said that their prosthesis is heavy. 55.9% found it unsightly, and 79.2% thought it was expensive.

Concerning psychological satisfaction, 61% of patients had difficulty accepting their prosthesis. However, the wearing of prosthesis enabled 87% of the patients to better accept their handicap while 13% of the patients said they preferred crutches, walking sticks or wheelchairs.

As far as social satisfaction is concern (Table II), the wearing of the prosthesis facilitated family and friendly rehabilitation of the majority of patients by favoring return to daily activities, and a self-fulfillment. Yet, up to 59.4% of the patients admitted to have had problems in their marital life despite the fact that they wore prosthesis. Ninety-two percent of the students in our study were able to resume school and for the most part without any social gap. However, up to 39.06% of the patients who initially had jobs became unemployed after the amputation, despite the fact that they wore prosthesis. The main reasons for the loss of their job were dismissal, resignation, and early retirement.

In all, 75.3% were satisfied and 24.7% of the patients were dissatisfied (Figure 1). In our sample, 15.59% finally gave up and stopped wearing their prosthesis. The main causes of discontinuation were stump pain and wounds secondary to the wearing, and the heaviness of the prosthesis.

On the other hand, women were more satisfied than men.

Patients younger than age 39 were the most satisfied. Patients with trans-tibial amputation were more satisfied than patients with trans-femoral amputation.

## Discussion

**Social and health profile:** These results indicate that patients subjected to amputation in our context were young and active, with high functional demands. This age group was also reported predominant in a study done in Malaysia in 2016 but represented 33.3% with a sex ratio of 2. This slight difference could be explained by the fact that they had a smaller sample size [2]. Men are involved in more active and demanding occupations and this exposes them more to road traffic accidents (RTA), and worker accidents (WA) than women (26%) who are mostly house wives and thus mostly develop amputations secondary to domestic accidents, medical complications, and infrequently road traffic accidents. The predominance of traumatic etiologies could be explained by the advent of two-wheeled vehicles as means of transport and the poor conditions of roads [5]. Trans-tibial amputations were the most represented level of amputations reason being that the surgeon aimed at preserving the autonomy and the mobility of the patient as the more the amputation is distal, the more the patient retains its mobility and autonomy [6]. Only 6.50% of the patients were followed up psychologically after amputation. These results indicate that psychological counselling is not effectively done in our 2 centers, whereas an amputation is not only a physical handicap but most especially a psychological one. Therefore a psychological support is needed by amputated patients.

**Physical Satisfaction:** The external prosthesis improved the physical rehabilitation of the amputee in that they found a body image similar to that before amputation and also regained the possibility of walking and standing. They have regained a good autonomy allowing them to be able to go about their daily activities. This could be explained by the fact that amputation results to a significant physical disability that renders the amputee unfit for walking and standing. However, this satisfaction is impaired by the weight of the prosthesis, pain and wounds secondary to wearing, the unattractive appearance of the prosthesis and the difficulties associated with displacement. They used crutches and walking sticks at the same time as the prosthesis for better mobility (Figure 2). Another limiting factor was the cost; thus, a high proportion of patients, 67.5% of our sample, felt that the prosthesis was very expensive. Indeed, future care or foreseeable expenses for repetitive medical care related to prosthetic equipment have to be considered and generally include the renewal of the prosthesis after 3 years, the change of nest depending on the evolution, or approximately every 18 months, the replacement of the sleeve according to its wear, the creams for the stump and the skin cleansing lotions [7]. In our patients, the stump narrowed over time and the socket prostheses could not be adjusted. The patients therefore were either forced to put on several socks to hold the prosthesis in place, which was not comfortable for all or he was forced to make another prosthesis, but not all patients could afford it [2].

**Psychological Satisfaction:** The wearing of prosthesis improved the psychological rehabilitation of patients. This helped patients to better accept their prosthesis. This good level of self-esteem in spite of the handicap made it possible to prevent the majority of patients from drowning into depression, anxiety or personal isolation that could occur as a

result of the amputation [5]. However, up to 13% of the patients said they did not accept their disability despite the fact that they wore prosthesis. These were mostly patients who did not benefit from a family or friendly psychological support. They preferred other orthopaedic equipment like crutches, walking sticks or wheelchairs. The appearance (look) of the prosthesis plays a big role in the psychological rehabilitation of an amputated patient; so a poor body image of oneself is related to anxiety, to depression and has a great influence on the satisfaction of the patient. Patients having problems with the physical appearance of the prosthesis would be more likely to experience psychological problems [2, 8].

**Social satisfaction:** The wearing of the prosthesis has facilitated the reinsertion of the patients into their family and friendly sphere and thus reduced social exclusion. The patients saw their number of friends increasing and were able to participate in games and other societal hobbies. In addition, the patient's colleagues or friends felt empathy for them. Eighty four percent of the patients no longer felt that they were in solitude, because the wearing of the prosthesis had made it possible for them to recover their primary body image, that is to say before amputation, and to return to their daily activities, and to feel more fulfilled. The majority of the students in our study resumed school after wearing of the prosthesis, mostly without a social gap. However, up to 39.6% of the workers found themselves unemployed after the amputation, even after getting prosthesis. This is explained by a significant loss of workers in the private sector after amputation. The main cause of the increase in the unemployment rate was the dismissal of the amputated patient

(52.00%). The reasons for the dismissal were either clearly stated to be amputation-related (69.29%) or simply disguised (30.80%) using excuses like "staff reduction"; or a voluntary resignation of the patient because he could not stand the eyes of others, or because he felt unfit in the practice of his profession [9]. Up to 59.4% of the patients admitted having problems with their sex life.

**Overall satisfaction:** In this sample, 15.59% of our population finally gave up and stopped using their prosthesis while 84.41% wore their prosthesis because of the benefits it brought to them. The main causes of discontinuation of the wearing of the prosthesis were the stump pain secondary to the wearing, stump wounds and the heaviness of the prosthesis [10]. In all, 24.7% of the patients were generally dissatisfied and 75.3% satisfied. The wearing of the prosthesis had improved the quality of life of the majority of the patients as they understood how their prosthesis works. The prosthesis has ameliorated their physical appearance, facilitated the acceptance of their handicap, and facilitated the regain of their autonomy and their reintegration into society (Figure 3). However, some criteria were associated with dissatisfaction such as the risk of having pain after the wearing of the prosthesis, difficulties related to displacement with the prosthesis, and the appearance of the prosthesis [11].

In this study, good satisfaction was associated with an age inferior to 39 years, to the female gender, to life in urban areas, to the distal amputation levels and to the wearing a tibial prosthesis [2, 12]. Dissatisfaction was related to weight, pain and wounds secondary to wearing, prosthesis appearance, and to costs.

**Table 1:** Variables of physical satisfaction

	Classes	n =77	%
Autonomy	-	54	70.10
Mobility	-	40	51.90
Heavy prosthesis	-	51	66.20
Stump pain	-	50	64.90
Stump wound	-	28	36.40
Easy to wear	-	73	94.80
Easy maintenance	-	72	93.50
Good dimension	-	39	50.60
Physical conformity of the prothese with respect to the loss limb	Very alike	2	2.60
	Almost alike	32	41.60
	Not alike	27	35.10
	Very different	16	20.80
Cost	Very expensive	52	67.50
	Slightly expensive	9	11.70
	Affordable	16	20.80

**Table 2:** Variables of social satisfaction

	Classes	n	%
Acceptance by the family (n=77)	Very good	57	74.00
	Pretty good	9	11.70
	Rejection	11	14.30
Acceptation by the children (n=61)	Very good	44	72.10
	Pretty good	14	23.00
	Rejection	3	4.90
Sexual life (n=69)	Good	28	40.60
	I don't know	9	13.00
	No sexual life	32	46.40
Réintégration au travail (n=64)	-	32	41.6
Réintégration à l'école (n=13)	-	12	92.30
Acceptation by entourage (n=77)	Very good	48	62.30
	Pretty good	16	20.80
	Rejection	13	16.90

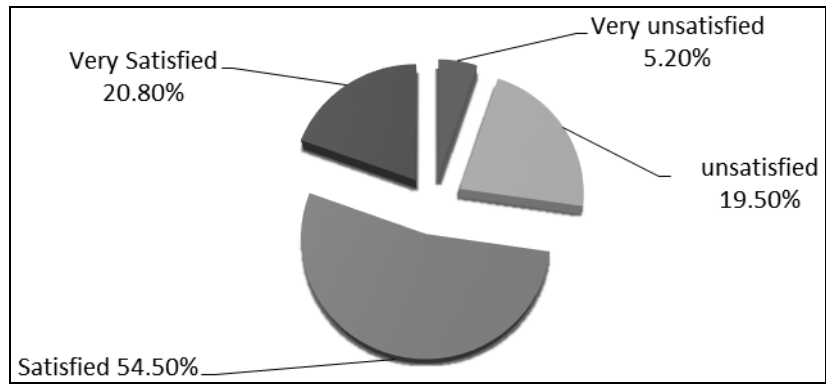


Fig 1: Overall Satisfaction Score



Fig 2: Patient wearing a temporary left articulated femoral prosthesis in standing and sitting positions



Fig 3: Patient wearing a left permanent tibial prosthesis in standing and sitting positions.

### Conclusion

In our context, the satisfaction of patients with an amputated lower limb, with respect to their prosthesis was not optimal in the sense that some criteria like the appearance of the prosthesis, patient's weight, displacement constraints, price, and quality of the prosthesis still needed to be improved. Psychological support and social protection needs to be improved as many patients have marital and employment challenges. Nevertheless, patients were mostly satisfied.

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