Life Accomplishment, Social Functioning and Participation of South-Eastern Nigerians with Lower Limb Amputation

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ABSTRACT

***Purpose**: For a better understanding of the possible impact of impairments and disabilities on the life of individuals with lower limb amputation,it is important to explore the levels of Life Accomplishment (LA), Social Functioning and Participation (SFP) among them.The present study, set in South-Eastern Nigeria, aimed to study these levels and the influence of selected clinical and demographic variables on these constructs.*

***Method**: This cross-sectional survey involved 60 individuals with lower limb amputation (46 unilateral, 14 bilateral) recruited from all the five South-Eastern Nigerian States. The Social Functioning Questionnaire (SFQ), Participation Scale and Life Habit Questionnaire were used for measuring levels of social functioning, social participation and life accomplishment, respectively. Data was analysed using descriptive statistics of frequency count, percentages, mean and standard deviation. Mann-Whitney U and Kruskal-Wallis tests were used to test the hypotheses. Alpha level was set at 0.05.*

***Results**: Most of the participants (51.7%-58.3%) had low levels of social functioning across SFQ domains. Most of them (61.7%) had severe participation restrictions, and they all had reduced life accomplishments. Participants with bilateral amputation had poorer levels of social functioning (P<0.0001), participation restriction (P<0.0001), and life habits accomplishment (P<0.0001) than their counterparts with unilateral amputation. Individuals with below-knee amputation had significantly better levels of social functioning (P<0.0001) and participation (P<0.0001) than those with above-knee amputation. Participants with prosthetic mobility aids had significantly better levels of social functioning*

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(P<0.0001) and participation (P<0.0001) than those with no prosthetic mobility aids. There was no significant difference in the levels of social functioning and participation between male and female participants, but female participants had statistically significant (P<0.0001) higher scores in nine out of twelve life habit domains than their male counterparts.

***Conclusion and Implications**: Low social functioning, severe participation restrictions, and reduced life accomplishments were prevalent among individuals with lower limb amputation, particularly amongthose with bilateral and above-knee amputations.*

There is a need to routinely evaluate the studied constructs among individuals with lower limb amputation. The provision of prosthetic aids may help to improve their levels of life accomplishment, social functioning and participation.

***Keywords**: life accomplishment, social functioning, participation, lower limb amputation*

INTRODUCTION

Amputation, the surgical removal of a part or whole of a limb (Walter et al, 2003), is an acquired condition that results in the loss of a limb or part thereof usually from injury, disease or surgery (Walter et al, 2003). The procedure is performed when arterial reconstruction surgery has failed or is not technically possible, and when the state of the limb is such that it cannot function well. It can be described as a salvage procedure embarked upon usually when reconstructive or restorative procedures are not achievable (Ogunlade et al, 2002).

Walters et al (2003) reported 200-500 million as the global figure for all amputations, with approximately 70,000 of these in the United States of America. Amputations due to vascular causes such as peripheral vascular disease (PVD), diabetes mellitus (DM) or chronic venous insufficiency (CVI) account for 82% of all lower extremity amputations in industrialised nations such as the United States of America (Dillingham et al, 2002). It is estimated that 25-27 in every 100,000 of the German population have undergone amputation (Moysidis et al, 2011). Non-industrialised nations generally have a higher incidence of amputation due to a higher rate of war, trauma, less developed medical systems, and the deplorable state of roads (Dillingham et al, 2002). Thanni and Tade (2007) reported 10 per 100,000 as the estimated prevalence of extremity amputation in Nigeria, with 70-90% involving one of the lower limbs. It was reported that 101 lower-limb

amputations were performed at the University College Hospital Ibadan in the Oyo State of Nigeria over 5 years (average of 20 amputations per year) and the majority (70.3%) of the individuals were males (Ogunlade et al, 2002). Similar male preponderance has been reported in studies from different parts of Nigeria (Yakubu et al, 1996; Olaogun and Lamidi, 2005; Ndukwe and Muoneme, 2015).

Persons with amputations may experience a wide range of activity limitations and participation restrictions (World Health Organisation, 2001).Typical activity limitations and participation restrictions for persons with lower extremity amputation relate, but are not restricted, to self-care activities and mobility (Kohler et al, 2009). Amputation thus leads to an unlimited burden of care on the individual, family, and society,bearing in mind the significance of the lower limbs for weight-bearing and walking (Kohler et al, 2009). Amputation also affects the ability of the person to return to and maintain work, maintain social functioning, participate in social activities, and to the overall quality of life (Kohler et al, 2009).

Social functioning defines an individual's interactions with their environment and the ability to fulfill their role within such environments as work, social activities, and relationships with partners and family (Bosc, 2000). This implies involvement at the individual level with his/her environment. Environmental factors such as barriers in the community related to physical/structural environments, as well as certain clinical and demographic factors such as sex difference, amputation type, amputation level, and ambulatory category may restrict functioning in normal social roles for individuals with lower limb amputation (IWLLA) (Kohler et al, 2009). A study from Nigeria found sexand prosthetic use to be the only variables associated with a social relationship in individuals with lower limb amputation (Adegoke et al, 2012).

Social participation is described as the right for meaningful involvement in decision-making about health, policy and planning, care and treatment, and the well-being of self and the community (Fredricks and Eccles, 2006). This implies the involvement of the individual at the community level. The concept of social participation has been extensively used in the health and social care literature (Jette et al, 2003). Participation, believed to contribute to health and well-being,became a central concept of several policy articles and is considered as the most relevant outcome (Fredricks and Eccles, 2006).Several authors consider social participation as an indicator of health, well-being, and positive social behaviours (Koster et al, 2008), yet the researchers found hardly any study available for referencing social participation among individuals with lower limb amputation.

According to the International Network on Disability Creation Process (INDCP, 1998), the accomplishment of life habits is the ability to successfully execute daily activities and social roles that ensure the survival and development of a person in society throughout his or her life. The accomplishment of life habits is not only determined by one's identity, choices, impairments to organs, abilities and disabilities, but also by the interaction of one's social activities. It is all about the quality of a person's social functioning and social participation (INDCP, 1998). There is a bidirectional link between life accomplishment, social functioning, and participation. The improved social functioning level has been reported to lead to quality participation and vice versa, which eventually allows life tasks to be accomplished with ease (Noreau et al, 2004), yet the researchers found hardly any study available for reference on the influence of the constructs among individuals with lower limb amputation.

Previous studies have shown that individuals with amputation suffer from poor health-related quality of life (Harness and Pinzur, 2001; Hammarlund et al, 2011; Karami et al, 2012; Rahimi etal, 2012) and have recommended comprehensive social assessment and activity participation as needful for a better quality of life among individuals with limb amputation (Nunes et al, 2012). Barnett et al (2013) reported that individuals with amputation had poor physical health following discharge from hospital, and needed improvement in overall quality of life post-discharge. In Nigeria, a recent study that investigated quality of life of individuals with unilateral lower limb amputation reported that male individuals with amputation had higher scores in the domain of social relations and overall health, and individuals with prosthesis scored higher in physical, psychological, environmental domains and overall health (Adegoke et al, 2012). The study was however clinic-based; therefore the authors recommended a community-based study amongst individuals with amputation.

Objective

While information on quality of life among individuals with amputation exists, little is known about their levels of life accomplishment, social functioning and participation. This study was therefore designed to evaluate the levels of life accomplishment, social functioning and participation among individuals with lower limb amputation,as well as the influence of selected clinical/demographic variables on the constructs.

METHOD

Study Participants

The study focused on 60 participants with lower limb amputation, who could speak and understand the English language and had no other co-morbid health conditions such as hearing or vision problems. Snowball sampling technique was utilised in recruiting the participants through the records of the Joint National Association of Persons with Disability (JONAPWD) in Abakaliki, Awka, Enugu, Owerri, and Umuahia, and the National Orthopaedic Hospital Enugu. Some of the participants were traced to their respective place of residence through the contact address in their medical and Associations' records.They were also contactedwith the help of some of the initial participants who were reached at their Associations' meeting points at the designated meeting centres (Awka, Enugu, Abakiliki, Owerri, and Umuahia).

Data Collection

The participants' demographic data and details such as the type of amputation, level of amputation and ambulation category, were collected and recorded. The Social Functioning Questionnaire (Clifford and Isobel, 2001)was first administered to the participants, followed by the Participation Scale (Carlijn et al, 2010), and the Life Habits Questionnaire (Fougeyrollas et al 2001).

The Social Functioning Questionnairewas designed to enable a detailed assessment of an individual's social functioning for both rehabilitation and research purposes. It is divided into 5 sections, each containing 8 items to be completed for each person: Self-care Skills, Domestic Skills, Community Skills, Social Skills, and Responsibility (Clifford and Isobel, 2001). Also, there are 10 'Index Items' which are asterisked and can be used to derive a global measure of social functioning (Clifford and Isobel, 2001). Each item of the instrument has tasks that are ranked 1- 4 (1= when the respondent encounters major problems performing the task; 2= when the respondent needs frequent prompting or help; 3= when the respondent needs occasional prompting or help; and, 4=when the respondent performs the task independently). The questionnaire is scored by summing the items, for which a rating has been made in each section, and dividing that total score by the number of items completed (Clifford and Isobel, 2001). However, social functioning profiling was given as follows: scores of 1-1.4 represent a very poor level; scores of 1.5-2.3 representa poor level;scores of 2.4-3.1

represent a low level; scores of 3.2-3.7 representa moderate level; and, scores of 3.8-4.0 representa high level of social functioning. Tyrer et al (2005)revealed that the Social Functioning Questionnaire demonstrated good test-retest reliability with r=0.8. The inter-rater reliability and the construct validity of the instrument were also good, with r = 0.7 and 0.8 respectively (Tyrer et al, 2005).

The Participation Scale (version 6) is an 18-item interview-based instrument designed to assess the level of social participation. The Scale allows quantification of social participation restrictions experienced by people affected by leprosy, disability, or other stigmatised conditions. The Participation Scale covers 8 of the 9 major life domains defined in the International Classification of Functioning, Disability, and Health (ICF), published by the WHO in 2001. The domains of participation include Learning and applying Knowledge (sharing skills and knowledge, solving problems, etc.), Communication (conversation, expressing needs and ideas, participating in discussions, etc.), Mobility (use of public transport, visiting public places, walking, ability to move about, etc.), Self-Care (washing, grooming, nutrition, hygiene, clothes, and appearance), Domestic Life (household tasks, assisting others, etc.), Interpersonal Interactions (relationships, etc.), Major Life Areas (work, education, employment, economic life, etc.), and,Community, Social and Civic (community life, recreation, leisure, religion, political life) (World Health Organisation, 2001). The Participation Scale can be administered, on average, in less than 20 minutes. Most questions ask the participant to compare himself or herself with an actual or hypothetical 'peer', someone who would be similar to him/her in all aspects, except for the disease or disability. The participant is asked whether he or she perceives the level of participation to be the same or less than that of their peer(s). If the participant indicates a potential problem, he or she is asked how big the problem is to him/her and indicate this on a 4-point scale with the following possible scores giving more weight by given a score 5 when some indicates a problem as a large one (1='no problem', 2='small problem', 3='medium problem', 5= 'large problem'). The questionnaire is scored by summing the items for which a rating has been made. A score of 0-12 implies no significant participation restriction, 13-22 implies mild restriction, 23-32 implies moderate restriction, 33-52 implies severe restriction, and, 53-90 implies extreme restriction (World Health Organisation, 2001). Carlijn etal (2010) reported the psychometric properties of the Social Participation Scale as follows: validity=0.92, test-retest reliability=0.83, inter-tester reliability=0.80. The Scale has been validated for use with people affected by leprosy, people with spinal cord injuries, polio, and other disabilities (World Health Organisation, 2001).

The Life Habits Questionnaire (version 3) assesses the level of life accomplishment. This version of the questionnaire was developed by Fougeyrollas et al (2001). It contains 12 domains including nutrition, fitness, personal care, communication, housing, mobility, responsibilities, interpersonal relationship, community life, education, employment, and recreation. Each of the domains contains life habittasks that directly relate to it. Within each life habit task, the respondent is asked to indicate how he/she accomplishes the task. It is scored in this format:9= no difficulty, no assistance;8= no difficulty, but with an assistive device; 7= with difficulty, no assistance; 6=with difficulty, assistive device; 5= no difficulty, human assistance; 4=no difficulty, assistive device, and human assistance; 3=with difficulty, human assistance; 2=with difficulty, assistive device, and human assistance; 1= accomplished by proxy; 0=not accomplished, not applicable. The total score in each domain is generated by the addition of the indicated difficulty level and type of assistance. When the total score is further multiplied by 10, it gives the numerator. Multiplication of the number of items in each domain by 9 gives the denominator (Fougeyrollas et al, 2001). The weighted score, which is the score of judgement, is finally arrived at by dividing the denominator by the numerator. A weighted score of less than 9 implies reduced life habits (Fougeyrollas et al, 2001). The instrument has excellent convergent validity (r=90), excellent discriminant validity (0.90), and test-retest reliability was also noted to be excellent (r=0.95) (Johannes etal, 2004).

The questionnaires were used as interviews. One of the researchers explained the questions simply and clearly to the participants. Participants' scores on each item of the questionnaires were obtained and recorded.

Data Analysis

The data obtained was coded in Microsoft Excel, summarised using the Statistical Package for Social Sciences (SPSS) version 16, and subsequently analysed using descriptive statistics of frequency, percentages, mean and standard deviation. Inferential statistics of the Mann-Whitney U test were used to compare levels of social functioning and participation between participants with unilateral and bilateral amputation, male and female participants, participants with above- and below- knee amputation, and also to compare life habit domains between participants with unilateral and bilateral amputation, and male and female participants. Kruskal-Wallis test was used to compare participants' levels of social functioning and participation across ambulation statuses. P-value was set at 0.05.

Ethics Approval

Before the commencement of the study, ethics approval was obtained from the institutional review boards of the National Orthopaedics Hospital Enugu and Enugu State University Teaching Hospital. The researchers explained the protocolto the participants. They were made to understand that their participation in the study would be voluntary and that they were free to withdraw at any time. Those who gave their informed consent by thumb-printing or signing the consent form were included in the study.

RESULTS

There were 60 individuals (49 males, 11 females) with lower limb amputation in this study. The socio-demographic and clinical profile of the participants revealed that the majority (60%) were less than 40 years of age, had unilateral amputation (76.7%), and were using non-prosthetic mobility aids (75%). Most of the participants were still single and had not received more than primary level education.

Individuals with above-knee amputation were almost similar in proportion to those with below-knee amputation (Table 1).

Table 1: Participants' Socio-demographic and Clinical Variables

Variable	Frequency (N)	Percentage (%)
Age (yrs)		
18-28	16	26.7
29-39	20	33.3
40-50	18	30.0
51+	6	10.0
Amputation Type		
Unilateral	46	76.7
Bilateral	14	23.3
Sex		
Male	49	81.7
Female	11	18.3
Marital Status		
Married	24	40.0

Single	36	60.0
Amputation Level		
Above knee	32	53.3
Below knee	28	46.7
Ambulation Category		
Prosthesis	15	25.0
Crutches	31	51.7
Wheelchair	14	23.3
Educational Status		
Primary	44	73.3
Secondary	16	26.7

The majority of the study participants ranked their levels of social functioning as either low (51.7-58.3%) or poor (23.3-25.0%) in all social functioning domains. All the participants also ranked themselves as having severe to extreme restrictions in social participation (Table 2).

Table 2: Participants' Levels of Social Functioning and Participation

Variable	**Levels**			
	High N (%)	Moderate N (%)	Low N (%)	Poor N (%)
SF Self-care	2(3.3%)	9(15.0%)	35(58.3%)	14(23.3%)
SF Domestic Skill	14(23.3%)	0(0%)	31(51.7%)	15(25.0%)
SF Community Skill	15(25.0%)	0(0%)	31(51.7%)	14(23.3%)
SF Social Skill	15(25.0%)	0(0%)	31(51.7)	14(23.3%)
SF Responsibility	15(25.0%)	0(0%)	31(51.7%)	14(23.3%)
Social Participation	Mild Restriction	Moderate Restriction	Severe Restriction	Extreme Restriction
	0(0%)	0(0%)	37(61.7%)	23(38.3%)

Key: SF =Social Functioning; N=Frequency; %=Percentage

All the participants had reduced life accomplishment (Table 3).

Table 3: Participants' Level of Life Accomplishment

Variable	**Mean ± SD**	**Levels** Normal LA N (%)	Reduced LA N (%)
LH Nutrition	6.16 ± 1.96	0 (0%)	60 (100%)
LH Fitness	6.21 ± 1.97	0 (0%)	60 (100%)
LH Personal Care	6.14 ± 1.93	0 (0%)	60 (100%)
LH Communication	6.20 ± 0.19	0 (0%)	60 (100%)
LH Housing	6.61 ± 0.19	0 (0%)	60 (100%)
LH Mobility	6.56 ± 3.75	0 (0%)	60 (100%)
LH Responsibility	6.16 ± 2.00	0 (0%)	60 (100%)
LH Interpersonal Relationship	6.15 ± 1.98	0 (0%)	60 (100%)
LH Community Life	6.19 ± 2.00	0 (0%)	60 (100%)
LH Education	6.16 ± 2.01	0 (0%)	60 (100%)
LH Employment	6.16 ± 1.98	0 (0%)	60 (100%)
LH Recreation	6.17 ± 1.98	0 (0%)	60 (100%)

Key: LH=Life Habit; LA=Life Accomplishment; SD=Standard Deviation

Participants with bilateral amputations had significantly poorer social functioning in all social functioning domains and more extreme participation restrictions compared to those with unilateral amputation (Table 4).

Table 4: Comparison of Levels of Social Functioning and Participation between Participants with Unilateral and Bilateral Amputation

Variable	Amp Type	Levels				Mean Rank	U	P
		High N (%)	Moderate N (%)	Low N (%)	Poor N (%)			
SF Self-care	Unilateral	2(4.3%)	9(19.6%)	35(76.1%)	0(0%)	37.50	0.000	<0.0001*
	Bilateral	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
SF Domestic Skill	Unilateral	14(30.4%)	0(0%)	31(67.4%)	1(2.2%)	37.50	0.000	<0.0001*
	Bilateral	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
SF Community Skill	Unilateral	15(32.6%)	0(0%)	31(67.4%)	0(0%)	37.50	0.000	<0.0001*
	Bilateral	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
SF Social Skill	Unilateral	15(32.6%)	0(0%)	31(67.4)	0(0%)	37.50	0.000	<0.0001*
	Bilateral	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
SF Responsibility	Unilateral	15(32.6%)	0(0%)	31(67.4%)	0(0%)	37.50	0.000	<0.0001*
	Bilateral	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
Social Participation		Mild Restriction	Moderate Restriction	Severe Restriction	Extreme Restriction			
	Unilateral	0(0%)	0(0%)	37(80.4%)	9(19.6%)	23.50	0.000	<0.0001*
	Bilateral	0(0%)	0(0%)	0(0%)	14(100%)	53.50		

Key:*=Significant at P<0.05; SF=Social Functioning; AmpType=Amputation Type; N=Frequency; %=Percentage

There was no significant difference in levels of social functioning and participation between male and female participants except in the social functioning self-care domain (Table 5).

Table 5: Comparison of Levels of Social Functioning and Participation between Male and Female Participants

Variable	Sex	Levels				Mean Rank	U	P
		High N (%)	Moderate N (%)	Low N (%)	Poor N (%)			
SF Self-care	Male	0(0%)	9(18.4%)	26(53.1%)	14(28.6%)	27.39	117.000	0.002*
	Female	2(18.2%)	0(0%)	9(81.8%)	0(0%)	44.36		
SF Domestic Skill	Male	12(24.5%)	0(0%)	22(44.9%)	15(30.6%)	29.65	228.000	0.386
	Female	2(18.2%)	0(0%)	9(81.8%)	0(0%)	34.27		
SF Community Skill	Male	13(26.5%)	0(0%)	22(44.9%)	14(28.6%)	29.67	229.000	0.397
	Female	2(18.2%)	0(0%)	9(81.8%)	0(0%)	34.18		
SF Social Skill	Male	13(26.5%)	0(0%)	22(44.9%)	14(28.6%)	29.67	229.000	0.397
	Female	2(18.2%)	0(0%)	9(81.8%)	0(0%)	34.18		
SF Responsibility	Male	13(26.5%)	0(0%)	22(44.9%)	14(28.6%)	29.67	229.000	0.397
	Female	2(18.2%)	0(0%)	9(81.8%)	0(0%)	34.18		
Social Participation		Mild Restriction	Moderate Restriction	Severe Restriction	Extreme Restriction			
	Male	0(0%)	0(0%)	31(63.3%)	18(36.7%)	30.76	250.000	0.809
	Female	0(0%)	0(0%)	6(54.5%)	5(45.5%)	29.36		

Key:*=Significant at P<0.05; SF=Social Functioning; N=Frequency; %=Percentage

Participants with above-knee amputation had significantly poorer social functioning and participation compared to those with below-knee amputation (Table 6).

Table 6: Comparing Levels of Social Functioning and Participation between Participants with Above-knee (AKA) and Below-knee (BKA) Amputations

Variable	Amp Level	Levels				Mean Rank	U	P
		High N (%)	Moderate N (%)	Low N (%)	Poor N (%)			
SF Self- care	AKA	1(3.1%)	2(6.2%)	15(46.9%)	14(43.8%)	22.97	207.000	<0.0001*
	BKA	1(3.6%)	7(25.0%)	20(71.4%)	0(0%)	39.11		
SF Domestic skill	AKA	4(12.5%)	0(0%)	13(40.6%)	15(46.9%)	23.59	227.000	<0.0001*
	BKA	10(35.7%)	0(0%)	18(64.3%)	0(0%)	38.39		
SF Community Skill	AKA	5(15.6%)	0(0%)	13(40.6%)	14(43.8%)	23.75	232.000	<0.0001*
	BKA	10(35.7%)	0(0%)	18(64.3%)	0(0%)	38.21		
SF Social skill	AKA	5(15.6%)	0(0%)	13(40.6%)	14(43.8%)	23.75	232.000	<0.0001*
	BKA	10(35.7%)	0(0%)	18(64.3%)	0(0%)	38.21		
SF Responsibility	AKA	5(15.6%)	0(0%)	13(40.6%)	14(43.8%)	23.75	232.000	<0.0001*
	BKA	10(35.7%)	0(0%)	18(64.3%)	0(0%)	38.21		
Social Participation		Mild Restriction	Moderate Restriction	Severe Restriction	Extreme Restriction			
	AKA	0(0%)	0(0%)	14(43.8%)	18(56.2%)	23.50	230.000	<0.0001*
	BKA	0(0%)	0(0%)	23(82.1%)	5(17.9%)	53.50		

Key: *=Significant at P<0.05; N=Frequency; SF=Social Functioning; %=Percentage; AKA=Above Knee Amputation;BKA=Below Knee Amputation; AmpLevel=Amputation Level

Wheelchair-users had significantly poorer social functioning and participation compared to those with crutches and prostheses. Participants with crutches had significantly poorer social functioning and participation compared to those with prosthetic mobility aids (Table 7).

Table 7: Comparison of Levels of Social Functioning and Participation in Different Ambulation Categories of the Participants

Variable	Ambulation Categories	Levels				Mean Rank	K	P
		High N (%)	Moderate N (%)	Low N (%)	Poor N (%)			
SFSelf- care	Prosthesis	2(13.3%)	9(60.0%)	4(26.7%)	0(0%)	53.00	53.213	<0.0001*
	Crutches	0(0%)	0(0%)	31(100%)	0(0%)	30.00		
	Wheelchair	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
SF Domestic Skill	Prosthesis	14(93.3%)	0(0%)	0(0%)	1(6.7%)	53.00	58.794	<0.0001*
	Crutches	0(0%)	0(0%)	31(100%)	0(0%)	30.00		
	Wheelchair	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
SF Community Skill	Prosthesis	15(100%)	0(0%)	0(0%)	0(0%)	53.00	59.000	<0.0001*
	Crutches	0(0%)	0(0%)	31(100%)	0(0%)	30.00		
	Wheelchair	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
SF Social Skill	Prosthesis	15(100%)	0(0%)	0(0%)	0(0%)	53.00	59.000	<0.0001*
	Crutches	0(0%)	0(0%)	31(100%)	0(0%)	30.00		
	Wheelchair	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
SF Responsibility	Prosthesis	15(100%)	0(0%)	0(0%)	0(0%)	53.00	58.822	<0.0001*
	Crutches	0(0%)	0(0%)	31(100%)	0(0%)	30.00		
	Wheelchair	0(0%)	0(0%)	0(0%)	14(100%)	7.50		
Social Participation		Mild Restriction	Moderate Restriction	Severe Restriction	Extreme Restriction			
	Prosthesis	0(0%)	0(0%)	13(86.7%)	2(13.3%)	73.00	79.000	<0.0001*
	Crutches	0(0%)	0(0%)	24(77.4%)	7(22.6%)	52.00		
	Wheelchair	0(0%)	0(0%)	0(0%)	14(100.0%)	13.00		

Key:*=Significant at P<0.05;SF=Social Functioning;N=Frequency;%=Percentage

Those with bilateral amputation had significantly poorer scores in all life habit domains than those with unilateral amputation (Table 8).

Table 8: Comparison of Life Habit (LH) Domains between Participants with Unilateral and Bilateral Amputation

Variable	Amputation Type	Mean Rank	U	P
LH Nutrition	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Fitness	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Personal Care	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Communication	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Housing	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Mobility	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Responsibility	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Interpersonal Relationship	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Community Life	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Education	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Employment	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		
LH Recreation	Unilateral	37.50	0.000	<0.0001*
	Bilateral	7.50		

Key: *=Significant at P<0.05; LH=Life Habit; SD=Standard Deviation

Female participants had higher scores in all life habit domains compared to the male participants (Table 9).

Table 9: Comparison of Life Habit (LH) Domains between Male and Female Participants

Variable	Sex	Mean Rank	U	P
LH Nutrition	Male	28.52	172.500	0.059
	Female	39.32		
LH Fitness	Male	28.73	183.000	0.078
	Female	38.36		
LH Personal Care	Male	28.59	176.000	0.057
	Female	39.00		
LH Communication	Male	27.50	122.500	0.003*
	Female	43.86		
LH Housing	Male	27.59	127.000	0.004*
	Female	43.45		
LH Mobility	Male	27.48	121.500	0.002*
	Female	43.95		
LH Responsibility	Male	27.83	138.500	0.008*
	Female	42.41		
LH Interpersonal Relationship	Male	27.73	134.000	0.009*
	Female	42.82		
LH Community Life	Male	28.01	147.500	0.013*
	Female	41.59		
LH Education	Male	28.00	147.000	0.011*
	Female	41.64		
LH Employment	Male	27.59	127.000	0.004*
	Female	43.45		
LH Recreation	Male	27.82	138.000	0.007*
	Female	42.45		

Key: LH=Life Habit; SD=Standard Deviation; *=Significant at P<0.05

DISCUSSION

Participants' Socio-demographic and Clinical Profile

This study explored the levels of life accomplishment, social functioning and participation among individuals with lower limb amputation. Sixty individuals (49 males, 11 females) with lower limb amputation participated in the study (Table 1). This suggests that male individuals were more exposed to conditions capable of causing lower limb amputation. The higher proportion of men in this study is in line with the report of previous studies that lower limb amputations are more common among males than females (Thompson et al, 1991; Yakubu et al, 1996; Ogunlade et al, 2002; Olaogun and Lamide, 2005; Da Silva et al, 2011; Adegoke et al, 2012; Ndukwe and Muoneme, 2015), and that males are more exposed to traumatic events than females (Dillingham et al, 2002; Ndukwe and Muoneme, 2015). Adegoke et al (2012) have reported that traumatic amputations in Nigeria occur mainly from road traffic accidents. There has been a public outcry by various non-governmental organisations and sister agencies for the government to fast-track efforts to rehabilitate worn-out roads in order to curtail road traffic accidents. Federal Road Safety staff have been regularly deployed at major roads across the country to warn careless and reckless road users about imminent traumatic accidents. The majority (60%) of the participants were less than 40 years of age (Table 1). This implies that conditions that led to the amputation may have occurred at an early adult age. This is consistent with a previous assertion by Dillingham et al (2002) that trauma was the major cause of amputation and most individuals with amputation were involved in traumatic incidents in early adulthood. Also, the majority of the participants (60%) were single (Table 1), implying that individuals with amputation were not ready to engage in marital life. This may be because options for achieving financial independence, usually a matter for consideration when getting married, are limited by the impact or burden of losing a limb.

The majority of the participants (73.3%) had not received more than primary level education (Table 1), suggesting low literacy levels among them. This could be attributed to the fact that most primary school leavers in South-Eastern Nigeria prefer to learn a trade rather than enrol themselves for post-primary education. Also, a good number of the participants may have joined the Joint National Association of Persons with Disability mainly to find help.

The majority of the participants (76.7%) had unilateral amputation (Table 1). This reflects the prevalent trend in amputation. It is consistent with anearlier Nigerian study by Ndukwe and Muoneme (2015) which opined that unilateral amputation is more common than bilateral amputation.

Participants' Levels of Social Functioning and Participation

The majority of the study participants ranked their levels of functioning as either low or poor in all the social functioning domains (Table 2). All the participants also felt that they experienced severe to extreme restrictions in social participation (Table 2). This implies their need for help to carry out self-care activities (such as changing clothes, washing hands, shaving, and toileting), domestic skills (such as cleaning of rooms and preparing meals), community skills (such as shopping and use of public facilities), social skills (such as making conversation with residents and engaging in leisure activities) and responsibility (over matters such as personal possessions, medications, and self-financing). This finding is consistent with the finding of an earlier work by Pinzur et al (2008) which reported the low social functioning among individuals with amputation. Better social functioning however, has been reported among individuals with lower limb amputation which was facilitated by sporting competitions (Fiorilli et al, 2013;Pezzin et al, 2013).

The findings of this study demonstrated that significant differences existed in the levels of social functioning and its domains, and also in participation, between participants with unilateral and bilateral amputation (Table 4), above and below-knee amputation (Table 6), and ambulation categories (Table 7). The finding of significantly poorer levels of social functioning and extreme levels of participation restriction among participants with bilateral lower limb amputation than among their unilateral counterparts is in line with a previous assertion by Asano et al (2008), which suggested that the likelihood of social activity decreases with increasing disability. Moreover, bearing in mind their extent of disability, individuals with bilateral amputation are reported to be likely to live a more dependent lifestyle than those with unilateral amputation, thereby limiting their ability for active functioning, participation in the society, and overall quality of life (Rahimi et al, 2012).

There was no significant difference in levels of social functioning and participation between male and female participants except in the social functioning self-care domain (Table 5). This implies that female participants may need less help in

doing self-care activities (washing, grooming, nutrition, hygiene, clothing, and appearance) than their male counterparts. Adegoke et al (2012) found significantly higher scores by male participants in social relationships and overall quality of life. The fact that the two studies have similar sex spread seems to suggest that,apart from other factors,gender may have significantly affected the level of social functioning and degree of participation restriction among individuals with amputation. The finding of significantly poorer levels of social functioning and a similar degree of participation restriction among participants with above-knee amputation compared to participants with below-knee amputation(Table 6) suggests that the presence of the knee joint may have given an edge to the below-knee amputation groupin the matter of social functioning and participation. This is similar to the findings of a previous study by Harness and Pinzur (2001) which revealed that participants with transtibial amputation had better social functioning. Cox et al (2011) also found that individuals with below-knee amputation had better social functioning and participation, with overall quality of life, than those with above-knee amputation. This may be explained by an assertion of Seymour (2002) that the more proximal the amputation, more energy is demanded from the cardiovascular and pulmonary systems, and the less can the energy demand be satisfied for functional and social activities. Moreover, the absence of a functional knee joint amongthe above-knee amputation group may also be a contributing factor to their functional limitation because the presence of the knee joint in individuals with amputation was reported to improve stability and enhance function (Andrysek et al, 2016). It was found that there was a significantly better level of social functioning and participation among individuals using prosthetic mobility aids compared to their counterparts with non-prosthetic mobility aids (Table 7).While prosthetic users could move easily around their homes and in the community, non-prosthetic users - particularly those using wheelchairs - may find the environment as an obstacle to social participation. Ephriam et al (2006) had reported that perception of environmental barriers is very prevalent among individuals with amputation, especially among those with non-prosthetic mobility aids. This outcome also agrees with the finding of significantly better quality of life among participants with prosthesis in a previous study by Adegoke et al (2012). Similarly, the use of prosthesis was reported as a predictor of better quality of life in an earlier study by Asano et al (2008). Barnett et al (2013) also reported that the use of prosthesis improved overall quality of life of individuals with amputation while decreasing fall efficacy. Zidarov et al (2009) similarly reported that the use of prosthetic mobility

aids significantly improved function. Individuals with prosthetic mobility aids may have expended less energy for mobility than their counterparts with non-prosthetic mobility aids.

Participants' Levels of Life Accomplishment

This study revealed that all the participants had reduced life accomplishments (Table 3). This suggests that the impact of lower limb amputation on life habit accomplishments may negatively affect quality of life. It calls for detailed attention to be paid to community rehabilitation and reintegration for individuals with lower limb amputation. The finding of generally reduced life accomplishments in this study differs from the finding of Zidarov et al (2009) in Canadaabout improved life accomplishment among individuals with lower limb amputation. The difference may be attributed to the fact that Canadahas a more organised economy than Nigeria, even to the extent of entrenching the rights of persons with disability, and as such may be operating a better community rehabilitation and reintegration facility for individuals with lower limb amputation. Also, reduction in life habit scores that was observed among the majority of the participants, supports the findings of a previous study by Noreau et al (2004) which established that participation restrictions hinder the accomplishment of life habits, and suggested that assessment of life habits may help to estimate the level of participation. The finding of significantly higher scores in all life habit domains among participants with unilateral amputation as compared to those with bilateral amputation (Table 8) implies that while those with unilateral amputation occasionally encountered difficulty in task accomplishments with no assistance, those with bilateral amputation often encountered difficulty in the same task accomplishment in spite of significant human assistance. This seems to buttress the assertion by the World Health Organisation (2001) that increased activity limitation leads to decreased task performance, and thus restricts activity participation.

There are statistically significant lower scores by male participants,as compared to their female counterparts, in the life habit communication, housing, mobility, responsibility, interpersonal relationship, community life, and education, employment, and recreation domains (Table 9). This may suggest that females were more likely to cope with a disability than males. However, bilateral amputation (suggestive of higher density) could also be the reason for lower life accomplishment among the men. Cox et al (2011) also found females with lower limb amputation to have significantly higher scores than males in quality

of life domains. Gallagher and MacLachlan (2004) did not find any significant sex difference in quality of life domains, while Da Silva et al (2011) found no correlation between sex and quality of life among individuals with lower limb amputation. Male participants also had lower scores in life habit domains of nutrition, fitness, and personal care but it was not statistically significant.

There is, therefore, the need for the establishment of centres that render comprehensive rehabilitation services (involving all experts) and support to individuals with lower limb amputation in Nigeria to help them accomplish their routine tasks with ease, and subsequently reduce their suffering. Reinforcement of their available capabilities, compensation for their disabilities during rehabilitation, reduction of obstacles due to prejudice, addressing lack of resources or assistance, addressing accessibility within the home and other social environments, are all steps which may improve their level of life accomplishment and overall quality of life.

Limitations

The exclusion of individuals with lower limb amputation who could not speak and understand the English language was a limitation to the study. Since the study was purely community-based, it excluded individuals with lower limb amputation at the hospital inpatient and rehabilitation centres and clinics. This affected the sample size. Another limitation was the absence of gender-matched controls for the constructs; hence the findings of this study may not be generalised.

CONCLUSION

Reduced life accomplishment, low social functioning, and severe participation restrictions are prevalent among individuals with lower limb amputation, and more particularly among those with bilateral and above-knee amputations. Female participants have significantly better accomplishments across nearly all domains than their male counterparts. It is therefore recommended that clinicians involved in the rehabilitation of individuals with amputation should routinely evaluate their levels of life accomplishment, social functioning, and participation, and also devise appropriate interventions to address their needs in these areas. Healthcare professionals involved in the care of people with amputations, and organisations such as JONAPWD and other Disabled People's Organisations (DPOs) for individuals with lowerlimb amputation should jointly advocate

for prosthetic aids to be made accessible and easily affordable for individuals with amputation. The government and its agencies can help accomplish this by allocating sufficient budget and providing subsidies or donations. Non-governmental organisations may also partner with JONAPWD and other DPOs to help with the provision of prosthesis.

The study has provided information,hitherto unavailable, on the levels of life accomplishment, social functioning and participation among individuals with lower limb amputation in the South-Eastern Nigerian States. The findings of prevalent low social functioning, severe participation restriction and reduced life accomplishments, particularly among those with bilateral and above-knee amputations, may help to highlight the need for clinicians involved in amputation rehabilitation to routinely investigate these constructs. It may also help them in the development of their management plans for this client group. This could improve the situation of individuals with lower limb amputation in terms of the studied constructs and overall quality of life. Consequently they may be enabled to contribute more meaningfully to their communities and society at large. The study also revealed the need to put policies in place that would make prosthetic aids readily accessible and easily affordable.

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