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QUALITY OF LIFE AND PHYSICAL ACTIVITY AMONG LOWER LIMB AMPUTEES VISITING PHYSICAL REHABILITATION CENTRE, UNIVERSITY OF MAIDUGURI TEACHING HOSPITAL, NIGERIA

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ABSTRACT

Background: Lower limb amputees usually have reduced mobility which affects their capacity to carry out daily tasks and physical activity which greatly affects their quality of life (QoL).

Aim: This study determined the QoL, physical activity and their associations with demographic and clinical factors of lower limb amputees at University of Maiduguri Teaching Hospital.

Methods: This was a **c**ross-sectional survey involving fifty amputees recruited through a convenience sampling technique. Quality of life was assessed using the WHOQOL-Bref (Hausa version) while physical activity (PA) was assessed using the International Physical Activity Questionnaire (IPAQ)-short form (Hausa version). Socio-demographic information of age, gender, level of education, and clinical factors such as cause of amputation, level of amputation and time since amputation were also obtained. Data were analysed by descriptive statistics and inferential statistics of Chi-square (χ^2) test. Statistical significance was set at $p<0.05$.

Results: Quality of life was higher in the "psychological" domain (67.88±13.52), relatively lower in the "social" domain of QoL (59.00±17.30). It shows (30%) low physical activity (570.24±555.69 MET-min/week), a high percentage (56%) of moderate physical activity level (649.60±884.61 MET-min/week) and (14%) vigorous physical activity (685.60±1868.24 MET-min/week) among the amputees. Significant associations between physical domain and age ($p<0.05$), psychological domain and level of education ($p<0.05$), environmental domain and cause of amputation ($p<0.05$) were observed. No significant associations ($p>0.05$) were found between the QoL domains with either gender, level of amputation and time since amputation. There was a significant association between physical activity levels with age and time including amputation ($p<0.05$) respectively.

Conclusion: There was a moderate physical activity level among lower limb amputees, with quality of life higher in the psychological domain which significantly associated with age, level of education and cause of amputation. Benefits of physical activity to the amputees at both the preoperative and postoperative phases of rehabilitation should be disseminated by healthcare professionals to enhance overall quality of lining.

Keywords: Quality of Life, Physical activity, Lower limb, Amputation, Physical Rehabilitation Centre, Northeastern Nigeria.

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INTRODUCTION

Amputation is among the leading causes of irreversible disability often associated with anxiety, isolation, and depression, with changes in societal and leisure time activities of an individual with lower limb amputation[1]. Amputation is the total or partial loss of a part or whole limb either surgically or traumatically[2]. It can be as the result of various conditions which are either congenital or acquired, due to diseases such as, tumours, circulatory disorders, trauma,

accidents, metabolic disease and infection[3]. Amputation of a limb is the last-resort decision for the surgeon and the patient when the limb is injured beyond salvage, or severely diseased and painful, functionless, and constitutes a nuisance to the patient[4]. Lower limb amputees usually have decrease mobility which affects their capacity to carry out daily tasks and to efficiently integrate into community life[5]. Lower limb amputation may be unilateral (involving a single limb) or bilateral (involving both of the limbs) and can be performed at a minor or major level[6]. In developed countries, peripheral vascular disorder is the most common cause for lower limb amputations, while in developing countries diabetic foot and trauma are the leading causes[7]. Although, trauma and crush injuries as a result of road traffic accidents predominate in Nigeria and account for about 50% of all amputations, complications of diabetes mellitus accounts for about 38% of the cases[3]. Overall, the estimated prevalence of lower limb amputation in Nigeria is 1.6 per 100,000 populations[6].

Quality of life (QoL) of amputees may be reduced due to limitations posed by body function and structure as a result of the amputation which hinders the activity and participation level. It has been recognized as an important outcome of rehabilitation programs and also as an indicator to assess adjustment to prosthesis[8]. According to Migaou *et al.*[9], time since amputation and family income status are some factors that affect the quality of life of an individual with lower limb amputation. Moreover, amputees' QoL tends to decline regardless of the cause of their amputation due to the physical changes immediately after amputation as well as the long-term implications in varied aspect of life[10].

An important aspect of rehabilitation following limb loss is assisting individuals to engage in regular physical activity for physical, psychological, and social health benefits[11]. Individuals with lower limb amputation generally have decreased mobility which influences their capacity to carry out daily responsibilities and to efficiently integrate into community life[5]. Carvalho *et al.*[12] and Lessa *et al.*[13] revealed that the prevalent outcomes of amputation in Brazil consist of functional impairment, psychiatric disturbances and occupational absence, with reduction in QoL. Some studies have found that many individuals with lower limb amputation undertake low levels of physical activity[14,15] and that individuals with lower limb amputation are less active than individuals without lower limb amputation[16].

Melo *et al.*,[17] found that the QoL and physical activity among adults and elderly individuals with lower limb amputation were lower. A study in Nigeria by Adegoke et al.,[3] found the QoL of Nigerians with lower limb amputation was moderate[3]. Another study on quality of life among lower limb amputees in Sweden reported that lower limb amputees had lower QoL compared to a group without amputation, and also indicated that higher perception of community inclusion and higher self-associated gait ability improved quality of life[18].

There appears to be a paucity of studies which investigated QoL and physical activity among lower limb amputees

undergoing physical rehabilitation in Maiduguri, Northeastern Nigeria. Consequently, this study will provide insights into the physical activity levels and QoL among amputees in Maiduguri. It will also inform the development of tailored rehabilitation programs that address the specific needs of amputees in Maiduguri, enhancing their physical activity levels and overall QoL. Therefore, the present study explored the QoL and physical activity among lower limb amputees attending physical rehabilitation centre, University of Maiduguri Teaching Hospital, Northeastern Nigeria.

METHODS

Study design and sampling technique

The study was a cross-sectional survey in which a convenience sampling technique was used to recruit participants for the study.

Study procedures

Ethical approval for this study was sought and obtained from the Research and Ethical committee of the University of Maiduguri Teaching Hospital (UMTH) number UMTH/REC/22/957. A written informed consent was sought and obtained before the commencement of the study. World Health Organisation Quality of Life Brief Version (WHOQOL-BREF) and International Physical Activity Questionnaire (IPAQ) questionnaires were administered on the participants who met the inclusion criteria, and explanations was given to participants where necessary in filling the questionnaires. Socio-demographic form was used to elicit information of their age, gender, level of education, cause of amputation, level of amputation and time since amputation. Period of study was between February to April 2022.

Study Participants

The participants of this study were lower limb amputees visiting the physical rehabilitation centre in UMTH.

Inclusion criteria: Male and female lower limb amputees visiting the physical rehabilitation centre in UMTH, age range of 15-65 years, unilateral or bilateral lower limb amputees.

Exclusion criteria: Individuals with both upper and lower limb amputation, amputees with hearing or vision impairment, amputees who are already fitted with prosthesis.

Outcome measures

The primary outcome measures for the study were QoL assessed using the WHOQOL-BREF questionnaire and level of physical activity assessed using the IPAQ.

Data collection instruments

Consent for was read and signed by each participant before the commencement of the research. Socio-demographic form was used to collect demographic and clinical information from the participants which include age, gender, level of education, cause of amputation, level of amputation and time since amputation. WHO Quality of life (WHOQOL-BREF) questionnaire Hausa version was used to assess quality of life among the lower limb amputees, the WHOQOL-BREF is a shorter version of the WHOQOL-100; both were developed by the World Health Organization (WHO). The WHOQOL-BREF is 26 items self-

administered questionnaire, responses to questions are on a 1-5 scale where 1 represents "disagree" or "not at all" and 5 represents "completely agree" or "extremely". The questionnaire contains four domains namely: Physical Health (7 items), Psychological Health (6 items), Social Associations (3 items) and Environment (8 items). The remaining two items, at the beginning of the questionnaire (coded Q1 and Q2), ask specifically about the participant's rating of their quality of life and satisfaction with their health. The Hausa version of WHOQOL-Bref is a valid, reliable and acceptable instrument for assessing quality of life; and is recommended for use in Hausa speaking populations[19]. The International Physical Activity Questionnaire (IPAQ) Short form Hausa version was used to assess the level of physical activity among the lower limb amputees. It measures the types of intensity of physical activity that people do as part of their daily lives and estimate the total physical activity in MET-min/week. It's a 7 items self-report questionnaire with a 7-day recall of physical activity. Results can be reported in categories (low activity levels, moderate activity levels or high activity levels) or as a continuous variable (MET minutes a week). MET minutes represent the amount of energy expended carrying out physical activity. A MET is a multiple of estimated resting energy expenditure. One MET is what is expended when at rest. Therefore 2 METS is twice what is expended at rest. To get a continuous variable score from the IPAQ (MET minutes a week) we consider walking to be 3.3 METS, moderate physical activity to be 4 METS and vigorous physical activity to be 8 METS. Those who score HIGH on the IPAQ engage in vigorous intensity activity on at least 3 days achieving a minimum total physical activity of at least 1500 MET minutes a week OR 7 or more days of any combination of walking, moderate intensity or vigorous intensity activities achieving a minimum total physical activity of at least 3000 MET minutes a week. Those who scored MODERATAE on the IPAQ engages in 3 or more days of vigorous intensity activity and/or walking of at least 30 minutes per day OR 5 or more days of moderate intensity activity and/or walking of at least 30 minutes per day. OR 5 or more days of any combination of walking, moderate intensity or vigorous intensity activities achieving a minimum total physical activity of at least 600 MET minutes a week. LOW level of physical activity on the IPAQ means that you are not meeting any of the criteria for either MODERATE or HIGH levels of physical activity. IPAQ is a generic scale and has a reliability of 0.80 and criterion validity of 0.30, which means that it is reliable, valid and of wide utility[20]. The Hausa IPAQ-SF has good concurrent validity with Spearman correlation coefficients (ρ) ranging from 0.78 for vigorous activity (Min Week^{-1}) to 0.92 for total physical activity (Metabolic Equivalent of Task [MET]-Min Week^{-1}), but poor construct validity, with cardio respiratory fitness ($\rho = 0.21$, $p = 0.01$) and body mass index ($\rho = 0.22$, $p = 0.04$) significantly associated with only moderate activity and sitting time (Min Week^{-1}), respectively. Reliability was good for vigorous (ICC = 0.73, 95% C.I = 0.55-0.84)

and total physical activity (ICC = 0.61, 95% C.I = 0.47-0.72), but fair for moderate activity (ICC = 0.33, 95% C.I = 0.12-0.51), and few meaningful differences were found in the gender and socioeconomic status specific analyses[21].

Sample size and sampling technique

The sample size for this research was calculated by using Taro Yamane[22] formula with 95% confidence level. The formula for Taro Yamane is presented as follows.

$$n=\frac{N}{1+N(e)^2}$$

Where:
n= sample size required
N = number of people in the population
e = allowable error (%)
1= unit constant
Total number of amputees visiting physical rehabilitation centre =50

$$n=\frac{57}{1+57(0.05)^2}=49.89$$

Therefore, the minimum sample size n= 50

Data analysis

Descriptive statistics of mean, standard deviation and percentages was used to summarize the socio-demographic and clinical variables, the WHOQoL-BREF and IPAQ questionnaires scores. Inferential statistics of chi-squared test was used to determine the association between quality of life and physical activity with socio-demographic variables (age, gender and level of education) and clinical characteristics (cause, level of amputation and time since amputation). The level of significance for this study was set at $p<0.05$.

RESULTS

Socio-demographic characteristics of the participants

Fifty (50) lower limb amputees completed and returned their questionnaires for analysis. They comprised 38 (76%) males and 12 (24%) females with a mean age of 37.26±15.03 years (age range: 15-65 years). Road Traffic Accident (RTA) 13(26%) and bomb blast/ gunshot 13(26%) account for the major cause of the lower limb amputation and the major level of amputation was below knee 34(68%). The details of the socio-demographic characteristics and clinical characteristics of the participants are shown in table 1.

Level of quality of life of the participants

The level of quality of life among the participants was reported according to the domains of WHOQOL-Bref. It was reported to be higher in the "psychological" domain (67.88±13.52) and relatively lower in the "social" domain (59.00±17.30) (Table 2).

Level of Physical activity of the participants

Majority of the participants 28(56%) are moderately physically active (649.60±884.61 MET/min/week) meeting the recommended guideline while 15 (30%) accumulated a low physical activity level (570.24±555.69 MET/min/week) (Table 3).

Association between quality of life and characteristics of the participants

Table 4 shows the association between quality of life and characteristics of the participants. There was a statistically significant association between quality of life and age group in the "physical health" domain ($p=0.036$) of quality of life. No

significant association was observed between quality of life and gender in all the quality-of-life domains ($p>0.05$). a significant association was found between level of education and "Overall QoL" ($p=0.026$), "physical health" ($p=0.037$) and "psychological health" ($p=0.010$) respectively. A significant association between quality of life and cause of amputation was recorded in "overall QoL" ($p=0.040$) and "environmental" ($p=0.014$) domain. There was no significant association ($p>0.05$) between all domains of quality of life and level of amputation. Also, there was no significant association ($p>0.05$) between quality-of-life domains and time since amputation.

Association between physical activity and characteristics of the participants

Table 5 shows the association between physical activity and characteristics of the participants. There was a significant association ($p=0.004$) between physical activity and age group. No significant association was found between physical activity and gender ($p=0.274$), level of education ($p=0.255$), cause of amputation ($p=0.200$) and level of amputation ($p=0.341$). A significant association was observed ($p=0.007$) between physical activity and time since amputation.

Table 1: Socio-demographic and clinical characteristics of the participants (n= 50)

Characteristics	frequency (n)	percentage (%)	Mean ± SD
Age group			37.26±15.03
15-24	15	30	
25-34	5	10	
35-44	15	30	
45-54	7	14	
55 above	8	16	
Gender			
Male	38	76	
Female	12	24	
Level of education			
Non formal	21	42	
Primary	5	10	
Secondary	16	32	
Tertiary	8	16	
Cause of amputation			
RTA	13	26	
Diabetes	8	16	
Bomb blast/Gunshot	13	26	
Infection/PVD	5	10	
Cancer	5	10	
TBS gangrene	6	12	
Level of amputation			
Below knee	34	68	
Above knee	16	32	
Time since amputation (years)			2.14±0.990
<1	14	28	
1-5	21	42	
6-10	10	20	
11-20	4	8	
>20	1	2	

Key: n=Frequency, SD=Standard Deviation, RTA=Road Traffic Accident, PVD=Peripheral vascular disease, TBS=Traditional Bone Setters

Table 2: Level of quality of life of the participants (n=50)

	Quality of life (WHOQOL-Bref) Mean ± SD
WHOQOL-Bref domains	
Physical	62.86 ± 15.72
Psychological	67.88 ± 3.52
Social	59.00 ± 17.30
Environmental	61.94 ± 14.27

Key: n=Frequency, SD=Standard Deviation, PA=Physical Activity, WHOQOL-Bref=World Health Organization Quality of Life Brief Scale

Table 3: Level of Physical activity of the participants n=50

	Physical activity		
	n	**%**	**Mean ± SD (MET)**
Low	15	30	570.24±555.69
Moderate	28	56	649.60±884.61
High	7	14	685.60±1868.24
Total PA			1905.44±2303.76

Key: n=Frequency, SD=Standard Deviation, PA=physical activity level; MET=Metabolic Equivalent of Task (MET/min/week).

Table 4: Association between quality of life and characteristics of the participants

Characteristics	n (%)	WHOQOL-Bref domains Q1 χ^2- value, p-value	Q2 χ^2-value, p-value	D1 χ^2 -value, p-value	D2 $\chi,^2$-value, p-value	D3 χ^2-value, p-value	D4 $\chi,^2$ -value, p-value
Age group							
15-24							
25-34		10.108,	17.918,	62.227,	39.824,	47.785,	59.536,
35-44	15(30%)	0.861	0.118	0.036	0.161	0.090	0.059
45-54	5(10%)						
55 above	15(30%)						
	7(14%)						
	8(16%)						
Gender							
Male		8.159,	5.806,	15.689,	5.435,	8.838,	6.368,
Female	38(76%)	0.086	0.121	0.153	0.710	0.452	0.848
	12(%)						
Level of education							
Non formal							
Primary		23.195,	17.859,	26.056,	42.902,	22.892,	31.301,
Secondary	21(42%)	0.026*	0.037*	0.799	0.010*	0.691	0.552
Tertiary	5(10%)						
	16(32%)						
	8(16%)						
Cause of amputation							
RTA							
Diabetes	13)26%)						
Bomb blast/Gunshot	8(16%)	32.317,	21.871,	58.615,	34.516,	34.796,	80.619,
Infection/PVD		0.040*	0.111	0.344	0.715	0.864	0.014*
Cancer	13(26%)						
TBS gangrene							
	5(10%)						
	5(10%)						
	6(12%)						
Level of amputation							
Below knee	34(68%)	3.898,	2.540,	6.725,	11.572,	10.719,	14.952,
Above knee	16(32%)	0.420	0.468	0.821	0.171	0.295	0.185
Time since amputation							
<1		11.981,	11.505,	42.510,	42.899,	37.252,	48.865,
1-5	14(28%)	0.745	0.486	0.536	0.094	0.411	0.284
6-10	21(42%)						
11-20	10(20%)						
>20	4(8%)						
	1(2%)						

Key: *=significant at p<0.05; $\chi,2$=Chi-value; Q1= Overall quality of life; Q2=Overall health; D1=physical; D2= psychological; D3=social; D4=environmental; RTA=Road Traffic Accident, PVD=Peripheral vascular disease, TBS=Traditional Bone Setters

Table 5: Association between physical activity and characteristics of the participants

Characteristics	Physical activity			χ^2- value	p-value
	Low n (%)	Moderate n (%)	High n (%)		
Age group				22.51	0.004*
15-24	2(4%)	12(24%)	1(2%)		
25-34	0(0%)	2(4%)	3(6%)		
35-44	4(8%)	8(16%)	3(6%)		
45-54	3(6%)	4(8%)	0(0%)		
55 above	6(12%)	2(4%)	0(0%)		
Gender				2.59	0.274
Male	11(22%)	20(40%)	7(14%)		
Female	4(8%)	8(16%)	0(0%)		
Level of education				7.78	0.255
Non formal	10(20%)	9(18%)	2(4%)		
Primary	1(2%)	4(8%)	0(0%)		
Secondary	2(4%)	10(20%)	4(8%)		
Tertiary	2(4%)	5(10%)	1(2%)		
Cause of amputation				13.44	0.200
RTA	2(4%)	9(18%)	2(4%)		
Diabetes	4(8%)	3(6%)	1(2%)		
Bomb blast/Gunshot	3(6%)	7(14%)	3(6%)		
Infection/PVD	2(4%)	3(6%)	0(0%)		
Cancer	4(8%)	1(2%)	0(0%)		
TBS gangrene	0(0%)	5(10%)	1(2%)		
Level of amputation				2.15	0.341
Below knee	8(16%)	21(42%)	5(10%)		
Above knee	7(14%)	7(14%)	2(4%)		
Time since amputation				20.89	0.007*
<1	2(4%)	10(20%)	2(4%)		
1-5	11(22%)	10(20%)	0(0%)		
6-10	0(0%)	7(14%)	3(6%)		
11-20	2(4%)	0(0%)	2(4%)		
>20	0(0%)	1(2%)	0(0%)		

Key: χ^2- value =chi-square value, *=significant at $p<0.05$; RTA=Road Traffic Accident, PVD=Peripheral vascular disease, TBS=Traditional Bone Setters

DISCUSSION

These cohort sample of amputees revealed moderate quality of life in all the domains after lower limb amputation. This finding may not be unrelated to the fact they are majorly (56%) also moderately physically active, which may have influenced their quality of life. Most Nigerians especially those coming from the not so urban regions do not participate in leisurely activities like camping, outdoor recreation, hiking, etc therefore the loss of a lower limb though detrimental and worrisome may not harbour mental affectations which may hinder their normal day to day activities and impair their quality of life to such detoriating level.

There was a significant association in the "physical health" domain of quality of life with age of the participants. Physical health domain was significantly lower among the older amputees compared with the younger amputees. The study by Shankar et al.[23] did not report the significant association of the four domains of quality of life with age, though the participants scored second highest on the physical health domain with the highest score in the environmental domain of the quality of life respectively. In line with the present study findings Banskota et al.[24] found significant association between age and both components of quality of life among lower limb amputees in Nepal. This means as age increases physical activity levels decline with decreasing physical health due to the natural aging process.

No significant association between gender and all the domains of quality of life. This was consistent with the study done by Razak et al,[10]. The higher occurrence of males than females with lower limb amputation in the present study are similar to other previous studies[25,23]. This higher occurrence of amputations in male may be associated with them partaking in professions that involve higher occupational risk because most often it is the male member of a household who venture out for purpose of work or undertake travel for the same; they are henceforth, more at risk of road traffic and industrial accidents leading to amputations. One additional reason might be due to the adventurous nature of the male gender, therefore exposing them to more dangers and injuries in their lifetime compared to the female gender who are more reserved and mostly live their life indoors due to cultural practices observed in the northern Nigeria. *Stutts et al*.,[26] reported women to generally experience high levels of posttraumatic emotional growth following amputation and

they have unique perspectives regarding coping, social support, perceived societal and workplace discrimination, acceptance, support groups, and other concerns related to gender identity in women.

Level of education presented in this study revealed significant association with "overall QOL", "overall health" and "psychological health" domain of quality of life with the number of individuals in non-formal education being higher. This is consistent with the study by Melo et al.[17] which indicates that education level is an important social factor for avoiding amputation and enhancing quality of life. Most of the participants were internally displaced persons form hard to access areas lacking knowledge regarding their health status and

attitude toward accessing existing healthcare services. Those with higher educational level might feel more socially equipped and find it easier to deal with psychological and social aspects of amputation that affect their quality of life.

The cause of amputation was significantly associated with "overall QOL" and "environmental" domains of quality of life with road traffic accidents (RTA) and bomb blast/gunshot the highest cause of lower limb amputations among the study population. Previous studies in Nigeria[3] and Pakistan[23] reported trauma, especially from road traffic accidents, as the most leading cause of amputation. Bomb blast caused lower limb amputation at the study centre was higher, this could be that majorly of the participants were victims of boko haram insurgency in Borno state, northeastern Nigeria during the year 2010 that marked the climax of the attacks. These attacks increased the rate of both bomb blast and traumatic amputations seen in the centre overtime. The causes of amputation have been reported to be influence by the level of development of the individual's region, assess to good transportation system and access to prompt quality medical care[17].

The level of amputation has no significant association in all the domains of quality of life, this finding buttressed previous findings [3, 27] that reported no significant association between scores of quality-of-life domains with below or above amputations among their participants. This finding indicates that amputations performed either below or above knee levels of the lower limbs does not influence the quality of life among these participants. However, this finding contrast with the study of Davies[28] that found below knee amputees had better physical function, better mental health and better social functioning than above knee amputations. It is also in contrast with the study by Bennett et al.,[29] which found out that worse physical functioning was associated with more proximal levels of amputations.

Time since amputation among the lower limb amputees in this study did not significantly influence participants' quality of life in all the domains studied, which is consistent with previous studies [3, 8] they did not find pattern of increased quality of life with time since amputation. However, this is in contrast with the study finding of Matos et al.,[30] which reported that, as time since amputation increased, adjustments to limitations improved. The Potential reason for not detecting change in quality of life considering time since amputation in the present study might be explained by the difference in perceived quality of life among the amputees which might have occurred earlier in rehabilitation and readjustment periods.

The study revealed a moderate level of physical activity among the amputees. This means that a majority of the amputees engages in daily life hustle and other social activities which might have enhances their physical activity participation. However, this finding is inconsistent with the study of Luza et al.,[31] that reported low physical activity among people with lower limb amputation in Brazil. The reason for this difference might be most of the amputees are of younger age with lots of energy levels making them to remain independent in performing their activities of daily living

thus more physically active. Physical activity is very central for rehabilitation, it improves on the physical function, and mental health of the amputees and with regular exercises improve on cardiorespiratory health, muscle strength, proprioception, balance and pave way for independent living[24].

There was a significant association between physical activity and age, with those in the age group of >55 years significantly presenting with lower physical activity when compared to their younger counter parts. This finding is similar to the study of Melo et al.,[17] that compares physical activity among the younger adults and the elderly lower limb amputees. It is also consistent with the study of Langford et al.,[32] that also reported a significant correlation between levels of physical activity with age of lower limb amputees. The study by Pepin et al.,[33] additionally buttressed the present study finding which reports that age was associated with levels of physical activity even though weak. The reason for this finding might be most times physical activity tends to decrease with age due to decline in overall strength, mobility and endurance that comes as one aged. Existence of health comorbidities like diabetes mellitus, arthritis can also limit their ability to engage in physical activity.

Gender was not significantly associated with physical activity. This finding is in line with the study by Langford et al.,[32]. Previous findings have shown women with lower limb amputation that carried out more domestic activities to reported higher practices of physical activity[31]. However, domestic activities were not assessed in the current study. The non-significant association revealed in this study may be difficult to explain in the literature as both genders might share same intrinsic and extrinsic factors that affect their physical activity levels. Both men and women amputees may face similar barriers when it comes to physical activity, such as pain, fatigue, limited access to healthcare or rehabilitation services. These factors may equally affect both genders, leading to similar levels of activity despite gender differences.

Level of education revealed no significant association with physical activity, with the number of lower limb amputees in non-formal education higher than the other educational levels among this cohort of amputees. therefore, not having any formal education did not have any significant influence on their level of physical activity. This is in line with the study by Melo et al.,[17] that reported schooling among amputees to have no association among its adults and elderly amputees. Educated amputees might probably portray more health-promoting behaviours and a higher level of physical activity as they are likely to recognise the benefits of physical activity.

Cause of amputation showed no significant association with physical activity which is in line with the study by Littmann et al.,[15] who reports, lower limb amputees with dysvascular cause of amputation participate less in physical activity than those with non-dysvascular aetiology due the underlying disease or have been leaving a less active lifestyle before the amputation. RTA and bomb blast reported the highest and equal proportion of indications of

amputation in the present study. This finding is somewhat similar with findings of previous studies [3, 34]. The finding is in contrast with previous studies of Shankar et al.,[23] that reported the major cause as trauma followed by RTAs, Melo et al. and Enweluzo et al., reported diabetes mellitus followed by trauma to be the indications for lower limb amputation in their studies[17, 35]. The study of Banskota et al.,[24] additionally reported burns to be the highest cause of amputation followed by trauma. The cause of amputation among lower limb amputees have impacts on mental health, with traumatic amputations leading to more psychological stress like anxiety and posttraumatic stress disorders while chronic diseases cause of amputations adds to ongoing emotional burdens and stress[36].

Physical activity levels revealed no significant association with level of amputation among the amputees. This is inconsistent with the previous study of Langford et al.,[32] that reported significant association between levels of physical activity and level of amputation among lower limb amputees. It has been documented that those with transtibial and trans-femoral amputations show varied levels of physical activity[1]. This suggests that the adoption and restoration of a substantial amount of physical activity among amputees may be contingent with the level of amputation present.

Time since amputation shows a significant association with physical activity, which is in line with the study by Littmann et al.,[15]. The study finding is also buttressed by the study of Langford et al.,[32] that also reported a significant correlation between physical activity levels among lower limb amputees with time since amputation. This is based on the fact that as time goes on, amputees accept and comes to term with their disability in addition to any rehabilitation process they are undergoing, therefore, tend to adapt and engage in physical activity participation regardless of their condition (disability).

Limitations of the study

The study is not without some limitations; even though the study used standardized tools making findings comparable with previous studies, the cross-sectional design used in the study makes it difficult for causal inferences. The low sample size in the study also limits the generalisation of findings and may increase the likelihood of type II error. Likewise, the self -report measures used in the study may be bias due to social desirability phenomenon.

CONCLUSIONS

Findings on this study show a high percentage 28(56%) of moderate physical activity level among lower limb amputees. The level of quality of life among the participants was reported to be higher in the "psychological" domain and relatively lower in the "social" domain of quality of life. Quality of life was significantly associated with age, level of education and cause of amputation and not significantly association with gender, level of amputation and time since amputation. While, Physical activity was significantly associated with age and time since amputation; but was not significantly associated with gender, level of education, cause of amputation and level of amputation among the lower limb amputees.

Recommendations

The study recommended that preoperative and postoperative training of patients is of vital importance for a successful rehabilitation after amputation. As it will help in enhancing their self-esteem in postoperative rehabilitation making preoperative rehabilitation process a bedrock to rehabilitation process. This will ease physical activity participation and prepares them psychosocially after the amputation. Benefits of participating in physical activity should be disseminated by health professionals to the amputees at both the preoperative and postoperative phases of rehabilitation. Studies with more larger sample size are also recommended. Additional studies on physical activity participation and quality of living are recommended due to scarcity of baseline studies in Nigeria.

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