Challenges Faced by People Living With Lower Limb Amputation Secondary to Type 2 Diabetes Mellitus. A Qualitative Study at Apromase Global Evangelical Hospital-kumasi

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Abstract

Background: Considering the burden of diabetes mellitus and its associated complications which includes limb amputation, an investigation into the challenges faced by persons with limb amputation cannot be downplayed. Amputation is a surgical method by which a part or the whole extremity is removed.

Objective: The main objective of the study was to explore the challenges faced by people with lower limb amputation secondary to type II diabetes mellitus

Method: The study followed a qualitative research approach using an explorative, narrative and descriptive design. Thirteen participants who had their limbs amputated at the Global Evangelical hospital were purposively sampled and interviewed using an interview guide. Data analysis was done using thematic analysis.

Result: The study revealed four main themes. All of the participants had an incapacitating physical challenge after amputation of the lower limb. Psychologically/ emotionally, all of the amputees were affected negatively though some had better coping strategies. Socio-economical challenge was common to them all. The males who were bread winners of their families had more serious economic issues than the females. Their coping strategies were mostly, thinking positive, having faith in God as well as social support and rehabilitation.

Conclusion: Participants faced enormous challenges from cost of treating diabetes mellitus to limb amputation and associated challenges which include psychological/emotional, physical and socio-economic.

Introduction

Diabetes accounts for over a million deaths annually with an additional 3 million deaths as a result of side effects. The global number of people suffering from diabetes rose from 108 million in 1980 to 422 million in 2014. Diabetes related complications include but not limited to cardiovascular distress, renal failure and possible amputations [1].

Amputation is a surgical procedure by which a body part or the whole such as the extremity is removed. A loss of the extremity consequently results in the loss of function in the affected limb, muscular dystrophy (resulting from reduced body mass distribution), uncoordinated movement and psychosocial challenges [2]. Complications resulting from diabetes have been identified as the most common cause of surgical amputations [3].

The World Health Organization defines quality of life as people's perception of life in the context of their culture and value systems. This perception also encompasses their goals, expectations, standards and interests [4]. The concept of quality of life is broad and takes into consideration an individual's physical, mental and social health as well as their economic freedom [5].

Limb amputation has been associated with a myriad of health related problems, including microbial infections, and phantom pain resulting from irritation of the nerve endings in the residual limb otherwise called stump pain [6]. The need for maintaining proper hygiene, getting involved with activities of daily living, and normal life functioning have often proved to be difficult or quite impossible for most diabetic patients with leg

amputation. The majority practically depend on others for their basic life functions due to loss of independence. This considerably contributes to the challenges they face in relation to their physical, psychological, social and financial life [7]. Marincek, [8] also identified that for disabilities concerning amputation of a limb, major physical challenges arise, such as barriers to participating in physical activity and performing activities of daily living. In addition, Schoppen et al [9] reports that these physical obstacles can carry with them psychosocial challenges, such as concerns about body image and perceived social and self-identity

Czerniecki et al [10] found that ambulatory function has been reported to decline in the intermediate period following a LLA. Postoperatively, Godlwana et al [11] study found a significant decline in mobility among persons with LLA at 3 months while Czerniecki et al [10] also found a decline in mobility at both 6 weeks and 4 months. Due to difficulties experienced by people with amputation in relation to mobility, engaging in activities of daily living such as household chores, recreational activities and returning to their occupation seems quite problematic for them. The difficulties

with social function significantly impact on their social relationships [12]. People with amputation would also have issues of employment, civil relationship and financial issues. This particularly becomes evident if social or financial security is not available from the state, or available financial help is insignificant to be able to lead a normal life [13].

In resource poor settings like Ghana, where there is limited access to affordable prosthesis, social support centers and rehabilitative centers [14, 15], there is therefore the need to acknowledge and understand the challenges faced by persons with Diabetes related amputations in-order to plan and implement appropriate support systems to help them cope.

Materials And Methods

Study setting

The research was conducted at Global Evangelical Hospital in Apromase, a suburb of Anwomaso in the Ashanti Region of Ghana. It is the referral center for the sub districts in the Ejisu Municipality. Apromase has a total population of 1200 with the natives having farming and trading as their main occupation.

The hospital has two directorates which is the clinical and non-clinical directorates. The clinical directorates include Medical, Surgical, Obstetrics and Gynaecology, Paediatric, Psychiatry, and Pharmacy. The departments of the hospital include: outpatient, laboratory, pharmaceutical, radiography, physiotherapy, casualty, and an operating theatre. The Hospital also provides the following services which includes; diabetic and hypertensive clinics, obstetric and gynaecological clinic, child welfare clinic, psychiatry clinic, ear, nose and throat (ENT) clinic, main outpatient department which provides various forms of consultation, appointments and reviews. The Hospital plays a major role in the training of nurses, offering a center for research and provision of health services for the general public. It has 35 bed capacity.

Study Design

The study followed a qualitative research approach using an explorative, descriptive design to investigate the challenges faced by people living with lower limb amputation secondary to type 2 diabetes mellitus. The qualitative approach to data collection employed in this study allowed the researchers to gather in-depth information mixed with emotions and personal experiences of persons with diabetes related lower limb amputation. According to Larrabee [16] the purpose of qualitative research is to study human phenomenon in their naturally occurring status using holistic methodologies rather than manipulation and controlling.

Study population and sampling

This research involved persons who had undergone diabetes related lower limb amputations at the Apromase Global Evangelical Hospital. In this study lower limb amputation (LLA) meant all forms of LLA including foot amputation, ankle disarticulation, below knee amputation, knee disarticulation, trans-femoral, and hip disarticulation. Criteria for inclusion into the study were age range 18–60 years, can read and understand either Akan or English language, has had lower limb amputation for not less than 3 months, discharged but still coming for reviews at the study site and gave informed consent. Exclusion criteria included other health related or traumatic amputations. Purposive sampling technique was used to select 13 participants for this study. Their folders and attendance register were used as the sampling frame. This sampling method allowed for the careful and intentional selection of participants who had the ability to elucidate the concept and/or phenomenon under study [17].

Data collection and Analysis.

A semi- structured interview guide was developed for the purpose of this study with an intention to obtain subjective highly personalized data while recording the rich innate feelings and emotions participants attached to a particular theme or phenomenon under study. The questions were open ended, neutral and understandable. A peer review of the questions was done by colleagues in the field and piloted with two participants for onward modification. The interview was face to face and was conducted at one of the consulting rooms with permission from the medical superintendent of the hospital. Each session lasted for 20–40 minutes. A rapport was established through introduction and explaining the purpose of the study to participants. The research team on the field assumed an open mindedness and an emotionally neutral approach while nodding, exhibiting positive facial expression which connote interest, empathy; making encouraging remarks such as oohh!, hmm! and really! Keeping silence and comforting participants was also adopted when the situation demanded. This was done to show participants how interesting, thoughtful and important their story was to the researchers. Where necessary, probing questions were introduced to seek for clarification on statements which included personal jargons or were unclear. All interview sessions were audio recorded with the permission of participants and field notes were taken alongside. Since all interviews were arranged with participants on their review day. They were assisted with retrieval of folders, arranging for quick review and collection of drugs at the pharmacy. This was done to avoid any further delays. Data collection lasted for a period of one month from February –March 2021. The recordings were played over and over again and transcribed verbatim. Data analysis was done with thematic approach. Preliminary codes were assigned to the data. Patterns, ideas, or themes were identified across the different data. The themes were then reviewed, defined and named after which a report was produced. According to Braun and Clark [18], thematic analysis allows for a purely qualitative, in-depth and distinctive account of data.

Maintaining Trustworthiness of the Study

As cited in Maher et al [19], Guba and Lincoln [20] suggest that to ensure trustworthiness in qualitative research, the study should satisfy the following four criteria: credibility, dependability, transferability and confirmability. Credibility was ensured through prolonged engagement and member checking. This ensured the questions measured what was intended and it was a true reflection of the experiences of participants. A detailed description of the research context was done to ensure the findings of the study was transferrable to other study settings. Also, because the process of this study was described adequately in detail, it was easy for other researchers to repeat the work. Investigator bias was avoided throughout the interview process to ensure objectivity or confirmability.

Ethics

This relates to the moral standards that a researcher should consider in all research methods at all stages of the research design. An ethical clearance for this research work was obtained from the Garden City University College Ethics Committee on Human Research and Publication. An introductory letter was sent to the Global Evangelical health administration to seek the consent and approval of the medical superintendent as well as the unit in-charges and Doctors. An informed consent was obtained from the participants after they agreed to partake in this study. The participants were given notice of the fact that the purpose of this interaction was purely for research purposes and as such any information gathered would be treated with strictest confidentiality while ensuring anonymity. They were also assured that they will not be subjected to any physical harm since the research team would not deal directly with the amputated limb. The participants were not forced or coerced but were assured of the freedom to withdraw or not to continue in the course of the study indicating to them that their rights are respected. However, all 13 participant cooperated throughout the interview.

Results

Socio-demographic characteristics

Majority (5) of the participants were above 60 years, 4 were within 41-50 years and 2 participants each were within 51-60 year and 31-40 years. Majority (7) of the participants were females and 6 were males. Majority (5) of the participants had 5-6 children, 4 participants had 3-4 children, 2 participants had 1-2 and 7 and above children respectively. Twelve participants were married and 1 was a widow. Six (6) participants were traders, 1, a security officer and the others engaged in vocational or technical jobs. Seven (7) of the participants were Junior High School graduates, 5 were Senior High school graduates and 1 had no formal education. Regarding the number of years, they have been leaving with the amputation, all were between 3 months – 2 years (see Table 1).

Table 1: Sociodemographic characteristics of participants

Variables	Frequency	Percentage%
Age Range		
31- 40 years	2	15.4
41- 50 years	4	30.8
51- 60 years	2	15.4
Above 60 years	5	38.5
Gender		
Male	6	46.2
Female	7	53.8
Occupation		
Trader	6	46.2
Vocational/technical jobs	6	46.2
Security officer	1	7.7
Education level		
Junior High School	7	53.8
Senior High School	5	38.5
Tertiary	0	0
No formal Education	1	7.7
Marital status		
Married	12	92.3
Single	0	0
Divorced	0	0
Widow	1	7.7
Number of children		
1-2 chidren	2	15.4
3- 4 children	4	30.8
5- 6 children	5	38.5
7 and above children	2	25.4

Main Findings

Table 2: Main themes and sub-themes

MAIN THEMES	SUB THEMES
Emotional challenges	Impact of amputation on self
	Poor sense of self efficacy
	Feelings of worthlessness
	Perceived body image disturbance
Physical challenges	Restrictions in daily functioning
	Loss of functional mobility
	Phanthom limb sensation
Socio-economic challenges	Unproductive financial status
	Loss of job opportunities
	Loss of social connectedness
Coping strategies to present challenges	Support and Rehabilitation
	Positivism
	Accepting condition as the will of God

THEME I: EMOTIONAL CHALLENGES

The data gathered depicts the psychological/emotional challenges of the patient after amputation. It was identified that impact of amputation on self, personality effect and perceived body image disturbance were the major sub themes identified in the transcripts that have been presented below. The data present quotes on the means by which participants are psychologically or emotionally challenged post amputation (see Table 2).

Impact of amputation on self

Some of the participants had a divergent opinion about their feelings after the amputation. Participants revealed the following:

Participant 12, a 44-year-old married woman and a trader with 5 children expressed her opinion as this:

“Emotionally I am not okay with my current situation where I have to rely solely on others for most of my activities of daily living.” (P12)

Participant 1 a 52-year-old female with 7 children and a trader living with the condition for 4 years cited:

“I feel shy and finds it difficult to go out because I feel people would begin to look at me.” (P01)

Poor sense of self efficacy

Participant feel they no longer look like they use to be where some see it as incompleteness, incapability, and disability. Participants expressed personal effect after the amputation because their looks have changed.

Participants remarked as follows:

Participant 10, a 36-year-old and a trader indicated:

"I no longer see myself the way I used to before and this has really affected my thought about life and I feel it is over." (P10)

However, participant 9 a security officer and having 2 children stated:

"I feel shy when talking to my friends because I have lost a limb which I think it is not perfect for me to even mingle among my peers who have all their body parts." (P09)

Participant 2 a 50-year-old mason with a unilateral below knee amputation said:

"Losing a limb has been a really a difficult situation for me. I can no longer drive my kids to school. Their mother now does it and takes care of most of the domestic activities in the home. This makes me feel I am no longer responsible for my children because I have lost a limb." (P02)

Perceived Body Image Disturbances

Participants felt uncomfortable with their body image after amputation. These were some of their responses on their body image after amputation.

Participant 7 a 40- year- old female and a mother of five stated:

"I feel there is a great change in how I look and I can recall I looked beautiful before the amputation but now I feel I have lost an important part of my body. I will not remain the same again." (P07)

Participant 6 also stated:

"*I feel I have lost a great part me. As I used to be the person who does almost everything for myself now I depend solely on people to keep me going in life. I can't belief I lost my leg. I am now a one legged man limbing with cruchets." (P06)*

Feeling of worthlessness

Participant 2 narrated his story as:

I feel sorry for myself for having lost a limb and so sees myself as not fit for the community I live in. I find it difficult attending social gatherings and even when I am called, I tell them I am sick. Also, I see myself not worthy of living as I came with two upper limbs and two lower limbs but here is the case I have only one lower limb." (P02)

Participant 6, a 44-year-old female with 7 children stated:

"I feel I am no longer human. I find it difficult to see myself to be normal. What at all is this world!? She fumed." (P06)

THEME II: PHYSICAL CHALLENGES

The data gathered depicts the challenges of the patients after amputation. They acknowledge experiencing physical challenges such as Restriction in performing daily activities, loss of functional mobility and phantom pain sensation (see Table 2)

Restriction in performing daily activities

Many participants stated that they started to face problems of daily living immediately after they were discharged from the hospital.

Participant 12 a 44-year-old married man and a trader with 5 children stated:

"The feeling was bad; I always needed the help of other people to do everything. When I wake up from bed and finds no one at home, I would have to wait till they get back home before I am attended to. Until my household is at home, I find it difficult to perform most activities of daily living not to talk alone of going to work it has drastically changed my lifestyle." (P12)

Participant 1 a 52-year-old female with 7 children and a trader also has this to say:

"…. after my limb was amputated, I felt being restricted by the loss of one leg. She lamented, I now require the services of other people to carry out most of my daily activities and this affected my lifestyle. This is a real challenge for me now." (P01)

Loss of functional mobility

The participants re-counted that after being discharged from the hospital they found that their functional level was stumpy, and it caused a heavy burden on their self-worth as well as their family members who took care of them. The loss of functional mobility and burden on care takers led to great frustration and lower self-image.

One participant sorrowfully expressed her fears about losing her self-determination as a result of immobility

… "*I was not able to move about because of the amputation. I felt so sorry for my family and people around me. I was unable to complete anything by myself. I wanted to be independent, but I couldn't. I am worthless and useless." (P10)*

Another participant stated:

"When I was discharged from the hospital I found that my functional level was low, and it caused a heavy burden on my family members I was unable to complete any task by myself. I wanted to be self-sufficient, but I couldn't as a result of the motionless of my limb." (P13)

Phantom Limb Sensation

Concerning this subtheme, participant recount their unpleasant experiences and feelings.

Participant 4, a 55year old male and a trader had this to say:

"*I sometimes feel a tingling and/or itching sensation and mild pain in my missing limb which makes me feel my missing limb isn't gone yet." (P04)*

Participant 12, a 42-year-old woman and a trader also narrate her experience as:

"*I experience abnormal movement in my amputated limb, which makes me feel the leg is still there. I sometimes forget myself and try to get out of bed with my two limbs which causes me to fall off on my side*." *(P12)*

THEME III: SOCIO-ECONOMIC CHALLENGES

The survival of patients through the amputation process and afterwards is strongly dependent on the availability of financial resources. Patient expressed their socio-economic struggles as captured by the interviews. Some of the participants did not face much problem due to their age. Their responses are captured and transcribed below.

Unproductive Financial status

Participant 4 a 51-year-old trader stated:

"My current situation has affected my work. I am unemployed because I can no longer go and trade in the scorching sun to make sales for a living. This has really incapacitated me financially and I can no longer cater for some of my life expenses. In fact, life has been difficult for me." (P04)

Participant 9, a security officer and having 2 children stated,

"*I can't go to work because I can no longer walk without having to use a wheel chair or crutches which makes it difficult to even make earns meet. This has led to a financial bankruptcy where I depend solely on my wife for a living. I do feel like crying but I can't turn back the hands of time." (P09)*

Participant 10, a 36-year-old female and a trader stated:

"Financial issues within my family has changed drastically. I used to support my husband financially for the smooth running of the family but due to my situation, he (referring to her husband) virtually does everything for us which is really hectic for him. I feel his pains but, I know God is in control." (P10)

Loss of job opportunities

Participant 11, a 65-year-old male and a trader with 3 children stated:

"*I can't even go out because how will my customers see me and even what will be their thoughts about me. This has really affected my view on taking up new jobs since the question in mind is which job would fit my current situation and hence always stays indoors." (P11)*

Participant 3, a 48-year-old farmer and married with 3 children also had this to say:

"I do not know what job can fit my situation. I used to hawk as a trader on days I don't go to the farm which requires a lot of walking. With my situation now, I think I can no longer work. My capital was also used in paying hospital bills and buying drugs. All hope is lost." (P03)

Loss of social connectedness

Participant 1 a 52-year-old female with 7 children and a trader stated:

"After the unilateral amputation, I feel lost in my own community. She further stated, twice I heard people comment about my current situation which really makes me feel so in-secured." (P01)

Another participant also narrated her ordeal as:

"If only I could turn back the ends of time, I would have lived a better life. Even when decisions are made, I am not even consulted. Family meetings are held and no one will seek my concern to know what my views are. This really saddens me." (P12)

THEME IV: COPING STRATEGIES TO PRESENT CHALLENGES

Support and Rehabilitation

Due to the deliberating nature of limb amputation due to diabetes, there is a dire need for support and proper rehabilitation. This does not only aid the patient to cope physically but also build a strong psychological coping mechanism for the patient. The support received by the patients from relatives can be of greater importance to accepting their current situation. Their responses are in quotes below.

Participant 3, a 48-year-old farmer and married with 3 children stated:

My husband had been very supportive throughout the situation and still being there for her. My children also show love and concern for me and even they promise to get my leg fixed (prosthesis). She further indicated: With this kind of love and care from my family, I feel less worried as they (my family) love and cherish me the way I am and look." (P03)

Participant 7, a 40-year-old female and a mother of five stated:

"My husband would usually call me as often times as he can and would close early to prepare dinner for the family and would even take me out for lunch just to show that he cares no matter the situation. This makes me forget my worries and as it stands now I no longer have worries of a limb loss." (P07)

Positivism

Having a good feeling about oneself and beginning to appreciate what one is like helps to give the individual some confidence about his or her current looks are like. For this reason, the participants expressed their views about positivism this way:

Participant 4 a 51-year-old trader indicated that:

“Even some persons have both limbs amputated. I am lucky to have a unilateral amputation. I am grateful to God.” (PO4)

Participant 8 narrated her own side of the story as:

“A great man once said, the eye is the light to the human body and if i can see and have only a limb loss, then I am lucky He further express, I find it pleasing to see. Losing a limb isn’t the end one’s life.” (PO8)

Accepting condition as the will of God and seeking solace in God

Faith according to the oxford dictionary states that it is trust or confidence or to have a strong belief in something (e.g. God). And as it reads some of the participants indicated that they have strong belief in God that he makes all things and this led to different responses on accepting their current situation. Here are some of their responses:

Participant 11, a 65-year-old male and a trader with 3 children stated:

“I have faith in God, He created me. He alone knows best and hence I will not have negative thoughts about my current situation which could lead to other problems and deteriorate my life even the more.” (P11)

Participant 3 had this to say:

“Once I am not dead, I do not know what tomorrow holds for me. I am grateful for the life I have now.” (PO3)

Participant 13 a 64-year-old female and a widow stated:

I have given everything to God and trusts that He will take care of me. Furthermore, all things worked together for the good of those who love God.” (P13)

Discussion

The study found that amputation had serious psychological impact on self, personality and body image. The emotional experiences of participants were mainly that of grief. Thus grieving over the loss of the self, body image and their formal looks. The findings of this study is consistent with that found in several studies [21–23]. A resounding challenge that seem common to almost all of them was an altered body image resulting from the loss of a limb secondary to the amputation. Grogan [24] defines body image as a persons’ mental picture of him/herself. Holzer et al [25], Verschuren et al [26] and Woods et al [27] studies were in agreement with our study findings and state that the body image of amputees is disrupted following amputation. Since, body image is a predictor of quality of life [28], our study suggests the need to improve the body image of amputees through psychological and mental reengineering, social support systems through the community and loved ones and physical rehabilitation that focuses on prosthesis fitting, ambulatory training and living normal lives with prosthetic device. Another psychological reaction of participants in this study which is worth sharing was the fact that they expressed feelings and opinions of not wanting to mingle with or attend social gatherings. This led them into a state of withdrawal. Similar finding is identified in [29,30]

Several studies [29,30] have pointed out depression as a common psychological challenge among persons with amputation. Our study however could not elicit this from participants' speech though their mood and posture depicted that of depression. Their denial of accepting depression as a challenge may also be that after a period of battling with the discomfort of a foot ulcer, they have now come to terms with the fact that amputation was the best possible clinical solution. Engstrom and Van de Van [21–22] and Gallagher and Maclachlan [31] are also of the view that not all amputation results in negative psychological reactions from amputees.

Amputation and care after the process places a lot of financial demands on the patients. Providing financial support for their family was a herculean task for most of the amputees since they felt incapacitated and are actively not engaged in any business venture. Other studies [9,32,33] support the findings of our study. Contrarily, Kerr et al [34] and Guest et al [35] are of the view that cost and care for diabetic foot ulceration is rather increasingly higher than that of amputations. Participants in this study also declared that majority of the financial responsibilities had been taken up by their partners, children and well- meaning family members. This is consistent with Schoppen et al [9]. Complaints about job opportunities and social regard was acknowledged in our study. This finding from our study is confirmed by Bossman [32] and Kamel [36].

Our study also discovered that the survival of patients through the amputation process and afterwards is strongly dependent on the availability of financial resources. Similarly, Davie-smith et al [37] found that the quality of life of persons with amputation is correlated to their socioeconomic status.

Basic movement and performing activities of daily living were mainly the concerns of most amputees. Their inability thereof to ambulate and engage in self-care activities due to alteration in physical appearance were their challenge. Several researchers [38, 39] have reported a positive correlation between mobility and quality of life of persons with amputation while Deans et al [39] is of the view that social integration was an important factor determining quality of life than mobility. Another study [37] also supports our findings and states that ability to perform self-care activities was positively correlated to quality of life. This therefore suggest that the need for prosthetic device and gait training could go a long way to increase the quality of life and positive self -image of amputees. Regaining walking with prosthesis is the long-term goal for most patients after lower limb amputation [40,41]. Phantom limb sensation was a common physical manifestation in almost all the participant with some describing the experience as unpleasant and disappointing. This is similarly reported in other studies [42,43]. According to Maura et al [42], this is the most common cause of chronic pain in persons with amputation and is experienced in the missing limb [43]. While other authors [44] posit that the cause of phantom pain is unknown, Hanyu- Deutmeyer et al [43] believe the pain is caused by irritation of the severed nerve ending. Peripheral and central nervous system factors associated with phantom pain and sensation has been shown in imaging studies such as Magnet Resonance Imaging (MRI) and Positron Emission Tomography (PET) scan [45].

Considering the enormous psychological, socioeconomic and physical challenges faced by persons with amputation, the need to investigate the efforts put in place by them to help cope successfully with the effect of amputation was necessary in this study. Support from family, friends, loved ones and rehabilitation was echoed by majority of the participants as a helpful coping strategy. This does not only aid the participants to cope physically but also build a strong psychological coping mechanism for the patient. This is consistent

with the findings of Callaghan & Condie, [46] and Wood-Dauphinee et al. [47]. Positivism thus being optimistic about the future and finding solace in God were also powerful in helping participants cope with the everyday challenge that comes with amputation. The findings of this study is also consistent with Ali Alzahrani, and Sehlo [48] and Driver et al [49].

Conclusion

Emotionally, all of the amputees were affected negatively though some had better coping strategies. All of the participants were socio-economically disabled. The males who were bread winners of their families had more serious economic issues as they could not go to work or lost their jobs. All of the participants had an incapacitating physical challenge ranging from immobility to inability to perform activities of daily living. Strategies employed by them to cope with the situation were support and rehabilitation, optimism and finding solace in God. The government policies regarding people with disabilities should include those who had a recent amputation of the limbs in order to optimize the return to work. This should further incorporate vocational training for those who could not return to their original occupation due to the nature of the work they did preoperatively.

Abbreviations

LLA Lower limb amputation

ENT Ear, nose and throat

MRI Magnetic resonance imaging

PET Positron emission tomography

Declarations

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

An ethical clearance for this research work was obtained from the Garden City University College Ethics Committee on Human Research and Publication. An introductory letter was sent to the Global Evangelical health administration to seek the consent and approval of the medical superintendent as well as the unit in-charges and Doctors. An informed consent was obtained from the participants after they agreed to partake in this study. All methods were carried out in accordance with relevant guidelines and regulations.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

COMPETING INTERESTS

The authors declare that they have no competing interests

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AUTHORS' CONTRIBUTIONS

DSB was involved with the development of the concept, idea, methodology, manuscript drafting, editing and review. VMKA was involved with development of concept, idea, methodology, data analysis, editing and review. CA, SAA and PA were involved with data collection, analysis and interpretation. All authors have approved the manuscript and agreed with submission to BMC public health

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