

POST-FITTING PRACTICES AMONG TRANSFEMORAL AMPUTEES AT ARUA REGIONAL REFERRAL HOSPITAL. A PROPOSED STUDY.

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Page | 1 Background

Prosthetic fitting aims to enable the patients to achieve maximum functional independence considering the patient's pre-amputation lifestyle, their expectations, and limitations. Activities to maximize independence in everyday life include self-care like dressing, feeding, bathing, and toileting among others with or without prostheses. Post-fitting management refers to follow-up activities performed by the rehabilitation team after the amputee has been fitted and discharged with a prosthesis to ensure maximum functional independence amidst the gait training and the accurate static and dynamic alignments done by the orthopedic technologists, patients have continued to present with these problems. Post-fitting management is essential to achieve the functional independence of the amputee. And it needs to be a continuous process. A person with an amputation in the prosthetic phase can continue to improve greatly if he is taught about the major goals of the post-fitting stage. Therefore, post-fitting management needs to be reinforced and made continuous to prevent such occurrences among transfemoral amputees. The study aims to assess fitting practices among transfemoral amputees at Arua Regional Referral Hospital.

Discussion

There is a need for continued studies about prosthetic fitting whose aim is to enable patients to achieve maximum functional independence considering the patient's pre-amputation lifestyle, expectations, and limitations. Proper assessment of post-fitting practices among transfemoral amputees will shed more light on the progress of management amputees and establish the existing challenges and areas of concern that may need to be addressed by both the patients and health workers. The findings of the assessment may contribute to the overall prognosis of current and future post-fitting patients and offer a foundation for further research.

Keywords: Post-Fitting Practices, Transfemoral Amputees, Orthopedic Technologists.

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Background.

Prosthetic fitting aims to enable the patients to achieve maximum functional independence considering the patient's pre-amputation lifestyle, expectations, and limitations (British Society of Rehabilitation 2003). Activities to maximize independence in everyday life include self-care like dressing, feeding, bathing, and toileting among others with or without prostheses. Domestic recreational and community-based activities also need to be addressed in the prosthetic phase. Therefore, rehabilitation should be functional and integrated with the patient's activities of daily living. Post-fitting management refers to follow-up activities performed by the rehabilitation team after the amputee has been fitted and discharged with a prosthesis to ensure maximum functional independence. This includes an initial assessment and exercises like range of motion exercises to prevent contractures, strength exercises to enable the patient to adequately perform transfers, balance, and coordination exercises to reduce the risks of falling, and endurance exercises to improve the patient's physical. The prevalence of contractures in international studies has been reported to range from 15% to 70%. The wide variation might be explained by the different definitions and diagnostic criteria. Stiff muscles, joints, and

skin can interfere with performing everyday tasks at home and work (Gnass et al, 2010).

Post-fitting management of amputees has not been given enough attention by the rehabilitation team in ARRH. This is evidenced by the development of contractures, failure to perform transfers, and increased energy expenditure leading to a burden on the endo cardiorespiratory system of the transfemoral amputees among others, this is especially observed when patients report for review and repair of their prosthesis. Delaying or foregoing treatment may make it difficult or impossible to regain range of motion when contractures occur. More than 50% of lower limb prosthetic users report falling at least once a month, placing them at a high risk of adverse health outcomes such as decreased mobility and diminished quality of life. This could be due to inadequate gait training and failure to actively involve the physiotherapist during the post-fitting phase after the technologists have fitted the amputees and discharged them. Amidst the gait training and the accurate static and dynamic alignments done by the orthopedic technologists, patients have continued to present with these problems. Post-fitting management is essential to achieve the functional independence of the amputee (WHO 2004). A person with an amputation in the prosthetic phase can continue to

improve greatly if he is taught about the major goals of post fitting stage. Therefore, post-fitting management needs to be reinforced and made continuous to prevent such occurrences among transfemoral amputees. The study aims to assess post-fitting practices among transfemoral amputees at Arua Regional Referral Hospital.

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Challenges faced while using a prosthesis.

Intact limb pain

Overuse syndrome is well documented in amputees, where additional and atypical amounts of time and pressure are borne down through the intact limb. Over time, this can and will cause early degeneration of the lower back, hip, knee, and ankle resulting in discomfort and other complications. This becomes even more important if there are injuries to the intact limb, which makes it even more critical that the prosthesis be designed to evenly bear the load and smooth out every step in your gait.

Back pain

There are few things in life more frustrating than back pain. Walking with a poorly fit prosthesis or with sub-optimal gait habits can cause long-term structural changes in the body that will result in muscular pain and eventually long-term neurological pain. Most users of a prosthesis will at some time encounter back pain due to compensation for the loss of your limb. The socket, the technology, the training, and the breaking of bad gait habits are all essential to address the issues that cause back pain.

Poor Balance, Instability, or a Fear of Falling

If you experience any of these issues, there is a good chance that it is not properly aligned. Over the months and years of use your limb may have subtle changes that reduce your control of the prosthesis. If however, your socket fits well and you are comfortable then there is the likelihood that the “alignment” of your prosthetic components is not optimized. If you are experiencing what feels like rotation of a knee or foot, a sensation of walking on the edge of your foot, or feel like you have a hitch in your step then adjustments are likely needed to your prosthesis to remedy the issue.

General Fatigue and Reduced Mobility

If you are struggling with fatigue when walking or when entering and exiting a seated position, some of this may be due to your prosthesis. Whether your goal is to simply stand up with confidence, walk around the house, or run a 10 km, your prosthetic plays a large role in your ability, and should not hold you back.

Irritation and Skin Issues

Research has shown that as many as 74% of amputees have skin issues associated with prosthetic wear. Sometimes these are minor and do not affect use, but oftentimes if the cause is untreated they progress to a new level.

We are specialists in understanding the skin/prosthetic interface and we are often asked to work directly with manufacturers to understand the causes and prevent the occurrence of skin irritation and breakdown. If you feel rubbing in your prosthesis, that is the result of mechanical friction and pressure combined which can cause irritation and skin issues. Socket shape and fit along with stabilizing the soft tissue are all important to prevent this and preserve the long-term health of your skin. We utilize a variety of Gel and Silicone materials to match the skin's needs and dissipate friction or pressure to reduce irritation. If you experience liner or skin breakdown you should be even more concerned. A stable socket environment protects you and the liner equally, and breakdown is the result of issues with the socket.

Socket Issues or Discomfort

Proper socket fitting requires a skilled clinician and a plan tailored to your unique needs. Without a sound clinical plan, socket fitting can take far too long, yet still provide little in the way of improvement and comfort. Unfortunately, a one-size-fits-all approach is used in the prosthetic industry, which inevitably compromises comfort and ability. A prosthesis should be easy to put on and take off, wearable all day without irritation or discomfort and one should have complete control over the prosthesis.

Adaptation of TF amputees to prosthetic use

John Hopkins (2020) Learning to get around with a prosthetic leg can be a challenge. Even after initial rehabilitation is over, you might experience some issues that your prosthetist and rehabilitation team can help you manage. Common obstacles include:

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- Excessive sweating (hyperhidrosis), can affect the fit of the prosthesis and lead to skin issues.
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- Changing residual limb shape. This usually occurs in the first year after an amputation as the tissue settles into its more permanent shape, and may affect the fit of the socket.
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- Weakness in the residual limb, which may make it difficult to use the prosthesis for long periods.
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- Phantom limb pain could be intense enough to impact your ability to use a prosthesis

METHODOLOGY

Study design

The study will be done by cross-sectional design using a quantitative method of data collection. The research is aimed at studying both the outcome and exposure at the same time and in a short period thus quick and time-saving.

Study area

The research will be carried out at Arua Regional Referral Hospital in Arua city, West Nile subregion of northern Uganda approximately 480kms by road northwest of Kampala Uganda's capital city.

Study population

The study will target only the transfemoral amputees attending the Arua regional referral hospital workshop, both male and female cutting across all age groups.

Sample size determination

The sample size will be calculated using the formula for a single population proportion by Kish Leslie 1965. Which is calculated as follows:

$$N = \frac{Z^2 P(1-P)}{d^2}$$

Where N=sample size

d=the acceptable sampling error

d = 0.0522

z =constant (statistical certainty)

z=0.95

p =percentage of contributing factors

z =1-p

p=1-z

p=1-0.95=0.05

$$N = \frac{0.95(2) * 0.05(1-0.05)}{0.0522^2}$$

N=15.73 ~16,

hence N=16

Therefore 16 patients will be given questionnaires.

Sampling technique

The researcher will use a nonprobability convenience sampling technique to due the easy accessibility of the target population and it is time-saving.

Sampling procedure

During the convenience sampling the researcher will assess every transfemoral amputee present at the hospital during the time of data collection if he/she consents to the study

Inclusion criteria

Only transfemoral amputees

Exclusion criteria

The study will exclude all those who do not consent to the study, those with mental disorders, and those with other levels of amputation or other orthopedic conditions that require the services of an orthopedic technologist. Also, below the age of 18.

Dependent variable

Post-fitting management practices.

Independent variable

The independent variables include age, sex, and level of education.

Data collection method

The researcher will use the interview method with the help of a questionnaire that will be pre-tested before use for data collection during the study.

Data collection tools

The data collection tools the researcher will use include written questionnaires for those who are literate and an interview guide for those who are illiterate.

Data collection procedure

During the study, the researcher will administer the questionnaires to the participants who consent one-on-one.

Piloting the study

A pilot study will be conducted at Mulago National Referral Hospital with the transfemoral amputees with the same questions that will be given to the TF amputees at the actual study area, Arua Regional Referral Hospital. The study tools will be tested and adjusted according to the findings of the pilot study.

Quality control

Pretesting the data collection tools to identify the gaps and fill them before the actual study. Translating the questions into the local language for those who cannot read and write English. The inclusion and exclusion criteria will be strictly followed.

Data analysis and presentation

The data will be collected and analyzed manually since the sample size is small

Ethical considerations

Approval will be obtained from the OTTS department of UIAHMS-Mulago by issuing an introductory letter for the pilot study and actual study. Permission to carry out the study will be obtained from the hospital director of ARRH, the in-charge Orthopaedic workshop of ARRH.

Consent will be obtained from the respondents before issuing out the questionnaires and the respondent will be allowed to stop if he or she feels uncomfortable and information will be treated with utmost confidentiality.

Study limitations.

The study might be limited by time due to the changes in the academic Callender brought about by covid 19, in

insufficient funds might also limit the study. A low response by the respondents and inevitable errors committed by the researcher since the researcher is learning and doing research for the very first time.

Dissemination of results

Page | 4 The copies of the results and findings will be compiled and made available to all stakeholders and accessible to future interested scholars.

Discussion

There is a need for continued studies about prosthetic fitting whose aim is to enable patients to achieve maximum functional independence considering the patient's pre-amputation lifestyle, expectations, and limitations. Proper assessment of post-fitting practices among transfemoral amputees will shed more light on the progress of management amputees and establish the existing challenges and areas of concern that may need to be addressed by both the patients and health workers. The findings of the assessment may contribute to the overall prognosis of current and future post-fitting patients and offer a foundation for further research.

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LIST OF ABBREVIATIONS AND ACRONYMS

ARRH : Arua Regional Referral Hospital
BACPAR: British Association of Chartered Physiotherapists in Amputee Rehabilitation
OTTS: Orthopedic Technology Training School
PARC: Prosthetic And Rehabilitation Center
TF: Transfemoral
WHO: World Health Organization

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