



RESEARCH ARTICLE

REHABILITATION SATISFACTION IN PATIENTS WITH LOWER LIMB PROSTHESIS.

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Abstract

Rational: The loss of a limb is a shocking experience. Persons with a new amputation face a complex set of tasks to return to an adaptive mobility status. The type and quality of the prosthesis affect the patient's physical and mental ability of adaptation. Limb loss can be a result of vascular disease, trauma, or congenital anomalies. But in Afghanistan the main cause is ongoing conflicts and war. Factors such as appearance, frustration, and pain can all be affected by the loss of a limb.

The purpose of this research study is to measure the rehabilitation satisfaction in persons with lower limb amputation in ICRC Orthopedic program at the north part of Afghanistan which covers about 7,966,576 population in 9 Northern provinces.

Objective: To investigate patients' satisfaction with their lower-limb prosthesis and related service delivery at ICRC rehabilitation center in the north part of Afghanistan.

Methods: A cross sectional (Observational) study was designed. A sample size of 36 patient in a period of a month searched for this study.

Time Frame: The study took 16 weeks from the start to the preparation of the first draft for analysis of the findings.

Results: This study of patient satisfaction with prosthesis medical devices provided an indication of patient satisfaction with Prosthetic Medical Device (PMD) in areas such as the weight, fit, durability, pain, abrasiveness, and comfort. It discovered that the weight and manageable of PMD gave the greatest patient satisfaction. Similarly, it revealed that the pain and abrasiveness of the PMD were characteristics that provided lower patient satisfaction, and therefore, are areas to improve in terms of the quality management of PMD by the health care facility.

Recommendation: Psychosocial disorders are the main consequence of amputations which requires special attention and support besides the usual rehabilitation program. Employment and self-employment are other aspects of disabled peoples problem which requires special attention of the government and organizations who are working in this field. The pain and abrasiveness is the main characteristics with lower satisfaction that can be improved by special attention of the service providers.

Rational and Background:-

Introduction to lower limb amputation :-

Amputation is a devastating event. The ability to maintain a functional status is the goal of both the healthcare professional and the patient. Rehabilitation of new orthopedic devices enables the people to start once again their natural daily life. It has a cosmetic effects for the patients as well.

Rehabilitation satisfaction is not an easy subject to find out all aspects of its requirements, psychological disorders, financial problems, poverty and being excluded from the community and family. Majority of the patients who lost their limbs in this study are the youths who have been injured in the recent conflicts or IEDs planted in the past years in Afghanistan. These young individuals (men and women) even reported cancellation of their engagements with their partners that will left a mental health disorders, such as depressions, PTSD, psychosis, and suicides mainly among young generations.

So, based on above distressing events, this study objective/aim is to present the rehabilitation satisfaction of patients experienced the loss of limbs (lower limbs) in the north part of Afghanistan. In this study I have concentrated on satisfaction of people using artificial devices (prosthetic limbs) which is facilitating the amputate patients to take part once again in their daily life and to be an active member of their family. It further aims to explore the complexity and gaps in management of rehabilitation of prosthetic patients for the service providers.

At the end of the study it helps the policy makers, health service providers, NGOs working on the field of supporting disabled people and other humanitarian actors including ICRC in the relevant context for intensive attention and proper approach of assistance in terms of policies, employment and psycho-social supports.

Demographics and Epidemiology:-

In Afghanistan, accurate and comprehensive figures of the disabled population are not available, because different actors are working in this field and still there is no integrated reporting for disabled people across the country. Roughly 10% of the world population are suffering from some sorts of disability (WHO 2011). Approximately 1.7 Million people living with limb loss around the world, 58% upper 42% lower limb amputation (Center for Orthotic and Prosthetic Care 2008). Those with mobility deficiencies could be around 850,000, (3.7%) of whom approximately 40,000- 45,000 are limb amputees in Afghanistan (UNICEF 2008). The numbers are constantly increasing due to the ongoing internal conflicts, despite the efforts made through mine risk education and de-mining programmes. Such a number of disabled persons is huge in a country not yet at peace and struggling to leave forty years of war behind. Since 1988 till end of 2014 roughly 40,500 Amputees assisted by ICRC in Afghanistan.

Well aware that the physical rehabilitation of a disabled person is only a step towards his/her social reintegration, the efforts have been done for disabled people to take role in society through education, vocational training, employment and micro business (ICRC, SCA and IAM are working in this field at the north part of Afghanistan).

More than 90,000 Afghan disabled have been assisted through the ICRC Orthopaedic Programme (from which year to which year?). Today, this programme is the largest activity in Afghanistan and implementing in 8 orthopedic centers across the country. Only in 2015 about 237 new amputated patients admitted in ICRC orthopedic center at country level for prosthetic services.

As it has been analyzed in this study majority of amputations occur due to the ongoing fighting's and planted IEDs with high percentage of 75%, Occupational incidents 2.7 %, Traffic accidents 2.7 % and the rest 19.5% medical problems such as burns, diabetes, cardiovascular problems and congenital anomalies. In other hand 75% of the study groups are male and from the youngest age groups of 15 to 45 years old, those who are the wage group of the population.

In this research it has been discovered, how much amputees will get benefit from the prosthetic device in order to be mobilized and restart their daily normal activities in the community and reduce the load of economical deficiencies of their families.

Literature Review:-

There is no specific studies in this field in Afghanistan. Even there are very limited worldwide studies which were not restricted to limb amputees but related to other types of amputations. In Afghanistan different organizations are currently working in this field and do not have any integrated approach for studies or reporting system.

Hereunder, I have found similar study which was held by (Lina Magnusson and Gerd Ahlström) at Jan 2016 in two African countries Sierra Leone and Malawi to compare the satisfaction of assistive prosthetic devices.

Sierra Leone and Malawi are two low-income countries like Afghanistan in sub-Saharan Africa and among the fifteen least-developed countries in the world, where the majority of the population lives under the 'absolute poverty' line. Sierra Leone has a history of conflict and large violations of human rights, which occurred during the country's civil war between 1991 and 2002; Malawi has a more stable history. The population in Sierra Leone is 6.2 million people and in Malawi 16.8 million people. Many low-income countries do not offer formal university education in the field of prosthetics/orthotics, which is the case in Sierra Leone and Malawi and the same in Afghanistan. This results in limited availability of prosthetic and orthotic services provided by qualified staff for persons with physical disabilities in low-income countries.

A literature review of lower-limb prosthetic technologies in developing countries indicated that there was a particular need for research related to policy, service delivery and patient outcomes. Some product evaluation of assistive devices was performed, but further research and product development was also needed. A survey of a number of low-income countries indicated that the development of improved designs, using low-cost and durable components, needed to be addressed. Studies investigating patients' capability, mobility and satisfaction with their assistive device, along with patients' satisfaction with service delivery using low-cost technology in low-income countries, were very limited. To our knowledge there are no previous studies investigating factors associated with patient mobility and satisfaction with low cost prosthetic and orthotic devices in low-income contexts.

Eighty-six percent of assistive devices were in use, but half needed repair. One third of participants reported pain when using their assistive device. A higher percentage (66%) of participants in Sierra Leone had difficulties or could not walk at all on uneven ground compared with 42% in Malawi. The majority in both countries had difficulties or could not walk at all up and down hills, or on stairs. Participants in both countries were quite satisfied (mean 3.7–3.9 of 5) with their assistive device. Participants were most dissatisfied with: comfort (46%), dimensions (39%), and safety (38%) of their assistive device. In Sierra Leone participants were less satisfied than in Malawi with service delivery (mean 3.7; 4.4, $p < .001$). The strongest association with satisfaction with assistive device was pain, and for satisfaction with service, country. The general condition of devices and the ability to walk on uneven ground were associated with both satisfaction with assistive devices and service received.

Based on above findings this literature was searched between July 2016 and Oct 2016 for almost four months, using electronic and manual search of articles, websites and written guidelines. After the initial search, briefing with rehabilitation program members, processing informed consent letters and FDGs for discussion a face to face interview through a prepared questionnaire have been used and filled out for almost 36 patients who were received prosthetic devices in a period of a month.

Finally the satisfaction of the patients through specific questions and direct interview have been collected and used for this study research.

The literature was analyzed to specify key points and areas relevant to answer the study questions. The findings from the literature were then used as a basis for questions and discussion for interviews.

a) **Primary objective (Main Objective):-**

To investigate patients' satisfaction with their lower-limb prosthesis and related service delivery at ICRC rehabilitation center in the north part of Afghanistan.

b) **Secondary objective (Specific objectives):-**

1. The level of satisfaction of prosthetic Medical device will be explored.
2. Strengths and limitations of existing orthopedic service in the ICRC orthopedic center will be described.

Hypothesis:-

Satisfaction of patients from applied prosthetic device in rehabilitation center.

Research question:-

How effective is a prosthetic device for satisfaction of an amputated patient to resume back their usual life in current rehabilitation program, in Afghanistan?

Study design:-

This study (rehabilitation satisfactions) is an observational cross sectional study which will be explained in a descriptive study method. The study population are all amputated patients who are coming to receive a prosthetic device in ICRC orthopedic center in a duration of a month with observations and direct interview of the researcher. Study subjects were assessed via person direct interview at ICRC Orthopedic program in a period of a month. Individuals were screened for study participation using the following inclusion and exclusion criteria:

Inclusion Criteria:-

1. All age groups were included.
2. Both sex group of male and female covered.
3. From all geographical areas.
4. From both sides of the conflict (Government and the AOGs).
5. Have a tolerance for standing for at least 5 minutes for the interview.
6. Have begun the prosthetic training.

Exclusion criteria:-

1. New amputee patient who were still in the process of their wound recovery and not used the devices yet.
2. Patients need medical surgeries
3. People with serious mental disorders
4. Those who did not interest to attend in this interview.

a. Sample size:-

Thirty six patient who have been admitted in a period of a month (October 2016) using direct interview were searched for rehabilitation Satisfaction. As the study is a qualitative study so qualitative questions designed and completed by the direct interview.

b. Data Sources :-

The data is collected through a questionnaire from the direct interview of the clients at ICRC orthopedic center in Mazar-e-sharif that covers 9 provinces of the Northern region of the country. During the interview both male and female section of the rehabilitation center provided equal facilitation and there is no bias for covering sex groups of the participants. So based on the number of daily admissions inclusion and exclusion criteria 36 patients have been selected for the rehabilitation satisfaction.

Research Methodology:-**a. Approaches:-**

In this qualitative research, a cross sectional (Observational) study was designed. Consent letter was approved by head of orthopedic rehabilitation center and the head of ICRC sub delegation in the Northern region. For all individual participants of this study research, an informed consent letter submitted and signed. Before starting the interviews a FGD (Focus Group Discussion) sessions organized to deliver specific information on the study aims and briefing on the topic to the participants in two different sessions (Male and Female section of orthopedic center). The research material used to each individual was a prepared two-page questionnaire based on the WHO standard questionnaires which was completed by the researcher.

b. Study Place:-

This study took place in ICRC Orthopedic center, Mazar-e-Sharif city, Balkh province, that covers nine Northern provinces of Afghanistan. There was no limitations for this study and the staff working in the Orthopedic Center provided enough support to facilitate this study research.

c. Time frame:-

The researcher completed the questionnaire in a period of a month (Oct 2016) in ICRC Orthopedic Center in Mazar-e-Sharif, Afghanistan.

d. The team:-

The researcher did the interview with the clients directly in ICRC orthopedic center. But ICRC technical staff supported and organized the patients and briefing of the topic. Major facilitation provided by ICRC North region delegation and ICRC head of orthopedic program.

e. The Sampling Method:-

The sampling method used in this study is a selective purposive (judgment) sampling from patient who were admitted in orthopedic center. On daily bases 3 to 6 lower limb amputee patients admitted in the rehabilitation center and their interview were taken according to the above-mentioned inclusion and exclusion criteria.

Data analysis:-

The data will be analyzed in a descriptive study method. The collected data will be sorted out and will be analyzed through available software (EPI info.). In order to increase the reliability of the validity of the data, triangulation will be applied.

Ethical considerations:-

The method that was used for collecting information of the patients did not require any ethical consideration.

The approved version of the protocol of informed consent forms (ICF), in English have been signed and stamped by ICRC orthopedic center for this study and were available. Every individual have been informed about objectives of this study research in order to avoid any false expectation or any misunderstandings events. Another informed consent letter prepared in local language, explained and signed by each individual of this study as well.

The research questionnaire does not represent any confidential information for the public.

Limitation of the Study:-

1. Some of the patients especially women were not exploring their views properly (cultural barriers).
2. The interview might create a false expectation. (some of the patients were feeling that this interview will be a profit project, however it was explained clearly at the beginning to them)
3. Interview with the women, required a female colleague to be accompanied with.

Result/ Key Findings:-

Hereunder the general study findings and specific satisfaction findings have been analyzed and inspected:

General Findings:

Age		
Characteristics	Number of patients	Percentage
(0-20)	10	27.70%
(21-40)	13	36.30%
(41-60)	10	27.70%
> 61	3	8.30%
Total	36	100%
Gender		
Characteristics	Number of patients	Percentage
Male	28	77.78%
Female	8	22.22%
Total	36	100%
Cause of amputation		
Characteristics	Number of patients	Percentage
Conflict/ IEDs	27	75%
Occupational	1	2.77%
Traffic accidents	1	2.77%
Other	7	19.50%

Total	36	100%
Level of satisfaction from service providers		
Characteristics	Number of patients	Percentage
Very happy	29	80.5%
Happy	6	16.8%
Un-happy	1	2.70%
Total	36	100%
Site of Amputation		
Characteristics	Number of patients	Percentage
Right	10	27.7%
Left	14	41.6%
Bilateral	12	30.5%
Total	36	100%
Types of service		
New case	22	61.11%
Repair/ Attendance	14	38.89%
Total	36	100%

In table and figure below the distribution of age groups, gender, and site of the amputation in the study is explained.

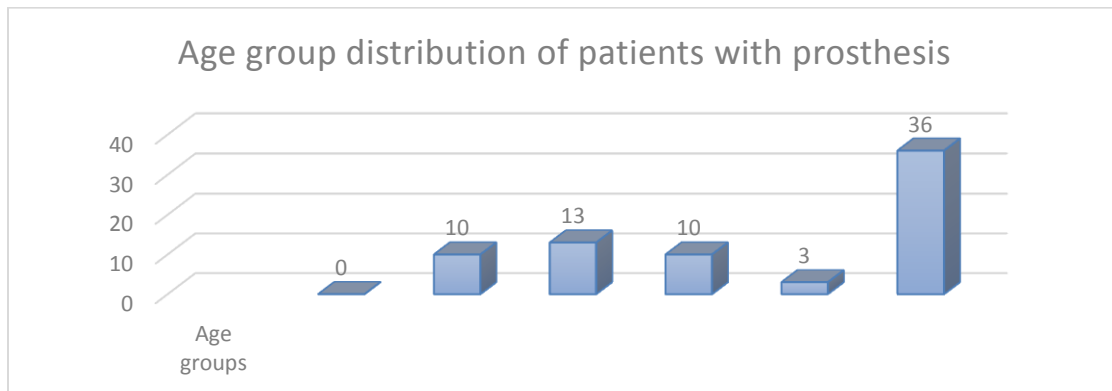


Table 1:-Individual Characteristics of amputated patients received Prosthesis based on the interview.

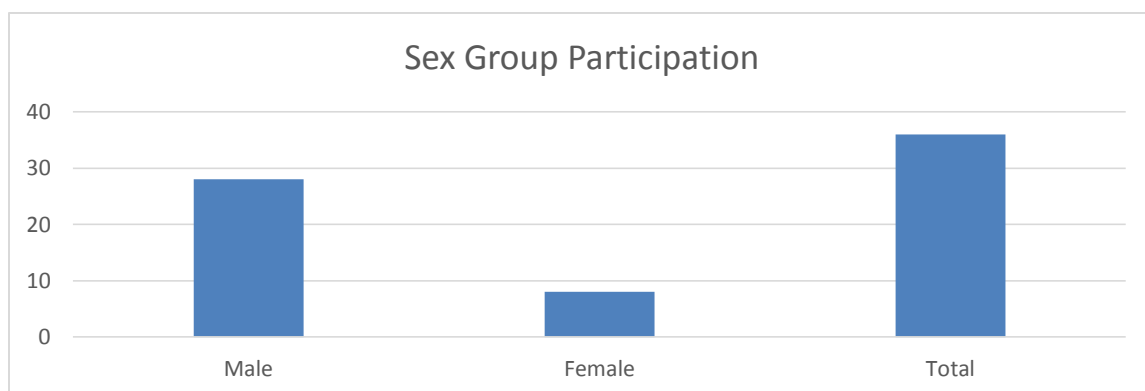


Table 2:-Sex group participation in the study.

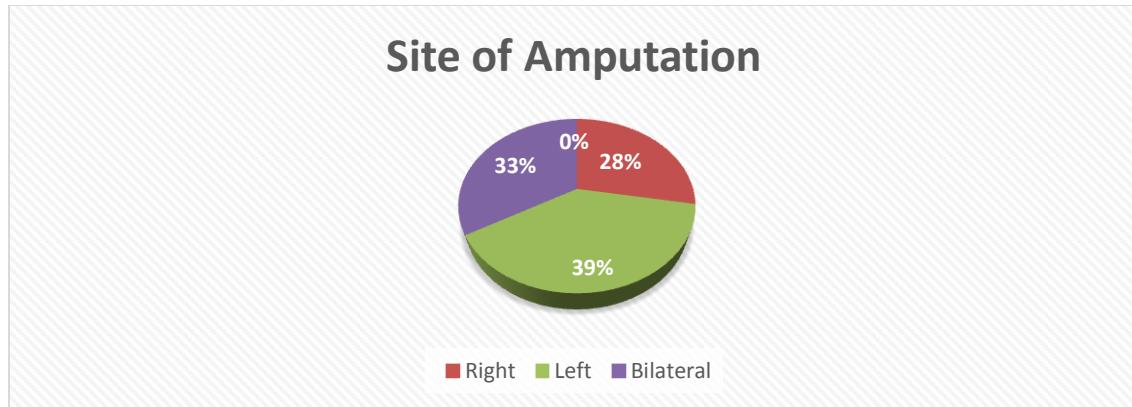


Table 3:- Site of Amputation in percentage

General question for Satisfaction of PMD: (Prosthetic Medical Device):

Characteristics of PMD	Number of patients	Percentage
How do you feel with your new prosthesis?		
Very happy	31	86%
Happy	3	8%
Moderately happy	2	6%
Unhappy	0	0
Very Unhappy	0	0
Total	36	100%
To what extent do you consider yourself active using the prostheses?		
Very good active	28	78%
Good active	5	14%
Moderately active	3	8%
inactive	0	0
Extremely inactive	0	0
Total	36	100%
What cosmetic effect created this PMD to your physical body?		
Very good effect	20	56%
Good effect	12	33%
Moderate effect	4	11%
No effect	0	0
Very Bad effect	0	0
Total	36	100%
Have you ever tried to do the household activities with your device and you failed?		
Never failed	23	64%
moderately failed	8	22%
Occasionally failed	3	8%
Badly failed	2	6%
Extremely failed	0	0
Total	36	100%

Specific finding of satisfaction with PMD: (prosthetic medical devices) according to individual specific characteristics .

<i>Frequency variable: PMD is free of abrasiveness</i>				
PMD is free of abrasiveness	Frequency	Percent	95% CI Lower	95% CI Upper
Strongly agree	23	63.89%	46.22%	79.18%
Agree	8	22.22%	10.12%	39.15%
Disagree	5	13.89%	4.67%	29.50%
TOTAL	36	100.00%		
<i>Frequency variable: PMD is durable</i>				
PMD is durable	Frequency	Percent	95% CI Lower	95% CI Upper
Strongly agree	29	80.56%	63.98%	91.81%
Agree	6	16.67%	6.37%	32.81%
Disagree	1	2.78%	0.07%	14.53%
TOTAL	36	100.00%		
<i>Frequency variable: PMD is pain free to wear</i>				
PMD is pain free to wear	Frequency	Percent	95% CI Lower	95% CI Upper
Strongly agree	22	61.11%	43.46%	76.86%
Agree	13	36.11%	20.82%	53.78%
Disagree	1	2.78%	0.07%	14.53%
TOTAL	36	100.00%		
<i>Frequency variable: Weight of OPMD is manageable</i>				
Weight of OPMD is manageable	Frequency	Percent	95% CI Lower	95% CI Upper
Strongly agree	31	86.11%	70.50%	95.33%
Agree	4	11.11%	3.11%	26.06%
Disagree	1	2.78%	0.07%	14.53%
TOTAL	36	100.00%		
<i>Frequency variable: Comfortable to use my PMD</i>				
Comfortable to use my PMD	Frequency	Percent	95% CI Lower	95% CI Upper
Strongly agree	30	83.33%	67.19%	93.63%
Agree	6	16.67%	6.37%	32.81%
Disagree	0	0	0	0
TOTAL	36	100.00%		
<i>Frequency variable: PMD Fits well</i>				
PMD fits well	Frequency	Percent	95% CI Lower	95% CI Upper
Strongly agree	28	77.78%	60.85%	89.88%
Agree	6	16.67%	6.37%	32.81%
Disagree	2	5.56%	0.68%	18.66%
TOTAL	36	100.00%		

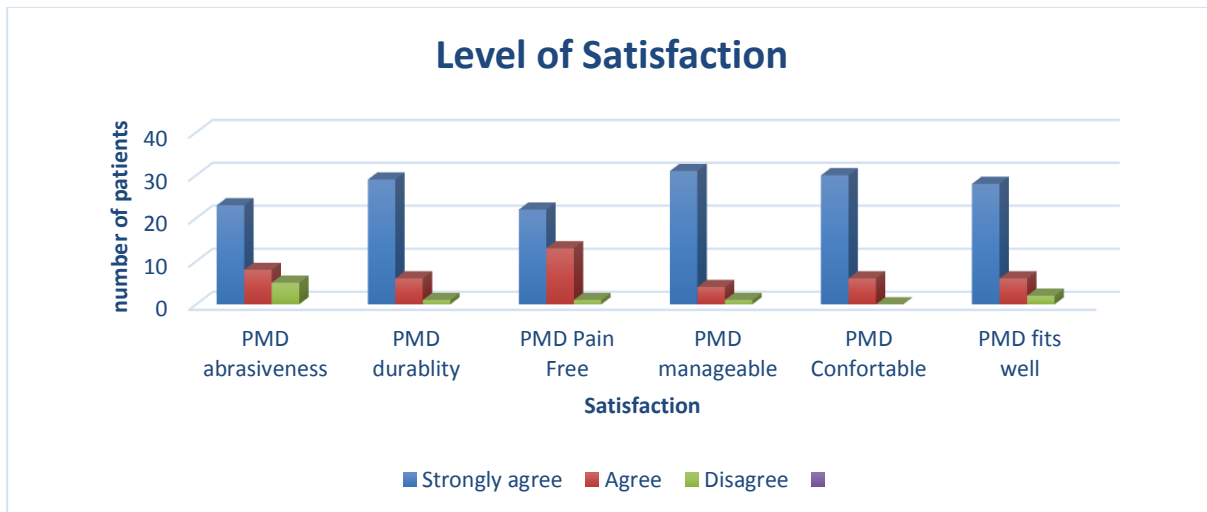


Table 4:-Level of Satisfaction with PMD

Discussion:-

As it was found in this study, majority of amputee patients are from the younger group of population in Afghanistan, Which affected the work-force of the country. Over (75%) of amputation occurred due to the on-going conflicts and planted IEDs. followed by occupational incidents (2.7%), Traffic incidents (2.7%) and other (diabetes, cardiovascular and burns 19%). See below chart:

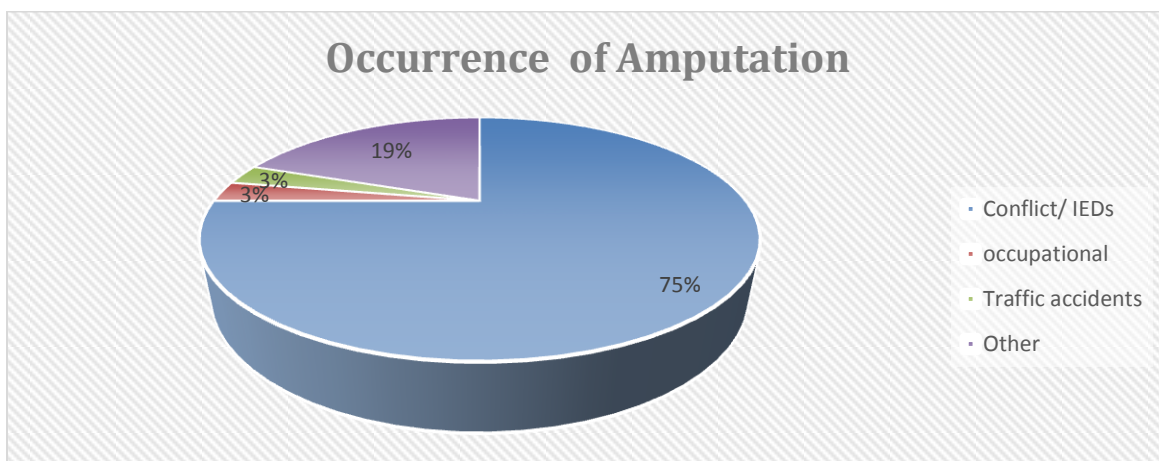


Table 5:-This pie chart illustrates the occurrence of amputations in patients.

Based on the findings of this study majority of the interviewed patients receive some amount of salary from Directorate of Labor, Social Affairs and Disabled and Martyred of the government and some INGOs, but this money is insufficient to fulfil their essential needs. Those who are the ANSF (Afghan National Security Forces) members received their salaries for some period of the time (six months to one year) and then it has been stopped or reduced.

Study findings on Satisfaction:-

Prosthesis Medical Devices (PMD) provided an indication of patient satisfaction in areas such as the weight, fit, durability, pain, abrasiveness, and comfort. It discovered that the weight and manageable of PMD gave the greatest patient satisfaction. Similarly, it revealed that the pain and abrasiveness of the PMD were characteristics that provided lower patient satisfaction, and therefore, are areas to improve in terms of the quality management of PMD by the health care facility. Identification of key areas in the management of quality will contribute to improving services and quality of life for patients. The areas of quality to improve could be the Weight of PMD, management of the wounds and pain on amputation site, physical exercise, and increase on duration of patient's admission at the rehabilitation center.

Conclusion and Recommendations:-

This study explored information on the rehabilitation satisfaction in ICRC Orthopedic center to relook their usual rehabilitation procedures and find out the gaps of the preformed devices. Furthermore, this research information will be beneficial to the governmental institutions and NGOs working in this field for their decision making and improvement of support of the disabled people in Afghanistan.

Psychosocial disorders are the main consequence of amputations which requires special attention and support besides the usual rehabilitation program. Majority of the patients appear to have more-less symptoms of psychological disorder and suffering from food security of their families. Those who are the only bread winners of their families especially the elderly members of the family, do really have concerns about the education, growth and development of their children due to lack of a proper financial support.

The following relevant recommendations are proposed in this study:

1. Disabled people require special attention and psychosocial support through involving several stakeholders for the support of disabled people.
2. Improve health sector response to disability, and merging disability as a main health problem in the current health system of Afghanistan. (Traditional bone makers are one of the main challenges of Afghanistan health system which their performance result a lot of unnecessary amputations that needs to be controlled)
3. Support employment and self-employment: as it is implementing at ICRC orthopedic center to train and recruit disabled people in the rehabilitation program the government should make policies and programs to facilitate the employment opportunities for the disabled people.
4. Advocacy and awareness-raising on government level to push for issues like implementation of policies, awareness-raising and prevention campaigns, health sector improvement, etc.
5. Abrasiveness and pain with the highest characteristics of problems for the amputee patients has to be reviewed and patients needed to be hospitalized for a longer period of time for recovery and wounds treatment.

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