Activity and participation at home and in the community for individuals using lower limb prostheses

A qualitative study conducted in Kiribati

Bachelor Thesis, 15 hp

MAIN AREA: Prosthetics and Orthotics

AUTHORS: Josefin Lång & Elin Svensk

SUPERVISOR: Nerrolyn Ramstrand

JÖNKÖPING 2018 June
Summary

Background: Kiribati has one of the highest rates of diabetes in the world. A major consequence of diabetes is amputation which creates a demand for prosthetic and orthotic services. It is well established that people with amputations who do not have access to a prosthesis experience difficulties with their mobility and participation in society. Aim: To describe activity and participation at home and in the community for individuals who have received a lower limb prosthesis in Kiribati. Method: This study is based on qualitative interviews using a semi-structured approach with seven participants from Kiribati who have been fitted with lower-limb prostheses. Recorded interviews were performed.

Results: The study yielded two main categories which led to the participants becoming more independent: the effect of mobility and the importance of relationships. Conclusion: Activity and participation increased in individuals who use a prosthesis as a result of diabetes type 2, compared to those who do not use a prosthesis. Prosthetic use contributes to increased mobility, which affects activity and participation, in turn leading to greater satisfaction in life. Caution should be taken with regard to these conclusions because the gender distribution did not meet the requirements for variation, making it difficult to generalize the results to the population.

Sammanfattnings

Aktivitet och delaktighet i hemmet och samhället för individer som använder sig utav protes - En kvalitativ studie genomförd i Kiribati

Bakgrund: Kiribati har en av den högsta prevalensen av diabetes i världen. En stor konsekvens av diabetes är amputation vilket leder till behov av protes- och ortos service. Svårigheter med mobilitet och delaktighet i samhället har visats för personer som är amputerade men inte har tillgång till protes.


Slutsats: Aktivitet och delaktighet ökade hos individer som till följd av diabetes typ 2 använder sig av protes, i jämförelse med dem som inte använder protes. Protesanvändning bidrar till en ökad mobilitet som påverkar aktivitet och delaktighet vilket leder till högre tillfredsställelse i livet. Dessa slutsatser skall dock tas med aktsamhet med anledning av att könsfördelningen inte mötte upp kraven på variation, vilket gör det svårt att generalisera resultatet till populationen.

Keywords: Developing countries, diabetes, Pacific Island countries (PIC’s), prostheses, participation, activity.
Table of Content

Abbreviations ........................................................................................................................................... 5

1 Introduction ................................................................................................................................................. 6

2 Background ................................................................................................................................................. 7
   2.1 Kiribati ..................................................................................................................................................... 7
   2.2 Health and Healthcare Kiribati .............................................................................................................. 8

3 Literature review ....................................................................................................................................... 8
   3.1 Diabetes and amputation in Kiribati ....................................................................................................... 8
   3.2 Prostheses in developing countries ....................................................................................................... 10
   3.3 How lower limb amputation affects activity and participation .......................................................... 11
   3.4 Theoretical connection ......................................................................................................................... 12

4 Aim .............................................................................................................................................................. 12

5 Material and Methods .............................................................................................................................. 13
   5.1 Study Design ......................................................................................................................................... 13
   5.2 Preunderstanding .................................................................................................................................. 13
      5.2.1 Trustworthiness ............................................................................................................................ 13
   5.3 Recruitment and Inclusion criteria ....................................................................................................... 13
   5.4 Interview and data collection ............................................................................................................. 14
   5.5 Data processing .................................................................................................................................... 15
   5.6 Ethical considerations .......................................................................................................................... 16

6 Result ......................................................................................................................................................... 16
   6.1 Outcomes of Mobilization .................................................................................................................. 17
      6.1.1 Active with prosthesis .................................................................................................................. 17
      6.1.2 Ability to work .............................................................................................................................. 18
      6.1.3 Feeling independent ...................................................................................................................... 18
      6.1.4 Activity limitations ....................................................................................................................... 19
   6.2 Importance of Relationships .............................................................................................................. 19
      6.2.1 Support from the surroundings .................................................................................................... 19
      6.2.2 Psychosocial factors .................................................................................................................... 20
      6.2.3 Providing for the family .............................................................................................................. 20
      6.2.4 Participate in community ............................................................................................................ 20

7 Discussion ................................................................................................................................................ 21
   7.1 Method discussion .............................................................................................................................. 21
      7.1.1 Study design and recruitment method ......................................................................................... 21
      7.1.2 Translation process and data collection ...................................................................................... 22
   7.2 Result discussion ............................................................................................................................... 24
      7.2.1 Demographic information ........................................................................................................... 24
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICF</td>
<td>International Classification of Functioning, Disability and Health</td>
</tr>
<tr>
<td>PICs</td>
<td>Pacific Island Countries</td>
</tr>
<tr>
<td>P&amp;O</td>
<td>Prosthetics and orthotics</td>
</tr>
<tr>
<td>TRS</td>
<td>Tungaru Rehabilitation Service</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>WHODAS 2.0</td>
<td>World Health Organization Disability Assessment Schedule 2.0</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Diabetes mellitus</td>
</tr>
</tbody>
</table>
1 Introduction

Diabetes type II is among the 10 most common causes of disability worldwide. Today there are over 400 million people around the world with a diabetes diagnosis and numbers are expected to increase. (International Diabetes Federation, 2018) A major consequence of diabetes is amputation which leads to a need for prosthetic and orthotic services (Lin et al., 2016).

Prostheses are assistive devices that facilitate mobility and may help to maintain or improve an individual’s function, participation and well-being (World Health Organization, 2017). Increased mobility leads to more involvement in everyday life and society (Magnusson et al., 2013, 2014).

There is a lack of studies with the aim to investigate activity and participation of amputees in Pacific Island Countries [PICs]. A qualitative study, conducted in Samoa by Nyqvist and Pettersson (2016), identified peoples’ activity and participation after an amputation. In their study they found that it is difficult for amputees who do not have access to a prosthesis to leave their homes and participate in society. In this study, we have followed-up the results of Nyqvist & Pettersson (2016) and described participation at home and in the community for individuals who have received a lower limb prosthesis. The data was collected in Kiribati, a country which has the same conditions as Samoa and the other PICs (Win Tin, Gadabu, Iro, Tasserei, & Colagiuri, 2013).
2 Background

2.1 Kiribati

Kiribati is an island state scattered over a large area along the equator in the Pacific Ocean. In 2016, the population of Kiribati was estimated as 114,395. Including the sea, the country covers 4,000 kilometers from east to west and 2,000 kilometers from south to north. It is one of the most isolated countries in the world. Kiribati consists of three island groupings: The Gilbert Islands, Phoenix Islands and Line Islands (see figure 1). Nine out of ten Kiribati residents live in the Gilbert islands and over half of the population live on the main island, Tarawa. (Swedish Institute of International Affairs (UI), n.d.)

The social life in Kiribati revolves around the extended family and maneaban, which is the house that represents the gathering place in each city. The people of Kiribati are used to sharing things and spaces and working together in the community. Ties to family and the homeland are important and the ability to participate has a major role in the culture. (Swedish Institute of International Affairs (UI), n.d.)

The United Nations [UN] classifies Kiribati as one of the world’s least developed countries. A large part of the population lives from what nature provides. Kiribati’s most important asset is the sea. But this asset also poses a serious threat: rising sea levels mean that most of the country will become uninhabitable within a few decades. (Swedish Institute of International Affairs (UI), n.d.) The inhabitants of Kiribati refuse to think that their home country is going to disappear. They value, and are very proud of, their traditions. (Warne, 2015) “They do not think of themselves as “sinking islanders,” rather as descendants of voyagers, inheritors of a proud tradition of endurance and survival.” (Warne, 2015).

Figure 1 - The map shows the location of the Republic Kiribati and the island Tarawa (circled in red) where the study was collected (Viney et al., 2015).
2.2 Health and Healthcare Kiribati

Healthcare facilities in Kiribati are limited in terms of quality and accessibility (Commonwealth of Nations, 2018). The health sector in Kiribati is facing major challenges with a rapidly growing population that is putting pressure on an already exposed healthcare system, as evidenced by problems such as limited bed capacity, lack of trained staff and shortage of medical equipment. There are thirteen local health centers around the islands and four hospitals, one of which is in Nawerewere, South Tarawa, and which provides medical service to all islands. Healthcare and medicine are free but the distance between the islands makes it difficult for everyone to access these services. (World Health Organisation - Western Pacific Region, 2017)

The rehabilitation clinic in Tarawa, Tungaru Rehabilitation Service [TRS], is the only multidisciplinary rehabilitation clinic in Kiribati. The clinic has now been operational for 14 years, providing prosthetic and orthotics, physiotherapy, and wheelchair services. Access to these services gives individuals who have undergone a lower-limb amputation a greater opportunity to participate in society. (ISPO Australia, n.d)

3 Literature review

3.1 Diabetes and amputation in Kiribati

The Pacific islands, including Kiribati, have one of the highest prevalence of diabetes in the world (Lin et al., 2016). Globally, the age range with the most people with diabetes is 40-59 years of age. 79% of adult diabetes sufferers live in low-middle income countries and diabetes rates are increasing in most countries. (International Diabetes Federation, 2018) In 2016 the prevalence of diabetes in Kiribati was ≈22%, distributed almost equally between the sexes (21.7% males, 22.2% females). Over the past 30 years the prevalence has grown approximately 14% (World Health Organisation, 2016).

Diabetes most commonly affects the peripheral nerves in the foot. Destroyed nerves can lead to impaired or no feeling. If the person does not have any feeling it can be major problem as injury can go unnoticed, which can lead to wounds, severe infections and, in some cases, amputation. (International Diabetes Federation, 2018) The most common cause of nerve damage (>63%) causing foot ulcers to occur is neuropathy. It has been estimated that a person with diabetes has a 25% higher risk to develop a foot ulcer then people without diabetes. (Win Tin, Gadabu, Iro, Tasserei, & Colagiuri, 2013)

In a report by Smedley (2012), the author stated that climate change and a growing population are having a large impact on the prevalence of diabetes. Climate change is forcing people to migrate and fast migration leads to food shortage. Only 3% of the greenhouse gas emissions come from the world’s poorest people but they are the ones who suffer the most devastating impacts of climate change. Small island states like Kiribati are at an especially high risk. At the same time, climate change leads to extreme weather, which destroys plants and crops. Urbanization leads to more obesity and sedentary
lifestyles with diabetes. (Smedley, 2012) In Kiribati, 66.5% males and 78.2% females are overweight, a statistic that contributes to the high level of diabetes (World Health Organisation, 2016).

Physical activity has the ability to decrease diabetes and increase self-esteem, body image, social functioning, mood and physical fitness (Eyre, Kahn, & Robertson, 2004). Baumann, Tchicaya, Lorentz and Le Bihan (2017) have identified a relationship between cardiovascular risks and diabetes, obesity and physical inactivity, and satisfaction with life. They found that life satisfaction decreases with the appearance of obesity and physical inactivity (Baumann et al., 2017). Conversely, higher physical activity levels have a positive impact on life satisfaction, and this differs between genders, as males are more engaged in physical activity than females (McDonell et al., 2011).

In Kiribati, there is no documentation on how many individuals are amputated due to foot ulcers. Physiotherapist T. Tamaroa (personal communication, April 5th 2018), who work at the only prosthesis clinic in Tarawa, explains that almost all amputees they see at the clinic are amputated because of an infected foot ulcer. This correspond with a study from Win Tin et al. (2013), where they identify factors that cause amputation in the PICs. In their study, 58% of the participants say that their cause for amputation is failure of a wound to heal and 32% indicate that they were amputated due to an infected wound (Win Tin et al., 2013).

If diabetes rates continue to increase as predicted in the PICs, it will have a major impact on families and society, in particular on the healthcare system, which will suffer from overpopulation and increased costs. An action plan on preventing and treating the problems with diabetes can instead lead to a reduction of amputations (Win Tin et al., 2013).

The organization Motivation Australia, in partnership with the Ministry of Health and Medical Services, have contributed to a strategy for a Diabetic Foot Clinic in Kiribati, where they try to heal foot ulcers and avoid amputations. Over an eighteen-month period they have sought to raise the knowledge of staff and the general population. The goal of the work is to reduce the number of diabetic related amputations annually from 90 (2011) to 68 (2019). (Motivation Australia, 2018)

Last year (2017) 106 individuals were amputated due to diabetes in Kiribati (Health Information Unit, 2017).
3.2 Prostheses in developing countries

Prostheses are assistive devices that facilitate mobility and which may help to maintain or improving an individual's function, participation and well-being. In most low-income countries, only 5-15% of those who would benefit from access to assistive technologies have access to them, even if the right to access aids is a prerequisite for equal rights and it has been established as a standard rule within the UN. (World Health Organization, 2017)

Parnes et al. (2009) has concluded that, to provide people with prostheses in developing countries, it is important to find the appropriate procedure, so the prosthesis can fit with a person’s lifestyle, surrounding and type of living. He also says that a lack of information about what a rehabilitation and prosthesis clinic provides can be a major problem as families need to undertake significant research themselves, which may extend the time to get a prosthesis after an amputation, sometimes by years (Parnes et al., 2009). Lindgren (2010) undertook a qualitative study of prosthesis users in Vietnam, interviewing twenty persons with prosthesis and concluding that they and their families struggle to afford prostheses even if they are free as they need to pay for transport to the prosthetist and sometimes accommodation while awaiting service delivery.

In a study by Jensen et al. (2005, 2006), the median time of using a prosthesis in developing countries was estimated to be 14-15 hours/day, and most participants used the prosthesis even if they might not be fully satisfied. In a study carried out in Malawi by Magnusson et al. (2013) a lot of patients expressed that they experienced pain while walking with their assistive devices and over half of devices were in need of repair. Despite this, the patients were very satisfied of the help they received and quite satisfied with their given device. Even if the prosthetic users were not completely satisfied with their prostheses, they were widely used. (Magnusson et al., 2013, 2014)
3.3 How lower limb amputation affects activity and participation

Due to mobilization difficulties, it has been concluded in a study conducted in PICs by Nyqvist and Pettersson (2016), that individuals who have undergone an amputation but not received a prosthesis find it difficult to attend and participate in community activities, such as going to town or church with their families. As the individuals with lower limb amputation have problems with mobility, they cannot work or perform household chores, which leads to difficulties in providing for their family. The authors interviewed individuals who had undergone an amputation due to diabetes type II. The participants explained how their environment forces them to spend whole days indoors. They depended on their families to help them in most situations, including going to the toilet, cooking and other self-care activities. Some of the participants were accepting of their situation while others wanted to be able to do the things they could do before the amputation. (Nyqvist & Pettersson, 2016)

Kelly & Dowling’s article from 2008 identifies a loss of function, sensation, body image and reduced balance in clients with lower limb amputation as factors that can cause individuals to avoid certain activities and lead to a loss of self-esteem that affects quality of life. The results in Kauzlaric, Kauzlaric, and Kolundzic review from 2007, confirm that prosthetic rehabilitation has a positive influence on the use of prostheses, mobility and in accomplishing activities independently, which are essential for the individual to reintegrate with the family and community.

Roepke et al., (2017) investigated and identified categories of social participation valued by individuals one year after their first dysvascular lower limb amputation. They identified two sides of social participation, social participation and satisfaction with participation. “Individual’s social participation may be influenced by physical and cognitive factors, whereas their satisfaction with participation may be influenced by psychosocial factors.” (Roepke et al., 2017). The study concluded that managing finances, maintaining close friendship and visiting loved ones are the most valued aspects of social participation among the participants. Better baseline mental status, mobility and lower amputation levels were related to higher levels of social participation and better social support from the surroundings, leading to higher satisfaction with participation. Roepke et al., (2017) suggest that rehabilitation specialists consider both sides of social participation when preparing goals for rehabilitation.

Amtmann, Morgan, Kim, & Hafner (2015) conclude that satisfaction with social roles, physical function and pain interference are generally worse in individuals who have lower limb loss, where the dysvascular amputations are more at risk than the individuals with traumatic amputation. That is a noteworthy reason for investigating how individuals with amputation and prosthetic use due to diabetes experience their situation (Amtmann, Morgan, Kim, & Hafner, 2015).
3.4 Theoretical connection

The purpose of International Classification of Functioning, Disability and Health [ICF] is to provide a scientific basis for understanding and studying health and health-related states, both in terms of consequences and determinants. It also serves to create a common language for describing health and health related states to improve communication between different users such as healthcare professionals, social service staff, researchers, politicians, and the general public, including people with disabilities. The domains that were relevant for this study were activity and participation. Activity is defined as a person’s implementation of a task or action. Activity limitation occur when an individual has difficulty implementing activities. Participation is engagement in a life situation and participation restriction are problems that a person can experience regarding involvement in life situation. (World Health Organization, 2001)

Most prosthetics research is focused on body function and activity and little attention has been given to participation. Jarl and Ramstrand (2017) have developed a model for lifting participation into prosthesis field. They proposed a model which defines the clinical prosthetics and orthotics [P&O] process. The model is called the Prosthetic and Orthotic Process and is based on the ICF. The main goal of P&O interventions, for example a prosthesis, is participation and a key to reaching participation is by accomplishing activities-related goals. (Jarl & Ramstrand, 2017)

The World Health Organization (2001) describes the environmental factors that significantly affect participation, prostheses are a factor that is classified as environmental, and it can assist or be an obstruction. A clinical evaluation of an intervention should not only be from a biomechanical point of view, but should also assess improvements in how a person lives their life (Jaini & Lee, 2015).

There are different strategies for measuring participation. The World Health Organization Disability Assessment Schedule 2.0 [WHODAS 2.0] is an instrument for health and disability that is directly linked to ICF. It covers six areas of functioning, including activity and participation. WHODAS 2.0 can be used to investigate variances between groups, types of diseases and health conditions, across cultures, ages and sexes (World Health Organization, 2017). Ustun et al., (2010) describes the development of WHODAS 2.0 and concludes that it has the potential to serve reliability and validity to evaluations of functioning and disability for primarily the areas, activities and participation of the ICF. WHODAS 2.0 is capable of evaluating the effectiveness of an intervention after being used, for example, in clinical research settings. “…it can generate information of use in evaluating the effectiveness of interventions to reduce disability and improve health.” (Ustun et al., 2010)

4 Aim

To describe activity and participation at home and in the community for individuals who have received a lower limb prosthesis.
5 Material and Methods

5.1 Study Design
This study was conducted between March and May 2018 and was based on qualitative interviews. The interviews were conducted using a semi-structured approach, which means that all participants were asked the same questions and every participant was given the opportunity to talk freely based on the questions. The order of the questions was not strictly followed; it varied depending on the situation. So as to describe participants’ thoughts and feelings within an activity, a qualitative and phenomenological approach was considered the optimal choice. This approach is suitable for studies that seek to understand how individuals and groups experience different phenomena. Detailed descriptions and interpretations from the participant can be presented through a qualitative study. (Skärvad & Lundahl, 2016)

5.2 Preunderstanding
The authors had basic knowledge about diabetes type II and its impact on a person’s life. To get more knowledge about people who live in developing countries and especially Kiribati, the authors resided in the country for a week before the study started. During that week, they attended the clinic and events in society to increase their understanding and awareness of the local culture. Despite this week, the authors did not have full knowledge of the culture. Accordingly, open questions were asked to reduce the risk of misunderstanding in terms of culture and lifestyle. (Polit & Beck, 2017) The authors used individuals from the staff in TRS to pilot test the questions. They also made sure that the questions were acceptable from a cultural perspective.

5.2.1 Trustworthiness
The procedures that are used to generate the findings in this qualitative study must be evaluated and should be as trustworthiness as possible (Graneheim & Lundman, 2004). For developing the trustworthiness of a qualitative study, Lincon and Guba (1985, referred in, Polit & Beck, 2017) have suggested four criteria: credibility, dependability, confirmability and transferability. These categories symbolize the criteria of external validity and internal validity, reliability and objectivity. Trustworthiness should be viewed as one variable even though credibility, dependability, confirmability and transferability are used to describe various aspects (Graneheim & Lundman, 2004).

5.3 Recruitment and Inclusion criteria
Participants was recruited through the prosthetic clinic, TRS, located in Nawerewere, and in collaboration with contacts already established. No database with information more detailed than a list of those who have received amputations existed, but individuals working at the P&O clinic in Kiribati assisted the authors in this matter. They chose the participants, both men and women, from what they knew about their patients based on the inclusion criteria.
The inclusion criteria required that participants must: be above 20 years of age, have diabetes type II, have a unilateral lower limb amputation, use a lower-limb prosthesis, and have the cognitive ability to understand the purpose of the study and answer questions. Individuals with additional health complication were excluded from the study. Our inclusion criteria provided some evidence that gave the result in the study a bigger chance to transferability. (Lincon and Guba 1985, referred in, Polit & Beck, 2017)

5.4 Interview and data collection

Before the interview started, the authors were well prepared. To collect the data, an interpreter was used to translated between English and I-Kiribati. With semi-structured interviews the samplings can be small but the goal is to collect enough data of sufficient depth such that no more information is required. (Polit & Beck, 2017)

Confirmability determines that the data represents the participants and that the interpretations of this data is not provided by the interviewer (Lincon and Guba 1985, referred in, Polit & Beck, 2017). We took several steps to ensure that the outcome reflected the participant’s information and not the interviewer’s or interpreter’s perspective. The interpreters were orally informed about the aim of the study, instructed why and how the questions would be asked in a certain way and to translate exactly what the participant said, and were introduced to read the informed consent.

To reach the participants, the authors undertook home visits. A well described interview guide was used to collect data and give constancy to the study. All interviews started by letting the participant know what the study was about, both in writing and orally. Then they answered some basic information questions for which the English version of WHODAS 2.0, section one and two was used. After that, open questions and some following up-questions were asked, implemented from different ICF components and the study from Roepke et al., (2017). Since this study was a follow-up study on Nyqvist and Pettersson (2016), we used similar questions. These factors affect the dependability of the study; the results of the study will be repeated under the same or similar conditions and participants (Lincon and Guba, 1985, referred in, Polit & Beck, 2017).

Credibility refers to the trust in the truth of the data and the interpretations of them (Lincon and Guba 1985, referred in, Polit & Beck, 2017). To accomplish credibility the collection of data was carried out by both authors in all cases. One author was leading the interview with the participant and the other took notes and followed the interview carefully to make sure nothing was missed. In this way, two interviewers can get more important and deep information (Skärvad & Lundahl, 2016). The authors used follow-up questions when a response had potential for development and to clarify that we had understood the participant correctly during the interview.

Due to the time and size of this study, there was a small sampling of participation. Previous experiences and knowledge from the authors have a contributing effect. However, as per Polit & Beck (2017), a small sampling with good interview quality is recommended for beginners in qualitative research, as was the case here. There were seven participants included in this study.
5.5 Data processing

During the interview the data was recorded to make sure that all the information represented the participants and no data was missed. After that, the authors transcribed all recorded material. To reach a higher level of confirmability, the first author listened to the other author’s material and read the transcript to detect possible misses. The transcribed material was thoroughly reviewed by the two authors. The purpose was to get a larger overview of the contents and to put together the data from both authors into one. After that all the personal information about the participants was removed. A qualitative content analysis was performed on the transcribed material.

The transcribed were analyzed to identify differences and similarities in the material. The transcribed material was broken down into meaning-bearing units. These sentences were condensed into shorter sentences and then abstracted into a code that described the content of the meaningful unit. To lift the content into a higher level, codes with similar content were grouped into sub-categories and all sub-categories were transmitted into two main categories. From our transcribed material, our sub-categories were clarified to produce the subheadings in the result of this study. Below is an analysis example of each created subcategory (see table 1). (Graneheim & Lundman, 2004)

<table>
<thead>
<tr>
<th>Meaning unit</th>
<th>Condensed meaning unit</th>
<th>Code</th>
<th>Subcategory</th>
<th>Main category</th>
</tr>
</thead>
<tbody>
<tr>
<td>That’s a , priority, is to keep fit, to I have to pumping water for the family.</td>
<td>.....my, priority, is to keep fit... have to pumping water for the family.</td>
<td>I have to keep fit to support my family.</td>
<td>Providing for the family</td>
<td>IMPORTANCE OF RELATIONSHIPS</td>
</tr>
</tbody>
</table>

Table 1 - Examples of the data analysis process.
5.6 Ethical considerations

To implement this study in Kiribati we received a filming and research permit from Ministry of Foreign Affairs & Immigration. The supervisor at Jönköping University has also approved an ethical considerations form.

Before the interview started all participants got information about the study in their native language and written informed consent were provided by all participants. These forms were developed with consideration of different ethical aspects described by Beauchamp & Childress (2009). The participants were treated confidentially. All information was kept in a secure manner to ensure that no one else could get access to it. Data were described on group level so that no individual person could be identified. The individuals were not subjected to mental or physical injury or violation and the information was used for research purposes only. The authors in this study ensure that the participant knew that they could chose to stop the interview at any time, if they did not want to answer a question and that participation is voluntary. If the participation agreed with participation they signed an Informed Consent.

6 Result

Two females and five males with a mean age of 53 years (47-64 years) were included in the study. When the interviews took place, the participants had used their prostheses for a mean period of 2.4 years (1 month-11 years). The mean waiting period for a prosthesis after amputation was 9.7 months (3-24 months). From the qualitative data, eight sub-categories were created, which gave rise to two main categories. A single theme emerged to describe the underlying meaning of the data (see table 2). Quotes from the participants are used in the results below to illustrate each sub-category.

<table>
<thead>
<tr>
<th>Theme</th>
<th>THE IMPACT OF PROSTHESES ON EVERY DAY LIFE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Category</strong></td>
<td>Outcome of Mobilization</td>
</tr>
<tr>
<td><strong>Sub-Category</strong></td>
<td>Active with prosthesis</td>
</tr>
</tbody>
</table>

Table 2 - Shows the resulting sub-categories, main categories and the theme.
6.1 Outcomes of Mobilization

The use of prostheses allowed participants to become more mobile. This was a significant factor in facilitating participation and activity, which affected participants’ satisfaction with life. Mobility gave participants the ability to be active and participate, which lead to participants gaining independence.

6.1.1 Active with prosthesis

The participants stated that their prostheses helped them to activate themselves. Some described how easy it was to just put on the prosthesis and go without hesitation. The prosthesis was considered as an essential means for enhancing mobility promoting activities such as walking and using public transport.

’Now...when I want to go to neighbors I just put on my leg and go.’

’...I walk with my prosthesis even in the night... if it’s too far I catch the public bus...’

’I use my prosthesis to go and play the bingo game in the other places. It’s quite far but I can walk...even if it’s twelve at midnight.’

The activities depended on the period of time that the participant had used their prosthesis. The participants who had used their prosthesis for a shorter period used them to walk but relied more on others to do housework. The participants who had used their prosthesis for a longer period had higher activity levels and experiences of people telling them that they are too active.

’At the moment I cannot do the housework’s... I just focus on the exercise...and walk with the prosthesis.’

’I...try every day and then I...know how to use it and I walk a lot...I can run a little bit...the old ladies...I walk more faster than them.’

Compared with the life they lived after the amputation and before they got their prosthesis, they expressed that the prosthesis made it easier to be active. One participant expressed that it made life easier.

’...life is easier with the artificial leg.’
6.1.2 Ability to work

The ability to work was important for most of the participants and the prosthesis is seen as essential to being able to work. Two of the participants worked every day at the same place of work as they had before the amputation, and one planned on returning but needed to recover and get better on walking with the prosthesis.

‘...I need to recover... able to use the prosthesis as much as I can... to walk... so I can continue my job.’

Most of the participants were retired but they did some small jobs at home like cleaning and feeding pigs. All the participants who described that they could perform any kind of work, either at home or at work, added that they only did small tasks.

‘... I just walk around inside the house, and do work things...’

‘Cleaning the house... just small work. Like not very heavy. ... I work from 8-4 o'clock...’

6.1.3 Feeling independent

Independence was a factor that the participants returned to throughout the interview. The ability to choose and do what they want, whenever they want, was highly appreciated and linked to having a prosthesis. They expressed satisfaction with their prosthesis by explaining that they had freedom.

‘...I really satisfied with my prosthesis because I can go anywhere every time...’

‘I'm very satisfied...I remain working and I can...go wherever I wants and do whatever I want.’

‘...If I get boring I just go to relatives...I just go and join...but most of the time I just prefer to stay at home. Not meaning I that I have a problem, I just want to stay home.’

If a problem was occurring with the prosthesis, the participants found other solutions to stay independent. Some did seek help to solve the problem, but others found other ways to do what they wanted to do, such as using crutches. Participants did not want to see the amputation as a disability, and independence was a factor that removed existing restrictions.

‘...important for me is just to ignore that I got a disability... want to enjoy my life rather than staying at home...go hanging around with friends and whatever I want...’

‘...the...I want to work as normal, independence.’
6.1.4 Activity limitations

When analyzing the data, a pattern of factors was observed that prevented participants from performing certain activities. Restricting factors that were consistently mentioned were fatigue, pain and fear of falling, especially if something should be carried.

‘I can’t...carry...my laptop...I’m afraid...to lose balance and fall.’

Participants explicitly responded that fatigue was an issue. Participants stated that long walks that they had previously undertaken were impossible after the amputation.

‘...I want to do like I used to...go on walks...but I can’t do that because sometimes...I get tired...pain sometimes...’

6.2 Importance of Relationships

Relationships are important for a number of reasons for participants. They described that they need physical and psychical support from both the environment and other individuals in their surroundings. The ability to provide for their families and participate in the community were stated as two of the most important aspects of life.

6.2.1 Support from the surroundings

All the participants described that they need some kind of help in their everyday life. Most of them pointed out a special need for help with self-care, because in their daily life they need to carry water and pour it over their body to take a shower.

‘...the son has to carry...big heavy things for me...carry water...I have to ask them to...do that for me’

‘...wife and kids they help me...there are things I can do by myself...but, whenever I go to the shower...they come with me....’

Family and friends are mainly the ones who help the participants in certain situations: to maintain balance, be driven to work and help to stand up after sitting on the floor. One participant also described needing a chair to climb up to their house.

‘I cannot climb easily...there’s no chair I cannot get off my house...I will fall’

When the inhabitants in Kiribati grow older, tasks are reduced and younger family members take greater responsibility in everyday life. As such, assistance with chores such as cooking and cleaning were not always considered as due to the prosthesis.

‘As you grow older...your work is getting less...I get, watering gardens and feeding pigs...’
6.2.2 Psychosocial factors

Involvement with other people and friends was crucial for participants. Maintaining friendships, improves participants’ confidence and self-esteem, which influences quality of life.

‘Involving with...other people help me to build up the confidence and like self-esteem...it also help me to reduce...that I already disabled...Involving with other people give me more encouragement.’

‘I just want to enjoy my life. ...if I want to visit friends I can go because I have the leg... if I want to join... I just go...’

6.2.3 Providing for the family

Health was described as important to being able to provide for family. Some of participants stated that controlling diet and staying fit was the most important thing in their life because keeping healthy allows them to support their family.

‘...my, priority, is to keep fit... have to pumping water for the family.’

‘...the most...important thing is my family... and... control my diet so I can stay more healthy.’

The female participants mostly provide for their families by taking care of their children or grandchildren. Money was also a big part, especially for males who described that they wanted to support the family with money, which was the outcome of work.

‘...my job is very important... need the money to get whatever I want. And to support the family...’

6.2.4 Participate in community

An important part in the participants’ life is to participate in the community. They are active in different kinds of gatherings: at church and work, and with neighbors and family.

‘...I always pray... During the Sundays, I go and join the church function. I n ever miss... a function.’

‘Involve in...my working place activity...I just join the community...’

‘...I like to be involved in a lot of things...I have a really active wife...I... work with her...’

Kiribati culture influences this matter, as it is common in Kiribati for men to be part of a group of “fishermen” who go out fishing every day. The men also climb trees to get coconuts and build houses. These are activities that the participants can no longer do and which they now miss.

‘...In our culture our main food is fishing...most of the men will do fishing...I stop fishing’

‘I really want to do fishing and build...my own house...but I can’t’

‘...just like fishing...that’s the main thing I want.’
7 Discussion

This study has given a new insight into how prosthesis use affects activity and participation. The interviews revealed that the prosthesis allowed a more active lifestyle but limitations remained that individuals could not overcome. The following discussion will contain a method and result discussion followed by future research. The method section will discuss issues regarding the applied method. The main findings of the result will be discussed in the result section. Throughout the discussion selection, trustworthiness will be generally considered.

7.1 Method discussion

7.1.1 Study design and recruitment method

As the aim of this study was to describe activity and participation, the authors sought to collect data that would describe that phenomena. It is important that all participants are able to describe how it is to live with the experience of the investigated phenomena, and that all participants have in fact experienced the same phenomenon. When this is the case, a small sampling (i.e. ten or fewer) is acceptable. (Polit & Beck, 2017) Accordingly, taking into account the authors’ relative inexperience in qualitative research, the samplings of seven participants seemed acceptable for this kind of method. Section one and two from WHODAS 2.0 provided a good structure to document the quantitative data from the participants. This gave the authors the opportunity to observe the variety of participants. Even if the questions were pilot tested a disadvantage was that some questions were hard to understand, requiring the authors to repeat the question.

The authors chose to perform the interviews in locations that were convenient and comfortable for participants, such as in their homes or place of work. This choice came with both advantages and disadvantages. Trost (1997) emphasizes the importance of choosing an environment that is calm and undisturbed, and where the participants can feel safe and relaxed. There is an asymmetric relationship between the interviewer and the participant that can be neutralized in the participants’ home where they feel secure. A disadvantage can be that such places may not necessarily be calm and undisturbed. (Trost, 1997) This was noticed in some of the interviews as the participants tended to live in open houses with their family close by. On the other hand, the researchers’ workplace made the asymmetric relationship more pronounced. Another advantage with performing the interviews in the participants’ homes was that it gave the interviewer more information than just that provided in participants’ answers, as they could see the participants in their natural home environment. The participants also had the freedom to choose where the interview was held, in what room, around a table or on the floor. The experience of having a foreign person in the private sphere can be an intrusive one. (Trost, 1997) The authors sought to mitigate these feelings by meeting the participants and setting up a time for the interview to take place with the participants. This allowed the participants to prepare for the visit, but it was unfortunately only performed with three out of seven participants. The other four participants were asked at the interviews if they would like to participate in the study.
7.1.2 Translation process and data collection

To complete the study, interpreters were necessary because only two participants could speak fluent English. When the first interviews took place one interpreter was used. The idea was to conduct all interviews with this interpreter, but it later turned out that the first interpreter was going to travel away and was unable to participate in further interviews. The optimal choice would have been to have one interpreter throughout the study to get the same interpretations, which would increase dependability and credibility (Wallin & Ahlström, 2006). Due to time pressure, it was not possible to wait until the interpreter was back. In any event, using only one interpreter posed the risk of fatigue and boredom, which increases the risk of abbreviations and summaries, which in turn is a threat to validity (Kapborga & Berterö, 2002). Both interpreters were fluent in both I-Kiribati and English, and shared the same culture as the participants. The interpreters could make the participants feel safe and gain trust, which is important for ethical reasons but also leads to more validated and reliable data collection (Kapborga & Berterö, 2002). An advantage of using interpreters from the TRS clinic is that they are familiar with the subject and with terms like ‘prosthetic’ and ‘orthotic’, which made the translation easier, but this was also a disadvantage where they had a relationship with the participants’ through the clinic. To reduce the risk of the participants being influenced by the relationship with the person from the clinic, the authors clarified that the person from the clinic was present as an interpreter only. Since the authors neither spoke nor understood I-Kiribati, they did not have full control over the data collection, which reduced reliability. But this was unavoidable as interpreters were necessary to undertake the study.

The psychological impression a person gets of another within the first two seconds of a meeting lasts for at least four minutes. Thus, a bad first impression lasts for a long time. The impression is first and foremost interpreted per your appearance. According to research, patients get a more positive picture of their carers if they look neat, clean and professional. (Guilliana & Baum, 2011) The authors wore clean and uniform clothing during the interviews, pants or long skirts and professional t-shirts from the School of Health and Welfare. A good approach also includes carefully listening to your subject, both to the words but also the feelings expressed through them. To be able to reflect a participants’ feelings through follow-up questions is a first building block toward credibility and trust.

Communication is a well-known problem that you need to practice on to be better; more communication errors may occur if one is newer in the area. (Guilliana & Baum, 2011) There was a great variety of quality and quantity in the interviews, with some participants providing longer answers than others. If the interviews were longer and more intense, and if the authors had more experience, the interviews could generate richer data (Polit & Beck, 2017). As the authors had little knowledge in interviewing, both were present during all interviews. The advantage of two interviewers was that they could capture more aspects of the interview and help to follow up on various issues. Sometimes one author would continue to ask supplementary questions in one area while the other tried to move on to the next question. The interaction between the authors improved after just a few interviews, and each was designated a predetermined role in which one would lead the interview
and the other focused on follow-up questions and noted significant things such as mood and answers that were particularly relevant for the aim of the study.

There is a risk that one interviewer ends up in a subordinate role and that status differences are exacerbated over time. But the advantage is that it can be easier for participants to have two interviewers when trust has not been established. Being eye-to-eye with one unknown person can be a more difficult experience than two unknown people, because there are three parties who can talk to each other. (Trost, 1997) The authors found that the fourth person, the interpreter, was a safe point for many of the participants during the interview.

In order to record the interviews, the authors used a Dictaphone. The advantage of recording the interview is that it captures the character of a conversation and it provides the authors with the freedom to concentrate on what the participant says and how the conversation should proceed. After the interview, there is an opportunity to listen to the conversation that can be reproduced verbally and the contents of some non-verbal expressions. In addition, the authors are given the opportunity to hear their own mistakes, enabling reflection and future improvements. If there are a couple of interviewers who conduct interviews, sound recordings are necessary for those who analyze the interviews, to listen and thereby get a feel for the material. The disadvantage of sound recordings is that it may make it difficult for the participant to feel relaxed, which may lead to a worse interview. But most participants forget about the Dictaphone after the start-up questions. Recorders can be problematic in noisy environments, and if the interviewer relies only on the Dictaphone, a poor recording may cause problem in the analysis as much information may have been lost. (Trost, 1997)

The authors split the recorded material and transcribed them separately. Then the transcripts were listen and read through by the other author fore reduce mistakes. After that they performed a qualitative content analysis on the material. The content analysis involves a balance between the researchers own perspective and the truth of the text. As soon as the analysis begins there is a communication present between the text and the researcher. The meanings created by the recordings were a product partly of how participants expressed words, laughter, sighs, silence and gestures, as these factors may have an influence on the underlying meaning. When creating the meaning-bearing units from the transcribed material it is important to begin and end the meaning unit in a way that maintains both the latent and manifest content. The selection of the most suitable meaning unit is a critical point for reaching credibility. The unit cannot be too broad or narrow as it can result in difficulties in creating codes through which to describe the content of the meaning unit. (Graneheim & Lundman, 2004)

“Since the researcher is often the one who collects the data as well as the one who performs the analysis, the question of the researcher’s qualifications, training and experiences is important.” (Patton, 1990 referred in Graneheim & Lundman, 2004). To reach a higher level of dependability during the analysis, the authors performed some of the qualitative content analysis together and the rest separately to later on compare the data and see if it resulted in the same or similar codes, subcategories and main categories. Credibility is affected by how well the categories and themes cover the
data of the research findings. Using representative quotations from the transcripts and looking for agreement between co-researcher are ways to avoid including irrelevant data. But in qualitative research, there is no correct way to create meaning from research findings. Arguments for the most credible interpretations from a particular perspective are the ones that establish trustworthiness in interpretation. (Graneheim & Lundman, 2004)

7.2 Result discussion

7.2.1 Demographic information

All the participants who were included in this study met the inclusion criteria as a result of good communication between the authors and the staff in TRS. The age range of participants was seventeen years (47–64 years). Although this is a small age range, it is one that includes the age demographic that most commonly suffers from diabetes, being 40–59 years. (International Diabetes Federation, 2018). The study resulted in more males than females. When collecting data, the authors and the staff at the clinic tried to include the same numbers of both sexes to achieve consistency of data, but this was not achieved. There were fewer known cases involving females, and some such patients had already gone to other islands. Due to the large distances between islands in Kiribati, the authors did not have the opportunity to travel to other islands to collect data. To get more participants the authors considered interviewing more participants even though this resulted in disproportionate numbers of men. According to the staff in TRS, Kiribati culture could have an impact on the disproportionate numbers of male cases. In Kiribati men are expected to climb trees, spend time in the ocean fishing and do hard work in dirty environments, all of which is done barefoot. Walking barefoot creates big risks of developing foot ulcers and infection in already developed ulcers (International Working Group on the Diabetic Foot, 2015).

All participants had a transtibial level of amputation, which both could have a positive and negative impact on the results of the study. This gives a deeper understanding of participation and activity for people with transtibial prosthesis. The negative side is that this study cannot provide generalize to all lower-limb prosthesis users, especially given that Roepke et al., (2017) identified that lower amputation levels were related to higher levels of social participation and lead to higher satisfaction with participation. It might be that lower levels of activity would have been achieved if the participants in this study had higher levels of amputation.

The big differences observed in activity carried out with prosthesis may be influenced by the wide variation due to the variations in the time of using prosthesis. The participants who had used their prosthesis for the longest time had used it for eleven years and showed an active lifestyle while the shortest time of use was one month. This participant explained that they found it hard to walk and only used the prosthesis for exercise. This result is consistent with (Seaman, 2011) where the authors described that it can take a long time to build up the remaining muscles on the effected side and then take time to learn to walk with an effective gait. In general, a higher activity was observed for
participants who had received the prosthesis a long time ago. Similar results were presented in a study by (Sinha, JA van den Heuvel, & Arokiasamy, 2014), which showed greater social and functional limitations for prosthesis users who had used their device for a short time. In the same way, they show that a greater ability appears in these aspects if the prosthesis had been used for a long time.

7.2.2 Outcomes of Mobilization

Prostheses are classified as an environmental factor that can either be assisting or an obstruction. (The World Health Organization, 2001). The ability to walk and move around at home is the key to independence for prosthesis users. The ability to move between wheelchair, bed and toilet and integrate with the community by taking part of social activities enhances self-esteem. (Rommers, Groothoff, Vos, & Eisma, 2001)

The participants in this study describe that the prosthesis increases their mobility and that it helps them to be active and participate. They do not see the prosthesis as an obstruction but rather as an asset that gives them independence. Because of the prosthesis, the participants can go and visit their neighbors whenever they want, be a part of playing the bingo game or be able to exercise. It is quite important for them to be able to do the activities that they did before the amputation where work is a significant part of life. The prosthesis is a factor that helps participants to go back to work and do household chores like feeding the pigs, cleaning and cooking.

Nothing comes without putting some effort in it, and post rehabilitation strategies such as training has a significant role in encouraging an active lifestyle (Desveaux et al., 2016). The participants who have used their prosthesis for a longer period of time have more use of it and their activity level is higher. This was noticed when they explained their ability to walk and even sometimes run with the prosthesis. The authors could feel and see the glow in the participants’ eyes when they were explaining what they can do and how easy it is to go wherever they want because of the prosthesis. According to some, people in their surroundings are surprised and sometimes worried about them being too active. The participants also stated that they do not want to see, and do not see, their amputation as a disability. Their prosthesis makes their lives easier in terms of mobility, but there limits to the activities it facilitates. Most of the participants described the chores they do as small and that they have trouble carrying heavy things since they are afraid of losing their balance and falling.

The balance in patients with vascular transtibial amputation due to diabetes is reduced compared with patients with non-vascular transtibial amputation and patients without amputation (Molina et al., 2017). “It is known that diabetic patients without amputation had a decline in their sensory function because the diabetic condition could affect sensory organization and postural control.” (Fulk, Robinson, Mondal, Storey, & Hollister, 2010). Fulk et al, (2010) suggested that there are more causes of impaired balance in people with diabetes than peripheral neuropathy. Diabetes can affect the sensory pathways centrally (Uccioli et al., 1997), which can lead to a higher risk of falling as the patients with vascular transtibial amputation due to diabetes grow older (Molina et al., 2017). But, Desveaux et al, (2016), have shown that there is a strong association between physical activity levels and mobility and balance in adults who use prosthesis and have diabetes. Their study shows that, despite improvements in functional capacity after prosthetic rehabilitation, the physical activity of
adults with diabetes is still far below the recommended guidelines. There is a need for strategies aimed at increasing active lifestyles and encouraging exercise. (Desveaux et al., 2016)

Some participants in this study described that they feel pain and fatigue if they go on long walks and that these factors affect their activity level in a negative way. According to, Yeung, Aaron, Ming and Winston (2012), walking stability and muscle fatigue is a problem associated with long-distance walking for individuals with transtibial amputation. The participants had different solutions to problems with their prostheses or if the distance was too long for them to walk, such as using crutches and taking the local bus. Independence is an important factor for them, where the prosthesis is the main reason for improvement. It is important that the prosthesis meets the needs that allow the individual to live the life that satisfies them (Parnes et al. 2009), which enforce Jaini and Lee's (2015) theory that improvements in how a person lives their life should be included when evaluating an intervention and not only from a biomechanics perspective.

**7.2.3 Importance of Relationships**

Individuals with lower limb loss have an increased risk of reduced satisfaction in social roles (Amtmann, Morgan, Kim, & Hafner, 2015). In a study by Roepke et al., (2017) it was concluded that the most valued way for participants to socially participate was to visit loved ones. Most of the participants in this study described their family as an important part of enabling participation in the community and at home. They also described that relationships in the family and the extended family played a major role in their physical and mental health.

The family plays a major role for the people of Kiribati (Swedish Institute of International Affairs (UI), n.d.). Sohyune and Eun (2011) describes that in a culture where family interdependence is highly valued it is common to live in extended families, that is, living with grown children and grandchildren. A part of the aim in the study by Sohyune and Eun (2011) was to investigate whether the self-esteem and physical state of health differed when living alone or with a family. The result showed a positive impact, both mentally and physically, when the participants had a family around (Sohyune & Eun, 2011).

Helping one another was a matter of course for the participants, especially as they became older. Then it was expected that the younger ones were to take more responsibility around the home, such as for cooking and cleaning. In this regard, it was not the prosthesis that affected the help from others, it was the cultural aspect.

A particular everyday activity that all participants needed help with was carrying the water in the shower. In this study, there were always persons within the family who helped. Whenever this was discussed during the interview, the participants expressed disappointment that they could not handle hygiene completely independent. A basic need to for health and well-being is that you should be able to do daily activities, including being able to take care of your hygiene (Kielhofner, 2008). Access to a shower with running water could possibly have solved this difficulty.
Participants described health and fitness as important for giving back to the family. McDonnell et al., (2011) showed that physical activity contributes to increased satisfaction. They also concluded that the men were more physically active than the women. When the results were reviewed, some differences between the sexes were observed. The older women helped the family take care of children and grandchildren, which was considered an important part of building good relationships within the family. Physical work, such as fishing and building houses, was something the men in this study tended to want to do. These physical activities not only contribute to food and shelter, but are also important culturally for men to socialize. Fishing was considered a social activity, but one which participants could not return to after receiving their prosthesis. Participation in a group is an important part of self-fulfillment and by losing a role, it can lead to the individual losing part of their identity, which in turn leads to reduced self-esteem (Kielhofner, 2008).

7.2.4 Before and After Prosthesis

The result of the study by Nyqvist and Pettersson (2016) demonstrated that most of participants had numerous difficulties that forced some participants to stay inside for whole days. The environment in their surroundings made it impossible for those with lower-limb amputations to mobilize. In some cases they could not move around inside the house because the house was not adapted for a wheelchair. This differs from our study. The participants in this study turned out to have different levels of mobility but everyone was able to move around in their home. That was also shown in a study by (Magnusson et al., 2014) where the majority were able to move around in their houses when they used their prosthesis or orthosis device. The study identified a difficulty among participants in walking on uneven surfaces but most were able to walk more them one kilometer if they used their devices (Magnusson et al., 2014).

In the study by Nyqvist and Pettersson (2016), help from the family, such as by carrying water, was needed when the participants wanted to take a shower. This turned out to be a residual problem even after the individuals received a prosthesis. In this study, it was found that family members were still important for the participants when they needed any kind of help like showering.

Participation in society was drastically reduced after amputation, some of the individuals completely ceased to participate in the community and some felt bored and meaningless (Nyqvist & Pettersson, 2016). Avoiding certain activities can lead to loss self-esteem and can be caused by loss of functions, body image and reduced balance (Kelly & Dowling, 2008). In both Nyqvist and Pettersson (2016) and this study, the environmental was found to hinder participants from participation. The environment in both studies were equivalent but in this study the results show that a prosthesis in many cases made it possible to overcome surrounding obstacles.

Fortunately, the comparison between this study and previous studies has shown an improvement in participation and activity for individuals who received a lower-limb prosthesis.
This qualitative study showed a new insight into activity and participation for individuals who lived with a lower limb prosthesis in the PIC’s. All the participants expressed that they were more active with their prosthesis which indicates an increase in activity and participation.

7.3 Further studies
To confirm the results in this study, several studies with the same focus area would be of value. Further studies should involve a larger number of participants. While Roepke et al., (2017) determined that people with lower amputation levels have higher satisfaction with participation than higher amputation levels, further studies should include participants with transfemoral prosthesis. Future studies should also focus on the increasing prevalence of diabetes and ways to prevent this non-communicable disease. Discussion regarding the components of the prostheses has not been mentioned in this study. To gain a clearer picture of the prosthesis impact on mobility and activity, it would be interesting to investigate if the components affect prosthesis users in these areas in different ways.

8 Conclusion
Activity and participation increased in individuals that use prosthesis as a result of diabetes type 2 as compared to those who do not use prosthesis. Prosthesis use contributes to increased mobility that affects activity and participation, which leads to greater satisfaction in life. These conclusions should be taken with care because the gender distribution did not meet the requirements for variation, making it difficult to generalize the results to the population.

8.1 Acknowledgements
We wish to thank Motivation Australia for making this project possible. Thanks also to all participants and all the staff at Tungaru Rehabilitation Center, Nawerewere for helping us throughout this study and a special thanks to Mr. Tekoaua Tamaroa who helped us with both minor and major problems throughout the process. We also would like to thank the government of Kiribati who gave us permission to stay in the country and collect the data. Appreciatiiveness is also given to the Minor Field Studies program and Swedish International Development Cooperation Agency for financial support and education. Finally, we would give a big thanks to our supervisor Nerrolyn Ramstrand who has helped and supported us along the way.

8.2 Conflict of interest
The authors declare no conflicts of interest.
9 References


World Health Organization. (den 4 September 2017). *WHO Disability Assessment Schedule 2.0 (WHODAS 2.0)*. Hämtat från who.int: http://www.who.int/classifications/icf/more_whodas/en/ den 9 April 2018
